Technical Assistance for the preparation of guidance for the implementation of the new bioenergy sustainability criteria set out in the revised Renewable Energy Directive – REDIIBIO

Appendices to Final report

Navigant Netherlands B.V., The European Forest Institute (EFI), The Institute for European Environmental Policy (IEEP), Oeko-Institut

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REDIIBIO project

Technical Assistance for the preparation of guidance for the implementation of the new bioenergy sustainability criteria set out in the revised Renewable Energy Directive

Appendices to the final report

Appendix A. STAKEHOLDER CONSULTATION

Throughout the REDIIBIO project, a range of stakeholders have been consulted. The purpose of the consultation was to support the Commission in its dialogue with stakeholders with the view to collect feedback on the proposed approaches/methods. This guaranteed the accuracy and objectivity of the overall project findings. The consultation took place in various forms such as project workshops, presentation at a wide range of other meetings/workshops and bilateral outreach.

In the following sections we provide details on the stakeholder workshop and interaction with other stakeholders.

A.1. Stakeholder workshops

The REDIIBIO project included the organization of **two stakeholder workshops**, one in the fall of 2019 and one in the spring of 2020. The first stakeholder workshop was held on the 11th of October 2019 in Brussels and was attended by a wide range of organisations. A second stakeholder workshop was held on the 25th of June 2020, where the draft project results were presented. Due to COVID, the 2nd workshop was held online. A benefit of this was that many more stakeholders could attend, resulting in over 100 participants[101].

Table 16. List of Attendees - 19th October 2019 Workshop

Organisation	Name
2BSvs	Luis Da Silva E Serra
Austrian Chamber of Agriculture	Andreas Thurner
AVEBIOM	Pablo Rodero
Belgium DG Env	Ivo Cluyts
Bioenergy Association of Finland	Hannes Tuohiniitty
BioenergyEurope	Jean-Marc Jossart
BioenergyEurope	Nathalie Hemeleers
Byrne č Cl®irigh Consulting	Shane Malone
CAN Europe (EU Energy Policy Coordinator)	Veerle Dossche
CERTH	Manolis Karampinis
Clariant	Paul Popescu
Conf®deration Europ®enne des Propri®taires Forestiers (CEPF)	Meri Siljama
Confederation of European Paper Industries (CEPI)	Ulrich Leberle
Danish energy agency	Bodil Harder
Drax	Laura Craggs
Engie	Yves Ryckmans
Enviva (US pellet manufacturer)	Justin Tait
European Confederation of Woodworking Industries (CEI-Bois)	Margherita Miceli
European farmers and agri-cooperatives COGECA	Oana Neagu
European farmers and agri-cooperatives COPA	Dominique Dejonckheere
European Landowners' Organization asbl (ELO asbl)	Oskar Zemitis
European pellet council	Gilles Gauthier
European State Forest Association (EUSTAFOR)	Amila Meskin
FERN	Katja Garson

[101] An overview of the list of attendees is not available, since the workshop was held online this was not registered.

Organisation	Name
Finland Ministry of Economic Affairs: Energy Dept	Jukka Saarinen
Fortum Corporation	Kari Kankaanp[a a]
France MS	Ms Johanna Flajollet-Millan
French Minist¯re de l'agriculture et de l'alimentation	Gu®nola Julienne
French Ministry for an ecological and solidary transition	Elisabeth Pagnac-Farbiaz
German government - Department Bioenergy Systems	Stefan Majer
IINAS	Uwe Fritsche
ISCC	Peter Hawighorst
NEPCON DK	Ondrej Tarabus
PEFC	Xavier Nyogen
Poland	Agnieszka Kedziora-Urbanowicz
Polish Department of Forestry	Monika Figaj
Polish Directorate General of State Forests	Tomasz Majerowski
RSB	Elena Schmidt
RVO	Timo Gerlagh
SBP	Simon Armstrong
Spain MS	Francisco Jos®Dom²nguez P®rez
Stichting BirdLife Europe (BirdLife Europe)	Luke Edwards
SUSTAINABLE RESOURCES	Thomas Siegmund
Transport & Environment	Luca De Bruyckere
US Industrial Pellet Association	Jessica Marcus
Utrecht University	Ric Hoefnagels
Wageningen University	Anouk Cormont
WWF	Alex Mason

A.2. Written stakeholder consultation

The draft report was published on the project website as to allow stakeholders after the 2nd workshop to provide written feedback on the REDIIBIO work. Feedback from the stakeholders was reviewed and where relevant integrated in the final report and project deliverables. In the following table an overview is presented of all organisations that have provided written feedback during this consultation period.

Table 17. Overview of organisations which have provided consultation feedback

Organisation	Name
AGPM and AGPB	Gildas Cotton
Association des Agriculteurs M®thaniseurs de France	Emilie Bondoerffer
Bioenergy Association of Finland	Hannes Tuohiniitty
Bioenergy Europe	Giulia Cancian
Bioenergy Europe	Florens H. Dittrich
CEPF	Fanny-Pomme Langue
CEPI	Meri Siljama
Danish Energy Agency	Jonas Juergen

Organisation	Name
Danish Energy Agency	Bodil Harder
Deutsche S^{a} ge	Julia Mobus
Drax	Laura O'Brien
EBA	Marco Giacomazzi
ENGIE	Yves Ryckmans
Enviva	Justin Tait
Eurelectric	Helene Lavray
Eustafor	Piotr Borkowski
Finnish Forest Industries Federation	Tuomas Nirkkonen
FSC	Matteo Mascolo
Georgia Forestry Commission	Risher Willard
German Biogas Association	Julia Munch
Graanul Invest	Mihkel Jugaste
Green Transition Denmark	Annika Gade
Kuratorium f¿r Waldarbeit und Forsttechnik e. V.	Bernd Heinrich
Natural Resources Canada - Canadian Forest Service	Christine Spady
Natural Resources Defense Council	Debbie Hammel
North Carolina Forest Service	Sean Brogan
Partnership for Policy Integrity	Mary Booth
SBP	Simon Armstrong
Shell	Lea Weisbrod
Southern Environmental Law Center	Heather Hillaker
Southern Group of State Foresters	Tim Foley
Transport & environment	Christina Mestre
USDA	Bruce Zanin
USIPA	Jessica Marcus

A.3. Desk-based research

Besides the stakeholder consultation an extensive desk-based review of literature, legislation and certification schemes took place.

A detailed analysis of indicators and evidence requested by range of certification schemes and sources was made. The precise documents of certain certification systems, norms, government programs and projects which have been considered in this study, are stated below (Table 19). It has to be noted that the intention of the review was to collect inspiration from established practice. It was not the intention to make a partial or full assessment of the capability of a scheme to demonstrate compliance with REDII and the results of this review should not be taken in that regard.

Table 18. Initial certification schemes and sources reviewed

Scheme/Source	Source document
SBP	Sustainable Biomass Partnership. SBP Framework Standard 1: Feedstock Compliance Standard. Version 1.0 March 2015

Scheme/Source	Source document
FSC	Forest Stewardship Council. FSC International Generic Indicators: FSC-STD-60-004 V2-0 EN. 01 July 2018
PEFC	PEFC Checklist - Sustainable Forest Management - Requirements (PEFC ST 1003:2018)
ISO13065	International Standard ISO-13065. Sustainability criteria for bioenergy. First edition. 2015-09-15
NL_RVO	Verificatieprotocol duurzaamheid vaste biomassa voor energietoepassingen, Ministry of Economic Affairs and Climate, December 2017
UK-DECC	Department of Energy & Climate Change, 2014. Risk Based Regional Assessment: A Checklist Approach. 22 December 2014. Crown copyright. United Kingdom
UK_WAS	United Kingdom Woodland Assurance Standard Fourth Edition; Version 4.0: approved by the Steering Group, 31 August 2017. Effective from 1 April 2018
Dutch Norm NEN-EN 16214-3+A1:	Dutch Norm NEN-EN 16214-3+A1: Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 3: Biodiversity and environmental aspects related to nature protection purposes

The analysis comprised of the compilation of all indicators in the certification schemes possibly relevant to the sub-paragraphs of article 29.6(b). The selected indicators addressed the individual topics to a more or less similar manner and extent. In a next step the indicators directly referring to the legal text in the REDII were isolated. Indicators and criteria that would have partially introduced new issues were left out and emphasis was put on the operationalization of the criteria and the possible proof, relevant for harvesting operations according to Article 29.6(b).

In the final selection of condensed and adjusted indicators, specific thresholds have been renounced because of the impracticality of one-size-fits-all solutions for Europe, let alone the world, due to the diversity of forest types, management practices, environmental influences, climatic conditions and statutory frameworks.

Appendix B. COUNTRY SHEETS

A set of country sheets has been developed as examples of applying the methods and checklists to 32 countries. The **country sheets** have been used to carry out a legal analysis of the compliance of the existing relevant legislations in 32 countries with the forest sustainability criteria (the level A route ï compliance on a national/subnational level).

The country sheets do not hold any legal value and were solely used for the purpose of testing the methodology developed for the level A.

The 32 countries considered are 27 EU Member States and five countries (or a subset of regions in that country) outside the EU which have been selected based on their current role in supplying forest biomass products to Europe: Russia, USA, Canada, Ukraine and Belarus.

For European countries that do not have forest legislation arranged on national level (e.g. Belgium, Germany, Italy, Spain), only one country sheet has been produced, but all regions were checked as part of a regional assessment. The criteria are met only if they are met in each region. For the country sheets for USA and Canada (forest legislation arranged on state level and not on federal level), two states where selected as examples.

The data-collection process was desk-based, but where information was difficult to retrieve through desk-based research, we have reached out to experts or in-country contacts (for example at the governments) to point us in the direction of most relevant legislation.

The country sheets do not qualify as a risk mitigation measure with regard to the EU Timber Regulation but may be useful as part of the due diligence procedure as laid down in the Regulation.

B.1. Description of country sheet development

The country sheets present a legal analysis to assess if current national and sub-national legislative frameworks meet the sustainability criteria for forest biomass **at level A**.

Please note these country sheets are merely a ósnapshotôof the current situation in countries. They are not a set of country sheets to be maintained over time nor do they hold any legal value. Once the guidance on forest biomass sustainability criteria is set, a verifier will need to assess if countries comply at national level.

They were developed as examples how to apply the stepwise approach as presented in the section 2.2.3 and 2.2.4. See below a summary of the criteria and the type of proofs.

The main process followed in the development of the country sheets was as follows:

- Country experts (see Table 21) were identified for all countries and regions within scope of this assessment. These experts received a data collection template (excel format) with a list of questions related to the criteria for level A compliance as identified in our approach (see detailed description in section 2.2 and 2.3 and resulting summarizing Table 20).

- For the requirements on laws, country experts have reviewed national legislation together with sub-national legislation where required and added the reference to the relevant law and its specific article covering the criteria mentioned. For several countries underlying regulations, guidelines or technical codes were also added in the references. Please note that country experts did not assess the effectiveness of the relevant laws (e.g. if the regulation on the longer term actually achieves the objective of the criteria in the manner it is currently formulated). The assessment only aimed to identify whether laws covering the harvesting criteria existed. Of course, it could be that the regulation or law used different wording, but the same concept should be covered as the criteria indicate.

- The country experts filled the data collection template based on a desk-based data collection process. In this process they reviewed available legal documentation and where relevant connected to government experts to identify the required evidence and information sources. Please note that most of the information was collected through a desk-based review and no other stakeholders were consulted bilaterally. Stakeholder consultation was done through the public consultation process. Please note that to keep an objective process, only changes or corrections were made, or information was added which could be considered reliable (e.g. based on reports from international or national governmental organization).

- For EU Member States the country experts were instructed to in case forestry legislation was a regional competence, assess all regions on compliance. Only in case all regions had the required regulation and enforcement in place, the criteria were deemed as complied with at level A.

- For the assessment on enforcement specifically, the following checks were done:

    - Check if relevant national or sub-national laws/regulations include monitoring/enforcement provisions, including sanctions:
        - References to relevant articles and regulations were included
    - Check the absence of robust evidence of significant and systematic lack of enforcement:
        - First a check was done if the Commission has and ongoing infringement procedure against the country. If this is the case, the summary of the complaint was reviewed to assess for which criteria enforcement should be set to No (e.g. Romania).
        - Secondly UNEP-WCMC briefing notes of the past two years were reviewed to check if the country was mentioned for serious offenses in those. If this was the case, the description of the comment was used to assess for which criteria enforcement should be set to No (example Romania). If the comment indicated ócorrupt or dysfunctional forest governanceôall criteria on sustainable harvesting were set to No.

- Below Table 20 several examples are provided on how the assessment was done and what the limitations of the country sheet development process were.

- The country sheets were reviewed by Navigant and EFI as to identify gaps and ensure consistency. Country experts updated the country sheets based on the consortium feedback provided.

- The country sheets were also circulated to Member States through the Committee for Sustainability of Biofuels, Bioliquids and Biomass Fuels, after which final edits were taken into account by the Consortium before the country sheets were published for feedback in the public stakeholder consultation. Final edits were made by Navigant to the country sheets based on feedback received in the consultation process.

Table 19. Summary of criteria, requirement and type of evidence required

REDII Criteria		Requirement	Type of evidence
29.6a(i)	Harvesting legality	Laws	• Adequate and efficient due diligence as required under the EU Timber Regulation (EUTR, (EU) 995/2010)
29.6a(i)	Harvesting legality	Monitoring/ Enforcement	• Proof that there is no evidence from national or international governmental organizations that there is significant and continue lack of enforcement
			• Proof that the relevant Member States is not subject to any on-going EU infringement procedure for non-compliance with the EU Timber Regulation
29.6a(ii)	Forest regeneration	Laws	• Legal analysis showing that the relevant legislation complies with the forest regeneration criteria
29.6a(ii)	Forest regeneration	Monitoring and enforcement	• Legal analysis showing that the relevant forest legislation includes monitoring and enforcement requirements for forest regeneration
			• Proof that there is no evidence from national or international governmental organizations that there is significant and continue lack of enforcement
29.6a(iii)	Protected areas	Laws	• Legal analysis showing that the relevant legislation complies with the protect areas requirement
29.6a(iii)	Protected areas	Monitoring and enforcement	• Legal analysis showing that the relevant forest legislation includes monitoring and enforcement requirements for protected areas
			• Proof that there is no evidence from national or international governmental organizations that there is significant and continue lack of enforcement
29.6a(iv)	Maintenance of soil quality and biodiversity	Laws	• Legal analysis showing that the relevant legislation complies with the maintenance of soil quality and biodiversity criteria
29.6a(iv)	Maintenance of soil quality and biodiversity	Monitoring and enforcement	• Legal analysis showing that the relevant forest legislation includes monitoring and enforcement requirements for protected areas
			• Proof that there is no evidence from national or international governmental organizations that there is significant and continue lack of enforcement
29.6a(v)	Long-term production capacity	Laws	• Legal analysis showing that the relevant legislation complies with the long-term production capacity criteria
29.6a(v)	Long-term production capacity	Monitoring and enforcement	• Legal analysis showing that the relevant forest legislation includes monitoring and enforcement requirements for long-term production capacity
			• Proof that there is no evidence from national or international governmental organizations that there is significant and continue lack of enforcement

To illustrate the methodology used, we provide in the following section examples on how the assessment was done.

For Canada (British Columbia) on forest regeneration and its related enforcement system

Forest regeneration ï name of law and article	Article text
Forest and Range practices Act of 2002 Part 3, Division 4 Ä 29	Free growing stands: 1) A holder of a major licence or community forest agreement who harvests timber to which a forest stewardship plan applies must establish in accordance with the plan, the prescribed requirements and the standards, a free growing stand on those portions of the area of the harvest that are in the net area to be reforested. 2) If the timber sales manager a. Has authorized the harvesting of timber under a timber sale licence that requires its holder to prepare a forest stewardship plan, or b. Is the holder of a forest stewardship plan c. He or she must establish in accordance with the plan, the prescribed requirements and the standards, a free growing stand on those portions of the area of the harvest under the plan that are in the net area to be reforested 3) A holder of a woodlot licence who harvests timber under the licence must establish a free growing stand on those portions of the area of the harvest that are in the net area to be reforested in accordance with a. The woodlot licence plan, if any, that is pertinent to the licence b. The prescribed requirements, and c. The standards 4) [Repealed 2003-55-18.] 5) to (10)[Repealed 2004-36-89.]
Forest Planning and Practices Regulation of 2004 (FPPR) - Section 16	Stocking standards ï 16: 1) A person required to prepare a forest stewardship plan must ensure that the plan specifies the situations or circumstances that determine when section 44 (1) [free growing stands generally] or section 45 [free growing stands collectively across cut blocks] will apply to an area. 2) In specifying a stocking standard under this section, a person who prepares a forest stewardship plan may consider the factors set out in section 6 [factors relating to stocking standards] of Schedule 1. 3) A person required to prepare a forest stewardship plan must ensure that the plan specifies, for each of the situations or circumstances specified under subsection (1) where (a) Section 44 (1) (a) will apply, the regeneration date and stocking standards, (b) Section 44 (1) (b) will apply, the free growing height and stocking standards, (c) Section 45 (1) will apply, the regeneration date and the stocking standards, and (d) Section 45 (2) will apply, the free growing date and the stocking standards, as approved by the chief forester. 4) A person required to prepare a forest stewardship plan must ensure that the plan specifies stocking standards for areas referred to in section 44 (4), and the situations or circumstances that determine when the stocking standards will be applied. 5) A holder of a major licence that is a forestry licence to cut entered into under section 24.8 of the Forest Act or converted into a forestry licence to cut under section 24.9 of the Forest Act is exempt from this section.
Forest and Range Practices Act- *Division 4 § 29*	**"**A person who contravenes section 21 (1), 22 (2), 29 (1) or (3) or 55 (a) commits an offence and is liable on conviction to a fine not exceeding $500 000, or to imprisonment for not more than 2 years, or to both.ò

For Ireland on minimizing impacts on biodiversity during harvesting of forest biomass and its related enforcement system:

Biodiversity impacts - name of article	Text article
Forestry Act 2014 **Forestry Regulations 2017** **Forest Biodiversity Guidelines**[102]	The **Forestry Act 2014** and the **Forestry Regulations 2017** require a person to apply to the Forest Service for a licence to fell trees, unless the trees are exempt. Under the conditions of a felling licence, the licensee is required to satisfy a range of good forest practise standards published by the Forest Service, including biodiversity conservation. The Forest Service sets out Forest Biodiversity Guidelines. Any grassland within a SAC or SPA be designated as highly biodiverse grassland. These areas of high biodiversity will therefore be covered under European Communities (Birds and Natural Habitats) Regulations 2011. Wildlife habitats are protected under **Wildlife Act 1976**.
Section 26 and 27 of the Forestry Act 2014	Section 26 and 27 of the Forestry Act 2014 describe offences under the Act and the penalties that can be imposed by the Courts. Penalties for illegal tree felling, breach of felling licence conditions or failure to reforest in accordance with a replanting order vary by type of offence. Section 67 of the European Communities (Birds and Natural Habitats) Regulations 2011 sets out penalties for contravention to the statute. Section 74 of the Wildlife Act 1976 sets out penalties for contravention to the statute.

Please note that in the assessments as described above, we have only reviewed if the requested sub-criterion is covered by the legislation, not if the legislation is effective and rolled out in such a way to actually achieve its objective. We are however aware of discussions[103] on the ósuitabilityôof the setting of the annual allowable cut in Russia for example, used to actually maintain long-term production capacity. However, since the legislation is present together with an enforcement system, the sub-criteria was considered as met in this case, within the aforementioned boundaries of this legal assessment. The quality of the methodology to come to the actual allowable cut numbers are beyond the scope of this assessment.

Examples on the broader assessment of enforcement beyond the relevant legislation:

***Ukraine*:**

- Following the comments in the UNEP-WCMC briefing notes:
  - ñFollowing publication of the Earthsight report in July 2018 and the EU TAIEX expert mission report in October 2018, Ukraine has taken steps to address illegalities in the forestry sector and the Ukrainian Prime Minister vowed to strengthen enforcement to fight **illegal logging** and timber trade. Ukrainian forestry reforms that would allow for **independent enforcement of Ukraineôs forestry laws** and **increased transparency** have been approved by the Ukrainian cabinet of ministers, however Earthsight note that this key package of reforms has apparently stalled, as it awaits sign-off from the Prime Minister.ò[104]
  - ñOn 14 July, Earthsight published findings from a two-year investigation into illegal logging and **timber corruption** in Ukraine. The report detailed extensive corruption throughout the timber supply chain from the government-owned State Forestry Enterprises (SFEs) to their superiors within the countryôs forest administration. An extrapolation from field investigations indicates that ~40% of timber being produced is illegally cut, through misuse of a loophole designed to prevent the spread of disease.ò[105]
  - ñRegarding timber from Ukraine, it was concluded that the country as a whole should be considered **a risk country of harvest**, requiring the provision of adequate risk

[102] https://www.agriculture.gov.ie/media/migration/forestry/publications/biodiversity.pdf
[103] http://www.hcvf.ru/ru/projects/neistoshhitelnost-lesopolzovanija ; http://www.spb-niilh.ru/pdf/O_lesoustroistve.pdf
[104] https://ec.europa.eu/environment/forests/pdf/EUTR_Briefing_note_July-August_2019_final.pdf
[105] https://ec.europa.eu/environment/forests/pdf/Briefing_note_June_-_August_2018_Public.pdf

mitigating measures. In cases where a negligible risk assessment cannot be reached, timber from Ukraine should not be placed on the EU market.ò[106]

- The text from the briefing notes clearly refer to issues with enforcement in the timber sector beyond only legality and therefore a ÎNOô on all five sustainable harvesting criteria for enforcement is set.

***Romania*:**

- The infringement procedure as well as the briefing notes comment:
  - ñThe Commission is urging **Romania** to properly implement the EU Timber Regulation (EUTR), which prevents timber companies from producing and placing on the EU market products made from **illegally harvested logs**. In the case of Romania, the national authorities have been unable to effectively check the operators and apply appropriate sanctions. Inconsistences in the national legislation do not allow Romanian authorities to check large amounts of illegally harvested timber. In addition, the Commission has found that the Romanian authorities manage forests, including by authorising logging, without evaluating beforehand the impacts on **protected habitats** as required under the Habitats Directive and Strategic Environmental Assessment Directives. Furthermore, there are shortcomings in the access of the public to **environmental information** in the forest management plans. The Commission also found that protected forest habitats have been lost within protected Natura 2000 sites in breach of the **Habitats and Birds Directives**. Therefore, the Commission decided today to send a letter of formal notice to Romania, giving it one month to take the necessary measures to address the shortcomings identified by the Commission. Otherwise, the Commission may decide to send a reasoned opinion to the Romanian authorities.ñ
- The text from the infringement procedure refers to issues beyond legality and therefore a ÎNOô has been set on enforcement for legality, protected areas and biodiversity.

Please note that for the assessment of enforcement, we have relied on sources specific to the forestry sector (e.g. not on corruption indexes covering a variety of sectors sometimes leading to misinterpretations). Additionally, the Commission requested only to include international governmental sources for the assessment of enforcement, so no NGO or private related sources or databases were directly taken into account as part of this assessment.

In the following table we present an overview of date on which the country sheet was produced, as well as the expert who contributed to them. The country experts were the main authors of the country sheets and have done the initial research. All country sheets were reviewed by EFI and Navigant, who provided comments which the country experts reviewed and integrated where relevant. The country sheets were further sent to all Member States (as part of the Committee on Sustainability of Biofuels and Bioenergy) and open for feedback to all stakeholders in the public stakeholder consultation. Last edits based on these two rounds were made by Navigant, although in all cases country experts were notified/consulted on the resulting changes.

Table 20. Country sheet dates and contributing experts

Name country sheet	Date of completion by expert	Country expert
Austria	12.06.2020	Blasius Schmidt
Belgium	12.06.2020	Jo Van Brusselen
Bulgaria	15.04.2020	Tsvetelina Filipova
Cyprus	16.04.2020	Anastasia Kostakou
Czech Republic	14.04.2020	Jan Cihlar
Denmark	12.06.2020	Thorfinn Stainforth
The Netherlands	06.04.2020	Gilles Dillen
Estonia	12.06.2020	Hannes Bº ttcher
Finland	09.04.2020	Venla Wallius
France	30.04.2020	Anne Marechal
Germany	12.06.2020	Hannes Bº ttcher
Greece	16.04.2020	Anastasia Kostakou
Croatia	10.04.2020	Nenad Ġimunoviĺ
Hungary	14.04.2020	Petra Stankovics
Ireland	12.06.2020	Cara Merusi

[106] https://ec.europa.eu/environment/forests/pdf/EUTR_Briefing_note_July-August_2019_final.pdf

Name country sheet	Date of completion by expert	Country expert
Italy	12.06.2020	Anastasia Giadrossi
Luxemburg	28.04.2020	Jo Van Brusselen
Latvia	24.04.2020	Andis LazdiÅģ
Lithuania	14.04.2020	Gediminas Jasinevicius
Malta	15.04.2020	Anna Pulo
Poland	03.04.2020	Artur Lenkowski
Portugal	23.04.2020	Mariana Hassegawa
Romania	7.09.2020	Laura Bouriaud
Slovenia	12.06.2020	Danijel Crnļ ec
Slovakia	10.04.2020	Jan Karaba
Spain	12.06.2020	Mercedes Rois
Sweden	21.04.2020	Mia Pantzar
Belarus	12.06.2020	Rens Hartkamp
Canada ï British Columbia	30.04.2020	Lucie Pfaltzgraff
Canada ï Quebec	12.06.2020	Lucie Pfaltzgraff
Russia	12.06.2020	Rens Hartkamp
Ukraine	12.06.2020	Georgiy Geletukha
USA - North Carolina	29.04.2020	John Gunn/Thomas Buchholz
USA - North Carolina	29.04.2020	John Gunn/Thomas Buchholz

Please note that the Commission has sent out the country sheets for an additional review by third countries in November 2020, after the finalization by the country experts. In this context, extensive feedback was received from Belarus, which unfortunately could not be taken into account due to timeline, So please note that the version of the country sheet presented here is without the additions by the Belarus Government.

B.2. Results country sheets

In the following section we present the country sheets as developed within the REDIIBIO project.

NAVIGANT
A Guidehouse Company

Austria

Background information

In 2020, there was about 3.90 million hectares of forest area in Austria, a share of 47,3% of the total land area. In 2015, the larger part of the forest (82%) was under private ownership, with only about 18% publicly owned. In 2018 there were 878,400 hectares of forest assignable to FOREST EUROPE protection area classes 1 and 2. In 2019, 5,579,035 m^3 of wood fuel was produced in Austria, of which 17,044 m^3 was exported. In 2015, the forestry sector contributed 1.8% to the Gross Domestic Product.[1]

Forest legislation is a federal competence. The main law regulating the forest sector is the Forestry Act of 1975. The Federal Act on forestry is a piece of basic legislation regulating Austrian forests, a factor of great importance for human beings, animal and plants and to the ecological, economic and social development of the country. The main aim of the present Federal Act is the conservation of the wood and its soil to guarantee an adequate treatment of the wood and finally to secure a sustainable development. The Forest Act is implemented within the framework of indirect federal administration, i.e. by the governor of the province (Landeshauptmann) and the district administrative authorities (Bezirksverwaltungsbehº rden). The Federal Forest Office is the competent authority for timber trade (FLEGT and EU Timber Regulation), forest reproductive material and plant protection.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Austria	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?		
	1. Allgemeines b¿rgerliches Gesetzbuch (General Civil Code) ABGB of 1812, Ä 405 [3] 2. Vermessungsgesetz (land register, legally gazetted boundaries) VermG of 1968[4] 3. Forstgesetz (Austrian forest law) ForstG of 1975, ÄÄ 17-19; 25 (1); 80-92; 174 (3) b) 3; 170-172; 174[5] 4. Holzhandels¿berwachungsgesetz of 2013, ÄÄ 2 ff; 14[16] 5. Schutzwaldverordnung of 1977[17]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6,16]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[6,7,16]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6,8,9,16]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?		
	1. Forstgesetz (Austrian forest law) ForstG of 1975, ÄÄ 13; 16 (2)c; 17a (4); 18 (4); 65 (2); 89; 170-172; 174 (1) a) 1, 3, 6a[6]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6,9]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?		

	1. Wasserrechtsgesetz (Austrian water rights act) of 1959, National law, ÄÄ 30 (1) 2-4; 55 (1)1a; 98-101; 130; 137; 138[10] 2. Nature conservation is primarily the responsibility of the federal states. As a result, nature conservation laws for each federal states have been identified as part of the regional assessment.[18]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10,18]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,18]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[10,18]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?		
	1. Forstgesetz (Austrian forest law) ForstG of 1975, ÄÄ 1; 16 (2)b; 38; 58(3)a; 60; 80 ff; 170-172; 174[6]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[6,11,12]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes[6]	
7.1	Law name and date? 1. Forstgesetz (Austrian forest law) ForstG of 1975, ÄÄ 1-2[6] 2. Nature conservation is primarily the responsibility of the federal states. As a result, nature conservation laws for each federal states have been identified as part of the regional assessment.[18]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6,18]	(specified at regional competence)
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[6,18]	(specified at regional competence)
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6,18]	(specified at regional competence)
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?		
	1. Forstgesetz (Austrian forest law) ForstG of 1975, ÄÄ 1; 13; 16 (2)a; 80 ff; 82 (1) a)1; 170-172; 173 (2)b; 174[6]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[6,11,12]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[13]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[14]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[15]	

[1] Sources for the paragraph are:
https://fra-data.fao.org/AUT/fra2020/, land use and forest area (2020), ownership (2015), protected areas (2018)
http://www.fao.org/faostat/en/, wood fuel production and export (2019)
GDP contribution: national report for the Forest Europe report State of EuropeËs Forests 2020 (will be published in December 2020, https://foresteurope.org/)

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://bfw.ac.at/rz/bfwcms.web?dok=4826

[3] https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10001622

[4] https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10011400

[5] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC089288/

[6] https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10010371

[7] http://www.wald-in-oesterreich.at/schutz-vor-illegalem-holzeinschlag/?context=C%2311%23AC%235127

[8] The Federal Office of Forests (Bundesamt f¿r Wald (BFW)): https://bfw.ac.at/rz/bfwcms.web?dok=9390

[9] The Austrian Forest Law (ForstG): https://www.bmlrt.gv.at/forst/oesterreich-wald/Forstrecht/Forstgesetz.html

[10] https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10010290

[11] https://bfw.ac.at/rz/bfwcms.web?dok=4256

[12] https://www.umweltbundesamt.at/boris

[13] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[14] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=AUT

[15] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Austria%20First/LV-03-06-EU%20INDC.pdf

[16] https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20008546

[17] RIS - Schutzwaldverordnung - Bundesrecht konsolidiert, Fassung vom 27.11.2020 (bka.gv.at)

[18] informationstext_naturschutzrecht.pdf (oekobuero.at)

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Belgium

Background information

In 2016, there was about 0.68 million hectares of forest area in Belgium, a share of 22.5% of the total land area. In 2010, the larger part of the forest (55%) was under private ownership, with only about 45% publicly owned. 47,900 hectares are protected forests and forests under Natura 2000. In 2018, 892,750 m^3 of wood fuel was produced in Belgium, of which 32,140 m^3 was exported. In 2011, the forestry sector contributed 0.6% to the Gross Domestic Product. [1]

Forest legislation is a regional competence. The main law regulating the forest sector is the 1990 Forest Decree. This decree seeks to regulate the conservation, protection, planting and management of woodlands. It applies to both public and private woodlands. Forest legislation falls mostly under the Ministry of Environment, with the Federal Public Service Health, Food Chain Safety and Environment as a competent authority.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Belgium	
2	Is forestry policy/legislation of national or regional competence?	Regional competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?		
	1. EU Timber Regulation[3] 2. Forest decree of 13/06/1990[4] 3. Nature decree of 21/10/1997[5] 4. Decree on spatial planning of 15/05/2009[6]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[7,5,6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[8,5,6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9,5,6]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes- covered at a regional level	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes- covered at a regional level	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes- covered at a regional level	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes- covered at a regional level	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	

6.1	Law name and date?		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes- covered at a regional level	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes- covered at a regional level	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes- covered at a regional level	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes- covered at a regional level	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes- covered at a regional level	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes- covered at a regional level	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[10]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[11]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[12]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32010R0995

4 https://codex.vlaanderen.be/Zoeken/Document.aspx?DID=1003183&param=inhoud

5 https://codex.vlaanderen.be/Zoeken/Document.aspx?DID=1005915&param=informatie

6 https://codex.vlaanderen.be/portals/codex/documenten/1018245.html

[7] https://www.health.belgium.be/nl/controles-op-hout

[8] SWD(2019) 112 final. COMMISSION STAFF WORKING DOCUMENT, The EU Environmental Implementation Review 2019. Country Report – BELGIUM: https://ec.europa.eu/environment/eir/pdf/report_be_en.pdf

[9] List of EUTR competent authorities in EU Member States: https://ec.europa.eu/environment/forests/pdf/list_competent_authorities_eutr.pdf

[10] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[11] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=BEL

[12] https://www.climat.be/files/4214/9880/5755/NAP_EN.pdf

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Bulgaria

Background information

In 2019 the forest territory in Bulgaria was 4.15 million ha, of which about 3.79 million hectares afforested area, a share of 37% of the total country's territory. The largest part of forest territories is under public ownership - state owned (74.62%) and municipal (13.53%) with only about 12% privately owned forests. 805,910 hectares are protected forests and the forest territory under Natura 2000 is 2.07 million ha (of which 1.85 million ha afforested area). In 2019, 4,095,423 m^3 of wood fuel was produced in Bulgaria, of which 497,144 tonnes was exported. The contribution of the forest sector to the Gross Domestic Product was just below 1%. [1]

Forest legislation is a national competence. The law on Forests of 2011 regulates and governs the public relations related to the preservation, management and use of all forest and forest land, both private and state owned, present on the territory of the Republic of Bulgaria, in order to guarantee the effective multifunctional and sustainable management of forest ecosystems. Forest legislation falls under the Ministry of Agriculture, Food and Forestry, with the Executive Forestry Agency as a main body responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Bulgaria	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Forestry Act of 2011[3] 2. Ordinance no 8 of 2011 for logging in forests[4] 3. Energy from Renewable Sources Act[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,6,7]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Forestry Act[4] 2. Ordinance № 2 of 07.02.2013 for the conditions and the order for forestation of forest territories and agricultural lands, used for creation of special, protective and economic forests and of forests in protected territories, inventory of the created cultures, their reporting and registration		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	

	1. Forestry Act [4] 2. Law on the protected territories of 1998[8] 3. Biological Diversity Act of 2002		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[8,9]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Forestry Act [4] 2. Law on soils[10]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Forestry Act[4] 2. Law on Biodiversity of 2002[11] 3. Protected Areas Act of 1998 4. Environmental Protection Act of 2002		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,12]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. Forestry Act[4]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[13,14]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[14,15]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[15]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[16]	The EU submitted its nationally determined contribution, which is being fulfilled collectively by all MS, including Bulgaria
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[18]	

[1] Sources for the paragraph are:
Отчетен доклад на ИАГ, 2020 г., http://www.iag.bg/data/docs/Doclad_2019N.pdf
National statistical institute, https://www.nsi.bg/bg/content/2206/%D0%B1%D0%B2%D0%BF-%D0%BF%D1%80%D0%BE%D0%B8%D0%B7%D0%B2%D0%BE%D0%B4%D1%81%D1%82%D0%B2%D0%B5%D0%BD-%D0%BC%D0%B5%D1%82%D0%BE%D0%B4-%D0%BD%D0%B0%D1%86%D0%B8%D0%BE%D0%BD%D0%B0%D0%BB%D0%BD%D0%BE-%D0%BD%D0%B8%D0%B2%D0%BE

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf
[3] http://extwprlegs1.fao.org/docs/pdf/bul187842.pdf
[4] http://www.iag.bg/docs/lang/1/cat/3/index
[5] https://me.government.bg/bg/library/energy-from-renewable-sources-act-167-c25-m258-1.html
[6] Annual report for the state and development of the agriculture:
https://www.mzh.government.bg/media/filer_public/2019/11/29/agraren_doklad_2019.pdf
[7] Rules of regulation of the Executive Forestry Agency:
http://www.iag.bg/data/docs/USTROJSTVEN_PRAVILNIK_IAG.pdf
[8] http://www.iag.bg/docs/lang/1/cat/1/index
[9] Directorate on National Parks: http://extwprlegs1.fao.org/docs/pdf/bul187842.pdf
[10] https://www.lex.bg/laws/ldoc/2135569762
[11] https://www.ecolex.org/details/legislation/biological-diversity-act-lex-faoc040293/
[12] Regulation No. 1 of 2012 on the control and protection of forest territories:
https://www.mzh.government.bg/media/filer_public/2019/11/19/naredba_1_ot_30012012_g_za_kontrola_i_opazvaneto_na_gorskite_teritorii-1.pdf
[13] National Forestry Accounting Plan of Bulgaria, including Forest Reference Levels for the period 2021-2025:
https://www.moew.government.bg/static/media/ups/tiny/NFAP_final_EN.pdf
[14] Regulation No. 8 of 2011 on logging in forests: http://www.iag.bg/docs/lang/1/cat/3/index
[15] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en
[16] https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx

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Croatia

Background information

In 2016, there was about 1.92 million hectares of forest area in Croatia, a share of 34% of the total land area. In 2010, the larger part of the forest (72%) was under public ownership, with only about 28% privately owned. 320,000 hectares are protected forests and forests under Natura 2000. In 2018, 2,170,639 m^3 of wood fuel was produced in Croatia, of which 612,740 m^3 was exported. In 2011, the forestry sector contributed 1.5% to the Gross Domestic Product.[1]

Forest legislation is a national competence. The main laws regulating the forest sector is the 'Law on forests of the 13th July 2018. This Law regulates the system and the management, use and monitoring of forests and forest land, based on the principles of sustainable management, economic and environmental acceptability and social responsibility. The Forestry Department of the Ministry of Agriculture and Forestry is responsible for the forestry sector. It co-operates primarily with the Ministry of Environmental Protection and Physical Planning, responsible for protected areas and wildlife preservation, and the State Water Directorate.[2] The state forest inspectors are entitled to inspect compliance with the Croatian legal framework and sanction any transgressions according to the fines prescribed in the law (section 11).

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Croatia	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	see below	
	1. Law on forests (Zakon o šumama (NN 68/18, 115/18, 98/19) of 2018, Articles 8(1), 28(3), 36(1), 38(1) (13.7.2018)[3] 2. Pravilnik o doznaci stabala, obilježbi šumskih proizvoda, teretnom listu (popratnici) i šumskom redu (NN 71/19) (printed 26.7.2019.) Ordinance on selection of trees for harvest, labeling of forest products, encumbrance sheet)[4] 3. Pravilnik o uređivanju šuma (NN 68/18) (printed 2.11.2018.) (Ordinance on forest inventory and management planning)[5] 4. Biodiversity provisions and other environmental protection measures related to forest harvest are regulated by: Zakon o zaštiti okoliša (NN 80/13., 153/13., 78/15, 12/18, 118/18, in force 01.01.2019.) (Law on enironmental protection)[6] 5. Pravilnik o popisu stanišnih tipova, karti staništa te ugroženim i rijetkim stanišnim tipovima (NN88/2014, printed 23.7.2014.) (Ordinance on the list of habitat types, habitat maps and endangered and rare habitat types)[7] 6. Pravilnik o čuvanju šuma (NN 28/15, printed 13.3.2015.) (Ordinance on forest safe keeping)[8] 7. Pravilnika o vrsti šumarskih radova,minimalnim uvjetima za njihovo izvođenje te radovima koje šumoposjednici mogu izvoditi samostalno (NN 16/15, printed 11.2.2015.) (Ordinance on types of silvicultural and forest harvesting activities, minimal conditions for their implementation and activities that private forest owners may performe themsleves)[9]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,8,]10,11,12,13,14	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,15,16,17,18,19]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3,15, ,20,21,22]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	see below	
	1. Law on forests of 2019 (Zakon o šumama, 13.7.2018, (NN 68/18, 115/18, 98/19)[3] 2. Article 19, 29, 30,40 of Ordinance on forest inventory and management planning (Pravilnik o uređivanju šuma (NN 68/18), printed 2.11.2018)[23]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3],[15]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[3],[15],[22]	

#	Criteria	Is the criteria embedded? How?	Comments
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3], [15], [22]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?		
	1. Zakon o zaštiti okoliša (NN 80/13., 153/13., i 78/15.) (enforced since 01.01.2019) (Law on envrionment protection)[24] 2. Pravilnik o popisu stanišnih tipova, karti staništa te ugroženim i rijetkim stanišnim tipovima (NN 88/14) (Ordinance on the list of habitat types, maps of habitats and endangered and rare habitat types)[25] 3. Uredba o ekološkoj mreži (NN124/2013) (Directive on ecological network) [26] 4. Konvencija o zaštiti svjetske kulturne i prirodne baštine (Pariz, 1972.) – Notifikacija o sukcesiji (NN 12/93.) (Convention Concerning the Protection of the World Cultural and Natural Heritage -notification on sucession)[27] 5. Konvencija o močvarnim staništima koja su od međunarodnog značenja naročito kao staništa ptica močvarica (Ramsar, 1971.) – Notifikacija o sukcesiji (NN – Međunarodni ugovori broj 12/93.) (Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat)[28] 6. Konvencija o biološkoj raznolikosti (Rio de Janeiro, 1992) – Zakon o potvrđivanju ("Narodne novine" – Međunarodni ugovori, broj 6/96.) (Convention on biodiversity, Rio de Janeiro, 1992)[29] 7. Konvencija o zaštiti europskih divljih vrsta i prirodnih staništa (Bern, 1979.) – Zakon o potvrđivanju (NN – Međunarodni ugovori, broj 6/00.) (Convention on the Conservation of European Wildlife and Natural Habitats (1979), or Bern Convention)[30] 8. Konvencija o europskim krajobrazima (Firenza, 2000) – Zakon o potvrđivanju (NN– Međunarodni ugovori, broj 12/02.) (European Landscape Convention of the Council of Europe - ratification law)[31]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[15,24]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[15, 24],[32],[33]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[15, 24]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?		
	1. Law on forests (Zakon o šumama, 13.7.2018, (NN 68/18, 115/18, 98/19), article 4, 9, 10, 48 § 1[34] 2. Zakon o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18), article 11- paragraph 2, article 21- paragraph 1 and 2, article 22 (enforced since 01.01.2019) (Law on environmental proteciton)[35]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3],[36], [15]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,15,36]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?		
	1. Zakon o šumama (13.7.2018),(NN 68/18, 115/18, 98/19, Article 3- paragraph 2, Articles 9 and 10 (Law on forests)[34] 2. Zakon o zaštiti okoliša (NN 80/13, 153/13, 78/15, 12/18, 118/18) article 3- paragraph 1, article 4- paragraph 33, article 7- paragraph 1, Article 10- paragraph 7, Article 11 (enforced since 01.01.2019) (Law on environmental protection)[35]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[15, 24, 34]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[15, 24,37],[38]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[15, 24, 34]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?		
	1. Pravilnik o uređivanju šuma (NN 79/15 i 97/18) (printed 2.11.2018.), articles 31-35 (Ordinance on forest management palnning)[39] 2. Law on forests (Zakon o šumama, 13.7.2018, (NN 68/18, 115/18, 98/19), article 3- paragraph 2, article 9, and article 27[23]		

#	Criteria	Is the criteria embedded? How?	Comments
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3], [15]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[3], [15], [22]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3], [15]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[40]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[41]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[41]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Croatian law on forests: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC185214; https://narodne-novine.nn.hr/clanci/sluzbeni/2018_07_68_1392.html; https://www.un.org/esa/agenda21/natlinfo/countr/croatia/natur.htm#forests

[4] https://narodne-novine.nn.hr/clanci/sluzbeni/2019_07_71_1506.html

[5] https://narodne-novine.nn.hr/clanci/sluzbeni/2018_11_97_1875.html

[6] https://www.zakon.hr/z/194/Zakon-o-zaštiti-okoliša

[7] https://narodne-novine.nn.hr/clanci/sluzbeni/2014_07_88_1782.html

[8] https://narodne-novine.nn.hr/clanci/sluzbeni/2015_03_28_595.html

[9] https://narodne-novine.nn.hr/clanci/sluzbeni/2015_02_16_302.html

[10] https://narodne-novine.nn.hr/clanci/sluzbeni/2018_12_115_2243.html

[11] https://narodne-novine.nn.hr/clanci/sluzbeni/2015_03_28_595.html

[12] UNEP-WCMC website, Chatham House portal dedicated to forest governance: https://forestgovernance.chathamhouse.org/

[13] Public data on state forest inspectorate: https://net.hr/danas/crna-kronika/sumarski-inspektor-uzeo-mito-od-vlasnika-pilane-nikada-vise-nece-smjeti-raditi-za-drzavu/

[14] http://drustvomarjan.hr/wp-content/uploads/2020/03/24.10.19.-Izvje%C5%A1%C4%87e-Dr%C5%BEavnog-inspektorata.pdf

[15] Law on state forest inspectorate (NN115/18): https://narodne-novine.nn.hr/clanci/sluzbeni/2018_12_115_2243.html

[16] https://narodne-novine.nn.hr/clanci/sluzbeni/2015_03_28_595.html

[17] Chatham House portal dedicated to forest governance: https://forestgovernance.chathamhouse.org/

[18] https://net.hr/danas/crna-kronika/sumarski-inspektor-uzeo-mito-od-vlasnika-pilane-nikada-vise-nece-smjeti-raditi-za-drzavu/

[19] http://drustvomarjan.hr/wp-content/uploads/2020/03/24.10.19.-Izvje%C5%A1%C4%87e-Dr%C5%BEavnog-inspektorata.pdf

[20] Ordinance on forest safe keeping: https://narodne-novine.nn.hr/clanci/sluzbeni/2015_03_28_595.html

[21] Chatham House portal dedicated to forest governance: https://forestgovernance.chathamhouse.org/

[22] Newspaper article: https://www.jutarnji.hr/globus/Globus-politika/globus-otkriva-veliku-pljacku-sumskog-blaga-drvna-mafija-u-ilegalnoj-sjeci-desetljeca-kriminalni-biznis-drzavi-se-odvija-pred-nosom/7991900

[23] Ordinance on forest inventory and management planning: https://narodne-novine.nn.hr/clanci/sluzbeni/2018_11

[24] The law on environmental protection (NN 80/13, 153/13, 78/15, 12/18, 118/18): https://narodne-novine.nn.hr/clanci/sluzbeni/2018_12_118_2345.html

[25] https://narodne-novine.nn.hr/clanci/sluzbeni/full/2014_07_88_1782.html

[26] Directive on the ecological network: https://narodne-novine.nn.hr/clanci/sluzbeni/2013_10_124_2664.html

[27] https://narodne-novine.nn.hr/clanci/medunarodni/1993_10_12_27.html

[28] https://narodne-novine.nn.hr/clanci/medunarodni/1993_10_12_27.html

[29] https://narodne-novine.nn.hr/clanci/medunarodni/1996_05_6_39.html

[30] https://narodne-novine.nn.hr/clanci/medunarodni/full/2000_05_6_67.html

[31] https://narodne-novine.nn.hr/clanci/medunarodni/2002_10_12_144.html

[32] Strategy and the action plan for protection of biological and landscape diversity of Republic of Croatia: https://narodne-novine.nn.hr/clanci/sluzbeni/2017_07_72_1712.html

[33] Directive on information system for environmental protection: http://www.propisi.hr/print.php?id=8181

[34] Law on forests: https://narodne-novine.nn.hr/clanci/sluzbeni/2018_07_68_1392.html

[35] https://narodne-novine.nn.hr/clanci/sluzbeni/2013_06_80_1659.html

[36] Article 224 - 266 of the law on environmental protection: https://narodne-novine.nn.hr/clanci/sluzbeni/018_12_118_2345.html

[37] Strategy and the action plan for protection of biological and landscape diversity of Republic of Croatia: https://narodne-novine.nn.hr/clanci/sluzbeni/2017_07_72_1712.html
[38] Directive on information system for environmental protection (NN68/08): http://www.propisi.hr/print.php?id=8181
[39] Law on forests: https://narodne-novine.nn.hr/clanci/sluzbeni/2018_07_68_1392.html
[40] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27
[41] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Belgium%20First/LV-03-06-EU%20INDC.pdf

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Cyprus

Background information

In 2016, there was about 172,700 hectares of forest area in Cyprus, a share of 13.8% of the total land area. In 2010, the larger part of the forest (68%) was under public ownership, with only about 32% privately owned. 26.41 thousand hectares are protected forests and forests under Natura 2000. In 2018, 8,840 m^3 of wood fuel was produced in Cyprus. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the Forest Act of 2012 with the Minister of Agriculture, Natural Resources and Environment and the Forest Advisory Board enforcing it.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Cyprus	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Forest Act NOMOΣ N. 25(I)/2012 of 2012[3]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[3]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3]	
4	**Forest regeneration of harvested area**	**No**	
4.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
4.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
4.3	Is there a monitoring system in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Forest Act NOMOΣ N. 25(I)/2012 of 2012[4]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Forest Act NOMOΣ N. 106(I)/2002 of 2002[5]		

6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[5]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Forest Act ΝΟΜΟΣ Ν. 25(I)/2012 of 2012[6]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	
8	**Maintenance and improvement of long-term production capacity**	**No**	
8.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8.3	Is there a monitoring system in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[7]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[8]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[8]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Forest Act, Article 33, shorturl.at/fsMW5

[4] Forest Act, Article 65, shorturl.at/fsMW5

[5] http://www.moa.gov.cy/moa/environment/environmentnew.nsf/page17_en/page17_en?OpenDocument

[6] Forest Act, Article 19, shorturl.at/fsMW5

[7] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27

[8] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=CYP

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Czech Republic

Background information

In 2016, there was about 2.67 million hectares of forest area in the Czech Republic, a share of 34.6% of the total land area. In 2010, the larger part of the forest (77%) was under public ownership, with only about 23% privately owned. 752,000 hectares are protected forests and forests under Natura 2000. In 2018, 4,246,000 m^3 of wood fuel was produced in the Czech Republic, of which 207,500 m^3 was exported. In 2011, the forestry sector contributed 1.8% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the 'Forest Act. The purpose of this Act is to determine conditions for the preservation, tending and regeneration of forests as national riches, to enable the fulfilment off all their functions and to support sustainable forest management. In case of state forests, the rights and duties of the owner of the forest under this Act shall apply to the legal entity which has been entrusted with the management of such forests, unless provided otherwise by this Act. Forest legislation falls mostly under the Ministry of Agriculture, with the Forest Professional Managers looking after supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Czech Republic	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	1. Forest Act No. 289 of 1995, § 7-9, 13, 24-27, 29-36, 46[3] 2. Nature Conservation Law, No.114 of 1992, §34[4]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,5]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,4,6,7,8]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3,4]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Forest Act No. 289 of 1995, §24-25, 31-32[3] 2. Decree No.139 of 2004, Decree on transfer of seeds and seedlings of forest species and records on reproductive material origin, and laying down rules on reforestation and afforestation of forest land[9]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,6,8,10]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3,6]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	
	1. Zákon České národní rady o ochraně přírody a krajiny, No.114 of 1992, §3[4]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,11]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,12]	

5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(see below)	
	1. Forest Act No. 289 of 1995, §13, 33[3] 2. Zákon České národní rady o ochraně přírody a krajiny, No.114 of 1992, §16, 26, 29[4]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,4]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,4,8,12,13,14]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3,4]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(see below)	
	1. Forest Act No. 289 of 1995, §8[3] 2. Zákon České národní rady o ochraně přírody a krajiny, No.114 of 1992, §15, 26, 29[4]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,4]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,4,10,15]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3,4]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	(see below)	
	1. Forest Act No. 289 of 1995, §24-25, 29, 31[3]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,8,10,13,14]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[16]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[17]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[17]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Forest Act: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC088503

[4] Zákon České národní rady o ochraně přírody a krajiny, No.114 of 1992: https://www.zakonyprolidi.cz/cs/1992-114?text=raseli

[5] Law No. 226 of 2013: https://www.zakonyprolidi.cz/cs/2013-226

[6] Czech Article summarizing the monitoring system for timber harvesting: http://eagri.cz/public/web/mze/tiskovy-servis/tiskove-zpravy/x2011_posileny-kontrolni-system-lesu-cr.html

[7] Additional information from the national forest management organization: https://lesycr.cz/wp-content/uploads/2016/12/kontrolni-cinnost-lcr-v-pc-a-tc.pdf
[8] Data from forest management plans and outlines (Ministry of Agriculture): http://eagri.cz/public/web/mze/
[9] Decree No.139 of 2004: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC074050
[10] Additional information from Lesy CR (the national forest management organization) https://lesycr.cz/wp-content/uploads/2016/12/kontrolni-cinnost-lcr-v-pc-a-tc.pdf
[11] Tools for protecting nature and landscapes (Ministry of the Environment): https://www.mzp.cz/web/edice.nsf/9BE7ACE92CCC839FC125708B001BB0F6/$file/planeta8_web.pdf
[12] Nature Conservation Agency (research and monitoring of the status of nature and landscapes: http://www.ochranaprirody.cz/pece-o-prirodu-a-krajinu/projekty-aopk-cr/vyzkum-a-sledovani-stavu-prirody-a-krajiny/
[13] Czech Research Institute for Forest Management: https://www.vulhm.cz/monitoring-stavu-lesa/icp-forests/
[14] Monitoring methodology: http://www.uhul.cz/images/poradenstvi/metodiky/HVLNPTAV.pdf
[15] Convention on Biological Diversity: http://chm.nature.cz/umluva-o-biologicke-rozmanitosti-cbd/
[16] https://www.un.org/sustainabledevelopment/blog/2016/04/parisagreementsingatures/
[17] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Czechia%20First/LV-03-06-EU%20INDC.pdf

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Denmark

Background information

In 2016, there was about 4 million hectares of forest area in Denmark, a share of 15% of the total land area. In 2010, the larger part of the forest (75%) was under private ownership, with only about 15% publicly owned. 123,710 hectares are protected forests and forests under Natura 2000. In 2018, 2,061,100 m^3 of wood fuel was produced in Denmark, of which 9,496 m^3 was exported. In 2011, the forestry sector contributed 0.5% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The law on Forests of 2011 regulates and governs the public relations related to the preservation, management and use of all forest and forest land, both private and state owned, present on the territory of the Republic of Bulgaria, in order to guarantee the effective multifunctional and sustainable management of forest ecosystems. The Ministry of Environment and Food is responsible for supervision and enforcement of Forest Act. The Environmental Protection Agency is responsible for supervision of forest reserves and the Nature Agency is responsible for monitoring of Danish forests.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Denmark	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Land Registration Law of 2014[3] 2. Forest Act of 2019[4] 3. Nature Protection Act of 2019[5] 4. EU Timber Regulation of 2012[6] 5. FSC Centralized National Risk Assessment for Denmark[7]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5,6,8]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[8]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[7]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Forest Act of 2019[5]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[8]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[8]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Forest Act of 2019[5] 2. Nature Protection Act of 2019[6] 3. National Park Act of 2017[9]		

	4. Hunting and Wildlife Management Act of 2019[10]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5,6,8,10]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[6,11]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[12]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Forest Act of 2019[5] 2. Environmental Protection Act of 2019[13,14]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[14]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[14]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[11]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Forest Act of 2019[5] 2. Nature Protection Act of 2019[6]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5,6,8]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[15]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[16]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. Forest Act of 2019[5]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[8]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[11]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[16]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[17]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[18]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest

Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://www.retsinformation.dk/forms/R0710.aspx?id=142900

[4] https://www.retsinformation.dk/Forms/R0710.aspx?id=208359

[5] https://www.retsinformation.dk/forms/r0710.aspx?id=155609

[6] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0995

[7] https://dk.fsc.org/preview.controlled-wood-risikovurdering-danmark.a-1689.pdf

[8] https://mst.dk/erhverv/skovbrug/lovgivning/fredskovspligten-og-tilsyn/

[9] https://www.retsinformation.dk/Forms/R0710.aspx?id=186417

[10] https://www.retsinformation.dk/Forms/R0710.aspx?id=208198

[11] https://mst.dk/natur-vand/overvaagning-af-vand-og-natur/terrestriske-naturtyper-og-arter/

[12] https://www.retsinformation.dk/Forms/R0710.aspx?id=208359

[13] https://www.retsinformation.dk/Forms/R0710.aspx?id=210726

[14] Environmental Law in Denmark by Ellen Margrethe Basse, Chapter 6 - forests

[15] https://mst.dk/natur-vand/overvaagning-af-vand-og-natur/terrestriske-naturtyper-og-arter/

[16] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[17] https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx

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Estonia

Background information

In 2016, there was about 2.23 million hectares of forest area in Estonia, a share of 51% of the total land area. In 2010, the larger part of the forest (53%) was under private ownership, with only about 47% publicly owned. 553,997 hectares are protected forests and forests under Natura 2000. In 2018, 3,500,000 m^3 of wood fuel was produced in Estonia, of which 372,527 m^3 was exported. In 2011, the forestry sector contributed 4.3% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the Forest Act (2006). This Act regulates the directing of forestry, forest survey and management and compensating the damage caused to the environment within the meaning of this Act and provides for liability for violation of this Act. The purpose of this Act is to ensure the protection and sustainable management of the forest as an ecosystem. Forest legislation falls mostly under the Ministry of the Environment, Forest Department.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Estonia	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Forest Act of 2007[3] 2. EU Timber Regulation of 2013[4]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[5,6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6,7,8]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Forest Act of 2007[4]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,8,9,9,10]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Nature Conservation Act of 2004[11]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[12]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[12]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9,12,12]	

5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9,12,12]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Forest Act of 2007[4] 2. Land Improvement Act of 2017[13]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes9,[14]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9,10,11]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Forest Act of 2007[4] 2. Nature Conservation Act of 2004[12]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[9,15]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9,10,11]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. Forest Act of 2007[4] 2. Environment minister`s decree on Environmental Inspectorate number 12 of 2008[9] 3. Environmental Supervision Act of 2001[15] 4. Estonian Forestry Development Plan until 2020[16]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9,4]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,15,17]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[18]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[19]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[20]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/

[3] https://www.riigiteataja.ee/en/eli/504092017014/consolide
[4] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0074&from=en
[5] Forest Act: https://www.riigiteataja.ee/en/eli/504092017014/consolide
[6] Forest survey website: https://veebiandmebaas.keskkonnaagentuur.ee/PXWeb/pxweb/et/?rxid=112d58b5-4eb7-4e92-9191-0d8c28ad8e44
[7] Environmental Board: https://www.keskkonnaamet.ee
[8] Environmental Inspectorate: https://www.kki.ee
[9] Forest Register: https://register.metsad.ee
[10] Forest notification portal: https://www.keskkonnaamet.ee/en/activities/forestry/forest-notification
[11] https://www.riigiteataja.ee/en/eli/508112013010/consolide
[12] Estonian Nature Information System: http://www.eelis.ee/
[13] https://www.riigiteataja.ee/en/eli/504092015003/consolide
[14] Yearbook of environmental law violations: https://www.kki.ee/et/aastaraamatud
[15] https://www.riigiteataja.ee/en/eli/506102014001/consolide
[16] https://www.riigiteataja.ee/akt/318022011003
[17] Forestry Development Plan: https://www.envir.ee/et/eesmargid-tegevused/metsandus/metsanduse-arengukava-aastateks-2021-2030
[18] https://unfccc.int/node/61061
[19] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=EST
[20] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Sweden%20First/EU%20First%20NDC.pdf

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Finland

Background information

In 2018, there was about 26.2 million hectares of forest area in Finland, a share of 86% of the total land area. In 2018, the larger part of the forest (60%) was under private ownership, with only about 40% publicly owned. In 2019, the total consumption of wood fuels in Finland was 105 TWh. The biggest source of wood-based energy is burning of black liquor and other concentrated liquors, which made up 46,4 terawatt-hours. In 2019, solid wood fuels consumed at heating and power plants accounted for 39,5 terawatt-hours, which equals to 20,5 million m^3 of solid wood fuels. In 2018, 7,758,731 m^3 of forest chips was produced in Finland, of which 119,957 m^3 was exported. In 2018, the forestry sector contributed 4.5% to the Gross Domestic Product.[1]

Forest legislation is a national competence. The Forest Act No. 1093/96 concerns the sustainable development of forest resources in its widest sense and the conservation of biodiversity. It covers the felling of trees and regeneration of forests, biodiversity protection, protection zones, enforcement and legal consequences and entry into force and transitional provisions. The Forestry Centres are the principal institutions to which the task of carrying out provisions of this Act is assigned to, including monitoring.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Finland	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	Forest Act 1093 of 1996, Chapter 2 and 3 amended and proclaimed in 2013 (number 1085)[3,4]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,6,7,8]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Forest Act 1093 of 1996, Chapter 2 amended and proclaimed in 2013 (number 1085), sections 5 a § and 8 §.[4,10] 2. Government decree on sustainable use and management of forests number 1308 of 2013, sections 8 § and 8 a §.		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,6,7,8]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	
	1. Forest Act number 1093 of 1996, Chapters 3 and 4 amended and proclaimed in 2013 (number 1085)[3]		

	2. Nature Conservation Act number 1096 of 1996[11] 3. Wilderness Act number 62 of 1991, Section 7[12]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5,8]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,6,7,8,13]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9,14]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(see below)	
	1. Forest Act number 1093 of 1996, Chapter 3 amended and proclaimed in 2013 (number 1085), section 10 a §[15] 1. Government decree on sustainable use and management of forests number 1308 of 2013[16]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5,8]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,8]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(see below)	
	1. Forest Act number 1093 of 1996, Chapter 3 amended and proclaimed in 2013 (number 1085)[15] 2. Government decree on sustainable use and management of forests number 1308 of 2013[16]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5,8]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,8,17]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	(see below)	
	1. Forest Act number 1093 of 1996, Section 1[4] 2. Government decree on sustainable use and management of forests number 1308 of 2013[16] 3. Act on Natural Resources Statistics number 562 of 2014, Section 2[18,19,20]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5,8]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[21]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9,19]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[22,23]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[24]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[24]	

[1] Sources for the paragraph are:
https://stat.luke.fi/sites/default/files/suomen_metsatilastot_2019_verkko2.pdf
https://stat.luke.fi/en/wood-energy-generation-2019_en
https://www.tilastokeskus.fi/tup/suoluk/suoluk_kansantalous_en.html

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Forest Act 1093/1996: http://extwprlegs1.fao.org/docs/pdf/fin11641E.pdf

[4] Original Forest Act: Metsälaki 1093/1996: https://www.finlex.fi/fi/laki/ajantasa/1996/19961093#a20.12.2013-1085

[5] Penal Code: https://www.finlex.fi/fi/laki/ajantasa/1889/18890039001.

[6] Statistics about monitoring the forest act: https://www.metsakeskus.fi/metsakeskuksen-lainvalvontatilastot.

[7] Information about satellite imaging: https://www.metsakeskus.fi/content/uusi-seurantamenetelma-tehostaa-ja-parantaa-metsalain-valvontaa.

[8] Decree of the Ministry of Agriculture and Forestry on supervision and monitoring by the Finnish Forestry Centre and Countryside Agency of compliance with forest laws and the reporting of verification results (No. 1 of 2012): https://www.finlex.fi/fi/viranomaiset/normi/400001/38878

[9] Act on the Finnish Forestry Centre 6.5.2011/418: https://www.finlex.fi/fi/laki/ajantasa/2011/20110418

[10] Supplementing: Government decree on sustainable use and management of forests 30.12.2013/1308: https://www.finlex.fi/fi/laki/ajantasa/2013/20131308

[11] Nature Conservation Act: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC012009; https://www.finlex.fi/fi/laki/ajantasa/1996/19961096

[12] Wilderness Act: https://www.finlex.fi/fi/laki/ajantasa/1991/19910062

[13] LiDAR: https://www.metsakeskus.fi/uutiset/metsavaratiedon-inventointimenetelma-uudistuu-ensi-vuonna

[14] Act on Metsähallitus 234/2016: https://www.finlex.fi/fi/laki/alkup/2016/20160234

[15] Forest Act: https://www.finlex.fi/fi/laki/ajantasa/1996/19961093.

[16] Government decree on sustainable use and management of forests 30.12.2013/1308: https://www.finlex.fi/fi/laki/ajantasa/2013/20131308

[17] Online service for mapping the habitats of special importance according to Forest Act: https://www.metsaan.fi/karttapalvelut

[18] Act on Natural Resources Statistics (562/2014): https://www.finlex.fi/fi/laki/alkup/2014/20140562

[19] Act on National Resources Institute Finland 561/2014: https://www.finlex.fi/fi/laki/alkup/2014/20140561

[20] National Resources Institute Finland (Luke) information on felling potential estimates: https://www.luke.fi/en/natural-resources/forest/forest-resources-and-forest-planning/felling-potential-estimates/

[21] National Resources Institute Finland (Luke) information on forest resources, annual increment and harvesting levels: https://www.luke.fi/en/natural-resources/forest/forest-resources-and-forest-planning/forest-resources/

[22] Paris Agreement: shorturl.at/klAQ5

[23] Climate Act: https://www.finlex.fi/fi/laki/ajantasa/2015/20150609

[24] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Finland%20First/LV-03-06-EU%20INDC.pdf

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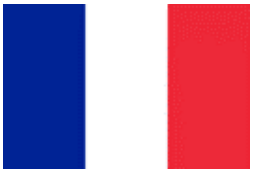
France



Background information

In 2016, there was about 16.99 million hectares of forest area in France, a share of 31% of the total land area. In 2010, the larger part of the forest (75%) was under private ownership, with only about 25% publicly owned. 6,179,990 hectares are protected forests and forests under Natura 2000. In 2018, 23,661,810 m^3 of wood fuel was produced in France, of which 584,337 m^3 was exported. In 2011, the forestry sector contributed 0.6% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The key legislation applying to the forestry sector is the Forestry Code 2012-92. This code is structured around 3 axes: the provisions common to all woods and forests; woods and forests falling under the forestry regime and woods and forests belonging to private individuals. The forestry sector falls under the Ministry of Agriculture, Food and Forestry. At national level, it is the High Council for forest and wood (Conseil supérieur de la forêt et du bois) which defines, coordinates, follows the implementation and the evaluation of the national forestry policy.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	France	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Forest Code[3] 2. Ordonnance n° 2012-92 of 2012 relating to the legislative part of the Forest Code[4] 3. Law n° 2014-1170 of 2014 on the future of agriculture, food and forests[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5,6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[7,8,9]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,5]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Forest Code[4] 2. Ordonnance n° 2012-92 of 2012 relating to the legislative part of the Forest Code[5]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,5]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,5]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	
	1. Environment Code, Livre III[10] 2. Forest Code[4] 3. Law 2016-1087 of 2016 on biodiversity, nature and landscapes[11]		

5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[11]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[12]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[13,14]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(see below)	
	1. Forest Code[4] 2. Ordonnance n° 2012-92 of 2012 relating to the legislative part of the Forest Code[5] 3. Law n° 2014-1170 of 2014 on the future of agriculture, food and forests[6]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[15]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[16,17]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(see below)	
	1. Forest Code[4] 2. Ordonnance n° 2012-92 of 2012 relating to the legislative part of the Forest Code[5]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[16]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[18,19]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,20]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	(see below)	
	1. Forest Code[4] 2. Ordonnance n° 2012-92 of 2012 relating to the legislative part of the Forest Code[5]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[16]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[21]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,21]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[22]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[23]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[24]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en

GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://www.legifrance.gouv.fr/affichCode.do;jsessionid=25AD00CBEE6CF840D10890E52466249F.tplgfr25s_2?cidTexte=LEGITEXT000025244092&dateTexte=20120701

[4] https://www.legifrance.gouv.fr/affichCode.do?dateTexte=20200717&cidTexte=LEGITEXT000025244092&fastReqId=1032603226&fastPos=1&oldAction=rechCodeArticle

[5] https://www.legifrance.gouv.fr/affichTexteArticle.do;jsessionid=690D1837AFBF3CC2A74F14C8D20DA7D0.tplgfr30s_3?cidTexte=JORFTEXT000029573022&idArticle=LEGIARTI000029575229&dateTexte=20141015

[6] https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000029575080&dateTexte=20200717

[7] http://observatoire.franceboisforet.com/

[8] https://agreste.agriculture.gouv.fr/

[9] www.onf.fr

[10] https://www.legifrance.gouv.fr/affichCode.do;jsessionid=AD2844F731CD0883A5B2EA585CF3B929.tplgfr30s_3?cidTexte=LEGITEXT000006074220&dateTexte=20200409

[11] https://www.legifrance.gouv.fr/affichTexteArticle.do;jsessionid=196B0EDA2AFEE44EAC9627A9413B8469.tplgfr25s_2?cidTexte=JORFTEXT000033016237&idArticle=LEGIARTI000033018598&dateTexte=20160809

[12] https://ofb.gouv.fr/gerer-et-restaurer-les-espaces-proteges

[13] https://www.legifrance.gouv.fr/affichCode.do;jsessionid=AD2844F731CD0883A5B2EA585CF3B929.tplgfr30s_3?idSectionTA=LEGISCTA000006188386&cidTexte=LEGITEXT000006074220&dateTexte=20200409

[14] https://www.legifrance.gouv.fr/affichCode.do?idSectionTA=LEGISCTA000006188394&cidTexte=LEGITEXT000006074220&dateTexte=20200409

[15] Implementation of the national forest programme (PNFB):
https://agriculture.gouv.fr/telecharger/84443?token=4b8096b95b488990df7a5711c98c62b2

[16] CNPF monitoring in private forests: https://www.cnpf.fr/actualite/voir/959/le-sol-forestier-element-cle-pour-le-choix-des-essences-et-la-gestion-durable/n:170

[17] IGN monitoring: https://inventaire-forestier.ign.fr/

[18] Plate-forme Biodiversité pour la Forêt (PBF): https://agriculture.gouv.fr/foret-et-biodiversite

[19] National Biodiversity Strategy: https://www.ecologique-solidaire.gouv.fr/sites/default/files/Strat%C3%A9gie%20nationale%20pour%20la%20biodiversit%C3%A9%202011-2020.pdf

[20] Décret n° 2017-155 du 8 février 2017 portant approbation du programme national de la forêt et du bois:
https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000034020467&dateTexte=&categorieLien=id

[21] National Forestry Accounting Plan of France: https://www.fern.org/fileadmin/uploads/fern/Documents/NFAP_France.pdf

[22] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[23] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Austria%20First/LV-03-06-EU%20INDC.pdf

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Germany

Background information

In 2016, there was about 11.42 million hectares of forest area in Germany, a share of 33% of the total land area. In 2010, the larger part of the forest (52%) was under public ownership, with only about 48% privately owned. 9,264,000 hectares are protected forests and forests under Natura 2000. In 2018, 21,874,000 m^3 of wood fuel was produced in Germany, of which 138,742 m^3 was exported. In 2011, the forestry sector contributed 0.8% to the Gross Domestic Product. [1]

Forest legislation is a regional competence. The main law regulating the forest sector is the Federal Forest Act. It focuses on the conservation of forests and the promotion of forestry. The text covers general rules; preservation of forests; silvicultural line-ups; promotion of forestry, disclosure of information; final regulations. Forest legislation falls mostly under the Federal Ministry of Food and Agriculture, with the Federal Office of Agriculture and Food as the body responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Germany	
2	Is forestry policy/legislation of national or regional competence?	Regional competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Federal Forest Act of 1975[3] 2. Federal Nature Conservation Act of 1976[4] 3. Timber Trade Act- Administrative Regulation of 2013[5] 4. Timber Trade Act of 2011[6]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[7]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,4,6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5,8,9]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. National Forest Act of 1975[4]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,5]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,5]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Federal Nature Conservation Act of 1976[5]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[5]	

5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. National Forest Act of 1975[4] 2. Federal Nature Conservation Act of 1976[5]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	Yes- covered at a regional level	
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes- covered at a regional level	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,11]	Although the monitoring system is not deemed optimal, there is no severe evidence of lack of enforcement
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	Note that for the N2000 monitoring for example, it is a joint effort of the Federal Government and the Länder
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. National Forest Act of 1975[4]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,5]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,5,12]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3,5]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[13]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[14]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[15]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://www.gesetze-im-internet.de/bwaldg/BJNR010370975.html
[4] https://www.gesetze-im-internet.de/bnatschg_2009/
[5] https://www.bmel.de/SharedDocs/ExterneLinks/DE/Rechtsgrundlagen/National/HolzSiGVwV.html
[6] http://www.gesetze-im-internet.de/holzsig/
[7] http://www.gesetze-im-internet.de/holzsig/index.html#BJNR134500011BJNE000100000
[8] https://www.bmel.de/DE/Wald-Fischerei/Waldpolitik/_texte/InfoquellenEUHolzHandVO.html
[9] Bundeswaldinventur, Bundesministerium für Ernährung,Landwirtschaft und Verbraucherschutz (ed.), Bonn. www.bundeswaldinventur.de
[10] https://www.gesetze-im-internet.de/bwaldg/__41a.html
[11] https://dejure.org/gesetze/BNatSchG/31.html
[12] Scenario study for assessing long-term production capacity: https://www.bmel.de/SharedDocs/Downloads/Broschueren/Wald-Rohholzpotential-40Jahre.html;nn=310868
[13] https://unfccc.int/node/180158
[14] https://www4.unfccc.int/sites/ndcstaging/Pages/Party.aspx?party=DEU&prototype=1
[15] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Sweden%20First/EU%20First%20NDC.pdf

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Greece

Background information

In 2016, there was about 4 million hectares of forest area in Greece, a share of 31% of the total land area. In 2010, the larger part of the forest (78%) was under public ownership, with only about 22% privately owned. 197,000 hectares are protected forests and forests under Natura 2000. In 2018, 1,065,000 m^3 of wood fuel was produced in Greece, of which 22,542 m^3 was exported. In 2011, the forestry sector contributed 0.4% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the 'Law No. 3208/2003. Protection of forest ecosystems, regulation of rights over forests and forestal areas and other provisions' and its predecessor 'Law No. 998 on the protection of forests and forestal areas'. Forest legislation falls mostly under the Ministry of Environment and Energy, with the Forest Service as main body responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Greece	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Forest Act NOMOΣ 998/1979 of 1979[3,4]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[5]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Forest Act 4575/1998 of 1998[6]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Forest Act NOMOΣ 3937/2011 of year 2011[7]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[7]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[7]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[7]	
6	**Maintenance of soil quality to minimize negative impact**	**No**	
6.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass

6.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
6.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation found specifying an enforcement system covering this sub-criterion
6.3	Is there a monitoring system in place related to the law(s) above?	No	No monitoring system identified in legislation covering this sub-criterion
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Forest Act ΝΟΜΟΣ 998/1979 of year 1979 Chapter C[8]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[8]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[9]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[99]	
8	**Maintenance and improvement of long-term production capacity**	**No**	
8.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation found specifying an enforcement system covering this sub-criterion
8.3	Is there a monitoring system in place related to the law(s) above?	No	No monitoring system identified in legislation covering this sub-criterion
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[10]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[11]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[12]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] http://www.oikotechnics.org/greek_legislation_GR.html#_Toc90714143

[4] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC023635

[5] http://www.oikotechnics.org/greek_legislation_GR.html#_Toc90714180

[6] https://nomosphysis.org.gr/13649/ste-7132014-paraleipsi-ekdosis-apofasis-epi-aitimatos-eksagoras-i-apallotriosis-idiotikis-anadasoteas-ektasis/

[7] https://www.e-nomothesia.gr/kat-periballon/n-3937-2011.html

[8] http://www.oikotechnics.org/greek_legislation.html#top_anchor

[9] http://www.oikotechnics.org/greek_legislation.html#_Toc108250433

[10] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[11] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=GRC

[12] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Greece%20First/LV-03-06-EU%20INDC.pdf

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Hungary

Background information

In 2016, there was about 2.07 million hectares of forest area in Hungary, a share of 22.7% of the total land area. In 2010, the larger part of the forest (57%) was under public ownership, with only about 43% privately owned. 874,000 hectares are protected forests and forests under Natura 2000. In 2018, 2,714,080 m^3 of wood fuel was produced in Hungary, of which 163,291 m^3 was exported. In 2011, the forestry sector contributed 0.9% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law is the Act No. XXXVII of 2009 on Forests, on the Protection and Management of Forests. The objective of the Act is, through the regulation of the relation between forests and the society, and, in particular, through the determination of sustainable requirements of forest management, to assure the maintenance, the protection, the growth, and the increase of its positive effects on the environment, the society and the economy. Forest legislation falls mostly under the Ministry of Agriculture and the Government Office of the Capital City Budapest (competent authority).[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Hungary	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	1. Act No. XXXVII of 2009 on forests, on the protection and management of forests[3] 2. Government Decree 433/2017. (XII, 21st) on Procedures for Certain Forest Authorities Procedures, Notifications and Official Registers 15§, 16§[4]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[7,8,9]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Act No. XXXVII of 2009 on forests, on the protection and management of forests.51. §; §52 (2013)[3]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[11,12,13]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[14]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	
	2. Act No. XXVI of 2003 on the National Land Use Plan[15] 3. National Strategy for the Conservation of Biodiversity of 2015[16] 4. Hungarian National Landscape Strategy (2017-2026)[17] 5. Act No. LIII of 1995 on the General Rules of Environmental Protection. (1995)[18]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[19]	

5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[19]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[20]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[21]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	Act No. CXXIX of 2007 on the protection of arable land.[22]	
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[23]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[24]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[25,26]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(see below)	
	1. Act No. XXXVII of 2009 on forests, on the protection and management of forests article 1. § b and 15 § (2) and 69. § (1)[3] 2. Parliamentary Decision No. 28/2015. on the National Strategy for the Conservation of Biodiversity 2015-2020[27]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[28,29,30]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[31]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	National Forest Strategy 2016-2030[32]	
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[14]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[33]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[34,35]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[36]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[37]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[38,39]	
10.b.i	The country has national laws in place, applicable to the harvest area, to conserve and enhance carbon stock and sinks over the long term?		
10.b.ii	The country can provide evidence that reported LULUCF sector emissions to not exceed removal?		

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf

Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Act No. XXXVII of 2009 on forests, on the protection and management of forests: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC094026

[4] Government Decree 433/2017. (XII, 21st) https://net.jogtar.hu/jogszabaly?docid=A1700433.KOR

[5] https://portal.nebih.gov.hu/iw/web/english/hungarian-forest-management/-/asset_publisher/pHBk9pq6UNxK/content/introduction/forest-act

[6] Decree of the Ministry of Agriculture: https://net.jogtar.hu/jogszabaly?docid=A1700061.FM

[7] Forest Research Institute: https://erti.naik.hu/en

[8] NÉBIH Division of European Timber Regulation (EUTR): https://portal.nebih.gov.hu/-/faanyag-kereskedelmi-lanc-ellenorzes

[9] Centre for Ecological Research: https://www.okologia.mta.hu/en/forest_ecology

[10] http://www.kormanyhivatal.hu/hu/ugytipusok-1/erdo-es-mezogazdasaggal-noveny-es-talajvedelemmel-kapcsolatos-ugyek/erdeszeti-ugyek/erdogazdalkodassal-kapcsolatos-ugyek/tarvagas-erdofelujitasi-biztositek-nyujtasahoz-kotese

[11] Database about forest regeneration: https://portal.nebih.gov.hu/documents/10182/861593/FR2013.pdf/19cf04a0-1639-401f-a3fb-644755057d0d

[12] http://extwprlegs1.fao.org/docs/texts/hun94026.doc&usg=AOvVaw0gea4NVnNwD-xHFaBBv8fo

[13] Forestry-related Databases of the Hungarian Forestry Directorate:
https://portal.nebih.gov.hu/documents/10182/862096/Forestry_related_databases.pdf/3ff92716-2301-4894-a724-72fafca9d4fc

[14] http://www.kormanyhivatal.hu/hu/szakigazgatasi-szervek/erdeszeti-igazgatosag

[15] Act No. XXVI of 2003 on the National Land Use Plan:
http://www.fao.org/faolex/country-profiles/general-profile/en/?iso3=HUN;

[16] National Strategy for the Conservation of Biodiversity of 2015: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC181618;

[17] Hungarian National Landscape Strategy: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC163398;

[18] Act No. LIII of 1995 on the General Rules of Environmental Protection: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC006567

[19] https://ec.europa.eu/environment/eir/pdf/report_hu_en.pdf

[20] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC181618

[21] http://www.termeszetvedelem.hu/index.php?lang=en

[22] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC097377

[23] https://www.uni-miskolc.hu/~agrarjog/ujsag/orszagjelentesangol.pdf

[24] http://en.foldhivatal.hu/content/view/84/121/

[25] Directorate of Plant Protection and Soil Conservation: https://portal.nebih.gov.hu/ca/web/english/hungarian-forest-management/-/asset_publisher/pHBk9pq6UNxK/content/directorate-of-plant-protection-and-soil-conservation/contacts

[26] Official Portal of the Hungarian Land Administration: http://en.foldhivatal.hu/content/view/3/4/

[27] Parliamentary Decision: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC163398

[28] National Strategy for the Conservation of Biodiversity in 2015-2020: https://www.cbd.int/doc/world/hu/hu-nbsap-v2-en.pdf

[29] National Biodiversity Monitoring System 2007: http://www.termeszetvedelem.hu/_user/downloads/biomon/biodiverzitas-magyarbeliv-low-res.pdf

[30] Biodiversity Information System Europe: https://biodiversity.europa.eu/countries/hungary

[31] https://op.europa.eu/en/web/who-is-who/person/-/person/CONSIL/CONSIL-MDR2_GOVREP_HUN-IND-CONSIL.HUN.17

[32] https://eustafor.eu/hungary-adopts-new-national-forest-strategy-2016-2030/

[33] http://www.nfk.gov.hu/Erdeszeti_Mero__es_Megfigyelo_Rendszer__EMMRE__news_537

[34] Hungarian Forest Management: https://portal.nebih.gov.hu/iw/web/english/hungarian-forest-management/-/asset_publisher/pHBk9pq6UNxK/content/introduction/forest-act

[35] Sustainable forest management, National Forest Strategy:
https://cor.europa.eu/en/events/Documents/NAT/Presentation%20by%20Andr%C3%A1s%20Szepesi.pdf

[36] Act L of 2016 on the Proclamation of the Paris Agreement Adopted by the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change

[37] https://unfccc.int/sites/default/files/cop21cmp11_hls_speech_hungary.pdf

[38] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0841&from=EN

[39] Hungarian National Reports: https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/40536871_Hungary-BR4-1-20191219_UNFCCC_BR4_fin.pdf

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Ireland

Background information

In 2017, the National Forest Inventory (NFI) estimated the area of forest to be 770,020 hectares or 11%, its highest point in over 350 years. Of the total forest area, 50.8 % is in public ownership, with the remainder privately owned. In 2010, 210,822 hectares are protected forests and forests under Natura 2000. In 2018, 40% of the wood fibre available for use in Ireland was used for energy generation, mainly within the forest products sector. 2,170,639 m^3 of wood fuel was produced in Ireland in 2018, of which 1,258 m^3 was exported. In 2011, the forestry sector contributed 0.4% to the Gross Domestic Product.[1]

Forest legislation is a national competence. The main laws regulating the forest sector is the Forestry Act of 2014. This Act makes provision with respect to a variety of matters affecting forestry in Ireland: administration of forestry sector; felling of trees; forest management plans; general and special functions of the Minister for Agriculture, Food and the Marine and the role of minister in safeguarding environment; removal or destruction of vegetation on land; preservation orders; afforestation, forest road works and aerial fertilisation of forests; replanting; enforcement; regulation-making powers of the Minister; and offences and penalties. The Forest Service is Ireland's national forest authority and is responsible for, among other things, national forest policy, the promotion of forestry, the administration of the forest consent system and forestry support schemes, forest health and protection, and the control of felling.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Ireland	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(See below)	
	1. Forestry Act No. 31 of 2014 (as amended)[3] 2. Forestry Regulations S.I. No. 191 of 2017 (as amended)[4] 3. Forestry (Amendment) Regulations 2020 (S.I. No. 31 of 2020)[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[7]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(See below)	
	1. Forestry Act No. 31 of 2014 (as amended);[3] 2. Forestry Regulations S.I. No. 191 of 2017 (as amended)[4]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[7]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(See below)	

	1. European Communities (Birds and Natural Habitats) Regulations S.I. No. 477 of 2011 (as amended)[9] 2. Planning and Development Regulations S.I. No. 600 of 2001 (as amended)[10] 3. Wildlife Act No. 39 of 1976 (as amended)[11]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[12]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[12]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[13]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(See below)	
	1. Forestry Act No. 31 of 2014 (as amended)[3] 2. Forestry Regulations S.I. No. 191 of 2017 (as amended)[4]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[14]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[14]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[15]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(See below)	
	1. Forestry Act No.31 of 2014 (as amended)[3] 2. Forestry Regulations S.I. No. 191 of 2017 (as amended)[4] 3. European Communities (Birds and Natural Habitats) Regulations S.I. No. 477 of 2011 (as amended)[9] 4. Wildlife Act No. 39 of 1976 (as amended)[11]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[12]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[16,17]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	Yes	
	1. Forestry Act No.31 of 2014 (as amended)[3] 2. Regulation EU 2016/2031[18] 3. Official Controls Regulation EU 2017/625[19]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[19]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[3]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[20]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[21]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[21]	

[1] Sources for the paragraph are:

Department of Agriculture, Food and the Marine. 2020. Forest Statistics 2020. Johnstown Castle, Wexford, Ireland.
https://www.agriculture.gov.ie/media/migration/forestry/ForestStatisticsIreland2020210820.pdf
Ownership, land use and forest area: National Forest Inventory 2017
https://www.agriculture.gov.ie/nfi/nfithirdcycle2017/nationalforestinventorypublications2017/
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Forestry Act 2014: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC139370

[4] Forestry Regulations 2017: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC167119

[5] Forestry Regulations 2020: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC193972/

[6] https://www.agriculture.gov.ie/media/migration/forestry/treefelling/FellingReforestationPolicyMay2017250517.pdf

[7] https://www.agriculture.gov.ie/nfi/

[8] https://www.agriculture.gov.ie/forestservice/forestservicegeneralinformation/abouttheforestservice/

[9] European Communities (Birds and Natural Habitats) Regulations S.I. No. 477 of 2011
http://www.fao.org/faolex/results/details/en/c/LEX-FAOC107828

[10] Planning and Development Regulations S.I. No. 600 of 2001 http://www.fao.org/faolex/results/details/en/c/LEX-FAOC089176

[11] Wildlife Act No. 39 of 1976 http://www.fao.org/faolex/results/details/en/c/LEX-FAOC022219

[12] https://www.npws.ie/about-npws/business-units/scientific-unit

[13] https://www.npws.ie/legislation

[14] https://www.agriculture.gov.ie/nfi/

[15] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC167119

[16] The Forest Service: https://www.agriculture.gov.ie/forestservice/forestservicegeneralinformation/abouttheforestservice/

[17] The National Parks and Wildlife Service (NPWS): https://www.npws.ie/legislation

[18] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016R2031

[19] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R0625

[20] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[21] https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx

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Italy

Background information

In 2016, there was about 9.30 million hectares of forest area in Italy, a share of 32% of the total land area. In 2010, the larger part of the forest (66%) was under private ownership, with only about 34% publicaly owned. 4,706,000 hectares are protected forests and forests under Natura 2000. In 2018, 10,839,000 m^3 of wood fuel was produced in Italy, of which 19,162 m^3 was exported. In 2011, the forestry sector contributed 0.8% to the Gross Domestic Product. [1]

Forest legislation is a regional competence. The main law applying to the forest sector is the Legislative Decree of 3 April 2018, n. 34-Consolidated text on forests and forestry supply chains. This Legislative Decree officially recognizes the national forest heritage as part of the national natural capital and as relevant asset of high public interest, to be protected and valued for stability and well-being of present and future generations. The provisions here stipulated are aimed at ensuring the protection of forests and their ecological diversity and bio-cultural wealth; at promoting the active and rational management of national forestry assets in order to guarantee all sorts of environmental functions, economic and socio-cultural development; at promoting and protecting the forest economy, the mountain economy and the respective production chains as well as the agro-silvo-pastoralism; at protecting the rational use principles; at implementing various preventive actions (natural and anthropic risks, hydrogeological defence, defence against fires and biotic and abiotic adversities, climate change, recovery of degraded/damaged areas); and at imposing various principles of sustainable forest management, as listed in the text. Forest legislation falls mostly under the Ministry of Agricultural, Food and Forestry Policies, which is also responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Italy	
2	Is forestry policy/legislation of national or regional competence?	Regional competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Reorganization and reform of forest and mountain land legislation, Regio Decreto-Legge 30 Dicembre 1923, n. 3267[3] 2. Code of the Cultural and Landscape Heritage 22/01/2004 n° 42[4] 3. National Forestry Law, Decreto legislativo of 3 Aprile 2018, n. 34[5] 4. Implementation of Regulation (EC) no. 2173/2005 concerning the establishment of a FLEGT licensing system for timber imports into the European Community, Decreto legislativo 30 Ottobre 2014[6]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[7,8,9,10]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[11,12]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[13]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Reorganization and reform of forest and mountain land legislation, Regio Decreto-Legge 30 Dicembre 1923, n. 3267[4] 2. National Forestry Law, Decreto Legislativo 3 Aprile 2018, n. 34[6]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[14]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[15]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[16]	

5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Framework Law on Protected Areas, Decreto legislativo of the 6 Dicembre 1991, n. 394[17] 2. WWF and LIPU (Italian League for the Protection of Birds) 2013 Report[18, 19]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[18]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[18]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[20]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Reorganization and reform of forest and mountain land legislation, Regio Decreto-Legge 30 Dicembre 1923, n. 3267[4] 2. National Forestry Law, Decreto legislativo of 3 Aprile 2018, n. 34[6] 3. Implementing Decree of Forestry Law of 1923, Regio Decreto 16 maggio 1926, n. 1126[21] 4. Environmental Code, Part III, Part IV, Part VI, Decreto legislativo 3 aprile 2006, n. 152, Codice Ambientale 152/2006[22]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,23]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[23,23]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[23]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. National Forestry Law, Decreto legislativo of 3 Aprile 2018, n. 34[6] 2. Framework Law on Protected Areas, Decreto legislativo of the 6 Dicembre 1991, n. 394[18] 3. Decree implementing the EU Directive 92/43/CEE, Decreto del Presidente della Repubblica of 8 Settembre 1997, n. 357[24]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[18,23,25]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[18, 25, 25]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[26]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	Yes- covered at regional level	
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes- covered at a regional level	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes- covered at a regional level	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes- covered at a regional level	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[26]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[27]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[31]	

[1] Sources for the paragraph are:

http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:regio.decreto:1923-12-30;3267
[4] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2004-01-22;42
[5] https://www.normattiva.it/atto/caricaDettaglioAtto?atto.dataPubblicazioneGazzetta=2018-04-20&atto.codiceRedazionale=18G00060
[6] https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2014-12-10&atto.codiceRedazionale=14G00191&elenco30giorni=false
[7] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:regio.decreto:1923-12-30;3267
[8] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:1967;950
[9] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2004-01-22;42
[10] https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2014-12-10&atto.codiceRedazionale=14G00191&elenco30giorni=false
[11] https://www.normattiva.it/atto/caricaDettaglioAtto?atto.dataPubblicazioneGazzetta=2018-04-20&atto.codiceRedazionale=18G00060
[12] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2016-08-19;177!vig=
[13] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2016-08-19;177!vig=
[14] www.gazzettaufficiale.it/eli/id/2016/09/16G00193/sg
[15] www.gazzettaufficiale.it/eli/id/2016/09/16G00193/sg
[16] www.gazzettaufficiale.it/eli/id/2016/09/16G00193/sg
[17] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:1991-12-06;394
[18] https://d24qi7hsckwe9l.cloudfront.net/downloads/dossiernatura2000_lipu_wwf_2013.pdf
[19] https://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+WQ+E-2013-009476+0+DOC+XML+V0//EN
[20] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2016-08-19;177!vig=
[21] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:regio.decreto:1926;1126
[22] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2006-04-03;152
[23] www.gazzettaufficiale.it/eli/id/2016/09/16G00193/sg
[24] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.del.presidente.della.repubblica:1997-09-08;357!vig=2018-09-27
[25] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2016-08-19;177!vig=
[26] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27
[27] https://www4.unfccc.int/sites/ndcstaging/Pages/Party.aspx?party=ITA&prototype=1
31 https://www.minambiente.it/sites/default/files/archivio/allegati/clima/nfap_final_resubmission_2019_clean.pdf

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Republic of Latvia

Background information

In 2016, there was about 3.36 million hectares of forest area in Latvia, a share of 54% of the total land area. In 2010, the larger part of the forest (52%) was under public ownership, with only about 48% privately owned. 549,400 hectares are protected forests and forests under Natura 2000. In 2018, 2,200,000 m^3 of wood fuel was produced in Latvia, of which 319,370 m^3 was exported. In 2011, the forestry sector contributed 6.4% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law is the 2000 Law on Forests. This Law promotes economically, ecologically, and socially sustainable management and use of the forest by ensuring equal rights, inviolability of the ownership rights, and independence of economic activity of all owners or lawful possessors of the forest, and determining equal obligations; and to govern the conditions for the management and alienation of the State forest land. The Law provides that forest management may not be in contradiction with the requirements specified in the spatial development planning documents. The Forest legislation falls mostly under the Ministry of Agriculture, which is also the main body responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Latvia	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	1. Law on Forests from 2000 with updates till 30.01.2020, Articles 7 to 12 and 41 to 42 (Meža likums, 24.02.2000 ar papildinājumiem līdz 25.02.2020).[3] 2. Regulations of Cabinet of Ministers No. 935 from 2012 on Harvesting of Trees in Forest (Ministru kabineta noteikumi Nr. 935 Noteikumi par koku ciršanu mežā, 18.12.2012).[4] 3. Regulations of Cabinet of Ministers No. 309 from 2012 on Harvest of Trees Outside Forest (Ministru kabineta noteikumi Nr. 309 Noteikumi par koku ciršanu ārpus meža, 02.05.2012).[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[7,8,9,10]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[10,11,12]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Law on Forests from 2000 with updates till 30.01.2020; Articles 17 to 25 (Meža likums, 24.02.2000 ar papildinājumiem līdz 25.02.2020).[13] 2. Regulations of Cabinet of Ministers No. 308 from 2012, on Forest Regeneration, Afforestation and Plantation Forests (Ministru kabineta noteikumi Nr. 308 Meža atjaunošanas, meža ieaudzēšanas un plantāciju meža noteikumi, 02.05.2012).[14]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10,11,14]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[9,10,11,14]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9,10,11]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	

	1. Law on Forests from 2000 with updates till 30.01.2020; articles 35 to 37 (Meža likums, 24.02.2000 ar papildinājumiem līdz 25.02.2020).[7] 2. Protection Zone Law from 05.02.1997 with updates till 20.06.2016; articles 5 to 11 (Aizsargjoslu likums, 05.02.1997 ar papildinājumiem līdz 20.06.2016).[15] 3. Law On the Conservation of Species and Biotopes from 16.03.2000 with updates till 13.10.2017; articles 7 to 17 (Sugu un biotopu aizsardzības likums, 16.03.2000 ar papildinājumiem līdz 13.10.2017)[16] 4. Regulations of Cabinet of Ministers No. 936 of 2012) on Requirements for Nature Protection Measures in Forest Management (Ministru kabineta noteikumi Nr. 936 Dabas aizsardzības noteikumi meža apsaimniekošanā, 18.12.2012).[17] 5. Regulations of Cabinet of Ministers No 940 of 2012 Regarding the Establishment and Management of Micro-reserves, Their Conservation, as well as Determination of Micro-reserves and Their Buffer Zones (Ministru kabineta noteikumi Nr.940 Noteikumi par mikroliegumu izveidošanas un apsaimniekošanas kārtību, to aizsardzību, kā arī mikroliegumu un to buferzonu noteikšanu, 18.12.2012.)[18] 6. Law on Specially Protected Nature Territories from 02.03.1993. (likums Par īpaši aizsargājamām dabas teritorijām)[19] 7. Regulations of Cabinet of Ministers No 264 of 2010 General Regulations on Protection and Use of Specially Protected Nature Territories (Ministru kabineta Īpaši aizsargājamo dabas teritoriju vispārējie aizsardzības un izmantošanas noteikumi , 16.03.2010).[20]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10,15,16,21,22]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[8,10,15,16]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8,17,21,22,23]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(see below)	
	1. Protection Zone Law from 1997 with updates till 20.06.2016, Articles 5 to 11 (Aizsargjoslu likums, 05.02.1997 ar papildinājumiem līdz 20.06.2016).[15] 2. Regulations of Cabinet of Ministers No 248 from 2013, on Procedure for Evaluation of Sustainability of Forest Management, Articles 1 to 6 including Annex 1 (Ministru kabineta noteikumi Nr. 248 Meža ilgtspējīgas apsaimniekošanas novērtēšanas kārtība, 07.05.2013). [10] 3. Regulations of Cabinet of Ministers No 238 (03.04.2012) on National Forest Monitoring, Annex 2 (Ministru kabineta noteikumi Nr. 238 Nacionālā meža monitoringa noteikumi, 03.04.2012).[9] 4. Law on Forests from 2000 with updates till 30.01.2020; Articles 6 and 35 (Meža likums, 24.02.2000 ar papildinājumiem līdz 25.02.2020).[7] 5. Regulations of Cabinet of Ministers No 936 from 2012 on Nature Protection Measures in Forest Management, Articles 6, 8 and 10 (Ministru kabineta noteikumi Nr. 936 Dabas aizsardzības noteikumi meža apsaimniekošanā, 18.12.2012).[17]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[10]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[10]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(see below)	
	1. Law on Forests from 24.02.2000 with updates till 30.01.2020; articles 35 to 37 (Meža likums, 24.02.2000 ar papildinājumiem līdz 25.02.2020).[7] 2. Protection Zone Law from 1997 with updates till 20.06.2016, Articles 5 to 11 (Aizsargjoslu likums, 05.02.1997 ar papildinājumiem līdz 20.06.2016).[15] 3. Law on the Conservation of Species and Biotopes from 2000, with updates till 13.10.2017, Articles 7 to 17 (Sugu un biotopu aizsardzības likums, 16.03.2000 ar papildinājumiem 13.10.2017).[16] 4. Regulations Cabinet of Ministers No. 350 from 2017 on List of Specially Protected Biotopes (Ministry kabineta noteikumi Nr. 350 Noteikumi par īpaši aizsargājamo biotopu veidu sarakstu, 20.06.2017).[24] 5. Regulations of Cabinet of Ministers No. 936 from 2012 on Requirements for Nature Protection Measures in Forest Management (Ministru kabineta noteikumi Nr. 936 Dabas aizsardzības noteikumi meža apsaimniekošanā, 18.12.2012).[17] 6. Regulations of Cabinet of Ministers No 325 From 2013 on restoration of specially protected species and habitats in forest (Ministru kabineta noteikumi Nr.325 Noteikumi par īpaši aizsargājamo biotopu un īpaši aizsargājamo sugu dzīvotņu atjaunošanu mežā, 18.06.2013.)[25]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10,15,16,21,22]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[8,10,15,16]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8, 17,23,21,22]	
8	**Maintenance and improvement of long-term production capacity**	Yes	

8.1	Law name and date?	(see below)	
	1. Law on Forests from 2000 with updates till 25.02.2020, Articles 1, 2, 13, 31 and 43 (Meža likums, 24.02.2000 ar papildinājumiem līdz 25.02.2020).[7] 2. Amelioration Law from 2010 with updates till 03.10.2019, Articles 4 and 21 (Meliorācijas likums, 14.01.2010 ar papildinājumiem līdz 01.11.2019).[26]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,14]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[9,10]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8,9,10]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[27,28]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[29]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[30,31]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Law on Forests: https://likumi.lv/doc.php?id=282

[4] Regulations No. 935: https://likumi.lv/ta/id/253760-noteikumi-par-koku-cirsanu-meza

[5] Regulations No. 309: https://likumi.lv/ta/id/247350-noteikumi-par-koku-cirsanu-arpus-meza.

[6] https://likumi.lv/ta/id/14594-valsts-meza-dienesta-likums

[7] Law on Forests: https://likumi.lv/doc.php?id=2825. English translation: https://likumi.lv/ta/en/en/id/2825-law-on-forests.

[8] Regulations No. 384: https://likumi.lv/ta/id/283091-meza-inventarizacijas-un-meza-valsts-registra-informacijas-aprites-noteikumi

[9] Regulations No. 238: https://likumi.lv/ta/id/246285-nacionala-meza-monitoringa-noteikumi

[10] Regulations No. 248: https://likumi.lv/doc.php?id=256891.

[11] Law on State Forest Service: https://likumi.lv/ta/id/14594-valsts-meza-dienesta-likums

[12] ON EUTR and SFS: https://www.vmd.gov.lv/valsts-meza-dienests/statiskas-lapas/es-kokmaterialu-regula?nid=1726

[13] Law on Forests in Latvian: https://likumi.lv/doc.php?id=2825, English translation: https://likumi.lv/ta/en/en/id/2825-law-on-forests.

[14] Regulations No. 308: https://likumi.lv/ta/id/247349-meza-atjaunosanas-meza-ieaudzesanas-un-plantaciju-meza-noteikumi.

[15] Protection Zone Law: https://likumi.lv/ta/id/42348-aizsargjoslu-likums

[16] Law on the Conservation of Species and Biotopes: https://likumi.lv/ta/id/3941-sugu-un-biotopu-aizsardzibas-likums

[17] Regulations No. 936: https://likumi.lv/ta/id/253758-dabas-aizsardzibas-noteikumi-meza-apsaimniekosana.

[18] Regulation No. 940 https://likumi.lv/ta/id/253746-noteikumi-par-mikroliegumu-izveidosanas-un-apsaimniekosanas-kartibu-to-aizsardzibu-ka-ari-mikroliegumu-un-to-buferzonu-noteiksanu

[19] Law On Specially Protected Nature Territories https://likumi.lv/ta/id/59994-par-ipasi-aizsargajamam-dabas-teritorijam

[20] Regulations No. 264 https://likumi.lv/ta/id/207283-ipasi-aizsargajamo-dabas-teritoriju-visparejie-aizsardzibas-un-izmantosanas-noteikumi

[21] Regulations of Cabinet of Ministers No. 507 of 2009 on Statutes of Nature Conservation Agency (Ministru kabineta noteikumi Nr.507 Dabas aizsardzības pārvaldes nolikums, 02.06.2009.)

[22] Environmental Protection Law https://likumi.lv/doc.php?id=147917

[23] Regulations No. 507: https://likumi.lv/ta/id/193117-dabas-aizsardzibas-parvaldes-nolikums

[24] Regulations No. 350: https://likumi.lv/ta/id/291790-noteikumi-par-ipasi-aizsargajamo-biotopu-veidu-sarakstu

[25] Regulation No. 325 https://likumi.lv/ta/id/257685-noteikumi-par-ipasi-aizsargajamo-biotopu-un-ipasi-aizsargajamo-sugu-dzivotnu-atjaunosanu-meza

[26] Ammelioration law: https://likumi.lv/ta/id/203996-melioracijas-likums.

[27] EU NDC: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[28] Law on Paris Agreement: https://likumi.lv/ta/id/288575-par-apvienoto-naciju-organizacijas-visparejas-konvencijas-par-klimata-parmainam-parizes-noligumu

[29] https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx

[30] Latvias first NDC: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Latvia%20First/LV-03-06-EU%20INDC.pdf

[31] European Union first NDC: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/European%20Union%20First/LV-03-06-EU%20INDC.pdf

NAVIGANT
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Lithuania

Background information

In 2016, there was about 2.18 million hectares of forest area in Lithuania, a share of 34.8% of the total land area. In 2010, the larger part of the forest (61%) was under private ownership, with only about 39% publicly owned. 377,000 hectares are protected forests and forests under Natura 2000. In 2018, 1,749,000 m^3 of wood fuel was produced in Lithuania, of which 217,678 m^3 was exported. In 2011, the forestry sector contributed 2.4% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the Forestry Law No. I-671 of 1994. This Law establishes rights and duties of all forest managers and users, whether state or private, to utilize, reproduce, grow and protect forests and establishes the main principles of forest management. The State Forest Service looks after the policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Lithuania	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	1. Law on Forests, Act No. I-671 of 1994 with amendments until 2020 January 1, Articles 5, 9 (Miškų įstatymas)[3] 2. Governmental Decree on Private Forest Management and Use, Act No. 799 of 1997 with amendments until 2015 December 9, Article 30 (Privačių miškų tvarkymo ir naudojimo nuostatai)[4] 3. Governmental Decree on Designation of Competent Authority for Implementation of EU Timber Regulation No. 995/2010, Act No. 205 of 2013 with amendments until 2016 January 1, article 1 (Dėl kompetentingų institucijų paskyrimo)[5] 4. Order of the Minister of the Environment on Forest Management Project Preparation Rules, Act No. D1-406 of 2016 with amendments until 2019 April 5 (Miškų tvarkymo schemų ir vidinės miškotvarkos projektų rengimo taisyklės)[6] 5. Order of the Minister of the Environment on Permits to Harvest Forest, Act No. D1-1055 of 2010 with amendments until 2016 June 7 (Leidimų kirsti mišką išdavimo tvarka)[7] 6. Code of Administrative Offenses of the Republic of Lithuania, Act No. XII-1869 of 2015 June 25 with amendments until 2020 March 31, article 270, 271, 276 (Administracinių nusižengimų kodeksas)[8]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,11]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?		
	1. Law on Forests, Act No. I-671 of 1994 with amendments until 2020 January 1, Article 15 (Miškų įstatymas)[3] 2. The Order of the Minister of the Environment on Forest Regeneration and Afforestation, Act No. D1-199 of 2008 with amendments until 2018 August 25 (Miško atkūrimo ir įveisimo nuostatai)[12] 3. Code of Administrative Offenses of the Republic of Lithuania, Act No. XII-1869 of 2015 June 25 with amendments until 2020 March 31, Article 281 (Administracinių nusižengimų kodeksas)[8]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,13]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?		

	1. Law on Protected Areas, Act No. I-301 of 1993 with amendments until 2020 January 1, Article 15 (Lietuvos Respublikos saugomų teritorijų įstatymas)[14] 2. Law on Environment Protection, Act No. I-2223 of 1992 with amendments until 2020 February 8, Article 32 (Aplinkos apsaugos įstatymas)[15] 3. Code of Administrative Offenses of the Republic of Lithuania, Act No. XII-1869 of 2015 June 25 with amendments until 2020 March 31, Articles 284, 285 (Administracinių nusižengimų kodeksas)[8]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[16,17]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[18,19]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?		
	1. Law on Forests, Act No. I-671 of 1994 with amendments until 2020 January 1, Articles 6, 9 (Miškų įstatymas)[3] 2. The Order of the Minister of the Environment on Forest Felling Rules, Act No. D1-79 of 2010 with amendments until 2020 March 19, (Miško kirtimų taisyklių)[20] 3. Code of Administrative Offenses of the Republic of Lithuania, Act No. XII-1869 of 2015 June 25 with amendments until 2020 March 31, Article 282 (Administracinių nusižengimų kodeksas) [8]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[10]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?		
	1. Law on Forests, Act No. I-671 of 1994 with amendments until 2020 January 1, Article 5 (Miškų įstatymas)[3] 2. The Order of the Minister of the Environment on Forest Felling Rules, Act No. D1-79 of 2010 with amendments until 2020 March 19 (Miško kirtimų taisyklių)[20] 3. Code of Administrative Offenses of the Republic of Lithuania, Act No. XII-1869 of 2015 June 25 with amendments until 2020 March 31, Articles 284, 285 (Administracinių nusižengimų kodeksas)[8]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[10]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?		
	1. Law on Forests, Act No. I-671 of 1994 with amendments until 2020 January 1, Article 14 (Miškų įstatymas)[3] 2. Code of Administrative Offenses of the Republic of Lithuania, Act No. XII-1869 of 2015 June 25 with amendments until 2020 March 31, Article 276 (Administracinių nusižengimų kodeksas)[21]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[21]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[13]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[22]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[23]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[23]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] The Law on Forests: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.6036/asr?positionInSearchResults=49&searchModelUUID=9c051af9-01d8-44ed-bd74-74accb431a97

[4] Governmental Decree on Private Forest Management and Use: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.41952/asr?positionInSearchResults=11&searchModelUUID=9c051af9-01d8-44ed-bd74-74accb431a97

[5] The Governmental Decree on Designation of Competent Authority for Implementation of EU Timber Regulation: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.444202/asr?positionInSearchResults=1&searchModelUUID=e544b4fb-5eb5-45be-8895-99bea7def7c5

[6] Order on Forest Management Project Preparation: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.282270/QXvdcNJzoL

[7] Order on Permits to Harvest Forest: thttps://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.390390

[8] Law on administrative offenses: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/b8d908c0215b11e58a4198cd62929b7a?jfwid=-fy7rw4k4w

[9] The State Forest Service: http://www.amvmt.lt/

[10] Annual reports on checks: http://www.amvmt.lt/index.php/veikla/ataskaitos
http://www.amvmt.lt/index.php/ukio-subjektu-prieziuros-efektyvumo-vertinimas

[11] List of planed checks: http://www.amvmt.lt/Images/Veikla/bendra/Administracine_informacija/Ukio_prieziura/2020/VMTpatikrinimuPlanas.pdf

[12] Order on Forest Regeneration and Afforestation4/10/2020
https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.318353/asr?positionInSearchResults=8&searchModelUUID=10f13a74-e626-4448-8bb3-5587620c2f6c

[13] Reports on national forest inventory:
http://www.amvmt.lt/index.php/nacionaline-misku-inventorizacija

[14] Law on Protected Areas:
https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.5627/asr?positionInSearchResults=26&searchModelUUID=4c637d60-b8b3-4c9c-8f99-3650bc5209b9

[15] Law on Environment Protection:
https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.2493/asr?positionInSearchResults=3&searchModelUUID=e544b4fb-5eb5-45be-8895-99bea7def7c5

[16] Reports on Natura 2000: https://vstt.lrv.lt/lt/saugomu-teritoriju-sistema/natura-2000

[17] State Service for Protected Areas annual reports:
https://vstt.lrv.lt/lt/vstt-administracine-informacija/veiklos-ataskaitos

[18] The State Service for Protected Areas: https://vstt.lrv.lt/en/

[19] Environmental Protection Service: https://aad.lrv.lt/en/

[20] Order on Forest Felling Rules:
https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.364764/asr?positionInSearchResults=9&searchModelUUID=add3eb90-7cb1-41b5-baf4-75dfa28575ac

[21] https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.6036/asr?positionInSearchResults=49&searchModelUUID=9c051af9-01d8-44ed-bd74-74accb431a97

[22] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Lithuania%20First/LV-03-06-EU%20INDC.pdf

[23] https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx

NAVIGANT
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Luxembourg

Background information

In 2016, there was about 86,700 hectares of forest area in Luxembourg, a share of 35.7% of the total land area. Based on a GIS-analysis (November 2020) the forest surface located in a Natura 2000 area measures 39,776.59 ha. A second protection status besides Natura 2000 areas are the ZPIN areas (zones protégées d'intérêt national). A forest area of 6,077.19 ha is located in a ZPIN and 5,202.80 ha out of this 6,077.19 ha are located in both (Natura 2000 and ZPIN). This results in the fact that 874.39 ha are located in a ZPIN but not in a Natura 2000 area. In 2018, 84,520 m^3 of wood fuel was produced in Luxembourg, of which 2,246 m^3 was exported. In 2011, the forestry sector contributed 0.3% to the Gross Domestic Product.[1]

Forest legislation is a national competence. The main law regulating the forest sector is the Law of 18th July 2018 on the protection of nature and natural resources. Forest legislation falls mostly under the Ministry of Environment, with the Administration de la nature et des forêts as the main body responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Luxembourg	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	1. Law of July 18, 2018 concerning the protection of nature and natural resources; 2. Instruction of November 18, 1952 concerning the management of forests subject to the forest regime, as mentioned in the Environment Code[3,4,5] 3. Law of January 30, 1951 concerning the wood protection.		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,6,7]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6,8]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Instruction of November 18, 1952 concerning the management of forests subject to the forest regime, mentioned in the Environment Code[5]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	
	1. Law of July 18, 2018 concerning the protection of nature and natural resources[9]		

5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[10]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[11]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(see below)	
	1. Law of July 18, 2018 concerning the protection of nature and natural resources[4]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(see below)	
	1. Law of July 18, 2018 concerning the protection of nature and natural resources[4,12] 2. Grand-Ducal Regulation of August 1, 2018 establishing protected biotopes, habitats of interest community and the habitats of species of community interest for which the state of conservation has been assessed as unfavourable, and specifying the measures for reduction, destruction or related deterioration 3. Grand-Ducal regulation of 12 May 2017 establishing a set of aid schemes for improving protection and sustainable management of forest ecosystems		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[12]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	(see below)	
	1. Instruction of November 18, 1952 concerning the management of forests subject to the forest regime, mentioned in the Environment Code,[13]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[6]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[14]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[15]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[15.16]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf

Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] EUTR, as a regulation is binding in all EU Member States. https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32010R0995

[4] Law of 18 July 2018: http://extwprlegs1.fao.org/docs/pdf/lux193017.pdf

[5] Instructions of 18 November 1952: http://extwprlegs1.fao.org/docs/pdf/lux39766.pdf

[6] Administration of nature and forests: https://anf.gouvernement.lu/fr/service.html

[7] SWD(2019) 126 final COMMISSION STAFF WORKING DOCUMENT. The EU Environmental Implementation Review 2019 Country Report - LUXEMBOURG. https://ec.europa.eu/environment/eir/pdf/report_lu_en.pdf

[8] EUTR competent authority: https://ec.europa.eu/environment/forests/pdf/list_competent_authorities_eutr.pdf

[9] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC193017/

[10] https://chm.cbd.int/database/record/7C393CC4-D665-CE1D-B971-CD4271602FB8

[11] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC033902/

[12] Law of 2002: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC033902/

[13] http://extwprlegs1.fao.org/docs/pdf/lux39766.pdf

[14] https://unfccc.int/process/the-paris-agreement/status-of-ratification

[15] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=LUX

[16] https://ec.europa.eu/clima/policies/forests/lulucf_en

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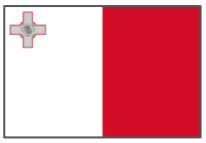
Malta



Background information

In 2016, there was about 347 hectares of forest area in Malta, a share of 1.1% of the total land area. No data is available on pubic vs private ownership of forests and no forest land is protected under Natura 2000. In 2011, the forestry sector contributed 0.2% to the Gross Domestic Product [1]

The harvesting timber in Malta is not a notable industry, hence it is the movement of timber from and to Malta which is regulated. The Forest Law Enforcement, Governance and Trade Licensing Scheme Regulations of 2015 (L.N. 115 of 2015) provides the implementation of provisions on the establishment of a FLEGT licensing scheme for imports of timber into the European Community. The Directorate of Agriculture is responsible for its enforcement.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Malta	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Subsidiary Legislation 549.94 Timber and Timber Products (Placing on the market) Regulations, Legal Notice 29 of 2015[3] 2. Subsidiary Legislation 549.95 Forest Law Enforcement, Governance and trade licensing scheme Regulations, Legal Notice 115 of 2015[4] 3. Subsidiary Legislation 433.10 Forest Reproductive Material Regulations, Legal Notice 273 of 2004, as amended by Legal Notices 17 of 2011 and 454 of 2013[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,4,5]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[3,4,5]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[3,4,5]	
4	**Forest regeneration of harvested area**	**No**	
4.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
4.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
4.3	Is there a monitoring system in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**No**	
5.1	Law name and date?	(see below)	
	Subsidiary Legislation 549.64 Trees and Woodlands Protection Regulations, Legal notice 200 of 2011; (Part IV: Regulation of ACtivities, num. 11, 12)[6]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
5.3	Is there a monitoring system in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass

5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
6	**Maintenance of soil quality to minimize negative impact**	**No**	
6.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
6.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
6.3	Is there a monitoring system in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
7	**Maintenance of biodiversity to minimize negative impact**	**No**	
7.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
7.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
7.3	Is there a monitoring system in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8	**Maintenance and improvement of long-term production capacity**	**No**	
8.1	Law name and date?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8.2	Is there an enforcement system outlined in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8.3	Is there a monitoring system in place related to the law(s) above?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	No	No legislation specified covering this sub-criterion for harvesting of forest biomass

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[7]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[8,9]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[8]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://legislation.mt/eli/sl/549.94/eng/pdf; http://www.fao.org/faolex/results/details/en/c/LEX-FAOC144152

[4] https://legislation.mt/eli/sl/549.95/eng/pdf; http://www.fao.org/faolex/results/details/en/c/LEX-FAOC144157

[5] https://legislation.mt/eli/sl/433.10/eng/pdf; http://www.fao.org/faolex/results/details/en/c/LEX-FAOC100737

[6] https://legislation.mt/eli/sl/549.64/eng/pdf; http://www.fao.org/faolex/results/details/en/c/LEX-FAOC006920

[7] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[8] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Ireland%20First/LV-03-06-EU%20INDC.pdf

[9] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=MLT

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Netherlands

Background information

In 2016, there was about 0.38 million hectares of forest area in the Netherlands, a share of 11.2% of the total land area. In 2010, the larger part of the forest (51%) was under private ownership, with only about 49% publicly owned. 92 hectares are protected forests and forests under Natura 2000. In 2018, 2,341,000 m^3 of wood fuel was produced in the Netherlands, of which 129,285 m^3 was exported. In 2011, the forestry sector contributed 0.5% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the 2020 Law on Nature Protection. The Ministry of Agriculture, Nature and Food Quality sets out the rules and regulations. Offences of the prescribed laws and acts are monitored via the Ministry of Justice and Security. The State Forestry monitors the quality of forests and woods.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	The Netherlands	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	1. Wet Natuurbescherming of 2020 (Law on Nature Protection), Article 2 [3] 2. Omgevingswet of 2016 (Environment and Planning Act), Article 4[4]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[3.6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[7,8]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Wet Natuurbescherming of 2020 (Law on Nature Protection), Article 4[9]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[10]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[11]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	
	1. Wet Natuurbescherming of 2020 (Law on Nature Protection)[12]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[13]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[14]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[14]	

6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(see below)	
	1. Wet Bodembescherming of 2017, Article 8[15] 2. Besluit Bodemkwaliteit of 2019, Article 35[16,17]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[16]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[18]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	(see below)	
	1. Wet Natuurbescherming of 2020 (Law on Nature Protection)[19,20]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[21]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[22]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[12]	
8	**Maintenance and improvement of long-term production capacity**	No	
8.1	Law name and date?	(see below)	
	1. Wet Natuurbescherming of 2020 (Law on Nature Protection)[19,23]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	No[233]	New regulation to be published 2021 covering this
8.3	Is there a monitoring system in place related to the law(s) above?	Yes	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[12]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[24]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[25]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[25]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Wet Natuurbescherming, 2020 (Law on Nature Protection), Article 2: https://wetten.overheid.nl/BWBR0037552/2020-01-01

[4] Omgevingswet: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC178952/

[5] Wet Natuurbescherming, 2020 (Law on Nature Protection), Article 7. https://wetten.overheid.nl/BWBR0037552/2020-01-01

[6] https://ec.europa.eu/environment/forests/pdf/UNEP%20WCMC%202019_Overview%20of%20CA%20checks%20 January-June%202019_FINAL_17.01.2020.pdf

[7] Nederlandse Voedsel en Warenautoriteit: https://www.nvwa.nl/documenten/import/hout/flegt/publicaties/hout-importeren-guidance-document-eutr

[8] The monitoring organisation appears to be Control Union Certification: https://certifications.controlunion.com/en

[9] Wet Natuurbescherming of 2020 (Law on Nature Protection), Article 4: https://wetten.overheid.nl/BWBR0037552/2020-01-01
[10] Wet verzelfstandiging Staatsbosbeheer (Law on the independence of Staatsbosbeheer): https://wetten.overheid.nl/BWBR0008904/2020-01-01/
[11] https://ec.europa.eu/environment/forests/pdf/UNEP%20WCMC%202019%20Overview%20of%20CA%20checks%20July-December%202018%20FINAL.pdf
[12] https://wetten.overheid.nl/BWBR0037552/2020-01-01#Hoofdstuk7
[13] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX%3A31979L0409%3ANL%3AHTML
[14] https://wetten.overheid.nl/BWBR0037552/2020-01-01#Hoofdstuk2
[15] https://wetten.overheid.nl/BWBR0003994/2017-01-01/#HoofdstukI
[16] https://wetten.overheid.nl/BWBR0022929/2019-12-18
[17] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC082792/
[18] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC175774/
[19] Wet Natuurbescherming, 2020 (Law on Nature Protection): https://wetten.overheid.nl/BWBR0037552/2020-01-01
[20] https://www.rijksdienstcn.com/landbouw-natuur-voedselkwaliteit/natuur/natuurbeleidsplan-2018-2022
[21] https://www.rijksoverheid.nl/onderwerpen/natuur-en-biodiversiteit/wetgeving-voor-natuurbescherming-in-nederland
[22] Wet Natuurbescherming 2020, (Law on Nature Protection), Article 2,3,7: https://wetten.overheid.nl/BWBR0037552/2020-01-01
[23] https://www.rijksoverheid.nl/onderwerpen/omgevingswet
[24] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en
[25] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Netherlands%20First/LV-03-06-EU%20INDC.pdf

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Poland

Background information

In 2016, there was about 9.4 million hectares of forest area in Poland, a share of 31% of the total land area. In 2010, the larger part of the forest (81%) was under public ownership, with only about 19% privately owned. 1.6 million hectares are protected forests and forests under Natura 2000. In 2018, 5,260,500 m^3 of wood fuel was produced in Poland, of which 194,523 m^3 was exported. In 2011, the forestry sector contributed 1.6% to the Gross Domestic Product .[1]

The Forest Act of 1991 applies to public and private forests and forestry, covering General Regulations (1); Forest Economy (2); Protection Forests (3); Forest Management Master Plan (4); Regulation of Access to Forests (5); The State Forests Enterprise State Forests (6); Management of national assets controlled by the State Forests (6a); Forest Service (7); Finance Economy in State Forest (8); Changes in Regulations in Force as Well as Transitory and Final Prescriptions (10). The Act lays down principles of preservation, protection and expansion of forest resources and principles of forest economy in relation to other elements of environment and national economy. The National Environmental Protection Inspectorate is responsible for monitoring all parties making use of the environment, as well as the trade of harvested timber.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Poland	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	Forest Act of 1991, Article 7-14, 66[3] Forest Tax Act of 2002, Article 4[4]	
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5,6,7]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	Forest Act of 1991, Article 13[3,8]	
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3,5]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	Nature Conservation Act of 2004, Article 6[9]	
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	

5.3	Is there a monitoring system in place related to the law(s) above?	Yes[9]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	Forest Act of 1991, Article 9[3]	
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	Forest Act of 1991, Article 7[3,10]	
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[6]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	Forest Act of 1991, Article 13[3]	
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[3]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[3]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[11]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[12]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[12]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Forest Act: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC113774
[4] Forest Tax Act: http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20022001682/U/D20021682Lj.pdf
[5] Act on the Protection of Agricultural and Forest Land, http://www.fao.org/faolex/results/details/en/c/LEX-FAOC129642
[6] The National Environmental Monitoring organisation, http://www.gios.gov.pl/monlas
[7] The National Environmental Protection Inspectorate, www.gios.gov.pl

[8] The National Forestry Directorate: http://www.lasy.gov.pl/pl/pro/publikacje/copy_of_gospodarka-lesna/hodowla/zasady-hodowli-lasu-dokument-w-opracowaniu
[9] http://www.fao.org/faolex/results/details/en/c/LEX-FAOC129607
[10] The National Forestry Directorate Guidelines: http://www.lasy.gov.pl/pl/pro/publikacje/copy_of_gospodarka-lesna/hodowla/zasady-hodowli-lasu-dokument-w-opracowaniu
[11] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en
[12] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Poland%20First/LV-03-06-EU%20INDC.pdf

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Portugal

Background information

In 2016, there was about 3.18 million hectares of forest area in Portugal, a share of 34.7% of the total land area. In 2010, the larger part of the forest (98%) was under private ownership, with only about 2% publicly owned. 1.07 million hectares are protected forests and forests under Natura 2000. In 2018, 1,178,200 m^3 of wood fuel was produced in Portugal, of which 19,096 m^3 was exported. In 2011, the forestry sector contributed 1.6% to the Gross Domestic Product.[1]

Forest legislation is a national competence. The main law regulating the forest sector is the 'Law of Forest Policy 33/96'. It defines national forestry policy which is necessary for the management, conservation and development of forests and their natural resources, according to human need. It defines forestry resources exploitation policy according to national development and conservation priorities. The purposes of this forestry policy are promoting and guaranteeing forestry expansion and protection. Forest legislation falls mostly under the Ministry of Ministry of Environment and Climatic Action.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Portugal	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date? 1. Basic Law of Forest Policy (Law 33/96) of 1996 and Decree 31/2020, 30th of June[3]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[5,6,7]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8,9]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date? 1. Decree-Law 96/2013 and subsequent amendments Decree-Law 12/2019 of 2019 [10]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[10]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[10]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?		
	1. National Strategy for the Conservation of Nature and Biodiversity 2030 of 2018 (approved by the Resolution of the Council of Ministers 55/2018)[11]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[11]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[11]	

5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[12]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date? 1. Basic Law of Forest Policy (Law 33/96) of 1996[13]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[9]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8, 9]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?		
	1. Basic Law of Forest Policy (Law 33/96) of 1996, Articles 3 and 21[5] 2. Law 19/2014 of 2014**Error! Bookmark not defined.**		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9,14]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[9]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[15,16]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?		
	1. Basic Law of Forest Policy (Law 33/96) of 1996, articles 3 and 17[5]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[9]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8,9]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[17]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[18]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[20]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Law 33/96, Art. 5-8, 17 August 1996 https://dre.pt/application/conteudo/406293

[4] https://www.gnr.pt/atrib_SPENA.aspx

[5] Basic Law of Forest Policy (Law 33/96), 17 August 1996 https://dre.pt/application/conteudo/406293

[6] Decree-Law 135/2012, 29 June 2012 https://dre.pt/application/conteudo/178537

[7] Decree-Law 16/2009, 14 January 2009 https://dre.pt/application/file/397417
[8] Institute for Nature Conservation and Forests http://www2.icnf.pt/portal/florestas/ppf
[9] National Republican Guard https://www.gnr.pt/atrib_SPENA.aspx
[10] https://dre.pt/application/conteudo/118051705
[11] https://dre.pt/application/file/a/115227157
[12] https://dre.pt/application/dir/pdf1sdip/2012/06/12500/0332603330.pdf
[13] Law 33/96, Art. 3 and 4, 17 August 1996 https://dre.pt/application/conteudo/406293
[14] NRG's mission and duties https://www.gnr.pt/missao.aspx
[15] Law 33/96, Art. 10: https://dre.pt/application/conteudo/406293
[16] Law 19/2014, Art. 21 https://dre.pt/application/conteudo/25344037
[17] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en; https://unfccc.int/node/61145
[18] Intended NDC of the EU and its Member States: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Portugal%20First/LV-03-06-EU%20INDC.pdf

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Romania

Background information

In 2016, there was about 6.86 million hectares of forest area in Romania, a share of 30% of the total land area. In 2010, the larger part of the forest (67%) was under public ownership, with only about 23% privately owned. 538,900 hectares are protected forests and forests under Natura 2000. In 2018, 4,649,768 m^3 of wood fuel was produced in Romania, of which 61,697 m^3 was exported. In 2011, the forestry sector contributed 1.9% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The 2008 Forest Code determines the forestry sector rules and provisions for all national based forests, forest land (private and public), land intended for afforestation. The aims of this law are to implement the cultural inclusive, production and sustainable forest functions management principles. This Law closely sets the provisions regarding the National Forest Fund, that is in charge for various forest sector and land with forestry destination related tasks and affairs (such as protection of forests and pastures; regeneration of land and plantations set up in forestry purposes; afforestation of degraded land and forest land). Forest regulation falls mostly under the Ministry of Environment, Waters and Forests, with the Forest Guards and the National Environmental Guards as main body responsible for monitoring and enforcement.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Romania	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**No**	
3.1	Law name and date?	(see below)	
	1. Law 46 of 2008, Forest Code[3] and Law 197 of 2020 for the modification of the Law 46/2008 Forest Code 2. Ministerial Order 766 of 2018 on Forest Management planning[4] 3. Instructions on harvesting approved by Ministerial Order 1540 of 2011[5] 4. Governmental Decision 470 of 2014 on timber origin and trade and the implementation of EUTR[6] (in force until 31.10.2020) 5. Ministerial Order 837 of 2014 about the Methodology of SUMAL wood tracking system[7] 6. Law on forest contraventions (forest administrative offences) 171 of 2010[8] 7. Ministerial Order on forest marking hammer 1346 of 2011[9] 8. Governmental Decision 497 of 2020 for the approval of the Norms on EU Timber Regulation 995/2020 implementation (in force starting with 31.10.2020)		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	No[4, 10,11,12,13,14,15,16,17,18,19,20]	Since an infringement procedure is on-going regarding the implementation of the EU Timber Regulation, the enforcement of the legality sub-criterion is set to no. [21] The briefing notes from UNEP-WCMC also refer to issues with enforcement of legality.[22] However, if the infringement procedure was to be resolved, the appropriate legislation is present to meet the criterion.
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4, 7, 14,23,24,25,26,27,28,29,30,31]	On 8.09.2020 the Law 197/2020 has introduced new enforcement mechanisms (a new definition of illegal logging and for the first time the classification of illegal timber transportation as criminal offence). Furthermore, in June 2020 a new version of timber tracking system was approved that will enter in force on 31.10.2020.

3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,14,32,33,34]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Law 46 of 2008, Forest Code[4] and Law 197 of 2020 for the modification of the Law 46/2008 Forest Code 2. Law on forest contraventions (forest administrative offences) 171 of 2010[9] 3. Ministerial Order 1648 of 2000 on the forest regeneration technical norms[35]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,9,34]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[4, 7, 36,37]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,31, 35]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**No**	
5.1	Law name and date?	(see below)	
	1. Law 46 of 2008, Forest Code[4] with modification by Law 197 of 2020 for the modification of the Law 46/2008 2. Ministerial Order 766 of 2018 on Forest Management planning[5] 3. Governmental Ordinance nr. 57 of 2007 on natural protected areas[38] 4. Ministerial Order 2525 of 2016 on the National Catalogue of virgin and virgin forests[39] 5. Ministerial Order 3397 of 2012 on the Criteria and indicators for virgin and virgin forest identification in Romania[40] 6. Law 95/2016 on establishment of the National Agency for Protected Natural Areas [51] 7. Governmental Decision 997 of 2016 on the organisation and functioning of the National Agency for Protected Natural Areas [51]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	No[4,37,41,42,]	Both the infringement procedure as well as the UNEP-WCMC briefing notes refer to issues with the protection of protected areas[22, 23]. However, if both were to be resolved, the appropriate legislation is present to meet the criterion. Note the Forest Code was modified in September 2020 (Law 197 of 2020) to institute a supremacy of environmental protection rules over forest management planning and over forest harvesting activities.
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[7, 16,38,43,44,45,46,47]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[48,49,50,51]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Law 46 of 2008, Forest Code[4] 2. Law on the funciar fond nr. 18 of 1991[52] 3. Ministerial Order 244 of 2002 approving the Methodology of 2002 about the monitoring of the soil-forest vegetation for silviculture[53]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[54]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[7, 55]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,31]	
7	**Maintenance of biodiversity to minimize negative impact**	**No**	
7.1	Law name and date?	(see below)	
	1. Law 46 of 2008, Forest Code[4] and Law 197 of 2020 for the modification of the Law 46/2008 Forest Code 2. Ministerial Order 766 of 2018 on Forest Management planning[5] 3. Governmental Ordinance 57 of 2007[56]		

	4. Ministerial Order 2525 of 2016 on the National Catalogue of virgin and virgin forests[38] 5. Ministerial Order 3397 of 2012 on the Criteria and indicators for virgin and virgin forest identification in Romania[39] 6. Law 95/2016 on establishment of the National Agency for Protected Natural Areas[51] 7. Governmental Decision 997 of 2016 on the organisation and functioning of the National Agency for Protected Natural Areas [51]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	No[4,11,12,55]	Both the infringement procedure as well as the UNEP-WCMC briefing notes refer to issues with minimizing impacts on biodiversity[22, 23] However, if the infringement procedure was to be resolved, the appropriate legislation is present to meet the criterion.
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[7, 36,38,42,43,44,45]	On 8.09.2020 the Law 197/2020 has introduced new enforcement mechanisms. In June 2020 a new version of timber tracking system was approved.
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[57,58,59,60]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. Law 46 of 2008, Forest Code[4] 2. Ministerial Order 1726 of 2011 for approving the Financial Guide for afforestation, ecological restoration and sustainable forest management[61]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[62]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[7, 36,60]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9,17,50]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[63]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[64]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[65]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] http://legislatie.just.ro/Public/DetaliiDocument/170527
[4] http://legislatie.just.ro/Public/DetaliiDocument/204225
[5] http://legislatie.just.ro/Public/DetaliiDocument/129447
[6] http://legislatie.just.ro/Public/DetaliiDocumentAfis/158885
[7] http://legislatie.just.ro/Public/DetaliiDocument/162297
[8] http://legislatie.just.ro/Public/DetaliiDocument/120856;
[9] http://legislatie.just.ro/Public/DetaliiDocumentAfis/183503
[10] Governmental Emergency Ordinance 85 of 2006 on forest damage evaluation: http://legislatie.just.ro/Public/DetaliiDocument/76819
[11] Legea nr. 265 of 2017 pentru aprobarea Ordonanței Guvernului nr. 9 of 2017 privind prorogarea termenului prevăzut la art. IV din Ordonanța de urgență a Guvernului nr. 51/2016 pentru modificarea și completarea Legii nr. 171/2010 privind stabilirea și sancționarea contravențiilor silvice: https://lege5.ro/Gratuit/gi3dimzygq3q/legea-nr-265-2017-pentru-aprobarea-ordonantei-guvernului-nr-9-2017-privind-prorogarea-termenului-prevazut-la-art-iv-din-ordonanta-de-urgenta-a-guvernului-nr-51-2016-pentru-modificarea-si-completarea-l

[12] Decision of the Romanian Constitutional Court 51 of 2019 - Decizia nr. 51 din 22 ianuarie 2019 referitoare la excepția de neconstituționalitate a dispozițiilor art. 107 alin. (1) lit. a) și art. 109 alin. (1) lit. a) din Legea nr. 46/2008 - Codul silvic: http://legislatie.just.ro/Public/DetaliiDocument/213523
[13] Law on forest contraventions (forest administrative offences) 171 of 2010: http://legislatie.just.ro/Public/DetaliiDocument/120856
[14] Instructions on harvesting approved by Ministerial order 1540 of 2011: http://legislatie.just.ro/Public/DetaliiDocument/129447
[15] The Annual Report on the Romanian Forests 2017: http://apepaduri.gov.ro/wp-content/uploads/2014/07/Starea-pădurilor-în-anul-2017.pdf;
[16] National Forest Inventory: http://roifn.ro/site/rezultate-ifn-2/
[17] National Statistical Institute, 2009, Study on Energy Consumtion in the Households: https://insse.ro/cms/files/publicatii/CENG_publicatie_tabele.pdf
[18] Greenpeace Romania, 2018. Illegal logging in Romania's forests 2018 report: https://storage.googleapis.com/planet4-romania-stateless/2019/11/5cbe6848-greenpeace-illegal-logging-report-2018.pdf
[19] INM, 2018: http://inm-lex.ro/fisiere/d_2441/Minuta%20intalnire%20drept%20penal%20procurori%2018%20mai%202018.pdf
[20] Vernea, 2018: http://www.nos.iem.ro/bitstream/handle/11748/1386/71.Vernea%20Andreea.pdf?sequence=1&isAllowed=y
[21] https://ec.europa.eu/commission/presscorner/detail/en/inf_20_202
[22] UNEP-WCMC Briefing Note for the Competent Authorities (CA) implementing the EU Timber Regulation February – May 2020: https://ec.europa.eu/environment/forests/pdf/EUTR%20Briefing%20note%20February-May%202020.pdf
[23] Instructions on harvesting approved by Ministerial order 1540 of 2011: http://legislatie.just.ro/Public/DetaliiDocument/129447
[24] SUMAL: Governmental Decision 470 of 2014 on timber origin and trade and the implementation of EUTR, http://legislatie.just.ro/Public/DetaliiDocumentAfis/158885 and Methodology SUMAL 2014 approved by th Ministerial Order 837 of 2014: http://legislatie.just.ro/Public/DetaliiDocument/169398
[25] Radarul pădurilor: https://www.sts.ro/ro/radarul-padurilor
[26] Daily statistics: https://www.sts.ro/files/userfiles/112/Statistica%20RADARUL%20PADURILOR/2020/MasaLemnoasa_site112_2020-04-21_082514.Pdf
[27] Inspectorul pădurilor: www.inspectorulpadurii.ro
[28] Catalog of the virgin forests: http://apepaduri.gov.ro/paduri-virgine/;
[29] National Register of the forest districts, http://mmediu.ro/new/wp-content/uploads/2014/01/2012-03-20_paduri_registruadministratorpaduriocoalesilvicenapos.pdf
[30] Risks maps for illegal logging, posted on the Ministry website: http://www.mmediu.ro/categorie/paduri/25
[31] Reports of Forest Guards activities in 2016: http://www.mmediu.ro/categorie/inspectii-si-control-in-domeniul-silvic/216
[32] Governmental Emergency Ordinance on forest guards 32 of 2015: http://legislatie.just.ro/Public/DetaliiDocumentAfis/206826; Government Decision 743/2015 on organisation and functioning of the Forest Guards: http://legislatie.just.ro/Public/DetaliiDocument/171442
[33] National Environmental Guard Report on the implementation of the EUTR 995 of 2010: https://www.emediu.ro/dbimg/files/Raport_activitate_GNM-2019.pdf
[34] Guide for EUTR 995 of 2010 implementation, 2015: http://www.mmediu.ro/app/webroot/uploads/files/Ghid_DDS.pdf
[35] http://bucuresti.gardaforestiera.ro/files/12494_Norm%201.pdf
[36] Reports of Forest Guards activities in 2016: http://www.mmediu.ro/categorie/inspectii-si-control-in-domeniul-silvic/216
[37] The Annual Report on the Romanian Forests 2017: http://apepaduri.gov.ro/wp-content/uploads/2014/07/Starea-pădurilor-în-anul-2017.pdf
[38] http://legislatie.just.ro/Public/DetaliiDocument/83289

[39] http://legislatie.just.ro/Public/DetaliiDocument/186018
[40] http://legislatie.just.ro/Public/DetaliiDocumentAfis/141475
[41] Governmental Emergency Ordinance 85 of 2006 on forest damage evaluation: http://legislatie.just.ro/Public/DetaliiDocument/76819;
[42] Legea nr. 265 of 2017 pentru aprobarea Ordonanței Guvernului nr. 9/2017 privind prorogarea termenului prevăzut la art. IV din Ordonanța de urgență a Guvernului nr. 51/2016 pentru modificarea și completarea Legii nr. 171/2010 privind stabilirea și sancționarea contravențiilor silvice: https://lege5.ro/Gratuit/gi3dimzygq3q/legea-nr-265-2017-pentru-aprobarea-ordonantei-guvernului-nr-9-2017-privind-prorogarea-termenului-prevazut-la-art-iv-din-ordonanta-de-urgenta-a-guvernului-nr-51-2016-pentru-modificarea-si-completarea-l;
[43] The Inventory of the Natural Protected Areas: http://ananp.gov.ro/wp-content/uploads/inventar_arii_Ro_v1-00000003.pdf
[44] The Monitoring of the conservation status by the National Agency of the Natural Protected Areas Agency: http://ananp.gov.ro/wp-content/uploads/Raportul-sintetic-privind-starea-de-conservare-a-speciilor-si-habitatelor-din-RO-1.pdf
[45] Methodology RAPAM: http://ananp.gov.ro/monitorizare-evaluare/
[46] Agent Green- The failure of the National catalogue of the virgin forests: https://www.agentgreen.ro/comunicat-de-presa-catalogul-padurilor-virgine-pierdute-un-esec-national/?fbclid=IwAR33cCd9e7dBjIsVYQQHkJ2dvUjxM4aG08hJi2Rr5R7UOUVxAeINunYW84I
[47] Annual Report on the Environmental Protection in Romania, 2018: http://www.anpm.ro/documents/12220/2209838/RSM+2018.pdf/e24e1dd6-450e-46bf-86e4-cff9a3482610
[48] National Agency of Protected Areas - functioning on the base of Law 95/2016 on establishment of the National Agency for Protected Natural Areas: http://legislatie.just.ro/Public/DetaliiDocument/178452, of Governmental Decision 997 of 2016 on the organisation and functioning of the National Agency for Protected Natural Areas: http://legislatie.just.ro/Public/DetaliiDocumentAfis/198367 and on the base of Ministerial Order 1288 of 2018 http://ananp.gov.ro/wp-content/uploads/OM_StrOrganizANANP_1228_2018-1.pdf
[49] National Agency of Protected Areas organisation: Ministerial Order 1288 of 2018: http://ananp.gov.ro/wp-content/uploads/OM_StrOrganizANANP_1228_2018-1.pdf
[50] National Environmental Guard – Garda de Mediu: https://www.emediu.ro/dbimg/files/Raport_activitate_GNM-2019.pdf. The National Environmental Guard is operating under the rules set up in Government Decision 1005/2012: http://legislatie.just.ro/Public/DetaliiDocument/142351
[51] Forest Guards, Governmental Emergency Ordinance 32 of 2015: http://legislatie.just.ro/Public/DetaliiDocumentAfis/206826
[52] http://legislatie.just.ro/Public/DetaliiDocument/1459
[53] Ministerial Order 244 of 2002 approving the Methodology of 2002 about the monitoring of the soil-forest vegetation for silviculture: http://legislatie.just.ro/Public/DetaliiDocumentAfis/40026
[54] Law on forest contraventions 171 of 2010: http://legislatie.just.ro/Public/DetaliiDocument/120856;
[55] Geambașu et al., 2004. Monitorizarea calitatii solurilor forestiere din Romania. Rezultate obtinute in reteaua europeana de 16x16 Km: http://www.editurasilvica.ro/analeleicas/47/1/geambasu.pdf
[56] http://legislatie.just.ro/Public/DetaliiDocument/83289

[57] Governamental Decision 997 of 2016 about the National Agency of Protected: http://legislatie.just.ro/Public/DetaliiDocumentAfis/198367
[58] Ministerial Order 1288 of 2018: http://ananp.gov.ro/wp-content/uploads/OM_StrOrganizANANP_1228_2018-1.pdf
[59] National Environmental Guard: https://www.emediu.ro/dbimg/files/Raport_activitate_GNM-2019.pdf
[60] Governmental Emergency Ordinance 32 of 2015: http://legislatie.just.ro/Public/DetaliiDocumentAfis/206826).;
[61] https://www.afm.ro/main/programe/program_impadurire_terenuri_agricole_degradate/2011/ordin1726-2011.pdf
[62] Ministerial Order 766 of 2018 on Forest Management planning: http://legislatie.just.ro/Public/DetaliiDocument/204225;
[63] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en

[64] https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx
Law 197 of 2020 for the modification of the Law 46/2008 Forest Code (Lege nr. 197 din 7.09.2020 pentru modificarea și completarea Legii nr. 46/2008 - Codul silvic) Publicat în MONITORUL OFICIAL nr. 823 din 8 septembrie 2020, http://legislatie.just.ro/Public/DetaliiDocument/229828

Governmental Decision 497 of 2020 for the approval of the Norms on EU Timber Regulation 995/2020 implementation (Hotărâre nr. 497 din 25 iunie 2020pentru aprobarea Normelor referitoare la proveniența, circulația și comercializarea materialelor lemnoase, la regimul spațiilor de depozitare a materialelor lemnoase și al instalațiilor de prelucrat lemn rotund, precum și a celor privind proveniența și circulația materialelor lemnoase destinate consumului propriu al proprietarului și a unor măsuri de aplicare a prevederilor Regulamentului (UE) nr. 995/2010 al Parlamentului European și al Consiliului din 20 octombrie 2010 de stabilire a obligațiilor care revin operatorilor care introduc pe piață lemn și produse din lemn, Publicat în MONITORUL OFICIAL nr. 570 din 30 iunie 2020), http://legislatie.just.ro/Public/DetaliiDocument/227471

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Slovakia

Background information

In 2016, there was about 1.94 million hectares of forest area in Slovakia, a share of 40% of the total land area. In 2010, the larger part of the forest (55%) was under public ownership, with only about 45% privately owned. 853,700 hectares are protected forests and forests under Natura 2000. In 2018, 523,620 m^3 of wood fuel was produced in Slovakia, of which 58,074 m^3 was exported. In 2011, the forestry sector contributed 2.4% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the 2005 'Act on Forests.' The purpose of this Act is conservation, enhancement and protection of forests as a component of the environment and of the country's natural resources, ensure their sustainable management, reconcile the interests of the company and the owners of forests and create economic conditions for sustainable forest management. Forest legislation falls mostly under the Ministry of Environment, with the State Forest Administration as main body responsible for monitoring and enforcement.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Slovakia	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Act No. 326 of 2005 on forests[3] 2. Decree No. 232 of 2006 of the Ministry of Agriculture of the Slovak Republic on marking timber harvesting, marking of harvested timber and documents on the origin of timber (EU Timber Regulation implementation)[4] 3. Act No. 113 of 2018 on placing timber and timber products to the internal market (EU Timber Regulation implementation[5] 4. Act No. 543 of 2002 on the protection of nature and landscape[6]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[6,8,7,8,9]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,11]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8,10,11, 12]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Act No. 326 of 2005 on forests[13]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10,14]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[14]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8,10,11]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Act no. 543 of 2002 on the protection of nature and landscape[15]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[16]	

5.3	Is there a monitoring system in place related to the law(s) above?	Yes[8]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[17]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Act No. 326 of 2005 on forests[4] 2. Act No. 543 of 2002 on the protection of nature and landscape[8]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	Act no. 543 of 2002 on the protection of nature and landscape[15]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[18,18]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,19,20]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[19,21]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	Act No. 326 of 2005 on forests[14]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[22]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[23]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[24]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[25]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[26]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[29]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101#paragraf-22

[4] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2006/232/20110701

[5] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2018/113/20200101
[6] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2002/543/
[7] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101#paragraf-23
[8] http://www.forestportal.sk/odborna-sekcia/statna-sprava/Stranky/default.aspx
[9] https://www.mpsr.sk/slovenska-lesnicko-drevarska-inspekcia/sldi/47-186-1354
[10] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101#predpis.diel-druhy.skupinaParagrafov-evidencia_lesnych_pozemkov
[11] https://www.minzp.sk/iep/publikacie/komentare/ako-zlepsit-sledovanie-tazbu-dreva.html
[12] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101
[13] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101#predpis.diel-druhy
[14] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2006/453/20150215
[15] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2002/543/
[16] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2002/543/#predpis.cast-piata
[17] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2002/543/#predpis.cast-siedma
[18] https://www.minzp.sk/files/oblasti/ochrana-prirody-a-krajiny/biodiverzita/1_vlastny_ap-biod_aug_2014.pdf
[19] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2002/543/#paragraf-71
[20] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2002/543/#predpis.cast-piata.skupinaParagrafov-straz_prirody
[21] https://www.sizp.sk/
[22] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101#predpis.diel-dvanasty
[23] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101#predpis.diel-siedmy.oddiel-druhy
[24] https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2005/326/20200101#predpis.diel-trinasty
[25] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en
[26] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Slovakia%20First/LV-03-06-EU%20INDC.pdf

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Slovenia

Background information

In 2019, there was about 1.18 million hectares of forest area in Slovenia, a share of 58.1% of the total land area. In 2010, the larger part of the forest (75%) was under private ownership, with only about 25% publicly owned. 98,762 hectares are protected forests, 9,508 hectares are forest reserves and 12,532 hectares of forests is under Natura2000. In 2018, 1,142,133 m^3 of wood fuel was produced in Slovenia, of which 384,821 m^3 was exported. In 2011, the forestry sector contributed 1.8% to the Gross Domestic Product.[1]

Forest legislation is a national competence. The Forest Law provides the forest management basic principles and rules. The Law closely regulates the protection (also fire protection), cultivation, construction and maintenance of forest infrastructure, timber issues, exploitation and use of forests and the disposal of forests and forest land as important natural resource, with the aim of ensuring sustainable and multi-functional approach and management, in accordance with the principles of environmental protection and protection of natural values, and sustainable and optimal functioning of forests as ecosystem. Forest legislation falls mostly under the Ministry of Agriculture, Forestry and Food, with the Forest Inspection as main body responsible for policy and supervision. Lastly, the Forest Service, a public institution, established by the Republic of Slovenia, performs public forestry service in all Slovenian forests, irrespective of ownership.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Slovenia	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes[3,4]	
3.1	Law name and date?	Act on Forests of 1993, Chapter III, Section 1, article 17 (Zakon o gozdovih)[5]	
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5,6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[5]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	Act on Forests of 1993, Articles 17 and 23 (Zakon o gozdovih) [5]	
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[5]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes[5]	
5.1	Law name and date?	Nature Conservation Act of 1999, Article 1 (Zakon o ohranjanju narave)[7]	
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[7]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[7]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[7]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	

6.1	Law name and date?	Act on Forests of 1993, Chapter III, Section 1, article 17(3) (Zakon o gozdovih)[4,5]	
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,5]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	
7.1	Law name and date?	Act on Forests of 1993, Chapter III, Section 2 (Zakon o gozdovih)[5,8]	
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[5]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5,7]	
8	**Maintenance and improvement of long-term production capacity**	Yes	
8.1	Law name and date?	Act on Forests of 1993, Chapter I, Article 1 (Zakon o gozdovih)[5,9]	
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[5]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[10]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[11]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[11]	

[1] Sources for the paragraph are:
SiSTAT - Forest area (ha), Slovenia, annually: https://pxweb.stat.si/SiStatData/pxweb/en/Data/-/1673105S.px/
Natura 2000 in Slovenia: http://www.natura2000.si/en/natura-2000/natura-2000-in-slovenia/
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf
Act on Forests of 1993, Chapter VII, Section 3, Article 56

[3] Cadastral Income Act: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO7125

[4] Rules on felling, managing wood residues, harvesting and stacking of timber assortments: http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV2997

[5] Forest Act: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO270&pogled=osnovni

[6] Newspaper article on enforcement case: https://www.slovenskenovice.si/novice/slovenija/clanek/sekal-zaradi-lubadarja-in-placal-kazen-271759

[7] Nature Conservation Act: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1600

[8] Rules on forest protection: http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV9492

[9] Resolution on National Forest Programme: http://www.pisrs.si/Pis.web/pregledPredpisa?id=RESO56

[10] Act ratifying the Paris Agreement (Zakon o ratifikaciji Pariškega sporazuma) of 2016: http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO7545

[11] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Slovenia%20First/LV-03-06-EU%20INDC.pdf

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Spain

Background information

In 2016, there was about 18.42 million hectares of forest area in Spain, a share of 36.9% of the total land area. In 2010, the larger part of the forest (71%) was under private ownership, with only about 29% publicly owned. 5.48 million hectares are protected forests and forests under Natura 2000. In 2018, 2,268,594 m^3 of wood fuel was produced in Spain, of which 24,443 m^3 was exported. In 2011, the forestry sector contributed 0.7% to the Gross Domestic Product.[1]

Forest legislation is a regional competence. The main law regulating the forest sector is the Law No. 21/2015- the Forestry Law. This amendment guarantees the conservation and protection of Spanish forests, promoting their restoration, improvement and rational use, based on collective solidarity, in order to improve the Act as an instrument for the sustainable management of Spanish forests, introducing as a new inspiring principle that of forests as green infrastructure. Forest legislation falls mostly under the Ministry of Agriculture, Food and Environment.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Spain	
2	Is forestry policy/legislation of national or regional competence?	Regional competence[3]	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	(see below)	
	1. Ley 21/2015, de 20 de julio, por la que se modifica la Ley 43/2003, de 21 de noviembre, de Montes (BOE 21/07/2015) (Spanish Forest Law)[4] 2. Real Decreto 1088/2015, de 4 de diciembre, para asegurar la legalidad de la comercialización de madera y productos de la madera (Royal Decree to guarantee the legality of the timber trade)[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,5,6,7]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
4	**Forest regeneration of harvested area**	Yes	
4.1	Law name and date?	(see below)	
	1. Ley 21/2015, de 20 de julio, por la que se modifica la Ley 43/2003, de 21 de noviembre, de Montes (BOE 21/07/2015) (Spanish Forest Law)[4]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,8]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	(see below)	
	1. Ley 42/2007, de 13 de diciembre, del Patrimonio Natural y de la Biodiversidad. (Law on the Natural Heritage and Biodiversity)[9] 2. Real Decreto 1015/2013, de 20 de diciembre, por el que se modifican los anexos I, II y V de la Ley 42/2007, de 13 de diciembre, del Patrimonio Natural y de la Biodiversidad (Royal Decree modifying the annexes of the Law 42/2007) 3. Ley 21/2015, de 20 de julio, por la que se modifica la Ley 43/2003, de 21 de noviembre, de Montes (BOE 21/07/2015) (Spanish Forest Law)[4]		

5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[9]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	(see below)	
	1. Ley 21/2015, de 20 de julio, por la que se modifica la Ley 43/2003, de 21 de noviembre, de Montes (BOE 21/07/2015) (Spanish Forest Law) [4]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
7	**Maintenance of biodiversity to minimize negative impact**	Yes[4]	
7.1	Law name and date?	(see below)	
	1. Ley 21/2015, de 20 de julio, por la que se modifica la Ley 43/2003, de 21 de noviembre, de Montes (BOE 21/07/2015) (Spanish Forest Law) [4]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	
8	**Maintenance and improvement of long-term production capacity**	Yes[4]	
8.1	Law name and date?	(see below)	
	1. Ley 21/2015, de 20 de julio, por la que se modifica la Ley 43/2003, de 21 de noviembre, de Montes (BOE 21/07/2015) (Spanish Forest Law) [4]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[4]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[10]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[11,12,13]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[11]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/

Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] A legislative framework exists in Spain at a national level (Código Forestal 2: Normas sobre Ordenación y Aprovechamientos Forestales). However, its implementation is carried-out by regions hence why the forestry policy/legislation has been indicated as of regional competence.
[4] Spanish Forest Law: https://www.boe.es/buscar/act.php?id=BOE-A-2003-21339
[5] https://www.boe.es/diario_boe/txt.php?id=BOE-A-2015-13437
[6] Plan Nacional de Control de la Legalidad de la Madera Comercializada (2018) (National Plan for the control of the legality of the timber trade 2018): https://www.mapa.gob.es/es/desarrollo-rural/temas/politica-forestal/plannacionaldecontroldelalegalidaddelamaderacomercializada_tcm30-484989.pdf
[7] Biannual reports required by the EU: https://www.mapa.gob.es/es/desarrollo-rural/temas/politica-forestal/Madera_Legal_FLEGT_EUTR/EUTR/EUTR_Informes.aspx
[8] https://www.mapa.gob.es/es/desarrollo-rural/temas/politica-forestal/control_cortas_de_madera_espanya_2012_tcm30-152390.pdf
[9] https://www.boe.es/buscar/act.php?id=BOE-A-2007-21490
[10] Declarations: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en#EndDec
[11] Intended Nationally Determined Contribution of the EU and its Member States (12/01/2017): https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Spain%20First/LV-03-06-EU%20INDC.pdf
[12] Spanish NAMA: https://www4.unfccc.int/sites/PublicNAMA/_layouts/un/fccc/nama/InformationOnSupportAvailable.aspx?ID=69&viewOnly=1
[13] Draft of new Law on Climate Change and Energy Transition: https://www.miteco.gob.es/es/prensa/ultimas-noticias/la-ley-de-cambio-climático-y-transición-energética-entra-en-la-recta-final-de-su-tramitación-administrativa/tcm:30-506983

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Sweden

Background information

In 2016, there was about 28.07 million hectares of forest area in Sweden, a share of 69% of the total land area. In 2010, the larger part of the forest (75%) was under private ownership, with only about 25% publicly owned. 2,245,030 hectares are protected forests and forests under Natura 2000. In 2018, 7,000,000 m^3 of wood fuel was produced in Sweden, of which 28,810 m^3 was exported. In 2011, the forestry sector contributed 2.9% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the 1979 Forest Act, focusing on the utilization of forest land. Forest land is described in as land suitable for the production of timber or land were the presence of forest is desirable to protect against soil erosion or against lowering of the timber line. The basic principles of the Act are that the forest is a national resource; it shall be managed in such a way as to provide a valuable yield and at the same time preserve biodiversity; forest management shall also take into account other public interests. Forest legislation falls mostly under the Ministry of Environment, with the Swedish Forest Agency and the Swedish Board for Agriculture as a main body responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Sweden	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Forestry Act of 1979[3] 2. Environmental Code of 1998[4] 3. Forestry Ordinance of 1993[5] 4. Swedish administrative provisions and common advice[6]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,7]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,8,8]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,9]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Forestry Act of 1979[4] 2. Forestry Ordinance of 1993[6] 3. Swedish administrative provisions and common advice[7]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,8]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[10]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[11]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Forestry Act of 1979[4] 2. Swedish administrative provisions and common advice[7] 3. Environmental Code of 1998[12]		

5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[13,14]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[8,15,16]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[17]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Forestry Act of 1979[4] 2. Environmental Code of 1998[13] 3. Species protection ordinance of 2007[18] 4. Guidance on environmental considerations in bioenergy from forests[19] 5. M¬lbilder fº r god miljº hª nsyn[20]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[21]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[22,23]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[24]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Forestry Act of 1979[4] 2. Environmental Code of 1998[13] 3. Species protection ordinance of 2007[25] 4. Guidance on environmental considerations in bioenergy from forests[20] 5. Law, 2010:598[26]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[27,28,29,30,31]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[32]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[33]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. Forestry Act of 1979[4]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[34]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[35]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[36]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[37]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[38]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[39]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:

FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skogsvardslag-1979429_sfs-1979-429
[4] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/miljobalk-1998808_sfs-1998-808
[5] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skogsvardsforordning-19931096_sfs-1993-1096
[6] https://www.skogsstyrelsen.se/lag-och-tillsyn/forfattningar/
[7] Forest Agency report 2019/15: https://www.skogsstyrelsen.se/globalassets/om-oss/publikationer/2019/rapport-2019-15-underlag-for-genomforande-av-direktivet-om-framjande-av-anvandningen-av-energi-fran-fornybara-energikallor.pdf
[8] Monitoring data: https://www.skogsstyrelsen.se/statistik/statistik-efter-amne/avverkningsanmalningar/
[9] Act on trade in timber and wood products: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-20141009-om-handel-med-timmer-och-travaror_sfs-2014-1009
[10] https://www.skogsstyrelsen.se/statistik/statistik-efter-amne/atervaxternas-kvalitet/
[11] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skogsvardslag-1979429_sfs-1979-429
[12] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/miljobalk-1998808_sfs-1998-808
[13] Rules regarding forestry and Natura 2000: https://www.skogsstyrelsen.se/aga-skog/skydda-skog/natura-2000/
[14] 2019 assessment of the Sustainable Forests EQO: https://www.skogsstyrelsen.se/globalassets/om-oss/publikationer/2019/rapport-2019-02-fordjupad-utvardering-av-levande-skogar-2019.pdf
[15] Budget Proposition 2016: https://www.riksdagen.se/sv/dokument-lagar/dokument/proposition/budgetproposition-2016-utgiftsomrade-20-allman_H3031d22/html
[16] Protected forests: https://www.naturvardsverket.se/upload/miljoarbete-i-samhallet/miljoarbete-i-sverige/naturvard/skydd-av-skog/formellt-skyddad-skogsmark-2019-06-27.pdf
[17] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skogsvardslag-1979429_sfs-1979-429
[18] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/artskyddsforordning-2007845_sfs-2007-845
[19] https://www.skogsstyrelsen.se/globalassets/om-oss/publikationer/2019/rapport-2019-14-regler-och-rekommendationer-for-skogsbransleuttag-och-kompensationsatgarder.pdf
[20] https://www.skogsstyrelsen.se/mer-om-skog/malbilder-for-god-miljohansyn/
[21] https://www.skogsstyrelsen.se/globalassets/om-oss/publikationer/2019/rapport-2019-02-fordjupad-utvardering-av-levande-skogar-2019.pdf
[22] Monitoring data: https://www.skogsstyrelsen.se/statistik/statistik-efter-amne/miljohansyn-vid-foryngringsavverkning/
[23] Field instructions for monitoring: https://www.skogsstyrelsen.se/statistik/statistik-efter-amne/miljohansyn-vid-foryngringsavverkning/
[24] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skogsvardslag-1979429_sfs-1979-429
[25] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/artskyddsforordning-2007845_sfs-2007-845
[26] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-2010598-om-hallbarhetskriterier-for_sfs-2010-598
[27] 2019 assessment of the Sustainable Forests EQO: https://www.skogsstyrelsen.se/globalassets/om-oss/publikationer/2019/rapport-2019-02-fordjupad-utvardering-av-levande-skogar-2019.pdf
[28] Artdatabanken national red list: https://www.artdatabanken.se/publikationer/bestall-publikationer/tillstand-och-trender-for-arter-och-deras-livsmiljoer-rodlistade-arter-i-sverige-2015/
[29] EPA 2019: https://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6890-5.pdf?pid=24788
[30] Eide 2014: https://www.artdatabanken.se/publikationer/bestall-publikationer/arter--naturtyper-i-habitatdirektivet--bevarandestatus-i-sverige-2013/
[31] EU Environmental Implementation Review Country Report ï Sweden: https://ec.europa.eu/environment/eir/pdf/report_se_en.pdfd
[32] Monitoring data: https://www.skogsstyrelsen.se/statistik/statistik-efter-amne/miljohansyn-vid-foryngringsavverkning/
[33] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skogsvardslag-1979429_sfs-1979-429
[34] https://www.skogsstyrelsen.se/statistik/statistik-efter-amne/atervaxternas-kvalitet/
[35] https://www.slu.se/centrumbildningar-och-projekt/riksskogstaxeringen/
[36] https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skogsvardslag-1979429_sfs-1979-429
[37] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en
[38] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=SWE

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Belarus

Background information

In 2016, there was about 8,633 million hectares of forest area in Belarus, a share of 31% of the total land area. In 2010, the majority of the forest was under public ownership. In 2018, 12,356,300 m^3 of wood fuel was produced in Belarus, of which 139,653 m^3 was exported. In 2011, the forestry sector contributed 1.1% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law applying to the Forestry sector is the Forest Code (Law No. 332-Z). This Law establishes that the Forest Fund (public forest) shall include forests growing on land of forest fund and land of other categories, and also forested land, unforested land within the boundaries of Forest Fund, and land of other categories allotted for forest management. Additionally, the Presidential Decree No. 214 on forest conservation measures charges the Ministry of Forests and its officials and state organizations with the responsibility to protect forests. Direct protection and conservation of forests shall be carried by forest officers. Forest officers shall be directly responsible for implementing protection and conservation measures, including, afforestation and reforestation, and for maintaining a favourable environment for wildlife species. The Decree requires that the sale of standing timber shall entail the allocation and transfer of woodcutting areas and the registration of timber extraction and logging. Forest legislation falls mostly under the Ministry of Natural Resources and Environmental Protection and the Ministry of Forests, with different of their departments being responsible for policy and supervision.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Belarus	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	No	
3.1	Law name and date?	Reference 1-24 (See appendix for an overview of references)	
3.2	Is there an enforcement system outlined in place related to the law(s) above?	No (reference 25-27)	The laws refer to standards and they refer to Technical Codes (TCPs). Several TCPs have been revoked and not replaced. Without these Technical Codes of Standard Practice, the legal system does not define important practical aspects of Sustainable Forest Management and it is unclear how this can then be enforced
3.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 28-30)	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 31-36)	
4	**Forest regeneration of harvested area**	**No**	
4.1	Law name and date?	Reference 37-43	
4.2	Is there an enforcement system outlined in place related to the law(s) above?	No (reference 44-45)	The laws refer to standards and they refer to Technical Codes (TCPs). Several TCPs have been revoked and not. Without these Technical Codes of Standard Practice, the legal system does not define important practical aspects of Sustainable Forest Management and it is unclear how this can then be enforced
4.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 46-50)	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 51-44)	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature**	**Yes**	

	competent authority for nature protection purposes, including wetlands and peatlands, are protected		
5.1	Law name and date?	Reference 56-70	
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 71-75)	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 76-78)	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	Reference 79-89	
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 90-95)	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 96-98)	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 99-103)	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	Reference 104-1116	
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 117-121)	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 122-128)	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 129-132)	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	Reference 133-142	
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 143-145)	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 146-147)	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 158-152)	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes (reference 153)	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes (reference 154)	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	No (reference 155-157)	
10.b.i	The country has national laws in place, applicable to the harvest area, to conserve and enhance carbon stock and sinks over the long term?	Yes (reference 158-169)	
10.b.ii	The country can provide evidence that reported LULUCF sector emissions to not exceed removal?	Yes (reference 170-174)	

Q	Ref #	Description	Description in native language	Reference
3.1	1	Forest code of the Republic of Belarus No. 332-Z of 2015	Кодекс Республики Беларусь от 24.12.2015 N 332-З Лесной кодекс Республики Беларусь	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
3.1	2	Decree of the President of the Republic of Belarus of May 7, 2007 No. 214 “On some measures to improve activities in the field of forestry” // NRPA RB. 2007. No 1/8576	Указ Президента Республики Беларусь от 7 мая 2007 года № 214 «О не которых мерах по совершенствованию деятельности в сфере лесного хозяйства» // НРПА РБ. 2007. № 1/8576	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC081415/
3.1	3	The Ministry of Forestry is entrusted with the functions of carrying out state policy in the field of use, protection, protection of the forest fund and reproduction of forests, state control over all legal entities conducting forestry, on the use of the forest fund, its protection and protection, reproduction of forests, their consideration, as well as other rules and regulations provided for by forest and environmental the legislation of the Republic of Belarus.		
3.1	4	Land code No. 425-Z of 2009	Кодекс Республики Беларусь о земле (вступает в силу с 1 января 2009 года)	LEX-FAOC092921: Land Code (Law No. 425-Z), http://www.fao.org/faolex/results/details/en/c/LEX-FAOC092921
3.1	5	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	https://etalonline.by/document/?regnum=Hk0300194
3.1	6	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
3.1	7	LAW OF THE REPUBLIC OF BELARUS July 12, 2013 № 53-З “About investments”	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ, 12 июля 2013 г. № 53-З “Об инвестициях”	http://pravo.by/document/?guid=3871&p0=H11300053
3.1	8	Law No. 63-Z “On concessions	Закон Республики Беларусь от 12.07.2013 № 63-З "О концессиях"	LEX-FAOC136871: Law No. 63-Z “On concessions, http://www.fao.org/faolex/results/details/en/c/LEX-FAOC136871
3.1	9	Law No. 131-Z on penalties for the infringement of forest and veterinary legislation.	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ 17 июля 2018 г. № 131-З О внесении изменений и дополнений в некоторые кодексы Республики Беларусь.	LEX-FAOC178312: Law No. 131-Z on penalties for the infringement of forest and veterinary legislation. http://www.fao.org/faolex/results/details/en/c/LEX-FAOC178312
3.1	10	Decree No. 19 of the Ministry of Forestry validating the Regulation on tenders for selection of contractors for public forestry programs of 2016.	ПОСТАНОВЛЕНИЕ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ 27 сентября 2016 г. № 19 Об утверждении Инструкции о порядке проведения конкурсов по выбору исполнителей мероприятий государственных программ.	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC163447
3.1	11	Decree No. 71 of the Ministry of Forestry validating the Regulation for harvesting of stumps, roots, wood juices, planting of fruits, berry and nut forest plantations, growing medicinal plants and other plant species, and procurement thereof of 2016.	ПОСТАНОВЛЕНИЕ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ 19 декабря 2016 г. № 71 Об утверждении Правил заготовки пней и корней, заготовки древесных соков, создания плодово-ягодных, орехоплодных и иных лесных плантаций, по выращиванию на них лекарственных и иных растений, их заготовке, сбору и признании утратившими силу некоторых постановлений Министерства лесного хозяйства Республики Беларусь.	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC163285
3.1	12	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. Date of original text: 16 March 2004 (29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
3.1	13	Decree No. 79 of the Ministry of Forestry validating Sanitary Forest Regulation of 19 December 2016.	ПОСТАНОВЛЕНИЕ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ 19 декабря 2016 г. № 79, Об утверждении Санитарных правил в лесах Республики Беларусь	LEX-FAOC163284: Decree No. 79 of the Ministry of Forestry validating Sanitary Forest Regulation of 19 December 2016 http://www.fao.org/faolex/results/details/en/c/LEX-FAOC163284
3.1	14	MINISTERIAL DECREE REPUBLICS OF BELARUS March 5, 2019 № 6 On	ПОСТАНОВЛЕНИЕ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ	http://pravo.by/upload/docs/op/W21933996_1553720400.pdf

		amendment of the decree of the Ministry of Forestry farms of the Republic of Belarus of December 19, 2016 № 79	БЕЛАРУСЬ 5 марта 2019 г. № 6 Об изменении постановления Министерства лесного хозяйства Республики Беларусь от 19 декабря 2016 г. № 79	
3.1	15	Decree of the President of the Republic of Belarus No 325 of June 22, 2010 on departmental control in the Republic of Belarus" (as amended on 03-06-2016)	Указ Президента Республики Беларусь от 22 июня 2010 г. № 325 О ведомственном контроле в Республике Беларусь	http://www.pravo.by/document/?guid=3961&p0=P31000325
3.1	16	Ministerial Decree No. 383 on allotment of standing timber.	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 29 марта 2002 г. № 383 О НЕКОТОРЫХ МЕРАХ ПО СОВЕРШЕНСТВОВАНИЮ ПОЛЬЗОВАНИЯ ЛЕСНЫМИ РЕСУРСАМИ В РЕСПУБЛИКЕ БЕЛАРУСЬ	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC065525
3.1	17	Decree № 954 of December 31, 2019. On establishing the tax value for the timber of the main forest species to be sold at the root in 2020	Постановление Совета Министров Республики Беларусь от 31 декабря 2019 г. № 954 Об установлении таксовой стоимости на древесину основных лесных пород, отпускаемую на корню, в 2020 году	http://www.government.by/upload/docs/file2cdd84ee8b215998.PDF
3.1	18	Decree No. 109 of the Council of Ministers amending forestry-related legislative acts. 08.02.2018	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 8 февраля 2018 г. № 109	LEX-FAOC175282: Decree No. 109 of the Council of Ministers amending forestry-related legislative acts. : http://www.fao.org/faolex/results/details/en/c/LEX-FAOC175282
3.1	19	TCP 622-2018 (33090)Technical requirements for forestry . Determining and taxating plots in the forests of the Republic of Belarus 01.10.2018	ТКП 622-2018 (33090) Технические требования при лесоустройстве. Отвод и таксация лесосек в лесах Республики Беларусь 01.10.2018	http://www.tnpa.by/#!/DocumentCard/399460/529265
3.1	20	TCP 634-2019 (33090) Procedure for carrying out forest protection measures in forests 01.06.2019	ТКП 634-2019 (33090) Порядок проведения лесозащитных мероприятий в лесах 01.06.2019	http://www.tnpa.by/#!/DocumentCard/357568/483595
3.1	21	TCP 500-2016 (33090) Forestry roads. Design rules and device rules	ТКП 500-2016 (33090) Лесохозяйственные дороги. Нормы проектирования и правила устройства. 01.10.2016	http://www.tnpa.by/#!/DocumentCard/357568/483595
3.1	22	TCP 575-2015 (33090) Sustainable forest management and forest operations. Guidance on growing planting material of wood and shrub species in forest nurseries of the Republic of Belarus	ТКП 575-2015 (33090) Устойчивое лесоуправление и лесопользование. Наставление по выращиванию посадочного материала древесных и кустарниковых видов в лесных питомниках Республики Беларусь	http://www.tnpa.by/#!/DocumentCard/341480/465329
3.1	23	TCP 587-2016 (33090) Sustainable forest management and forest management. Rules for allocating forest types. 01.01.2017	ТКП 587-2016 (33090) Устойчивое лесоуправление и лесопользование. Правила выделения типов леса. 01.01.2017	http://www.tnpa.by/#!/DocumentCard/362096/489152
3.1	24	Decree of the Council of Ministers of the Republic of Belarus dated July 14, 2003 No. 949 "On the National Environmental Monitoring System in the Republic of Belarus"	Постановление Совета Министров Республики Беларусь от 14 июля 2003 г. №949 "О Национальной системе мониторинга окружающей среды в Республике Беларусь"	http://pravo.levonevsky.org/bazaby09/sbor40/text40725.htm; http://www.minpriroda.gov.by/en/envmonitoring-en/
3.2	25	Forest code of the Republic of Belarus No. 332-Z of 2015	Лесной кодекс Республики Беларусь от 24.12.2015 N 332-З	LEX-FAOC159387: Forest Code (Law No. 332-Z), http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
3.2	26	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
3.2	27	Decree No 376 of 16 October 2017 "On measures to improve auditing (oversight) activities"		http://president.gov.by/en/news_en/view/commentary-to-decree-no-376-of-16-october-2017-17321/
3.3	28	Ministerial Decree No. 298 regarding the sphere of competence of the Ministry of Forestry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
3.3	29	LEX-FAOC175282: Decree No. 109 of the Council of Ministers amending forestry-related legislative acts.	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 8 февраля 2018 г. № 109	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC175282
3.3	30	Decree of the Council of Ministers of the Republic of Belarus dated July 14, 2003 No. 949 "On the National Environmental Monitoring System in the Republic of Belarus"	Постановление Совета Министров Республики Беларусь от 14 июля 2003 г. №949 "О Национальной системе мониторинга окружающей среды в Республике Беларусь"	http://pravo.levonevsky.org/bazaby09/sbor40/text40725.htm; http://www.minpriroda.gov.by/en/envmonitoring-en/

3.4	31	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
3.4	32	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. Date of original text: 16 March 2004 (29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
3.4	33	State Inspectorate for Protection of Fauna and Flora under the President of the Republic of Belarus.		http://gosinspekciya.gov.by/information/
3.4	34	The State Control Committee of the Republic of Belarus (2019). The Committee investigated the legality of activities of forestry enterprises, December 2019 and brought many people to justice		http://kgk.gov.by/by/news-press-center-by/view/bolee-100-dolzhnostnyx-lits-lesxozov-i-gomelskogo-gplxo-privlecheny-k-distsiplinarnoj-otvetstvennosti-za-110330/
3.4	35	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
3.4	36	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
4.1	37	LEX-FAOC159387: Forest code of the Republic of Belarus (Law No. 332-Z)	Кодекс Республики Беларусь от 24.12.2015 N 332-З Лесной кодекс Республики Беларусь	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
4.1	38	CODE OF REPUBLIC OF BELARUS ON ADMINISTRATIVE VIOLATIONS № 194-З, April 21, 2003	КОДЕКС РЕСПУБЛИКИ БЕЛАРУСЬ ОБ АДМИНИСТРАТИВНЫХ ПРАВОНАРУШЕНИЯХ, № 194-З, 21 апреля 2003 г.	https://etalonline.by/document/?regnum=Hk0300194
4.1	39	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
4.1	40	MINISTERIAL DECREE REPUBLICS OF BELARUS December 19, 2016 № 73 On some issues of forest reproduction in the field of seed production of forest plants.	ПОСТАНОВЛЕНИЕ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ, 19 декабря 2016 г. № 73, О некоторых вопросах воспроизводства лесов в области семеноводства лесных растений.	http://pravo.by/upload/docs/op/W21631597_1484600400.pdf
4.1	41	LEX-FAOC178312: Law No. 131-Z on penalties for the infringement of forest and veterinary legislation		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC178312
4.1	42	Decree of the President of the Republic of Belarus No 325 of June 22, 2010 on departmental control in the Republic of Belarus" (as amended on 03-06-2016)	Указ Президента Республики Беларусь от 22 июня 2010 г. № 325 О ведомственном контроле в Республике Беларусь	http://www.pravo.by/document/?guid=3961&p0=P31000325
4.1	43	17.06-10-2013 (02120) on environmental protection and nature use. Hydrosphere. Rules for the provision of migration in the family of forests and the creation of optimal conditions for their reproduction in the Republic of Belarus.	ТКП 17.06-10-2013 (02120) Охрана окружающей среды и природопользование. Гидросфера. Правила обеспечения миграции рыб семейства лососевых и создания оптимальных условий для их воспроизводства на реках Республики Беларусь;	http://www.tnpa.by/#!/DocumentCard/305610/424104
4.2	44	Forest code of the republic of Belarus No. 332-Z of 2015	Лесной кодекс Республики Беларусь от 24.12.2015 N 332-З	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
4.2	45	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
4.3	46	Forest code of the Republic of Belarus No. 332-Z of 2015	Кодекс Республики Беларусь от 24.12.2015 N 332-З Лесной кодекс Республики Беларусь	LEX-FAOC159387: Forest code of the Republic of Belarus (Law No. 332-Z), http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
4.3	47	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
4.3	48	STB 1708, "SUSTAINABLE FOREST MANAGEMENT AND FOREST USE		https://cdn.pefc.org/pefc.org/media/2019-04/93d37076-fb50-4e24-928f-e68a0b824a99/2edba973-fb3e-55d4- 8731-651c095f1bbf.pdf
4.3	49	STB 1358-2002 Afforestation and reforestation. Technological requirements.		https://cdn.pefc.org/pefc.org/media/2019-04/0ce0d812-e31b-

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4.3	50	Revoked has been the important Technical Code of Standard Practice TCP 047-2009 (02080) on “Sustainable forest management. Instructions on reforestation and afforestation in Belarus”.		http://www.tnpa.by/#!/DocumentCard/229462/326993
4.4	51	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
4.4	52	Ministerial Decree No. 298 regarding the sphere of competence of the Ministry of Forestry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
4.4	53	State Inspectorate for Protection of Fauna and Flora		http://gosinspekciya.gov.by/information/
4.4	54	The official website of the State Control Committee of the Republic of Belarus:		kgk.gov.by
4.4	55	Result of Inspections carried out:		http://www.kgk.gov.by/ru/news-kgk_vitebsk-com_obl-ru/view/na-kollegii-komiteta-gosudarstvennogo-kontrolja-vitebskoj-oblasti-v-rabote-kotoroj-prinjal-uchastie-109543
5.1	56	LEX-FAOC159387: Forest code of the Republic of Belarus (Law No. 332-Z)		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
5.1	57	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
5.1	58	LEX-FAOC092921: Land Code (Law No. 425-Z)		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC092921
5.1	59	Law of the Republic of Belarus No. 3335-XII of 20.10.1994 "On Specially Protected Natural Territories". The document ceased to be valid since June 14, 2019 according to the Law of the Republic of Belarus of November 15, 2018 No. 150-Z	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ от 20 октября 1994 года №3335-XII “Об особо охраняемых природных территориях”	http://rntbcat.org.by/EK/US/Ecology/68.pdf
5.1	60	LEX-FAOC037863. Law No. 1982-XII of 1992 on protection of the environment		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC037863/
5.1	61	LAW OF THE REPUBLIC OF BELARUS of December 18, 2019 No. 272-Z About protection and use of peat bogs.	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ 18 декабря 2019 г. № 272-З Об охране и использовании торфяников	http://pravo.by/upload/docs/op/H11900272_1577394000.pdf
5.1	62	LEX-FAOC175264. Presidential Decree No. 108 “On ecological network”.		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC175264
5.1	63	LEX-FAOC158237. Strategy on Conservation and Sustainable Utilization of Biological Diversity for 2011-2020.	Стратегия по сохранению и устойчивому использованию биологического разнообразия	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC158237
5.1	64	Law "On Nature Conservation" dated November 26, 1992 (National Register of Legal Acts of the Republic of Belarus, 2002, № 85, 2/875),	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ, Об охране окружающей среды, 26 ноября 1992 г. № 1982-XII	http://www.government.by/upload/docs/file7f314d21163f74f6.PDF
5.1	65	The Strategy for the Realization of the Convention on Wetlands of International Importance, especially as Waterfowl Habitat, № 177 dated February 10, 2009 (the National Register of Legal Acts of the Republic of Belarus, 2009, № 44, 5/29297)	Постановление Совета Министров Республики Беларусь от 10.02.2009 N 177 "Об утверждении стратегии по реализации Конвенции о водно-болотных угодьях, имеющих международное значение главным образом в качестве местообитаний водоплавающих птиц"	http://pravo.levonevsky.org/bazaby11/republic11/text682.htm
5.1	66	The National Strategy for the Development of the Network of Specially Protected Natural Areas till January 1, 2030, № 649 dated July 2, 2014 "On the Development of the Network of Specially Protected Natural Areas" (National Legal Internet-portal of the Republic of Belarus, 11.07.2014, 5/39101)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ, 2 июля 2014 г. № 649 О развитии системы особо охраняемых природных территорий	http://pravo.by/upload/docs/op/C21400649_1405026000.pdf
5.1	67	Environmental protection and management. Territories. Procedure and rules of work on ecological rehabilitation of developed peat deposits and other disturbed bogs and prevention of violations of the hydrological regime of natural ecological systems during reclamation works 01.01.2009 amended 2018	ТКП 17.12-02-2008 (02120)	http://ecoinv.by/images/pdf/tkp_fond/izm/17.12-02.pdf (Visited 13-04-2020)
5.1	68	TCP 17.12-06-2014 (02120). Protection of the environment and wildlife management. Territories. Plant world. Terms of allocation	ТКР 17.12-06-2014 (02120). Охрана окружающей среды и природопользование. Растительный	https://brestnatura.org/ru/law/ (Visited 13-04-2020)

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5.1	69	TCP 17.12-11-2015 (33140) Environmental protection and management. Territories. Rules for description of borders of the declared or converted specially protected natural area and its protection zone 01.01.2016	ТКП 17.12-11-2015 (33140) Охрана окружающей среды и природопользование. Территории. Правила описания границ объявляемой или преобразуемой особо охраняемой природной территории и ее охранной зоны	http://www.tnpa.by/#!/DocumentCard/344629/468818
5.1	70	Law "On Nature Conservation" dated November 26, 1992 (National Register of Legal Acts of the Republic of Belarus, 2002, № 85, 2/875),	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ, Об охране окружающей среды, 26 ноября 1992 г. № 1982-XII	http://pravo.by/document/?guid=3871&p0=v19201982
5.3	71	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
5.3	72	Decree of the Council of Ministers of the Republic of Belarus dated July 14, 2003 No. 949 "On the National Environmental Monitoring System in the Republic of Belarus"	Постановление Совета Министров Республики Беларусь от 14 июля 2003 г. № 949 "О Национальной системе мониторинга окружающей среды в Республике Беларусь"	http://pravo.levonevsky.org/bazaby09/sbor40/text40725.htm; http://www.minpriroda.gov.by/en/envmonitoring-en/
5.3	73	LEX-FAOC037863 : Law No. 1982-XII of 1992 on protection of the environment.	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ 26 ноября 1992 г. № 1982-XII Об охране окружающей среды	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC037863
5.3	74	LAW OF THE REPUBLIC OF BELARUS of December 18, 2019 No. 272-Z About protection and use of peat bogs.	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ 18 декабря 2019 г. № 272-З Об охране и использовании торфяников	http://pravo.by/upload/docs/op/H11900272_1577394000.pdf
5.3	75	Decree of the Council of Ministers of the Republic of Belarus dated July 14, 2003 No. 949 "On the National Environmental Monitoring System in the Republic of Belarus"	Постановление Совета Министров Республики Беларусь от 14 июля 2003 г. № 949 "О Национальной системе мониторинга окружающей среды в Республике Беларусь"	http://pravo.levonevsky.org/bazaby09/sbor40/text40725.htm; http://www.minpriroda.gov.by/en/envmonitoring-en/
5.4	76	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
5.4	77	Ministry of Natural Resources and Environmental Protection of the Republic of Belarus		http://minpriroda.gov.by/en/
5.4	78	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
6.1	79	LEX-FAOC159387: Forest code of the Republic of Belarus (Law No. 332-Z)		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
6.1	80	CODE OF REPUBLIC OF BELARUS ON ADMINISTRATIVE VIOLATIONS № 194-З, April 21, 2003	КОДЕКС РЕСПУБЛИКИ БЕЛАРУСЬ ОБ АДМИНИСТРАТИВНЫХ ПРАВОНАРУШЕНИЯХ, № 194-З, 21 апреля 2003 г.	https://etalonline.by/document/?regnum=Hk0300194
6.1	81	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
6.1	82	Land code No. 425-Z of 2009		LEX-FAOC092921: Land Code (Law No. 425-Z), http://www.fao.org/faolex/results/details/en/c/LEX-FAOC092921
6.1	83	RESOLUTION OF THE COUNCIL OF MINISTERS OF THE REPUBLIC OF BELARUS April 29, 2015 No. 361 “On some issues of preventing land degradation (including soil)”	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 29 апреля 2015 г. № 361 “О некоторых вопросах предотвращения деградации земель (включая почвы)”	https://knowledge.unccd.int/sites/default/files/naps/Belarus-rus.pdf; https://knowledge.unccd.int/sites/default/files/inline-files/belarus-ldn-country-report.pdf
6.1	84	STB 1360-2002. Sustainable forest management. Felling. Requirements to Technology	СТБ 1360-2002 Устойчивое лесоуправление и лесопользование. Рубки главного пользования. Требования к технологиям	http://www.tnpa.by/#!/DocumentCard/142215/162656
6.1	85	STB 1361-2002	СТБ 1361-2002	http://www.tnpa.by/#!/DocumentCard/142216/162657
6.1	86	STB1688-2006: Sustainable forest management and forest operations. Requirements to forestry projecting.	СТБ 1688-2006Устойчивое лесоуправление и лесопользование. Требования к лесохозяйственному проектированию	http://www.tnpa.by/#!/DocumentCard/187252/284470
6.1	87	STB 1681-2006 Sustainable forest management and forest management.	СТБ 1681-2006 Устойчивое лесоуправление и лесопользование.	http://www.tnpa.by/#!/DocumentCard/185920/283135

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6.1	88	TCP 622-2018 Technical requirements for forestry planning. Determinating and taxating of plots in the forests of the Republic of Belarus 01.10.2018	ТКП 622-2018 (33090) Технические требования при лесоустройстве. Отвод и таксация лесосек в лесах Республики Беларусь 01.10.2018	http://www.tnpa.by/#!/DocumentCard/399460/529265
6.1	89	Subsoil Code of the Republic of Belarus of July 14 July 2008. No 406-З	КОДЕКС РЕСПУБЛИКИ БЕЛАРУСЬ О НЕДРАХ, 14 июля 2008 г. № 406-З	https://etalonline.by/document/?regnum=Hk0800406
6.2	90	Forest code of the republic of Belarus No. 332-Z of 2015	Лесной кодекс Республики Беларусь от 24.12.2015 N 332-З	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
6.2	91	STB 1688-2006: Sustainable forest management and forest operations. Requirements to forestry projecting.	СТБ 1688-2006 Устойчивое лесоуправление и лесопользование. Требования к лесохозяйственному проектированию	
6.2	92	RESOLUTION OF THE COUNCIL OF MINISTERS OF THE REPUBLIC OF BELARUS April 29, 2015 No. 361 “On some issues of preventing land degradation (including soil)”	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 29 апреля 2015 г. № 361 “О некоторых вопросах предотвращения деградации земель (включая почвы)”	
6.2	93	STB 1360-2002. Sustainable forest management. Felling. Requirements to Technology	СТБ 1360-2002 Устойчивое лесоуправление и лесопользование. Рубки главного пользования. Требования к технологиям	http://www.tnpa.by/#!/DocumentCard/142215/162656
6.2	94	STB 1361-2002	СТБ 1361-2002	http://www.tnpa.by/#!/DocumentCard/142216/162657
6.2	95	Centralized National Risk Assessment for Belarus FSC-CNRA-BY V1-0 EN of 20 September 2017, p 133		
6.3	96	Ministerial Decree No. 298 regarding the sphere of competence of the Ministry of Forestry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
6.3	97	Decree of the Council of Ministers of the Republic of Belarus dated July 14, 2003 No. 949 "On the National Environmental Monitoring System in the Republic of Belarus"	Постановление Совета Министров Республики Беларусь от 14 июля 2003 г. №949 "О Национальной системе мониторинга окружающей среды в Республике Беларусь"	http://pravo.levonevsky.org/bazaby09/sbor40/text40725.htm; http://www.minpriroda.gov.by/en/envmonitoring-en/
6.3	98	TCP 622-2018 Technical requirements for forestry planning. Determinating and taxating of plots in the forests of the Republic of Belarus 01.10.2018	ТКП 622-2018 (33090) Технические требования при лесоустройстве. Отвод и таксация лесосек в лесах Республики Беларусь 01.10.2018	http://www.tnpa.by/#!/DocumentCard/399460/529265
6.4	99	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
6.4	100	Ministry of Natural Resources and Environmental Protection		http://minpriroda.gov.by/en/
6.4	101	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
6.4	102	State Inspectorate for Protection of Fauna and Flora under the President of the Republic of Belarus.		http://gosinspekciya.gov.by/information/
6.4	103	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
7.1	104	LEX-FAOC159387: Forest code of the Republic of Belarus (Law No. 332-Z)		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
7.1	105	CODE OF REPUBLIC OF BELARUS ON ADMINISTRATIVE VIOLATIONS № 194-З, April 21, 2003	КОДЕКС РЕСПУБЛИКИ БЕЛАРУСЬ ОБ АДМИНИСТРАТИВНЫХ ПРАВОНАРУШЕНИЯХ, № 194-З, 21 апреля 2003 г.	https://etalonline.by/document/?regnum=Hk0300194
7.1	106	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
7.1	107	Law of the Republic of Belarus No. 3335-XII of 20.10.1994 "On Specially Protected Natural Territories". The document ceased to be valid since June 14, 2019 according to the Law of the Republic of Belarus of November 15, 2018 No. 150-Z	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ от 20 октября 1994 года №3335-XII “Об особо охраняемых природных территориях”	http://rntbcat.org.by/EK/US/Ecology/68.pdf
7.1	108	LEX-FAOC037863. Law No. 1982-XII of 1992 on protection of the environment		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC037863/
7.1	109	LEX-FAOC050616 Plants Act (No. 205-Z of 2003).		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC050616

7.1	110	LEX-FAOC081393 Wildlife Law (No. 257-Z).		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC081393
7.1	111	Law "On Nature Conservation" dated November 26, 1992 (National Register of Legal Acts of the Republic of Belarus, 2002, № 85, 2/875),	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ, Об охране окружающей среды, 26 ноября 1992 г. № 1982-XII	http://pravo.by/document/?guid=3871&p0=v19201982
7.1	112	Resolution of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus No. 26 of 09.06.2014 “On Approval of the list of rare and endangered species”)		http://redbook.minpriroda.gov.by/
7.1	113	TCP 17.05-01-2014 (02120).Technical code of common practice. Protection of the environment and wildlife management. Plant world. Protection rules of wild plants belonging to the species included in the Red Book of the Republic of Belarus, and the sites of their location.	ТКР 17.05-01-2014 (02120). Охрана окружающей среды и природопользование. Растительный мир. Правила охраны дикорастущих растений, относящихся к видам, включенным в Красную книгу Республики Беларусь, и мест их произрастания.	https://brestnatura.org/ru/law/ (Visited 13-04-2020)
7.1	114	TCP 17.07-01-2014 (02120). Protection of the environment and wildlife management. Animal world. Regulations for protection of wild animals belonging to the species included in the Red Book of the Republic of Belarus and their habitats	ТКР 17.07-01-2014 (02120). Охрана окружающей среды и природопользование. Животный мир. Правила охраны диких животных, относящихся к видам, включенным в Красную книгу Республики Беларусь, и мест их обитания	https://brestnatura.org/ru/law/ (Visited 13-04-2020)
7.1	115	On the National Action Plan for the Conservation and Sustainable Use of Biological Diversity for 2016-2020 and on amendments to the Resolution of the Council of Ministers of the Republic of Belarus № 1707 dated November, 19, 2010		https://www.cbd.int/doc/world/by/by-nbsap-v2-p2-en.pdf
7.1	116	Convention on Biological Diversity United Nations 1992		https://www.cbd.int/doc/legal/cbd-en.pdf; https://chm.cbd.int/pdf/documents/nationalReport6/241352/1
7.2	117	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
7.2	118	Ministry of Natural Resources and Environmental Protection of the Republic of Belarus		http://minpriroda.gov.by/en/
7.2	119	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
7.2	120	Forest code of the republic of Belarus No. 332-Z of 2015	Лесной кодекс Республики Беларусь от 24.12.2015 N 332-З	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
7.2	121	Law of the Republic of Belarus No. 3335-XII of 20.10.1994 "On Specially Protected Natural Territories". The document ceased to be valid since June 14, 2019 according to the Law of the Republic of Belarus of November 15, 2018 No. 150-Z	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ от 20 октября 1994 года №3335-XII “Об особо охраняемых природных территориях”	http://rntbcat.org.by/EK/US/Ecology/68.pdf
7.3	122	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
7.3	123	Ministry of Natural Resources and Environmental Protection		http://minpriroda.gov.by/en/
7.3	124	Forest code of the republic of Belarus No. 332-Z of 2015	Лесной кодекс Республики Беларусь от 24.12.2015 N 332-З	LEX-FAOC159387: Forest code of the Republic of Belarus (Law No. 332-Z), http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
7.3	125	Resolution of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus No. 26 of 09.06.2014 “On Approval of the list of rare and endangered species”	Постановление Министерства природных ресурсов и охраны окружающей среды No. 26 of 09.06.2014 “Об утверждении перечня редких и исчезающих видов”)	http://redbook.minpriroda.gov.by/; http://minpriroda.gov.by/ru/red_book-ru/
7.3	126	State Inspectorate for Protection of Fauna and Flora under the President of the Republic of Belarus.		http://gosinspekciya.gov.by/information/
7.3	127	TCP 17.05-01-2014 (02120).Technical code of common practice. Protection of the environment and wildlife management. Plant world. Protection rules of wild plants belonging to the species included in the Red Book of the Republic of Belarus, and the sites of their location.	ТКР 17.05-01-2014 (02120). Охрана окружающей среды и природопользование. Растительный мир. Правила охраны дикорастущих растений, относящихся к видам, включенным в Красную книгу Республики Беларусь, и мест их произрастания.	http://www.tnpa.by/#!/DocumentCard/315779/435262

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7.4	129	Ministry of Natural Resources and Environmental Protection		http://minpriroda.gov.by/en/
7.4	130	Ministerial Decree No. 298 regarding the sphere of competence of the Ministry of Forestry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
7.4	131	State Inspectorate for Protection of Fauna and Flora under the President of the Republic of Belarus.		http://gosinspekciya.gov.by/information/
7.4	132	TCP 622-2018 Technical requirements for forestry planning. Deterninating and taxating of plots in the forests of the Republic of Belarus 01.10.2018	ТКП 622-2018 (33090) Технические требования при лесоустройстве. Отвод и таксация лесосек в лесах Республики Беларусь 01.10.2018	http://www.tnpa.by/#!/DocumentCard/399460/529265
8.1	133	LEX-FAOC159387 Forest Code: (Law No. 332-Z)		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
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8.1	135	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
8.1	136	STB 1708-2006 Sustainable forest management and forest operations. Basic provisions.	СТБ 1708-2006 Устойчивое лесоуправление и лесопользование. Основные положения.	http://www.tnpa.by/#!/DocumentCard/188829/286070
8.1	137	STB 1688-2006 Sustainable forest management and forest operations. Requirements to forestry projecting.	СТБ 1688-2006 Устойчивое лесоуправление и лесопользование. Требования к лесохозяйственному проектированию.	http://www.tnpa.by/#!/DocumentCard/187252/284470
8.1	138	STB 1582-2005	СТБ 1582-2005 Устойчивое лесоуправление и лесопользование. Требования к мероприятиям по охране леса.	http://www.tnpa.by/#!/DocumentCard/167036/206186
8.1	139	TCP 622-2018 Technical requirements for forestry planning. Deterninating and taxating of plots in the forests of the Republic of Belarus 01.10.2018	ТКП 622-2018 (33090) Технические требования при лесоустройстве. Отвод и таксация лесосек в лесах Республики Беларусь 01.10.2018	http://www.tnpa.by/#!/DocumentCard/399460/529265
8.1	140	TCP 575-2015 (33090) Sustainable forest management and forest operations. Guidance on growing planting material of wood and shrub species in forest nurseries of the Republic of Belarus	ТКП 575-2015 (33090) Устойчивое лесоуправление и лесопользование. Наставление по выращиванию посадочного материала древесных и кустарниковых видов в лесных питомниках Республики Беларусь	http://www.tnpa.by/#!/DocumentCard/341480/465329
8.1	141	TCP 587-2016 (33090) Sustainable forest management and forest use. Rules for selecting forest types 01.01.2017 Introduced for the first time	ТКП 587-2016 (33090)	http://www.tnpa.by/#!/DocumentCard/362096/489152
8.1	142	TCP 634-2019 (33090) Procedure for carrying out forest protection measures in forests 01.06.2019	ТКП 634-2019 (33090) Порядок проведения лесозащитных мероприятий в лесах 01.06.2019	http://tnpa.by/
8.2	143	Forest code of the republic of Belarus No. 332-Z of 2015	Лесной кодекс Республики Беларусь от 24.12.2015 N 332-З	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
8.2	144	Ministerial Decree No. 298 regarding the sphere of competence of the Forest Ministry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
8.3	145	The Ministry of Forestry of the Republic of Belarus		https://www.mlh.by/en/about/
8.3	146	STB 1360-2002. Sustainable forest management. Felling. Requirements to Technology	СТБ 1360-2002 Устойчивое лесоуправление и лесопользование. Рубки главного пользования. Требования к технологиям	http://www.tnpa.by/#!/DocumentCard/142215/162656
8.3	147	STB 1361-2002	СТБ 1361-2002	http://www.tnpa.by/#!/DocumentCard/142216/162657
8.4	148	Ministerial Decree No. 298 regarding the sphere of competence of the Ministry of Forestry. 16 March 2004 (revision of 29 July 2006)	ПОСТАНОВЛЕНИЕ СОВЕТА МИНИСТРОВ РЕСПУБЛИКИ БЕЛАРУСЬ 16 марта 2004 г. № 298 ВОПРОСЫ МИНИСТЕРСТВА ЛЕСНОГО ХОЗЯЙСТВА РЕСПУБЛИКИ БЕЛАРУСЬ	http://pravo.by/document/?guid=3871&p0=C20400298
8.4	149	LEX-FAOC081415 Presidential Decree No. 214 on forest conservation measures.	Указ Президента Республики Беларусь от 7 мая 2007 года № 214 «О не которых	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC081415/

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8.4	150	The Code of Administrative Offences No. 194-Z of 21.04.2003.	Кодекс Республики Беларусь об административных правонарушениях от 21 апреля 2003 г. № 194-З	http://pravo.by/document/?guid=3961&p0=Hk0300194
8.4	151	Procedural-Executive Code of Administrative Offences No. 194-Z of 20.12.2006.	Процессуально-исполнительный кодекс Республики Беларусь об административных правонарушениях № 194-З 20 декабря 2006 г.	http://pravo.by/document/?guid=3871&p0=Hk0600194
8.4	152	TCP 622-2018 Technical requirements for forestry planning. Determinating and taxating of plots in the forests of the Republic of Belarus 01.10.2018	ТКП 622-2018 (33090) Технические требования при лесоустройстве. Отвод и таксация лесосек в лесах Республики Беларусь 01.10.2018	http://www.tnpa.by/#!/DocumentCard/399460/529265
9	153	Acceptance 21 September 2016		https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27
10a1	154	NDC Belarus:		https://www4.unfccc.int/sites/NDCStaging/Pages/Party.aspx?party=BLR
10a2	155			https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Belarus%20First/Belarus_INDC_Rus_25.09.2015.pdf
10a2	156			https://unfccc.int/MA/Belarus#eq-3: target for 2020
10a2	157			https://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/br_2_belarus_eng_for_web.pdf
10b1	158	Forestry related measures:		
10b1	159	LEX-FAOC159387 Forest Code: (Law No. 332-Z).		http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159387
10b1	160	LEX-FAOC175281 Decree No. 907 of the Council of Ministers implementing Forest Code (Law No. 332-Z) http://extwprlegs1.fao.org/docs/pdf/blr175281.pdf		
10b1	161	LEX-FAOC164949 Decree No. 4 of the Ministry of Natural Resources and Environmental Protection validating the Regulation on formation and keeping carbon register. http://extwprlegs1.fao.org/docs/pdf/blr164949.pdf		
10b1	162	LEX-FAOC081415 Presidential Decree No. 214 on forest conservation measures. http://www.fao.org/faolex/results/details/en/c/LEX-FAOC081415/		
10b1	162	LEX-FAOC082985 Order No. 400 of the Ministry of Natural Resources and Environmental Protection validating the Regulation on conservation, demolition, transfer of urban plantations and classification thereof. http://www.fao.org/faolex/results/details/en/c/LEX-FAOC082985/		
10b1	164	LAW OF THE REPUBLIC OF BELARUS of December 18, 2019 No. 272-Z About protection and use of peat bogs.	ЗАКОН РЕСПУБЛИКИ БЕЛАРУСЬ 18 декабря 2019 г. № 272-З Об охране и использовании торфяников	http://pravo.by/upload/docs/op/H11900272_1577394000.pdf
10b1	165	New law on wetlands to help Belarus implement Paris Agreement.		https://eng.belta.by/society/view/new-law-on-wetlands-to-help-belarus-implement-paris-agreement-84-2020/
10b1	166	Forest area and carbon stock increase yearly.		https://data.worldbank.org/indicator/AG.LND.FRST.K2?locations=BY
10b1	167	STB1708 is also the national standard for sustainable forest management for PEFC certification.		https://cdn.pefc.org/pefc.org/media/2019-04/93d37076-fb50-4e24-928f-e68a0b824a99/2edba973-fb3e-55d4- 8731-651c095f1bbf.pdf
10b1	168	TCP 17.08-08-2007 (02120) Environment protection and nature use. Atmosphere. Emissions of pollutants from greenhouse gas and air. Rules for calculation of discharges of fire;	ТКП 17.08-08-2007 (02120) Охранаокружающейсредыиприродопользование. Атмосфера. Выбросызагрязняющихвеществипарниковыхгазовватмосферныйвоздух. Правиларасчетавыбросовприпожарах;	http://www.tnpa.by/

10b1	169	ТРС 17.09-02-2011 (02120) of Environmental Protection and Natural Resources Use. Climate. Emissions and absorption of greenhouse gases. Rules for calculation of emissions and absorption of natural marsh ecological systems, dried peat soils, developed and developed peat soils;	ТКП 17.09-02-2011 (02120) Охранаокружающейсредыиприродопользование. Климат. Выбросыипоглощениепарниковыхгазов. Правиларасчетавыбросовипоглощенияо тестественныхболотныхэкосистем, осушенныхторфяныхпочв, выработанныхиразрабатываемыхторфяныхместорождений;	http://www.tnpa.by/
10b2	170	LULUCF: The second Biennial Report of the republic of Belarus According to Commitments under the United Nations Framework Convention on Climate Change. Table 1 – Change in greenhouse gas emissions, sectorwise, 1990 –2012, Gg, CO2 eq p.7		https://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/br_2_belarus_eng_for_web.pdf
10b2	171	GHG reports Belarus 2019:	NIR Belarus: НАЦИОНАЛЬНЫЙ ДОКЛАД О КАДАСТРЕ антропогенных выбросов из источников и абсорбции поглотителями парниковых газов, не регулируемых Монреальским протоколом за 1990 – 2017 гг. Chapter 6 https://unfccc.int/documents/194790	https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2019
10b2	172	CRF Table10s6:		https://unfccc.int/documents/194782
10b2	173	Resolution of the Council of Ministers of the Republic of Belarus No. 485 of 10 April 2006 “On Approval of the Regulations on the Procedure of the State Inventory of Anthropogenic Source Emissions and Greenhouse Gases Sinks Absorption”		
10b2	174	Belarus is to review the issue of accounting greenhouse gas emissions and sinks in the LULUCF sector until 2020.		https://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/br_2_belarus_eng_for_web.pdf

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

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Canada - British Columbia

Province of British Columbia background information

In Canada, forestry is under provincial jurisdiction (regional competence). In 2020, there were 57 million hectares (ha) of forest area in British Columbia (BC), which is 60% of the total land area. Almost 95% of BC's forest land is under public ownership and 5% is privately owned. In BC, 9.5 million ha of forests are protected, which corresponds to 17% of the total forest area. Wood fuel (known in Canada as 'firewood') is produced and consumed domestically, but is not exported. Along with traditional forest products, such as lumber, pulp and paper, BC produces wood pellets mostly from mill and harvest residues. In 2018, 2.2 million tonnes of wood pellets were produced in BC, all of which were exported.[1]

In BC, forest legislation is primarily enforced by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development. Under the Forest Act, the government can issue various forms of tenure agreements for public land timber. All timber harvesting operations under these agreements must comply with the Forest and Range Practices Act. This Act requires that forest stewardship plans document how activities will be consistent with objectives set by government for soils, timber, wildlife, water, fish, biodiversity, recreation resources, visual quality and cultural heritage resources. The Forest and Range Practices Act also specifies requirements related to forest health and reforestation. All privately-owned 'managed forests' must be managed in accordance with the Private Managed Forest Land Act and associated Regulations, which specify the required forest practices related to soil conservation, protection of water quality, protection of fish habitat, and reforestation.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Canada- British Columbia	
2	Is forestry policy/legislation of national or regional competence?	Regional competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Forest Act of 1996[3] 2. Forest and Range Practices Act of 2002[4] 3. Forest Planning and Practices Regulation of 2004[5] 4. Woodlot Licence Planning and Practices Regulation of 2005[6]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[7]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[5,7,8]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5,10]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Forest and Range Practices Act of 2002[4] 2. Forest Planning and Practices Regulation of 2004[5] 3. Woodlot Licence Planning and Practices Regulation of 2005[6] 4. Private Managed Forest Land Act[21]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[5, 8]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[5]	

5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Forest and Range Practices Act of 2002[4] 2. Forest Planning and Practices Regulation of 2004[5] 3. Woodlot Licence Planning and Practices Regulation of 2005[6] 4. Government Action Regulation of 2004[9]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[8]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[14, 8, 19]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Forest and Range Practices Act of 2002[5] 2. Forest Planning and Practices Regulation of 2004[6] 3. Woodlot Licence Planning and Practices Regulation of 2005[7] 4. Private Managed Forest Land Act[21]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[7]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[5,11]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[13, 8, 20]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Forest and Range Practices Act of 2002[4] 2. Forest Planning and Practices Regulation of 2004[5] 3. Woodlot Licence Planning and Practices Regulation of 2005[6] 4. Private Managed Forest Land Act[21]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[5],[12]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8, 13,19]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. Forest Act of 1996[3] 2. Forest and Range Practices Act of 2002[4] 3. Woodlot Licence Planning and Practices Regulation of 2005[6]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[14]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[5,15]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[15]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[16]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the	Yes[17]	

	UNFCCC?		
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[18]	

[1] BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development; 2019 Canadian Forest Service Bioenergy Survey; and https://www5.statcan.gc.ca/cimt-cicm/home-accueil?lang=eng. (Export values include all pellets exported from BC ports, including those produced in Alberta);
[2] https://www.sfmcanada.org/images/Publications/EN/BC_info_Province_and_territories_EN.pdf
[3] http://www.bclaws.ca/civix/document/id/complete/statreg/96157_01 (Forest Act)
[4] http://www.bclaws.ca/civix/document/id/complete/statreg/02069_01 (Forest and Range Practices Act)
[5] https://www.bclaws.ca/civix/document/id/complete/statreg/12_14_2004 (Forest Planning and Practices Regulation)
[6] https://www.bclaws.ca/civix/document/id/complete/statreg/21_2004 (Woodlot Licence Planning and Practices Regulation)
[7] http://www.bclaws.ca/civix/document/id/consol21/consol21/00_02069_01#section87 (Forest and Range Practices Act- Offences and Court Orders)
[8] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/integrated-resource-monitoring/forest-range-evaluation-program (Forest Range Evaluation Program)
[9] http://www.bclaws.ca/civix/document/id/complete/statreg/582_2004 (Forest and Range Practices Act)
[10] http://www.bclaws.ca/civix/document/id/complete/statreg/96344_01 (Park Act)
[11] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/integrated-resource-monitoring/forest-range-evaluation-program/frep-monitoring-protocols/soils (Forest Range Evaluation Program Monitoring Protocols for soils)
[12] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/integrated-resource-monitoring/forest-range-evaluation-program/frep-monitoring-protocols/biodiversity (Forest Range Evaluation Program Monitoring Protocols for biodiversity)
[13] https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/reporting/environmental-enforcement-reporting/c-e-approach (Natural Resources Compliance & Enforcement Approach)
[14] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources (Forest Stewardship)
[15] https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/integrated-resource-monitoring/forest-range-evaluation-program/frep-monitoring-protocols/timber (Forest and Range Evaluation Program Timber Monitoring Protocols)
[16] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en (UN Paris Agreement)
[17] https://www4.unfccc.int/sites/NDCStaging/Pages/Party.aspx?party=CAN (NDC Registry Canada)
[18] https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/1687459_Canada-BR4-1-Canada%E2%80%99s%20Fourth%20Biennial%20Report%20on%20Climate%20Change%202019.pdf (Canada's fourth biennial report on climate change)
[19] https://bcparks.ca/partnerships/item/ (BC Long Term Ecological monitoring program)
[20] https://bcparks.ca/partnerships/item/
[21] https://www.bclaws.ca/civix/document/id/complete/statreg/03080_01#division_d2e2870 (Private Managed Forest Land Act)

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Canada - Quebec

Province of Quebec background information

In Canada, forestry is under provincial jurisdiction (regional competence). In 2020, there were 91 million hectares (ha) of forest area in Quebec, a share of 54% of the total land area. Ninety two percent (92%) of Quebec's forest land is under public ownership and 8% is privately owned. In Quebec, 8.6 million ha of forests are protected, which corresponds to 9.5% of the total forest area. Wood fuel (known in Canada as 'firewood') is produced and consumed domestically, but is not exported. Along with traditional forest products, such as lumber, pulp and paper, Quebec produces wood pellets, mostly from mill and harvest residues. In 2018, 337,000 tonnes of wood pellets were produced in Quebec, of which 58% were exported (196,000 tonnes).[1]

In Quebec, forest legislation and regulations are enforced by the Ministry of Forest, Fauna and Parks. The Minister is responsible for the sustainable development of forests on public land and for their management, in terms of forest planning carrying out, and monitoring of forest operations, as well as timber scaling and the granting of forestry rights. The development of Québec's privately-owned forests is also governed by a number of provisions in the Sustainable Forest Development Act.[1]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Canada- Quebec	
2	Is forestry policy/legislation of national or regional competence?	Regional competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Sustainable Forest Development Act of 2010[2]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[2]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[2,3]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[2,3]	
4	**Forest regeneration of harvested area**	**Yes**	
4.1	Law name and date?	(see below)	
	1. Sustainable Forest Development Act of 2010[2]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[2]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[2]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[2]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	
5.1	Law name and date?	(see below)	
	1. Sustainable Forest Development Act of 2010[2] 2. Natural Heritage Conservation Act of 2002 and Parks Act[4] 3. Environment Quality Act of 2019[5] 4. Regulation respecting the application of the Environment Quality Act[6] 5. An Act respecting the conservation of wetlands and bodies of water[7] 6. Regulation respecting the sustainable development of forests in the domain of the State[8]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[2,5,8,9]	

5.3	Is there a monitoring system in place related to the law(s) above?	Yes[2,5,8,9]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. Sustainable Forest Development Act of 2010[4]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[2]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[2,8]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[2]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. Sustainable Forest Development Act of 2010[4] 2. Natural Heritage Conservation Act of 2002[6] 3. Environment Quality Act of 2019[7] 4. Regulation respecting the application of the Environment Quality Act[8] 5. An Act respecting the conservation of wetlands and bodies of water[9] 6. Regulation respecting the sustainable development of forests in the domain of the State[10]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[2,5,7,8,9]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[2,5,7,8,9]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[2,5,7,8,9]	
8	**Maintenance and improvement of long-term production capacity**	**Yes**	
8.1	Law name and date?	(see below)	
	1. Sustainable Forest Development Act of 2010[4]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[2,8]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[2,8]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[2,8]	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[10]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[11]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[12]	

[1] Ministère des forêts, de la faune et des parcs du Québec 2016-2020
[2] http://legisquebec.gouv.qc.ca/en/ShowDoc/cs/A-18.1 (Sustainable Forest Development Act of 2010)
[3] https://www.sfmcanada.org/images/Publications/EN/QC_info_Provinces_and_territories_EN.pdf (Quebec fact sheet from CCFM)
[4] http://legisquebec.gouv.qc.ca/en/showDoc/cs/C-61.01?&digest= (Natural Heritage Conservation Act)
http://legisquebec.gouv.qc.ca/en/ShowDoc/cs/P-9 (Parks Act)
[5] http://legisquebec.gouv.qc.ca/en/ShowDoc/cs/Q-2/ (Environment Quality Act)
[6] http://legisquebec.gouv.qc.ca/en/ShowDoc/cr/Q-2,%20r.%203/ (Regulation respecting the application of the Environment Quality Act)
[7] https://www.canlii.org/en/qc/laws/astat/sq-2017-c-14/latest/sq-2017-c-14.html (An Act respecting the conservation of wetlands and bodies of water)
[8] http://legisquebec.gouv.qc.ca/en/ShowDoc/cr/A-18.1,%20r.%200.01 (Regulation respecting the sustainable development of forests in the domain of the State)
[9] http://legisquebec.gouv.qc.ca/en/showdoc/cs/C-61.01?langCont=en#ga:l_v-gb:l_ii-h1 (Offenses and penalties- Natural Heritage Conservation Act)
[10] https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en
[11] https://www4.unfccc.int/sites/NDCStaging/Pages/Party.aspx?party=CAN
[12] https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/1687459_Canada-BR4-1-Canada%E2%80%99s%20Fourth%20Biennial%20Report%20on%20Climate%20Change%202019.pdf

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Russian Federation

Background information

In 2016, there was about 815 million hectares of forest area in Russia, a share of 31% of the total land area. In 2010, the majority of forests (78%) was under public ownership. In 2018, 16,431,453 m^3 of wood fuel was produced in Russia, of which 174,865 m^3 was exported. In 2011, the forestry sector contributed 0.8% to the Gross Domestic Product. [1]

Forest legislation is a national competence. The main law regulating the forest sector is the The Forest Code, which governs the protection, ownership, use and renewal of forest resources in the Russian Federation based on the notion of forests as an ecological system. Forest legislation falls mostly under the Ministry of Natural Resources and Environment, with the Federal Forestry Agency and government subjects of the Russian Federation.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Russian Federation	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	Yes	
3.1	Law name and date?	Reference 1-25	
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 26-29)	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 30-34)	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 35-38)	
4	**Forest regeneration of harvested area**	Yes	**Please note that there is evidence identified that indicates that the current legislation might not ensure forest regeneration**
4.1	Law name and date?	Reference 39-50	Legislation does exist, but NGO publications exist to indicate that the current set up of legislation is not ensuring appropriate forest regeneration. No evidence from international government organisations was identified to substantiate a NO here.
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 51-58)	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 59-61)	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 62-63)	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	Yes	
5.1	Law name and date?	Reference 64-77	
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 78-79)	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 80)	

5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 81-84)	
6	**Maintenance of soil quality to minimize negative impact**	Yes	
6.1	Law name and date?	Reference 85-90	
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 91-93)	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 94)	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 95-96)	
7	**Maintenance of biodiversity to minimize negative impact**	Yes	**Please note that there are publications encountered that the current protection through HCV values might be insufficient to minimize negative impacts on biodiversity**
7.1	Law name and date?	Reference 197-108	NGO publications refer to a broader need for biodiversity protection. However, since the basic laws exists, the criterion is set to Yes.
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 109-110)	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 111)	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 112-113)	
8	**Maintenance and improvement of long-term production capacity**	Yes	**Please note that there is evidence identified that indicates that the current legislation might not ensure the maintenance of long-term production capacity**
8.1	Law name and date?	Reference 114-119	Some reports are available indicating that the actual long-term production capacity of Russian forests has been declining, so the legislation is available, but might not obtain the required effect.
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes (reference 120-123)	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes (reference 124-126)	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes (reference 124-126)	

LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes (reference 127-129)	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	No (reference 130)	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	No	
10.b.i	The country has national laws in place, applicable to the harvest area, to conserve and enhance carbon stock and sinks over the long term?	Yes (reference 131-136)	
10.b.ii	The country can provide evidence that reported LULUCF sector emissions to not exceed removal?	Yes (reference 137)	

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Russia – overview of references

Q	Ref #	Description	Description in native language	Reference
3.1	1	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
3.1	2	Code of administrative offences of the Russian Federation of 30.12.2001 No.195-FZ (revision of 18.03.2020)	Кодекс Российской Федерации об административных правонарушениях от 30.12.2001 N 195-ФЗ (ред. от 18.03.2020)	http://www.consultant.ru/document/cons_doc_LAW_34661/
3.1	3	Order of the Ministry of Natural Resources No. 692 of 20.12 2017 “On approval of sample form and content of forest management plans of subjects of the Russian Federation and its development and amending procedures”	Приказ Минприроды России от 20.12.2017 N 692 "Об утверждении типовой формы и состава лесного плана субъекта Российской Федерации, порядка его подготовки и внесения в него изменений".	http://www.consultant.ru/document/cons_doc_LAW_295497/
3.1	4	Order of Ministry of Natural Resources of 27.02.2017 No.72 “on approving the content of forest district plans, procedure for their development, duration time and amending procedure”	Приказ Минприроды России от 27.02.2017 N 72 "Об утверждении состава лесохозяйственных регламентов, порядка их разработки, сроков их действия и порядка внесения в них изменений”	https://rulaws.ru/acts/Prikaz-Minprirody-Rossii-ot-27.02.2017-N-72/
3.1	5	Order of the Federal Forestry Agency No. 69 of 29 February 2012. “Content of a forest development project and a procedure for its development”	Приказ Рослесхоза от 29.02.2012 N 69 "Об утверждении состава проекта освоения лесов и порядка его разработки"	http://www.consultant.ru/document/cons_doc_LAW_129583/
3.1	6	Order of the Ministry of Natural Resources No. 17 of 16 January 2015 “On approving a sample form for a forest declaration, procedures for its development and submission, requirements for electronic version of forest declaration”	Приказ Минприроды России от 16.01.2015 N 17 "Об утверждении формы лесной декларации, порядка ее заполнения и подачи, требований к формату лесной декларации в электронной форме"	http://www.consultant.ru/document/cons_doc_LAW_175910/
3.1	7	Decree of the Government of the Russian Federation of June 22, 2007 No. 394 “On approval of the Regulation on the implementation of federal state forest supervision (forest protection)” (redaction of 02.03.2019)	Постановление правительства Российской Федерации от 22 июня 2007 г. № 394 “Об утверждении Положения об осуществлении федерального государственного лесного надзора (лесной охраны)”	http://pravo.gov.ru/proxy/ips/?docbody=&nd=102114904&rdk=&backlink=1
3.1	8	Order of the Ministry of Natural Resources and Ecology of the Russian Federation dated April 12, 2016 N 233 “On Approving the Administrative Regulation for the Execution of the State Function for the Implementation of the Federal State Forestry Supervision (Forest Protection)”	Приказ Министерства природных ресурсов и экологии Российской Федерации от 12 апреля 2016 г. N 233 “Об утверждении административного регламента исполнения государственной функции по осуществлению Федерального государственного лесного надзора (лесной охраны)”	”https://prirodnadzor.admhmao.ru/kontrolno-nadzornaya-deyatelnost/dokumenty/les/715746/prikaz-mpr-rf-ob-utverzhdenii-administrativnogo-reglamenta-ispolneniya-gosudarstvennoy-funktsii-po-o
3.1	9	Water Code of the Russian Federation of 03.06.2006 No.74-FZ (revision of 02.08.2019)	Водный кодекс Российской Федерации от 03.06.2006 N 74-ФЗ (ред. от 02.08.2019) (с изменениями и дополнениями, вступившими в силу с 01.01.2020)	http://www.consultant.ru/document/cons_doc_LAW_60683/
3.1	10	Federal Law No 33-FZ of 14.03.1995 “On specially protected nature areas” (revision of 26.07.2019)	Федеральный закон от 14 марта 1995 г. N 33-ФЗ "Об особо охраняемых природных территориях”(с изменениями на 26 июля 2019 года)	http://base.garant.ru/10107990/
3.1	11	Decree of the Government of the Russian Federation of 20.05.2017 No.607 "On the rules of sanitary security in the forests"	Постановление Правительства РФ от 20.05.2017 N 607 "О Правилах санитарной безопасности в лесах"	http://www.consultant.ru/document/cons_doc_LAW_217315/
3.1	12	Decree of the Government of the Russian Federation of 30.06.2007 No.417 (revision of 17.04.2019) "On the approval of the fire safety rules in forests”	Постановление Правительства РФ от 30.06.2007 N 417 "Об утверждении Правил пожарной безопасности в лесах" (ред. от 17.04.2019)	http://www.consultant.ru/document/cons_doc_LAW_69502/
3.1	13	Decree of the Government of the Russian Federation of 26.12.2014 No.1525 “On the approval of rules for accounting for wood”	Постановление Правительства РФ от 26.12.2014 N 1525 "Об утверждении Правил учета древесины"	http://www.consultant.ru/document/cons_doc_LAW_173066/
3.1	14	Resolution of the Plenum of the Supreme Court of the Russian Federation of 18.10.2012 No. 21 (as revision of on 30.11.2017) "On the application by courts of legislation for violations in the field of environmental protection and nature management"	Постановление Пленума Верховного Суда Российской Федерации от 18 октября 2012 г. N 21 г. Москва "О применении судами законодательства об ответственности за нарушения в области охраны окружающей среды и природопользования" (с изменениями и дополнениями от 30.11.2017)	http://base.garant.ru/70246708/
3.1	15	Order of the Ministry of Natural Resources No. 693 of 20.12.2017 «On approving of standard contract for taking forest unit in lease»	Приказ Министерства природных ресурсов и экологии РФ от 20 декабря 2017 г. N 693 "Об утверждении типовых договоров аренды лесных участков" (с изменениями и дополнениями)	https://base.garant.ru/71907890/

3.1	16	Order of the Ministry of Natural Resources of 13.09.2016 No.474 (revision of 11.01.2017) «On approval of the rules for timber harvesting and the features of timber harvesting in forest districts, forest parks, specified in Article 23 of the Forest Code of the Russian Federation»	Приказ Министерства природных ресурсов и экологии РФ от 13 сентября 2016 г. № 474 "Об утверждении Правил заготовки древесины и особенностей заготовки древесины в лесничествах, лесопарках, указанных в статье 23 Лесного кодекса Российской Федерации"	https://www.garant.ru/products/ipo/prime/doc/71480564/
3.1	17	Order of the Ministry of Natural Resources and Ecology of the Russian Federation of June 27, 2016 N 367 “On approval of the Types of logging operations, the procedure and sequence for their implementation, the form of the technological map of logging operations, the form of the inspection certificate for the cutting area and the inspection procedure for the cutting area”	Приказ Министерства природных ресурсов и экологии российской федерации от 27 июня 2016 года N 367 “Об утверждении Видов лесосечных работ, порядка и последовательности их проведения, формы технологической карты лесосечных работ, формы акта осмотра лесосеки и порядка осмотра лесосеки”	http://docs.cntd.ru/document/420367623
3.1	18	Order of the Ministry of Natural Resources of 22.11.2017 No.626 « On the approval of the rules for forest maintenance» (revision of 01.11.2018)	Приказ Минприроды России от 22.11.2017 N 626 "Об утверждении Правил ухода за лесами" (ред. от 01.11.2018)	http://www.consultant.ru/document/cons_doc_LAW_286334/1895a8e2e8201c522dffaa1159b6db7feb6ff1eb/
3.1	19	Order of the Ministry of Natural Resources No.181 of 16.07.2007 “On approval of special terms for usage, tending, protection, reforestation for forests located in nature reserves” (revision of 12.03.2008)	Приказ МПР РФ от 16.07.2007 N 181 "Об утверждении Особенностей использования, охраны, защиты, воспроизводства лесов, расположенных на особо охраняемых природных территориях" (ред. от 12.03.2008)	http://www.consultant.ru/document/cons_doc_LAW_70835/
3.1	20	Order of Federal Forestry Agency No. 513 of 5 December 2011 “On approving the list of tree and shrub species for which timber harvesting is not allowed”	Приказ федерального агентства лесного хозяйства от 5 декабря 2011 года N 513 “Об утверждении Перечня видов (пород) деревьев и кустарников, заготовка древесины которых не допускается”	http://docs.cntd.ru/document/902319931
3.1	21	Order of Federal Forestry Agency No.105 of 09.04.2015 “On verification of felling age”	Приказ Рослесхоза от 09.04.2015 N 105 (ред. От 02.07.2015) "Об установлении возрастов рубок"	https://rulaws.ru/acts/Prikaz-Rosleshoza-ot-09.04.2015-N-105/
3.1	22	Resolution of the Plenum of the Supreme Court of the Russian Federation of 18.10.2012 No. 21 (as revision of on 30.11.2017) "On the application by courts of legislation for violations in the field of environmental protection and nature management"	Приказ Министерства природных ресурсов и экологии Российской Федерации от 21 января 2014 г. N 21 "Об утверждении нормативов патрулирования лесов должностными лицами, осуществляющими федеральный государственный лесной надзор (лесную охрану)"	http://docs.cntd.ru/document/499073820
3.1	23	Penal Code No. 63-FZ of 13.06.1996 (revision of 01.04.2020)	Уголовный кодекс Российской Федерации от 13.06.1996 N 63-ФЗ (ред. от 01.04.2020)	http://www.consultant.ru/document/cons_doc_LAW_10699/
3.1	24	Federal Law No. 415-FZ of December 28, 2013 ‘On Amendments to the Forest Code of the Russian Federation and the Code of the Russian Federation on Administrative Offenses’	Федеральный закон "О внесении изменений в Лесной кодекс Российской Федерации и Кодекс Российской Федерации об административных правонарушениях" от 28.12.2013 N 415-ФЗ (последняя редакция)	https://rg.ru/2013/12/30/drevesina-dok.html
3.1	25	Federal Law "On Amending Certain Legislative Acts of the Russian Federation" dated 07.21.2014 N 277-FZ	Федеральный закон "О внесении изменений в отдельные законодательные акты Российской Федерации" от 21.07.2014 N 277-ФЗ	http://www.consultant.ru/document/cons_doc_LAW_165850/
3.2	26	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
3.2	27	Decree of the Government of the Russian Federation of June 22, 2007 No. 394 “On approval of the Regulation on the implementation of federal state forest supervision (forest protection)” (redaction of 02.03.2019)		http://base.garant.ru/12154199/
3.2	28	Order of the Ministry of Natural Resources No. 17 of 16 January 2015 “On approving a sample form for a forest declaration, procedures for its development and submission, requirements for electronic version of forest declaration”		http://www.consultant.ru/document/cons_doc_LAW_175910/
3.2	29	Russian Federation country overview to aid implementation of the EUTR, September 2018, UN Environment WCMC		https://ec.europa.eu/environment/forests/pdf/Country_overview_Russian_Federation_03_10_2018.pdf
3.3	30	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
3.3	31	Federal Law No. 415-FZ of December 28, 2013 ‘On Amendments to the Forest Code of the Russian		https://rg.ru/2013/12/30/drevesina-dok.html
3.3	32	Federation and the Code of the Russian Federation on Administrative Offenses’		http://www.consultant.ru/document/cons_doc_LAW_156534/

3.3	33	Order of the Ministry of Natural Resources and Ecology of the Russian Federation dated April 12, 2016 N 233 “On Approving the Administrative Regulation for the Execution of the State Function for the Implementation of the Federal State Forestry Supervision (Forest Protection)”		http://www.consultant.ru/document/cons_doc_LAW_204106/
3.3	34	Order of the Ministry of Natural Resources and Ecology of the Russian Federation of January 21, 2014 N 21 "On the Approval of Standards for Forest Patrol by Officials Implementing Federal State Forestry Supervision (Forest Protection)"		http://www.consultant.ru/document/cons_doc_LAW_160161/c6871cb6a1541d21cb581a33bf1742b3b4bcc13c/
3.4	35	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
3.4	36	Decree of the Government of the Russian Federation of June 22, 2007 No. 394 “On approval of the Regulation on the implementation of federal state forest supervision (forest protection)” (redaction of 02.03.2019)		http://base.garant.ru/12154199/
3.4	37	Code of administrative offences of the Russian Federation of 30.12.2001 No.195-FZ (revision of 18.03.2020)		http://www.consultant.ru/document/cons_doc_LAW_34661/
3.4	38	Federal Law "On Amending Certain Legislative Acts of the Russian Federation" dated 07.21.2014 N 277-ФЗ		http://www.consultant.ru/document/cons_doc_LAW_165850/
4.1	39	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (edited 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
4.1	40	Order of the Ministry of Natural Resources and Ecology of the Russian Federation dated March 25, 2019 N 188 On the approval of the rules of reforestation, composition of the project of reforestation, the order of development of the project of reforestation and changes (as amended on August 14, 2019).	Приказ Министерства природных ресурсов и экологии Российской федерации от 25 марта 2019 года N 188 Об утверждении Правил лесовосстановления, состава проекта лесовосстановления, порядка разработки проекта лесовосстановления и внесения в него изменений (с изменениями на 14 августа 2019 года)	http://www.consultant.ru/document/cons_doc_LAW_295497/
4.1	41	Order of the Ministry of Natural Resources and Environment of the Russian Federation of March 11, 2019 N 150 On the approval of the Procedure for assigning lands intended for reforestation to the lands where forests are located and the forms of the relevant act	Приказ Министерства природных ресурсов и экологии Российской федерации от 11 марта 2019 года N 150 Об утверждении Порядка отнесения земель, предназначенных для лесовосстановления, к землям, на которых расположены леса, и формы соответствующего акта	https://rulaws.ru/acts/Prikaz-Minprirody-Rossii-ot-27.02.2017-N-72/
4.1	42	Order of the Ministry of Natural Resources and Environment of the Russian Federation of February 19, 2015 N 59 On the approval of the implementation of state monitoring of forest reproduction.	Приказ Министерства природных ресурсов и экологии Российской федерации от 19 февраля 2015 года N 59 Об утверждении порядка осуществления государственного мониторинга воспроизводства лесов	http://www.consultant.ru/document/cons_doc_LAW_129583/
4.1	43	Order of the Ministry of Natural Resources and Environment of the Russian Federation dated January 20, 2015 N28 On establishing the order of presentation of the report on forest reproduction and afforestation and its forms.	Приказ Министерства природных ресурсов и экологии Российской федерации от 20 января 2015 года N28 Об установлении порядка представления отчета о воспроизводстве лесов и лесоразведении и его формы	http://docs.cntd.ru/document/554151577/
4.1	44	Code of Administrative Offences of the Russian Federation of 30.12.2001 No.195-FZ (edited 18.03.2020)	Кодекс Российской Федерации об административных правонарушениях от 30.12.2001 N 195-ФЗ (ред. от 18.03.2020)	https://www.garant.ru/products/ipo/prime/doc/72153418/
4.1	45	Federal Law of July 19, 2018 No. 212-ФЗ “On Amending the Forest Code of the Russian Federation and Certain Legislative Acts of the Russian Federation Regarding Improving Forest Reproduction and Afforestation”	Федеральный закон от 19 июля 2018 г. №212-ФЗ «О внесении изменений в Лесной кодекс Российской Федерации и отдельные законодательные акты Российской Федерации в части совершенствования воспроизводства лесов и лесоразведения»	http://www.consultant.ru/document/cons_doc_LAW_185523/66726eaa6d6877343328883e7654215e8679ee8e/
4.1	46	Order of the president of the Russian Federation of May 7, 2018 no. 204 “on national goals and strategic tasks of development of the Russian federation for the period up to 2024”	Указ президента российской федерации от 7 мая 2018 года № 204 «О национальных целях и стратегических задачах развития российской федерации на период до 2024 года»	http://www.consultant.ru/document/cons_doc_LAW_179135/
4.1	47	Code of Administrative Offences of the Russian Federation of 30.12.2001 No.195-FZ (edited 18.03.2020)		http://www.consultant.ru/document/cons_doc_LAW_34661/
4.1	48	Federal Law of July 19, 2018 No. 212-ФЗ “On Amending the Forest Code of the Russian Federation and Certain Legislative Acts of the Russian Federation Regarding Improving Forest Reproduction and Afforestation”		http://www.consultant.ru/document/cons_doc_LAW_302854/
4.1	49	Order of the president of the Russian federation of May 7, 2018 no. 204 “On national goals and		https://minenergo.gov.ru/view-pdf/11246/84473

		strategic tasks of development of the Russian Federation for the period up to 2024”		
4.1	50	Federal project "Forest Conservation" of the National Project "Ecology", October 1, 2018 (to 31 December 2014)		http://www.mnr.gov.ru/upload/medialibrary/5e7/ecology.pdf
4.2	51	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
4.2	52	Order of the Ministry of Natural Resources No. 692 of 20.12 2017 “On approval of sample form and content of forest management plans of subjects of the Russian Federation and its development and amending procedures”	Приказ Минприроды России от 20.12.2017 N 692 "Об утверждении типовой формы и состава лесного плана субъекта Российской Федерации, порядка его подготовки и внесения в него изменений".	http://www.consultant.ru/document/cons_doc_LAW_295497/
4.2	53	Order of Ministry of Natural Resources of 27.02.2017 No.72 “on approving the content of forest district plans, procedure for their development, duration time and amending procedure”	Приказ Минприроды России от 27.02.2017 N 72 "Об утверждении состава лесохозяйственных регламентов, порядка их разработки, сроков их действия и порядка внесения в них изменений”	https://rulaws.ru/acts/Prikaz-Minprirody-Rossii-ot-27.02.2017-N-72/
4.2	54	Order of the Federal Forestry Agency No. 69 of 29 February 2012. “Content of a forest development project and a procedure for its development”	Приказ Рослесхоза от 29.02.2012 N 69 "Об утверждении состава проекта освоения лесов и порядка его разработки"	http://www.consultant.ru/document/cons_doc_LAW_129583/
4.2	55	Order of the Ministry of Natural Resources and Ecology of the Russian Federation dated March 25, 2019 N 188 On the approval of the rules of reforestation, composition of the project of reforestation, the order of development of the project of reforestation and changes (as amended on August 14, 2019).	Приказ Министерства природных ресурсов и экологии Российской федерации от 25 марта 2019 года N 188 Об утверждении Правил лесовосстановления, состава проекта лесовосстановления, порядка разработки проекта лесовосстановления и внесения в него изменений (с изменениями на 14 августа 2019 года)	http://docs.cntd.ru/document/554151577/
4.2	56	Order of March 29, 2018 N 122 On the approval of the Forest Management Instructions (as amended on February 6, 2020)	Приказ от 29 марта 2018 года N 122 Об утверждении Лесоустроительной инструкции (с изменениями на 6 февраля 2020 года)	http://docs.cntd.ru/document/542621790/
4.2	57	Reforestation in Russia, causes of inefficiency and anti-crisis measures, Evgeny Schwartz, Nikolay Shmatkov, Konstantin Kobyakov, LesPromInform No. 4 (142), 2019	Лесовосстановление в России, Причины неэффективности и антикризисные меры. Евгений Шварц, Николай Шматков, Константин Кобяков. ЛесПромИнформ № 4 (142), 2019	https://lesprominform.ru/jarticles.html?id=5360
4.2	58	Aor restoration of forests in 2019, more than 110 million pieces of saplings have been grown in the nurseries of the NWFD. Forest agency of Russia, 25 July 2019	Для восстановления лесов в 2019 году в питомниках СЗФО выращено более 110 млн штук саженцев. Рослесхоз, 25 Июля 2019	http://rosleshoz.gov.ru/news/2019-07-25/%D1%81%D0%B7%D1%84%D0%BE_3155
4.3	59	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
4.3	60	Order of the Ministry of Natural Resources and Ecology of the Russian Federation of February 19, 2015 N 59 on approval of the procedure for state monitoring of forest reproduction	Приказ Министерства природных ресурсов и экологии Российской федерации от 19 февраля 2015 года N 59 об утверждении порядка осуществления государственного мониторинга воспроизводства лесов	http://www.consultant.ru/document/cons_doc_LAW_185523/66726eaa6d6877343328883e7654215e8679ee8e/
4.3	61	Reforestation in Russia, causes of inefficiency and anti-crisis measures, Evgeny Schwartz, Nikolay Shmatkov, Konstantin Kobyakov, LesPromInform No. 4 (142), 2019		https://lesprominform.ru/jarticles.html?id=5360
4.4	62	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
4.4	63	Code of administrative offences of the Russian Federation of 30.12.2001 No.195-FZ (revision of 18.03.2020)	Кодекс Российской Федерации об административных правонарушениях от 30.12.2001 N 195-ФЗ (ред. от 18.03.2020)	http://www.consultant.ru/document/cons_doc_LAW_34661/
5.1	64	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
5.1	65	Order of the Ministry of Natural Resources No.181 of 16.07.2007 “On approval of special terms for using, tending, protecting, and regenerating forests in especially protected natural areas”	Приказ МПР РФ от 16 июля 2007 г. № 181 “Об утверждении Особенностей использования, охраны, защиты, воспроизводства лесов, расположенных на особо охраняемых природных территориях”	https://www.garant.ru/products/ipo/prime/doc/12055425/
5.1	66	Code of Administrative Offences of the Russian Federation of 30.12.2001 No.195-FZ (edited 18.03.2020)	Кодекс Российской Федерации об административных правонарушениях от 30.12.2001 N 195-ФЗ (ред. от 18.03.2020)	http://www.consultant.ru/document/cons_doc_LAW_34661/
5.1	67	Federal Law No. 7-FZ of 10 January 2002 (edited 27.12.2019) “On Environment Conservation"	Федеральный закон от 10.01.2002 N 7-ФЗ (ред. от 27.12.2019) "Об охране окружающей среды"	https://legalacts.ru/doc/FZ-ob-ohrane-okruzhajuwej-sredy/
5.1	68	Order of the Ministry of Natural Resources of 13.09.2016 No.474 (edited 11.01.2017) «On approval of the rules for timber harvesting and the features of timber harvesting in forest districts,	Приказ Министерства природных ресурсов и экологии РФ от 13 сентября 2016 г. № 474 "Об утверждении Правил заготовки древесины и особенностей заготовки древесины в	https://www.garant.ru/products/ipo/prime/doc/71480564/

		forest parks, specified in Article 23 of the Forest Code of the Russian Federation»	лесничествах, лесопарках, указанных в статье 23 Лесного кодекса Российской Федерации"	
5.1	69	Order of March 29, 2018 N 122 On the approval of the Forest Management Instructions (as amended on February 6, 2020)	Постановление Правительства РФ от 30.07.2004 N 400 (ред. от 27.07.2019) "Об утверждении Положения о Федеральной службе по надзору в сфере природопользования и внесении изменений в Постановление Правительства Российской Федерации от 22 июля 2004 г. N 370" (с изм. и доп., вступ. в силу с 01.01.2020)	http://docs.cntd.ru/document/542621790/
5.1	70	Federal Law No 33-FZ of 14.03.1995 (with the changes of 26.07.2019) “On Specially Protected Nature Areas”	Федеральный закон от 14 марта 1995 г. N 33-ФЗ "Об особо охраняемых природных территориях” (с изменениями на 26 июля 2019 года)	http://www.consultant.ru/document/cons_doc_LAW_48720/
5.1	71	Order of the Federal Service for Supervision in the Sphere of Nature Management of 19.10.2011 No.761 “On permitted activities in the field of conservation of biological diversity"	Приказ Росприроднадзора от 19.10.2011 N 761 О разрешительной деятельности в сфере сохранения биологического разнообразия	http://base.garant.ru/10107990/
5.1	72	Order of the Ministry of Natural Resources of the Russian Federation of 29.05.2017 г. No. 264 «On the approval of the specific approach to protection in the forests of rare and endangered trees, bushes, lianas, other forest plants listed in the Red Book of the Russian Federation or red books of the subjects of the Russian Federation”	Приказ Министерства природных ресурсов и экологии российской федерации от 29 мая 2017 года N 264 “Об утверждении Особенностей охраны в лесах редких и находящихся под угрозой исчезновения деревьев, кустарников, лиан, иных лесных растений, занесенных в Красную книгу Российской Федерации или красные книги субъектов Российской Федерации”	https://ppt.ru/docs/prikaz/rosprirodnadzor/n-761-92660/
5.1	73	Order of March 29, 2018 N 122 On the approval of the Forest Management Instructions (as amended on February 6, 2020)	Приказ от 29 марта 2018 года N 122 Об утверждении Лесоустроительной инструкции (с изменениями на 6 февраля 2020 года)	http://docs.cntd.ru/document/542601195/
5.1	74	Water Code of the Russian Federation of 03.06.2006 No.74-FZ (revision of 02.08.2019)	Водный кодекс Российской Федерации от 03.06.2006 N 74-ФЗ (ред. от 02.08.2019) (с изменениями и дополнениями, вступившими в силу с 01.01.2020)	http://www.consultant.ru/document/cons_doc_LAW_60683/
5.1	75	Federal Law "On Amendments to the Forest Code of the Russian Federation and certain legislative acts of the Russian Federation regarding the improvement of legal regulation of relations related to ensuring the conservation of forests on lands of the forest fund and lands of other categories" dated December 27, 2018 N 538-ФЗ (latest revision)	Федеральный закон "О внесении изменений в Лесной кодекс Российской Федерации и отдельные законодательные акты Российской Федерации в части совершенствования правового регулирования отношений, связанных с обеспечением сохранения лесов на землях лесного фонда и землях иных категорий" от 27.12.2018 N 538-ФЗ (последняя редакция)	http://www.consultant.ru/document/cons_doc_LAW_314666/
5.1	76	Order of the Federal Forestry Agency (Rosleskhoz) of May 27, 2011 N 191 "On approval of the procedure for calculating the estimated cutting area"	Приказ Федерального агентства лесного хозяйства (Рослесхоз) от 27 мая 2011 г. N 191 "Об утверждении Порядка исчисления расчетной лесосеки"	https://rg.ru/2011/07/07/lesoseka-site-dok.html
5.1	77	Convention on Wetlands of International Importance, mainly as habitats for waterfowl (Ramsar 1971, as amended in 1982 and 1987)		https://unesdoc.unesco.org/ark:/48223/pf0000261400_rus
5.2	78	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
5.2	79	Order of the Ministry of Natural Resources of 13.09.2016 No.474 (revision of 11.01.2017) «On approval of the rules for timber harvesting and the features of timber harvesting in forest districts, forest parks, specified in Article 23 of the Forest Code of the Russian Federation»		https://www.garant.ru/products/ipo/prime/doc/71480564/
5.3	80	Federal Law No. 7-FZ of 10 January 2002 (revision of 27.12.2019) “On Environment Conservation"	Федеральный закон от 10.01.2002 N 7-ФЗ (ред. от 27.12.2019) "Об охране окружающей среды"	https://legalacts.ru/doc/FZ-ob-ohrane-okruzhajuwej-sredy/
5.4	81	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
5.4	82	Federal Law No. 7-FZ of 10 January 2002 (revision of 27.12.2019) “On Environment Conservation"		https://legalacts.ru/doc/FZ-ob-ohrane-okruzhajuwej-sredy/
5.4	83	Code of administrative offences of the Russian Federation of 30.12.2001 No.195-FZ (revision of 18.03.2020)		http://www.consultant.ru/document/cons_doc_LAW_34661/
5.4	84	Peatlands - guidance for climate change mitigation through conservation, rehabilitationand sustainable use, Second edition. Mitigation of Climate Change in Agriculture Series 5. Food and Agriculture Organization of the United Nations and Wetlands		http://www.fao.org/3/a-an762e.pdf

		International Mitigation of Climate Change in Agriculture (MICCA) Programme, October 2012		
6.1	85	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (edited 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
6.1	86	Order of the Ministry of Natural Resources of 13.09.2016 No.474 (edited 11.01.2017) «On approval of the rules for timber harvesting and the features of timber harvesting in forest districts, forest parks, specified in Article 23 of the Forest Code of the Russian Federation»	Приказ Министерства природных ресурсов и экологии РФ от 13 сентября 2016 г. № 474 "Об утверждении Правил заготовки древесины и особенностей заготовки древесины в лесничествах, лесопарках, указанных в статье 23 Лесного кодекса Российской Федерации"	https://www.garant.ru/products/ipo/prime/doc/71480564/
6.1	87		Приказ Министерства природных ресурсов и экологии Российской федерации от 25 марта 2019 года N 188 об утверждении Правил лесовосстановления, состава проекта лесовосстановления, порядка разработки проекта лесовосстановления и внесения в него изменений (с изменениями на 14 августа 2019 года)	http://docs.cntd.ru/document/554151577/
6.1	88		Доработанный текст проекта Постановления Правительства Российской Федерации "Об утверждении мер по сохранению лесных насаждений, лесных почв, среды обитания объектов животного мира, других природных объектов в лесах" (подготовлен Минприроды России 24.08.2018)	https://www.garant.ru/products/ipo/prime/doc/56669938/
6.1	89	Code of Administrative Offences of the Russian Federation of 30.12.2001 No.195-FZ (redaction of 18.03.2020)		http://www.consultant.ru/document/cons_doc_LAW_34661/
6.1	90	Land Code of the Russian Federation" dated 10.25.2001 N 136-ФЗ (as amended on 03/18/2020)		http://www.consultant.ru/document/cons_doc_LAW_33773/
6.2	91	Order of the Ministry of Natural Resources of 13.09.2016 No.474 (revision of 11.01.2017) «On approval of the rules for timber harvesting and the features of timber harvesting in forest districts, forest parks, specified in Article 23 of the Forest Code of the Russian Federation»		https://www.garant.ru/products/ipo/prime/doc/71480564/
6.2	92	Приказ Министерства природных ресурсов и экологии Российской федерации от 25 марта 2019 года N 188 об утверждении Правил лесовосстановления, состава проекта лесовосстановления, порядка разработки проекта лесовосстановления и внесения в него изменений (с изменениями на 14 августа 2019 года)		http://docs.cntd.ru/document/554151577/
6.2	93	Доработанный текст проекта Постановления Правительства Российской Федерации "Об утверждении мер по сохранению лесных насаждений, лесных почв, среды обитания объектов животного мира, других природных объектов в лесах" (подготовлен Минприроды России 24.08.2018)		https://www.garant.ru/products/ipo/prime/doc/56669938/
6.3	94	Federal Law No. 7-FZ of 10 January 2002 (revision of 27.12.2019) “On Environment Conservation"		https://legalacts.ru/doc/FZ-ob-ohrane-okruzhajuwej-sredy/
6.4	95	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
6.4	96	Code of administrative offences of the Russian Federation of 30.12.2001 No.195-FZ (revision of 18.03.2020)		http://www.consultant.ru/document/cons_doc_LAW_34661/
7.1	97	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (edited 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
7.1	98	Federal Law No 33-FZ of 14.03.1995 (revision of 26.07.2019) “On specially protected nature areas”	Федеральный закон от 14 марта 1995 г. N 33-ФЗ "Об особо охраняемых природных территориях” (с изменениями на 26 июля 2019 года)	http://base.garant.ru/10107990/
7.1	99		Федеральный закон от 14 марта 1995 г. N 33-ФЗ "Об особо охраняемых природных территориях"	https://legalacts.ru/doc/FZ-ob-ohrane-okruzhajuwej-sredy/
7.1	100	Federal Law No. 7-FZ of 10 January 2002 (edited 27.12.2019) “On Environment Conservation"	Федеральный закон от 10.01.2002 N 7-ФЗ (ред. от 27.12.2019) "Об охране окружающей среды"	http://base.garant.ru/10107990/#ixzz6IoY9j0VY
7.1	101		Федеральный закон "Об экологической экспертизе" от 23.11.1995 N 174-ФЗ (с изменениями на 27 декабря 2019 года)	http://docs.cntd.ru/document/9014668
7.1	102		Национальная стратегия сохранения биоразнообразия России, 2012	http://www.caresd.net/img/docs/530.pdf
7.1	103		Стратегия сохранения редких и находящихся под угрозой исчезновения видов животных и растений в РФ до 2030 г. (2014)	https://mosmetod.ru/metodicheskoe-prostranstvo/srednyaya-i-starshaya-

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7.1	104	Order of the Ministry of Natural Resources No.181 of 16.07.2007 “On approval of special terms for usage, tending, protection, reforestation for forests located in nature reserves”	Приказ МПР РФ от 16 июля 2007 г. № 181 “Об утверждении Особенностей использования, охраны, защиты, воспроизводства лесов, расположенных на особо охраняемых природных территориях”	https://www.garant.ru/products/ipo/prime/doc/12055425/
7.1	105	Order of the Ministry of Natural Resources of 13.09.2016 No.474 (edited 11.01.2017) «On approval of the rules for timber harvesting and the features of timber harvesting in forest districts, forest parks, specified in Article 23 of the Forest Code of the Russian Federation»	Приказ Министерства природных ресурсов и экологии РФ от 13 сентября 2016 г. № 474 "Об утверждении Правил заготовки древесины и особенностей заготовки древесины в лесничествах, лесопарках, указанных в статье 23 Лесного кодекса Российской Федерации"	https://www.garant.ru/products/ipo/prime/doc/71480564/
7.1	106	Order of the Ministry of Natural Resources No. 692 of 20.12 2017 “On approval of sample form and content of forest management plans of subjects of the Russian Federation and its development and amending procedures”	Приказ Минприроды России от 20.12.2017 N 692 "Об утверждении типовой формы и состава лесного плана субъекта Российской Федерации, порядка его подготовки и внесения в него изменений"	http://www.consultant.ru/document/cons_doc_LAW_295497/
7.1	107	Order of Ministry of Natural Resources of 27.02.2017 No.72 “on approving the content of forest district plans, procedure for their development, duration time and amending procedure”	Приказ Минприроды России от 27.02.2017 N 72 "Об утверждении состава лесохозяйственных регламентов, порядка их разработки, сроков их действия и порядка внесения в них изменений”	https://rulaws.ru/acts/Prikaz-Minprirody-Rossii-ot-27.02.2017-N-72/
7.1	108	Code of Administrative Offences of the Russian Federation of 30.12.2001 No.195-FZ (edited 18.03.2020)	Кодекс Российской Федерации об административных правонарушениях от 30.12.2001 N 195-ФЗ (ред. от 18.03.2020)	http://www.consultant.ru/document/cons_doc_LAW_34661/
7.2	109	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
7.2	110	Publicly available, detailed information about several kinds of High Conservation Value Forests (HCVF) in Russia is collected on a website of World Wide Fund for Nature (WWF).		http://hcvf.ru
7.3	111	Order of the Ministry of Natural Resources and Ecology of the Russian Federation dated April 12, 2016 N 233 “On Approving the Administrative Regulation for the Execution of the State Function for the Implementation of the Federal State Forestry Supervision (Forest Protection)”		http://www.consultant.ru/document/cons_doc_LAW_204106/
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8.1	114	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (edited 27.12.2018)	Лесной кодекс Российской Федерации от 04.12.2006 N 200-ФЗ (ред. от 27.12.2018)	http://www.leskodeks.ru/
8.1	115	Order of Federal Forestry Agency No.105 of 09.04.2015 “On verification of felling age”	Приказ Рослесхоза от 09.04.2015 N 105 (ред. От 02.07.2015) "Об установлении возрастов рубок"	https://rulaws.ru/acts/Prikaz-Rosleshoza-ot-09.04.2015-N-105/
8.1	116	Order of the Federal Forestry Agency (Rosleskhoz) of May 27, 2011 N 191 "On approval of the procedure for calculating the estimated cutting area"	Приказ Федерального агентства лесного хозяйства (Рослесхоз) от 27 мая 2011 г. N 191 "Об утверждении Порядка исчисления расчетной лесосеки"	https://rg.ru/2011/07/07/lesoseka-site-dok.html
8.1	117	Приказ Минприроды России от 21.08.2017 N 451 "Об утверждении перечня информации, включаемой в отчет об использовании лесов, формы и порядка представления отчета об использовании лесов, а также требований к формату отчета об использовании лесов в электронной форме"		http://www.consultant.ru/document/cons_doc_LAW_286062/
8.1	118	Code of Administrative Offences of the Russian Federation of 30.12.2001 No.195-FZ (edited 18.03.2020)	Кодекс Российской Федерации об административных правонарушениях от 30.12.2001 N 195-ФЗ (ред. от 18.03.2020)	http://www.consultant.ru/document/cons_doc_LAW_34661/
8.1	119	Decree of the Government of the Russian Federation of April 15, 2014 N 318 On approval of the state program of the Russian Federation Development of forestry "	Постановление Правительства РФ от 15 апреля 2014 г. N 318 Об утверждении государственной программы Российской Федерации Развитие лесного хозяйства"	http://www.consultant.ru/document/cons_doc_LAW_162196/
8.2	120	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
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8.2	122	Order of the Federal Forestry Agency No. 69 of 29 February 2012. "Content of a forest development project and a procedure for its development"		http://www.consultant.ru/document/cons_doc_LAW_129583/
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8.4	124	Forest Code of the Russian Federation No. 200-FZ of 4 December 2006 (revision of 27.12.2018)		http://www.leskodeks.ru/
8.4	125	Code of administrative offences of the Russian Federation of 30.12.2001 No.195-FZ (revision of 18.03.2020)		http://www.consultant.ru/document/cons_doc_LAW_34661/
8.4	126	Decree of the Government of the Russian Federation of June 22, 2007 No. 394 "On approval of the Regulation on the implementation of federal state forest supervision (forest protection)" (redaction of 02.03.2019)		http://base.garant.ru/12154199/
9	127			https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27
9	128	On Russia's participation in the Paris climate agreement, Russian Government, September 23, 2019	Об участии России в Парижском соглашении по климату, Правительство России, 23 сентября 2019	http://government.ru/docs/37917/
9	129	Vienna Convention on the Law of Treaties 1969		https://treaties.un.org/Pages/Overview.aspx?path=overview/glossary/page1_en.xml
10a1	130			https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx
10b 1	131	Draft Federal Law "On state regulation of greenhouse gas emissions and removals and on amendments to certain legislative acts of the Russian Federation" (prepared by the Ministry of Economic Development of Russia) (not included in the State Duma of the Federal Assembly of the Russian Federation, text as of 03/27/2019)	Проект Федерального закона "О государственном регулировании выбросов и поглощений парниковых газов и о внесении изменений в отдельные законодательные акты Российской Федерации" (подготовлен Минэкономразвития России) (не внесен в ГД ФС РФ, текст по состоянию на 27.03.2019)	http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=PRJ&n=183113#0553636326202084
10b 1	132	Draft order of the Government of the Russian Federation on approval of the Strategy for the long-term development of the Russian Federation with a low level of greenhouse gas emissions until 2050		https://economy.gov.ru/material/file/babacbb75d32d90e28d3298582d13a75/proekt_strategii.pdf
10b 1	133			https://economy.gov.ru/material/news/minekonomrazvitiya_rossii_podgotovilo_proekt_strategii_dolgosrochnogo_razvitiya_rossii_s_nizkim_urovnem_vybrosov_parnikovyh_gazov_do_2050_goda_.html
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Ukraine

Background information

In 2016, there was about 9.66 million hectares of forest area in Ukraine, a share of 16.7% of the total land area. In 2010, the majority of the forest (99%) was under public ownership, with only about <1% privately owned. 20.000 hectares are protected forests and forests under Natura 2000. In 2018, 10,719,000 m^3 of wood fuel was produced in Ukraine, of which 1,043,000 m^3 was exported. In 2011, the forestry sector contributed 1% to the Gross Domestic Product. [1]

Forest legislation is a national competence. Forest relations in Ukraine are regulated by the present Forest Code. It regulates the legal relations with the view of ensuring raising forest productivity, forest protection and afforestation, useful qualities, satisfaction of the needs of society in forest resources on the basis of their scientifically substantiated rational use. The State Forest Resources Agency of Ukraine and State Environmental Inspection of Ukraine are the competent authorities in Ukraine.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	Ukraine	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	No	
3.1	Law name and date?	(see below)	
	1. Forest code of Ukraine (No.3852-XII of 1994), section 4, Articles 12-13, current edition - Revision as of - 1/16/2020[3] 2. Ministerial Decree No. 0085 -10, 2009 "On the validation of the Regulation on main use felling".[4] 3. Ministerial Decree No. 761 of 2007 «On the settlement of issues related to the special use of forest resources»[5] 4. Ministerial Decree No. 724 of 2007 «On approval of the Rules for improving the quality of forests»[6]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	No[7,8]	The briefing notes from UNEP-WCMC report several issues with enforcement of legality, therefore enforcement was set to No.[9]
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,11,12]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[13]	
4	**Forest regeneration of harvested area**	No	
4.1	Law name and date?	(see below)	
	1. Forest code of Ukraine (No.3852-XII of 1994), section 5, Articles 14, current edition - Revision as of 1/16/2020[14] 2. Ministerial Decree No. 303-2007 “On the approval of the Rules of Forest Regeneration”[15]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	No[9]	The briefing notes from UNEP-WCMC report several issues with enforcement of forestry laws in Ukraine, therefore enforcement was set to No.[10]
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,11,12,16]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[11,12]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	No	
5.1	Law name and date?	(see below)	
	1. Law of Ukraine No. 2456-XII of 1992 “On Natural Reserves”.[17] 2. Law of Ukraine No. 962-IV of 2003 “On land protection”.[18]		

	3. Ministerial Decree No. 733-2007 “On approval of the Order of division of forests into categories and selection of especially protective forest areas”[19] 4. Ministerial Decree No. 1287-2002 “On the Procedure for Granting Wetlands with the Status of Wetlands of International Importance”[20]		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	No[9,10]	The briefing notes from UNEP-WCMC report several issues with enforcement of forestry laws in Ukraine, therefore enforcement was set to No.[10]
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[10,11,12]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[11,12]	
6	**Maintenance of soil quality to minimize negative impact**	No	
6.1	Law name and date?	(see below)	
	1. Forest Code of Ukraine No.3852-XII of 1994, article 14, sec.2, § 2; article 19, sec.2, § 1; article 83, sec.1, § 2.[3] 2. Law of Ukraine No.962-IV of 2003 "On land protection" , article 41.[18] 3. Order No. 364 of 2009 of the State Committee of Forest Resources validating the Regulation on main use felling in forests, section 5. [21]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	No[9,22]	The briefing notes from UNEP-WCMC report several issues with enforcement of forestry laws in Ukraine, therefore enforcement was set to No.[10]
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[5,23]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[24,25]	
7	**Maintenance of biodiversity to minimize negative impact**	No	
7.1	Law name and date?	(see below)	
	1. Forest Code of Ukraine No.3852-XII of 1994, article 85[5] 2. Law of Ukraine On Amendments to Some Legislative Acts of Ukraine on protection of biodiversity No. 323-VIII of 2015[26] 3. Concept of the National Program for Conservation of Biodiversity for 2005-2025 No. 675-p of 2004; 4. Order No. 364 of 2009 of the State Committee of Forest Resources validating the Regulation on main use felling in forests, §1.3[27,28]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	No[9, 10]	The briefing notes from UNEP-WCMC report several issues with enforcement of forestry laws in Ukraine, therefore enforcement was set to No.[10]
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[26]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[29]	
8	**Maintenance and improvement of long-term production capacity**	No	
8.1	Law name and date?	(see below)	
	1. Forest Code of Ukraine No.3852-XII of 1994, article 43-44.[5] 2. Instruction for the procedure of approval of prescribed annual cut No. 38 of 2007.[30]		
8.2	Is there an enforcement system outlined in place related to the law(s) above?	No[9,22]	The briefing notes from UNEP-WCMC report several issues with enforcement of forestry laws in Ukraine, therefore enforcement was set to No.[10]
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[30]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[31]	

LULUCF Criteria

#	Criteria	National level	Comments

9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[32]	
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[33]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[33,34]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and
https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] Forest code of Ukraine: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC043452

[4] Decree "On the validation of the Regulation on main use felling": https://zakon.rada.gov.ua/laws/show/z0085-10

[5] Decree «On the settlement of issues related to the special use of forest resources»: https://zakon.rada.gov.ua/laws/show/761-2007-%D0%BF

[6] Decree «On approval of the Rules for improving the quality of forests»: https://zakon.rada.gov.ua/laws/show/724-2007-%D0%BF

[7] Code of Ukraine on Administrative Offences: https://zakon.rada.gov.ua/laws/show/80731-10

[8] Criminal Code of Ukraine: https://zakon.rada.gov.ua/laws/show/2341-14

[9] BUNEP-WCMC Briefing Note for the Competent Authorities (CA) implementing the EU Timber Regulation May - June 2019: https://ec.europa.eu/environment/forests/pdf/Briefing%20note%20May-June%202019_Final.pdf

[10] Law of Ukraine #877-16 “On the basic principles of state supervision (control) in the field of economic activity”: https://zakon.rada.gov.ua/laws/show/877-16

[11] Provisions of the State Forest Resources Agency of Ukraine: https://zakon.rada.gov.ua/laws/show/521-2014-%D0%BF

[12] Provisions of the State Environmental Inspection of Ukraine: https://zakon.rada.gov.ua/laws/show/275-2017-%D0%BF#n8

[13] https://ec.europa.eu/environment/forests/pdf/Country_overview_Ukraine___03_10_2018.pdf

[14] Forest Code of Ukraine: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC043452

[15] Ministerial Decree No. 303-2007 “On the approval of the Rules of Forest Regeneration”: https://zakon.rada.gov.ua/laws/show/303-2007-%D0%BF

[16] Report of SFRE on Reforestation and afforestation: http://dklg.kmu.gov.ua/forest/control/uk/publish/article?art_id=121176&cat_id=32875

[17] Law of Ukraine No. 2456-XII “On Natural Reserves”: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC045103

[18] Law of Ukraine No. 962-IV “On land protection”: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC137032

[19] Ministerial Decree No. 733-2007: https://zakon.rada.gov.ua/laws/show/733-2007-%D0%BF

[20] Ministerial Decree No. 1287-2002: https://zakon.rada.gov.ua/laws/show/1287-2002-%D0%BF

[21] Regulation on main use felling in forests, http://www.fao.org/faolex/results/details/en/c/LEX-FAOC171975

[22] State Statistics Service of Ukraine: http://www.ukrstat.gov.ua/

[23] Regulation on the state system of environmental monitoring No. 391 of 1998: https://zakon.rada.gov.ua/laws/show/391-98-%D0%BF

[24] http://dklg.kmu.gov.ua/forest/control/uk/publish/article?art_id=62971&cat_id=32880.

[25] https://www.dei.gov.ua/posts?category_id=17&post_type_id=1

[26] Law of Ukraine On Amendments to Some Legislative Acts of Ukraine on protection of biodiversity: https://zakon.rada.gov.ua/laws/show/323-19

[27] Regulation on main use felling in forests: https://zakon.rada.gov.ua/laws/show/675-2004-%D1%80

[28] Regulation on main use felling in forests: http://www.fao.org/faolex/results/details/en/c/LEX-FAOC171975

[29] http://dklg.kmu.gov.ua/forest/control/uk/publish/article?art_id=100429&cat_id=36090

[30] Instruction for the procedure of approval of prescribed annual cut No. 38 of 2007: https://zakon.rada.gov.ua/laws/show/z0160-07.

[31] http://dklg.kmu.gov.ua/forest/control/uk/publish/category?cat_id=32881

[32] https://zakon.rada.gov.ua/laws/show/1469-19

[33] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Ukraine%20First/Ukraine%20First%20NDC.pdf

[34] https://climateactiontracker.org/countries/ukraine/pledges-and-targets

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USA- Georgia

USA Background information

In 2016, there was about 310 million hectares of forest area in the USA, a share of 34% of the total land area. In 2010, the larger part of the forest (58%) was under private ownership, with 42 % publicly owned. 76,217 thousand hectares are protected forests and forests under Natura 2000. In 2018, 70,548,631 m^3 of wood fuel was produced in the USA, of which 318,000 m^3 was exported. In 2011, the forestry sector contributed 0.6% to the Gross Domestic Product. [1]

Forest legislation is a national competence. In the USA, the National Forest Management Act of 1976 (PL. 101-630) is the main state governing the administration of national forests. It declares that the National Forest System consists of units of federally owned forest, range and related lands throughout the U.S. and its territories, united into one integral system for the long-term benefit of present and future generations. The Act requires the Secretary of Agriculture (Secretary) to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and develop and implement a resource management plan for each unit of the National Forest System. The USDA Forest Service is the competent authority responsible for monitoring and the application of sanctions on National Forest lands.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	USA- Georgia	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Georgia Forestry Commission (2017)[3] 2. US Forest Service Planning Rule of 2012[4] 3. National Forest Management Act of 1976[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[4,5,6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[4,6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[4,7]	
4	**Forest regeneration of harvested area**	**No**	Even though a number of Federal laws are available covering this criterion, there is no legislation in place covering private land. A forest owner on private land is exempt of meeting the Federal laws highlighted in the references. This includes clearcutting and not replanting. As a result, this criterion is deemed not met.
4.1	Law name and date?	(see below)	
	1. US National Forest Reforestation requirements summary[8]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[9]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[9,9]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[9]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including wetlands and peatlands, are protected**	**Yes**	

5.1	Law name and date?	(see below)	
	1. National Park Service Organic Act of 1916[10] 2. Endangered Species Act of 1973[11] 3. National Wildlife Refuges:[12] Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat. 1119) Migratory Bird Conservation Act (16 U.S.C. 715 et seq.; 45 Stat. 1222) Fish and Wildlife Coordination Act (16 U.S.C. 661-666c; 48 Stat. 401) Lea Act (16 USC 695-695c; 62 Stat. 238) Emergency Wetlands Resources Act (16 U.S.C. 3901; 100 Stat 3582) Endangered Species Act (16 U.S.C. 1531-1543; 87 Stat. 884).		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[11,13]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[14,15]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[16,17]	
6	**Maintenance of soil quality to minimize negative impact**	**Yes**	
6.1	Law name and date?	(see below)	
	1. US Federal Clean Water Act[18] 2. State of Georgia Water Quality Protection[19]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[20,21,22,23]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[21,24]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[21]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. US Federal Endangered Species Act[25] 2. State of Georgia Endangered Wildlife Act[26]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[27,28]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[24,29]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[30]	
8	**Maintenance and improvement of long-term production capacity**	**No**	Even though a number of Federal laws are available covering this criterion, there is no legislation in place covering private land. A forest owner on private land is exempt of meeting the Federal laws highlighted in the references. This includes clearcutting and not replanting. As a result, this criterion is deemed not met.
8.1	Law name and date?	No[22,31]	
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[32]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[33,34,35,36,37,38,39]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[40]	

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LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[41]	The US intends to leave the agreement in November 2020, which would cause this to turn to No.
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[42]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[43]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://gatrees.org/wp-content/uploads/2019/11/Forestry-Laws-2017.pdf
[4] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5362536.pdf
[5] https://www.fs.fed.us/emc/nfma/includes/NFMA1976.pdf
[6] National Forest Monitoring and Evaluation: https://www.fs.fed.us/emc/met/
[7] US Forest Service Monitoring and Evaluation Framework: https://www.fs.fed.us/emc/met/
[8] https://www.fs.fed.us/restoration/reforestation/overview.shtml
[9] National Forest reporting to US Congress: https://www.fs.usda.gov/visit/passes-permits/reports
[10] https://www.law.cornell.edu/uscode/text/54/100101
[11] http://www.law.cornell.edu/uscode/html/uscode16/usc_sup_01_16_10_35.html
[12] https://www.fws.gov/laws/lawsdigest/nwracts.html
[13] https://www.fws.gov/le/index.html
[14] National Park Service Incident Reporting System: https://www.doi.gov/privacy/case-incident-reporting-system-national-park-service-nps-19
[15] US Fish and Wildlife Service Annual Monitoring Reports (National): https://www.fws.gov/le/annual-reports.html
[16] National Park Service: https://www.nps.gov/policy/DOrders/DOrder9.html
[17] US Fish and Wildlife Service (national): https://www.fws.gov/le/index.html
[18] https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=1522&object_id=1528
[19] https://gatrees.org/forest-management-conservation/water-quality-protection/
[20] Georgia Forestry Commission Water Quality BMP Monitoring: http://gatrees.net/forest-management/water-quality/
[21] Georgia Water Control quality Act. https://openei.org/wiki/Georgia_Water_Quality_Control_Act_(Georgia)#:~:text=The%20Georgia%20Water%20Quality%20Control,Environmental%20Protection%20Division%20(EPD).
[22] PUBLIC LAW 89-560-SEPT. 7, 1966. https://uscode.house.gov/statutes/pl/89/560.pdf
[23] The Soil Conservation Act of April 27, 1936. http://nationalaglawcenter.org/wp-content/uploads/assets/farmbills/soilconserv1936.pdf
[24] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054261
[25] https://www.fws.gov/laws/lawsdigest/esact.html
[26] http://rules.sos.ga.gov/GAC/391-4-10?urlRedirected=yes&data=admin&lookingfor=391-4-10
[27] US Fish and Wildlife Service as implementation and enforcement: https://www.fws.gov/endangered/improving_esa/index.html
[28] USGS Protected Area Database (PAD): https://www.usgs.gov/core-science-systems/science-analytics-and-synthesis/gap/science/pad-us-data-overview?qt-science_center_objects=0#qt-science_center_objects
[29] https://www.fws.gov/endangered/what-we-do/recovery-overview.html
[30] https://gadnrle.org/division
[31] https://www.fordlibrarymuseum.gov/library/document/0055/12000335.pdf
[32] https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf
[33] Wetland Protection Act (Chapter 391-3-16-.03)
[34] River Corridor Protection Act (Chapter 391-3-16-.04)
[35] Mountain Protection Act (Chapter 391-3-16-.05)
[36] Coastal Management Act (O.C.G.A. 12 -5-260)
[37] Erosion and Sediment Control Act (O.C.G.A. 12-7-1)
[38] State Board of Registration for Foresters Standards of Practice (O.C.G.A. 43-1-19) Chapter 220-5.01
[39] https://www.fs.usda.gov/treesearch/pubs/57903
[40] Georgia's Best Management Practices for Forestry. https://gatrees.org/wp-content/uploads/2020/02/BMP-Manual-2019-Web.pdf
[41] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=USA
[42] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf

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USA- North Carolina

USA Background information

In 2016, there was about 310 million hectares of forest area in the USA, a share of 34% of the total land area. In 2010, the larger part of the forest (58%) was under private ownership, with 42 % publicly owned. 76,217 thousand hectares are protected forests and forests under Natura 2000. In 2018, 70,548,631 m^3 of wood fuel was produced in the USA, of which 318,000 m^3 was exported. In 2011, the forestry sector contributed 0.6% to the Gross Domestic Product. [1]

Forest legislation is a national competence. In the USA, the National Forest Management Act of 1976 (PL. 101-630) is the main state governing the administration of national forests. It declares that the National Forest System consists of units of federally owned forest, range and related lands throughout the U.S. and its territories, united into one integral system for the long-term benefit of present and future generations. The Act requires the Secretary of Agriculture (Secretary) to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and develop and implement a resource management plan for each unit of the National Forest System. The USDA Forest Service is the competent authority responsible for monitoring and the application of sanctions on National Forest lands.[2]

Sustainable Harvesting Criteria

#	Criteria	Is the criteria embedded? How?	Comments
1	Country-region name:	USA- North Carolina	
2	Is forestry policy/legislation of national or regional competence?	National competence	
3	**Legality and harvesting operation**	**Yes**	
3.1	Law name and date?	(see below)	
	1. Right to practice forestry of 2005[3] 2. US Forest Service Planning Rule of 2012[4] 3. National Forest Management Act of 1976[5]		
3.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[5,6]	
3.3	Is there a monitoring system in place related to the law(s) above?	Yes[5,6]	
3.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[7]	
4	**Forest regeneration of harvested area**	**No**	
4.1	Law name and date?	(see below)	Even though a number of Federal laws are available covering this criterion, there is no legislation in place covering private land. A forest owner on private land is exempt of meeting the Federal laws highlighted in the references. This includes clearcutting and not replanting. As a result, this criterion is deemed not met.
	1. US National Forest Reforestation requirements summary[7]		
4.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[8]	
4.3	Is there a monitoring system in place related to the law(s) above?	Yes[8,8]	
4.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[8]	
5	**Legislation is in place to ensure that areas designated by international or national law or by the relevant competent authority for nature**	**Yes**	

	protection purposes, including wetlands and peatlands, are protected		
5.1	Law name and date?	(see below)	
	1. National Park Service Organic Act of 1916[9] 2. Endangered Species Act of 1973[10] 3. National Wildlife Refuges:[11] Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat. 1119) Migratory Bird Conservation Act (16 U.S.C. 715 et seq.; 45 Stat. 1222) Fish and Wildlife Coordination Act (16 U.S.C. 661-666c; 48 Stat. 401) Lea Act (16 USC 695-695c; 62 Stat. 238) Emergency Wetlands Resources Act (16 U.S.C. 3901; 100 Stat 3582) Endangered Species Act (16 U.S.C. 1531-1543; 87 Stat. 884).		
5.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[10,12]	
5.3	Is there a monitoring system in place related to the law(s) above?	Yes[13,14]	
5.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[15,16]	
6	**Maintenance of soil quality to minimize negative impact**	**No**	
6.1	Law name and date?	(see below)	North Carolina is dominated by private forests. There is no legal requirement for private forests to follow water guideline as set on federal level. The best management practices (BMPs) are voluntary in the state and are monitored.
	1. US Federal Clean Water Act[17,18] 2. Drinking Water Protection Program[19] 3. 15A NCAC 18C .1305 Source Water Protection Planning[20]		
6.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[21,22,23,24,26]	
6.3	Is there a monitoring system in place related to the law(s) above?	Yes[25,26,27]	
6.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[22,26,28]	
7	**Maintenance of biodiversity to minimize negative impact**	**Yes**	
7.1	Law name and date?	(see below)	
	1. US Federal Endangered Species Act[29]		
7.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[23]	
7.3	Is there a monitoring system in place related to the law(s) above?	Yes[23]	
7.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[30,31]	
8	**Maintenance and improvement of long-term production capacity**	**No**	
8.1	Law name and date?	No[32,33,34]	Even though a number of Federal laws are available covering this criterion, there is no legislation in place covering private land. A forest owner on private land is exempt of meeting the Federal laws highlighted in the references. This includes clearcutting and not replanting. As a result, this criterion is deemed not met.
8.2	Is there an enforcement system outlined in place related to the law(s) above?	Yes[35]	
8.3	Is there a monitoring system in place related to the law(s) above?	Yes[28,36]	
8.4	Is there a competent authority in place responsible for the monitoring and the application of sanctions?	Yes[22,29]	

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LULUCF Criteria

#	Criteria	National level	Comments
9	Is the country of origin of the biomass a signatory of the Paris Agreement?	Yes[37]	The US intends to leave the agreement in November 2020, which would cause this to turn to No.
10.a.i	Has the country submitted a Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[38]	
10.a.ii	Is the LULUCF sector included in the Nationally Determined Contribution (NDC) to the UNFCCC?	Yes[40]	

[1] Sources for the paragraph are:
http://www.fao.org/faostat/en/, land use and forest area (2016), wood fuel production and export (2018)
Ownership: Global Forest Resources Assessment 2015, http://www.fao.org/3/a-i4808e.pdf
Protected areas: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_protect&lang=en
GDP contribution: FAO. 2014. Contribution of the forestry sector to national economies, 1990-2011, by A. Lebedys and Y. Li. Forest Finance Working Paper FSFM/ACC/09. FAO, Rome. http://www.fao.org/3/a-i4248e.pdf

[2] Sources:
FAOlex: http://www.fao.org/faolex/country-profiles/en/
Competent authorities: information from country assessment and https://ec.europa.eu/environment/forests/pdf/LIST%20of%20CAs%20(FLEGT)%20-%20updated%202%20April.pdf

[3] https://www.ncleg.net/Sessions/2005/Bills/Senate/PDF/S681v6.pdf
[4] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5362536.pdf
[5] https://www.fs.fed.us/emc/nfma/includes/NFMA1976.pdf
[6] National Forest Monitoring and Evaluation: https://www.fs.fed.us/emc/met/
[7] https://www.fs.fed.us/restoration/reforestation/overview.shtml
[8] National Forest reporting to US Congress: https://www.fs.usda.gov/visit/passes-permits/reports
[9] https://www.law.cornell.edu/uscode/text/54/100101
[10] http://www.law.cornell.edu/uscode/html/uscode16/usc_sup_01_16_10_35.html
[11] https://www.fws.gov/laws/lawsdigest/nwracts.html
[12] US Fish and Wildlife Service (national): https://www.fws.gov/le/index.html
[13] National Park Service Incident Reporting System: https://www.doi.gov/privacy/case-incident-reporting-system-national-park-service-nps-19
[14] US Fish and Wildlife Service Annual Monitoring Reports (National): https://www.fws.gov/le/annual-reports.html
[15] https://www.nps.gov/policy/DOrders/DOrder9.html
[16] https://www.fws.gov/le/index.html
[17] https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=1522&object_id=1528
[18] https://www.ncforestservice.gov/publications/WQ0107/xAppx%201-%20Regulations%20and%20laws.pdf
[19] https://deq.nc.gov/about/divisions/water-resources/drinking-water/drinking-water-protection-program
[20] http://reports.oah.state.nc.us/ncac/title%2015a%20-%20environmental%20quality/chapter%2018%20-%20environmental%20health/subchapter%20c/15a%20ncac%2018c%20.1305.pdf
[21] North Carolina Forest Service Regulations and Laws: https://www.ncforestservice.gov/publications/WQ0107/xAppx%201-%20Regulations%20and%20laws.pdf;
[22] North Carolina Forest Service Best Management Practices Manual (BMP) to implement regulation: https://www.ncforestservice.gov/publications/WQ0107/BMP_manual.pdf
[23] PUBLIC LAW 89-560-SEPT. 7, 1966. https://uscode.house.gov/statutes/pl/89/560.pdf
[24] The Soil Conservation Act of April 27, 1936. http://nationalaglawcenter.org/wp-content/uploads/assets/farmbills/soilconserv1936.pdf
[25] North Carolina Forestry BMP Manual Appendix 1: (updatedJuly2018) Citation of Laws, Regulations, and other Requirements: https://www.ncforestservice.gov/publications/WQ0107/xAppx%201-%20Regulations%20and%20laws.pdf
[26] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054261
[27] https://www.ncforestservice.gov/water_quality/bmp_manual.htm
[28] North Carolina Forest Service. https://www.ncforestservice.gov/water_quality/bmp_manual.htm
[29] https://www.fws.gov/laws/lawsdigest/esact.html
[30] US Fish and Wildlife Service as enforcement agency: https://www.fws.gov/raleigh/es_tes.html; See same website for listed species by county
[31] USGS Protected Area Database (PAD): https://www.usgs.gov/core-science-systems/science-analytics-and-synthesis/gap/sc
[32] https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf
[33] Federal Water Pollution Control Act. https://www.fws.gov/laws/lawsdigest/FWATRPO.HTML
[34] https://www.fordlibrarymuseum.gov/library/document/0055/12000335.pdf
[35] https://www.epa.gov/cwa-404/clean-water-laws-regulations-and-executive-orders-related-section-404
[36] https://www.fs.usda.gov/treesearch/pubs/57903
[37] https://www4.unfccc.int/sites/NDCStaging/pages/Party.aspx?party=USA
[38] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/U.S.A.%20First%20NDC%20Submission.pdf

Appendix C. CASE STUDIES FOREST BIOMASS

This appendix outlines how case studies for the new forest sustainability criteria were selected, developed, including the presentation of the results obtained.

C.1. Selection of forest biomass case studies

The selection of forest biomass case studies was based on the following elements:

- Case studies on both the sustainable harvesting criteria as well as the LULUCF criteria.
- Countries not complying with level A for either the sustainable harvesting or LULUCF criteria.
- Geographical spread (e.g. coverage of different countries) to have examples covering EU and non-EU countries.
- Countries where production of forest biomass for energy purposes takes place not using processing residues (e.g. pellets produced from saw dust) do not have to demonstrate compliance with forest sustainability criteria.

The basis of case studies was the stepwise approach as developed for level B. It was checked if all necessary information is available and adequate for the compliance analysis for those elements not complied with in the level A analysis (country sheets).

For each case study, a report centred on the following elements was produced:

- Description of the case analysed, including reference to its geographical location, review of sustainable production or LULUCF criteria (or which specific elements within these criteria), chain of custody and any other relevant specifics.
- For each sub-criterion, a check was done to determine whether evidence was available to demonstrate compliance, with specific reference to the evidence available to demonstrate this and the enforcement/monitoring system available for this evidence.
- A brief section with main findings or recommendations feeding back to the overall guidance/checklist for level B evidence. In this section we also provided some reflections on the ósuitabilityôof the evidence provided. Finally, we summarized if the full review of level B evidence for this specific case is compliant.

Experience from the case studies were used in further detailing and describing the approaches of the stepwise approach or add to the list of potential evidence identified (see Chapter 2).

The list of case studies selected and the rationale for their selection is presented in Table 22.

Table 21. Forest biomass criteria case studies

Criteria	Country/region	Rationale for the selection
Sustainable Harvesting	USA	Large supply region for EU consumed forest biomass. From the initial level A analysis, it seemed not all criteria would be met through level A evidence.
Sustainable Harvesting	Russia	Large supply region for EU consumed forest biomass (especially central and western Russia). From the initial level A analysis, it seemed not all criteria would be met through level A evidence

Criteria	Country/region	Rationale for the selection
Sustainable Harvesting	Ukraine	Uncertain of all sustainable harvesting criteria could be met at level A.
Sustainable Harvesting	Portugal	A European country with an important forestry sector.
Sustainable Harvesting	Romania	At least one of the criteria is not met at national/subnational level.
LULUCF	USA	The US announced to withdraw from the Paris Agreement and will therefore not comply on national level (level A).

C.2. Findings forest biomass case studies

In the following sections we present the case studies on forest biomass.

The main conclusions reached on the case-studies done for sustainable harvesting criteria are summarised below:

- For several elements in the case studies, the answer is currently that data is not available. This is in several cases due to the fact that this information is currently not requested in supplier contracts. However, for many elements the required background information would be available from forest owners (and has been described in the case studies), so could be included in supplier contracts in the future.

- Evidence that is mostly mentioned in the case studies are concessions or declarations of compliance and forest management plans (in some countries already existing/required to be set up by forest owners).

- In some cases, additional effort (beyond including requirements on existing data sources in supplier contracts) will be required. Examples are long-term production capacity (Portugal, USA) and forest regeneration and long-term production capacity (Russia).

- Specifically for the Russian case study on the element of long-term production capacity, the currently available information on the annual allowable cut, is not very accurate. If this is used for the assessment of the criterion on long term production capacity, there is a risk that the resulting production capacity of forests in Russia will decline If the public available information would not be used, it will be difficult for operators to prove their compliance. Therefore, it would be advised that the government made calculations on annual allowable cut are improved.

- Specifically for the USA case study on the element of long-term production capacity, currently private forest owners do not have any legal obligations on this. It would depend on the size of the sourcing area and the level of detail in the US Forest Service Forest Inventory and Analysis (FIA) program if this would be sufficient to match. Otherwise additional detail level to monitor/determine the annual increment might be required.

Some resulting findings for the LULUCF criteria:

- There is currently no readily available database for operators to demonstrate the full compliance with the LULUCF criteria. This will require adding a forward-looking modelling (which can be done based on existing calculators).

Please note that the case studies were used to test the level B approach as presented in the report for stakeholder consultation. Based on the case studies, the public stakeholder consultation and some last comments from the Commission, changes were made to the final approach as presented in this report. The case studies and their outcomes presented below follow the initially drafted methodology.

Case study – Ukraine (sustainable harvesting criteria)

Key findings

The table below summarizes the key findings of the Ukraine case study for the sustainable harvesting criteria. Most of the requested information is available at the forest owner level. Evidence types include logging tickets/logging permits and forest management plans, covering several of the requirements based on the criteria. It should be noted, that in relation with the assessment done on the enforcement of the harvesting criteria in Ukraine, in light of the type of evidence put forward at a level B, it would be important for an auditor to verify the paper trail of the permits and logging tickets[107].

Table 22. Key findings on the Ukraine case study

Criterion	Type of evidence	Available for this region?	Ease of access	Comment
Legality	Own Due Diligence System (DDS)	Yes	Limited public availability, paid for the enterprise	
	Due Diligence System (DDS) via a recognized monitoring organization	Yes	Restricted	
	Records kept by traders	Yes	Restricted	
Forest regeneration	Type of forest operation from which forest biomass results (final felling, thinning)	Yes	Public	
	Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.)	Yes	Public	
Protected areas	Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes	Public	
	Evidence of implementation of plans/measures in nature protection areas	Yes	Restricted	

[107] This would be important to check by an auditor, since at level A concerns were raised on the enforcement of specific regulations.

	Permissions for biomass removal in protected areas including wetlands and peatlands.	Yes	Public
Soil quality and biodiversity	The existence of poor or vulnerable soils in the forest sourcing area.	Yes	Public
	Harvesting of forest biomass on poor or vulnerable soils	Yes	Public
	Stump or residue removal	Yes	Public
	Consideration and minimizing of negative impacts on biodiversity features	Yes	Public
	Minimization of impacts on soil and remaining stand	Yes	Public
Long term production	Sustainable harvest levels	Yes	Public
	Harvest amounts exceed net annual increments	Yes	Public

Introduction

The State Forest Resources Agency of Ukraine (SFRAU) controls 73% of Ukrainian forests. 272 State Forest Enterprises (SFEs) subordinated to SFRAU are in charge of managing these forests. Logging operations are managed by SFEs either directly or through private contractors. The remaining 27% of forests are in permanent use by other central government bodies and municipalities. Regional Forest and Hunting Departments of SFRAU monitor the activities of SFEs and are in charge of issuing logging permits for final felling. SFEs have the authority to issue logging permits for sanitary felling. Please note that during the level A check of evidence issues with enforcement were flagged (e.g. UNEP-WCMC briefing notes) which should be taken into account when reviewing evidence at level B to ensure proper compliance.

Underdevelopment, very weak domestic demand and a large volume of suppliers generally characterize the Ukrainian pellet market. The production of pellets is export-oriented since 2007. Raw materials for the production of wood pellets have always had the status of industrial waste (wood chips, sawdust, etc.). The rapid growth in the number of enterprises-manufacturers of pellets was facilitated by the development of energy production from pellets in the EU-27, availability and low competition for raw materials in Ukraine, low cost of domestic production of pellets in Ukraine, exchange rate difference with the EUR.

Wood pellets are primarily produced from rejected wood that cannot be used in woodworking processes, as well as from wood chips and sawdust. That is, the raw material supply for the production of wood pellets to some extent directly depends on the production of the woodworking industry as a whole. However, the dynamics of wood pellet production development depended primarily on demand, mainly export, and was less determined by changes in the number or volume of final felling.

In recent years, there has been a tendency to close a large number of small-scale production facilities of pellets. Producers who focused on the purchase of waste from woodworking enterprises and sawmills on the open market are increasingly unable to find raw materials at a cost-effective distance from production facilities. Today, those companies for which the biofuel business is additional and based on its own raw material are the main pellets producers. The typical sourcing area for the wood pellets production does not exceed 100 km (one-way transportation distance from the place of feedstock origin to the production facility).

Production of wood pellets in Ukraine amounted to 390 thousand tons at 313 enterprises (for 2016), of which 254 - specialize in the production of only wood pellets, others - in the combined production of

other raw materials (plant biomass, straw, husks, peat, rice), and also briquettes. Export of wood pellets in general increased from 107 thousand tons in 2012 to 150 thousand tons in 2015. The largest importers of pellets from Ukraine are Poland, Italy and the Czech Republic.

Wood pellet producers do not have large unit capacities and centralization in a feedstock supply, the average unit capacity is 1200 t/year. The average load factor of large enterprises is 0.2 - 0.3. For example, Pellet-Energo Yemilchyne LLC with a total pellet line capacity of 7 t/h produced about 15,500 tons of pellets in 2016 (loading factor 0.27). In small enterprises with a production capacity of 1000 - 3000 t/year, the load factor is slightly higher, it is 0.3 - 0.5, which is not enough for efficient and cost-effective operation of enterprises of this scale. It follows that the potential to, at least, double the production of wood pellets can be achieved even at existing facilities. The primary problem is the underdeveloped biomass market, as well as, which is especially true for the wood pellet market, and is the lack of free wood resources due to high competition in this sector.

Experts of the Bioenergy Association of Ukraine suggest that the load of enterprises could be increased by using logging waste as a raw material, as well as by the reorientation of fuel wood exported (an average of 2 million tons for 2014-2018) to the internal market for the production of pellets.

In Ukraine, logging waste is practically not used for the biofuel production. The rules for the handling of logging residues (methods for cleaning felling sites) include the harvesting of logging residues in piles and bulks to decay, spreading over the felling site, laying on skid road sand in the places where the aggregate forest machines run, as well as partial combustion (Section VI Cleaning of felling sites of ñRegulation of Fellingò). Harvesting of logging residues and the production of wood fuel from them are not provided by the current legislation. In addition, there are no requirements for permanent forest users to keep records of the entire amount of logging residues (at present, records are only kept for brushwood and twigs).

Sustainability of the pellets production is not directly regulated by the related legislation. The forest code of Ukraine establishes general contents and main requirements for forestry management including usage of the forest resources (general and special) and wood harvesting. The economic activity of the forestry enterprises (as a final forest user) is aimed at the rational and efficient use of forest resources, increasing soil protection, sanitation, health, aesthetic and other benefits of the forest.

Background questions

1.	Please indicate which region/location is looked at.
	Kyiv region, Ukraine
2.	Please indicate in 1-2 sentences why this region is of interest for this specific case study.
	The forest cover of the region is 20%, which is a little more than the national average (15.9%). In addition, a few big pellets producers are located at the territory of the Kyiv region.
3.	Please indicate if there are specific boundary conditions you want to mention.
	The forests of the region by their economic purpose and location perform mainly water conservation, protection, sanitation and health functions and have limited operational value. The main part of the region's forests is subordinated to the enterprises of the State Forestry Agency of Ukraine.

Legality of harvest operations at forest sourcing area level

4.i	Is the economic operator a first placer of harvested timber or timber products on the EU market (from inside or outside the EU)? *If no, go to question 4.iv.*

	Yes. The state forestry enterprise carries out forestry activities (including felling of all types) and production activities (timber production). The enterprise sells its products in Ukraine, but its customers can export it, in particular to EU countries.
4.ii	The operator has its own due diligence system in place to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
	State forestry enterprises generate their own DDS that is performed by the obtaining and collection of the legal documents to prove the legality of the harvesting operations: Forest inventory with the plan and cartographic materials; Approval of annual allowable cut; Forest logging ticket; Receipts for payment of rent for special use of forest resources; Receipts for payment of VAT; Receipts for payment of income tax for permanent forest users or receipts for payment of the single tax for forest users working under the simplified taxation system; Logging maps of cutting areas which reflect nature conservation requirements; Permits for employees to carry out high risk tasks; Evidence of compliance with the radiation measurement requirements; Evidence that salary payments are up to date. In addition, the unified state system of electronic accounting of wood is implemented in Ukraine. To perform the export operations a trader has to obtain the certificates of origin of timber and timber products made of it. *Please note that according to research done for the country sheet (level A evidence), it was indicated that briefing notes from UNEP-WCMC indicated concerns on the enforcement of legality, so this would be a specific point for an auditor to emphasize in the checks on the level B evidence.*
4.iii	The operator is assisted by a recognized monitoring organisation to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
	Yes. The enterprise is certified by the FSC certification scheme. There is a national office of FSC in Ukraine. However, the accredited certification body has done the certification process.
4.iv	Traders keep records of their suppliers and customers according to Article 5 of the EU Timber Regulation ((EU) 995/2010)?
	The record of customers is carried out, records of suppliers is not required by national regulation.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Own Due Diligence System (DDS).	Yes	Publicly available for monitoring, paid for the enterprise	[1]
Due Diligence System (DDS) via a recognized monitoring organization.	Yes	Restricted	[2]
Records kept by traders.	Yes	Restricted	

Forest regeneration after harvest

5.i	Does the forest biomass result from final felling or an intermediate felling or clearing of forest area after natural disturbances? *If not, forest biomass results from a precommercial thinning or pruning of standing trees. Go to question 6.*

	Wood is harvested during the final felling, felling of formation and rehabilitation of forests, selective sanitary felling or continuous sanitary felling.
5.ii	Do supplier contracts require that forest area regeneration is carried out before or after final felling or harvest, either through natural regeneration, planting and seeding, or coppice regrowth and that forest regeneration is done in a manner that ensures quantity and quality of next generation forest resources? *If yes, go to question 6.*
	The forest management plan of the enterprise contains plans for forest regeneration. A project is developed for each of the forest regeneration activity. Works related to forest regeneration are subject to accounting and quality assessment by a special commission. The commission develops the report on the forest regeneration and submits it to the executive bodies to which the enterprise is subordinated. Violation of reforestation rules can be a reason for refusal to issue a logging ticket. A logging ticket is required to obtain approval for logging of forest biomass. *Please note that in the Level A evidence assessment concerns with enforcement were flagged, which would be a reason for an auditor to specifically check paper trails related to permits, logging tickets or other related official documentation.*

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Type of forest operation from which forest biomass results (final felling, thinning).	Yes	Public	Logging ticket (for final logging) https://lk.ukrforest.com/ Certificate of wood origin (general view): http://dklg.kmu.gov.ua/forest/document/35486
Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	Yes	Public	Public report of the enterprise: http://makarivlis.com.ua/informacija/informacija-shchodo-sertifikaciji-pidprijemstva.html Forest management plan: http://makarivlis.com.ua/fileadmin/user_upload/%D0%BF%D0%BB%D0%B0%D0%BD_%D0%BBi%D1%81%D0%BE%D1%83%D0%BF%D1%80%D0%B0%D0%B2%D0%BBi%D0%BD%D0%BD%D1%8F_2020.doc

Protected areas

6.i	Does the forest sourcing area include areas designated by international or national law of the relevant competent authority for nature protection purposes, including wetlands and peatlands, as protected? *If no, go to question 7.*
	Yes, the nature reserve fund includes seven objects with a total area of 1464.32 hectares, which is 5.5% of the total area of the forest. The final felling is prohibited at these territories. Other types of felling are allowed with restrictions.
6.ii	Do supplier contracts contain the provision of conditions statements from the relevant competent authority?
	To conduct the felling of formation and rehabilitation of forests, selective sanitary felling and continuous sanitary felling the permission of the relevant regulatory body (state forestry committee and local

	administration) and state ecological inspection must be obtained. The permission (forestry ticket) is based on materials including a forest management plan and sanitary and forest pathological examination.
6.iii	Do supplier contracts contain the required implementation evidence of the measures specified in the conditions statement?
	A forestry ticket for any felling within the territory of the nature reserve fund should be obtained before wood could be sold as a feedstock.
6.iv	If forest operations are restricted in the nature protection areas, do suppliers contracts require the official approval for biomass removal in the protected area obtained from the relevant competent authority (including wetlands and peatlands)?
	Reasoning for biomass collection must be substantiated when applying for a forestry ticket (meaning a project is being developed where the arguments for removal are given).

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes	Public	Charters of the objects of the nature reserve fund. Examples: https://menr.gov.ua/files/docs/nakazy/2019/nakaz_219.pdf http://cbr.nature.org.ua/doc/pol_cbr.pdf
Evidence of implementation of plans/measures in nature protection areas	Yes	Restricted	Reports of the object of the nature reserve fund to the local authorities and the relevant ministry
Permissions for biomass removal in protected areas including wetlands and peatlands.	Yes	Public	Projects of organization of the territory of the nature reserve fund objects. General content of the project: https://zakon.rada.gov.ua/laws/show/z0831-05 Example: http://www.npptovtry.org.ua/wp-content/uploads/2018/03/project_org.pdf Forestry ticket

Maintenance of soil quality and biodiversity with the aim of minimizing negative impacts

7.i	Do poor or vulnerable soils exist in the forest sourcing area? *If no, go to question 8.i.*
	Yes
7.ii	Do supplier contracts require harvesting permission of the relevant competent authority in sensitive areas in the forest sourcing area (e.g. poor vulnerable or sensitive soils) and confirmation of appropriate

	precautionary measures and harvesting procedures in these areas? *If no, go to question 8.ii.*
	This issue is taken into account during the development of forest management plan by the Ukrainian State Project Forest Management Production Association (USFMPA - state company that was established for the purpose of forest management on the entire territory of the forest fund of Ukraine). A forest management plan is developed for each state forestry enterprise. USFMPA provides a forest soil survey that determines the properties of soils, possibility of growing plantations of different tree species, selection of target tree species and recommendations for forestry practices on different types of soils and forests.
8.i	Does the biomass include stumps and residues? If no, go to question 9.i.
	No
8.ii	Do suppliers contracts require that evidence is provided to confirm that stumps or residues have not been harvested inappropriately from poor vulnerable soils? *If no, go to question 9.ii.*
	N/A
9.i	Do supplier contracts require that harvesting operations take into account biodiversity attributes to minimise the impact on native forest types, habitat features, rare and endangered species and their habitats, stipulated and recommended deadwood types and amounts?
	This issue is taken into account during the development of forest management plan by the Ukrainian State Project Forest Management Production Association (state company that was established for the purpose of forest management on the entire territory of the forest fund of Ukraine). A forest management plan is developed for each state forestry enterprise. USFMPA provides recommendations for strengthening protection of biodiversity attributes though identification of rare and endangered species, their monitoring and protection, carrying out of inspections of the wood plots before felling, mapping of growth places of populations of rare and endangered species.
9.ii	Do suppliers contracts require the proof that avoidable damage (e.g. to the soil and the remaining stand) due to the harvesting operations has not occurred and that negative impacts due to harvesting operations have been minimised?
	This issue is taken into account during the development of forest management plan by the Ukrainian State Project Forest Management Production Association (state company that was established for the purpose of forest management on the entire territory of the forest fund of Ukraine). Forest management plan is developed for each state forestry enterprise. USFMPA provides for each felling area a map of the technological process of logging that includes Act of inspection of the felling area with planned measures for minimizing the negative impact of felling on the forest and environment.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
The existence of poor or vulnerable soils in the forest sourcing area.	Yes	Public	Detailed field inventory data are available in the Forest management plan of the enterprise: http://makarivlis.com.ua/fileadmin/user_upload/%D0%BF%D0%BB%D0%B0%D0%BD_%D0%BBi%D1%81%D0%BE%D1%83%D0%BF%D1%80%D0%B0%D0%B2%D0%BBi%D0%BD%D0%BD%D1%8F_2020.doc

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Harvesting of forest biomass on poor or vulnerable soils	Yes	Public	Forest management plan issued by the relevant state company contains justification for all the types of harvesting, including that on poor soils (if necessary): http://makarivlis.com.ua/fileadmin/user_upload/%D0%BF%D0%BB%D0%B0%D0%BD_%D0%BBi%D1%81%D0%BE%D1%83%D0%BF%D1%80%D0%B0%D0%B2%D0%BBi%D0%BD%D0%BD%D1%8F_2020.doc
Stump or residue removal	Yes	Public	Forestry ticket
Consideration and minimizing of negative impacts on biodiversity features	Yes	Public	Environmental impact assessment (EIA) of the planned activity of the forestry contains the list of the possible effects of the enterprise activities on the flora and fauna and mitigation measures: http://makarivlis.com.ua/fileadmin/user_upload/%D0%9E%D0%92%D0%9D%D0%A1_-_2019.doc Report to the public on the monitoring activities contains the list of measures that have been implemented to mitigate the impact on the biodiversity: http://makarivlis.com.ua/fileadmin/user_upload/%D0%97%D0%92I%D0%A2_%D0%9C%D0%9E%D0%9DI%D0%A2%D0%9E%D0%A0%D0%98%D0%9D%D0%93_-__2019.doc
Minimization of impacts on soil and remaining stand	Yes	Public	Environmental impact assessment contains the possible impact on geological structures and soils and mitigation measures: http://makarivlis.com.ua/fileadmin/user_upload/%D0%9E%D0%92%D0%9D%D0%A1_-_2019.doc Report to the public on the monitoring activities contain the list of measures that have been implemented to mitigate the impact on soils: http://makarivlis.com.ua/fileadmin/user_upload/%D0%97%D0%92I%D0%A2_%D0%9C%D0%9E%D0%9DI%D0%A2%D0%9E%D0%A0%D0%98%D0%9D%D0%93_-__2019.doc

Maintenance or improvement of the long-term production capacity of the forest

10.i	Does data exist on the harvested wood amounts and net annual increments as part of the forest sourcing area? *If no, pass the rest of the questions.*
	Yes
10.ii	Do average annual harvested timber amounts NOT exceed the average net annual increment (e.g. an average measured over a 5-year period)? *If yes, pass the rest of the questions.*
	Yes, for this case, the annual harvest does not exceed annual increment.
11.i	In the forest sourcing area, do average annual harvest levels exceed the average net annual increment? Due to restructuring of even-aged woodlands? Habitat management or restoration of biodiversity? Or a response to pet, disease or storm damage?

	N/A
11.ii	Do permits exist to mention or justify this in the case of exceptional higher harvest levels? *If yes, pass next question.*
	N/A

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Sustainable harvest levels	Yes	Public	Report to the public on the monitoring activities provides the information on the volumes of planned and executed forestry activities (the amounts of forest reproduction, the final felling, logging of forest formation and rehabilitation, etc.): http://makarivlis.com.ua/fileadmin/user_upload/%D0%97%D0%92I%D0%A2_%D0%9C%D0%9E%D0%9DI%D0%A2%D0%9E%D0%A0%D0%98%D0%9D%D0%93_-__2019.doc Forest management plan developed by the USFMPA contains the justification of the size of the estimated felling: http://makarivlis.com.ua/fileadmin/user_upload/%D0%BF%D0%BB%D0%B0%D0%BD_%D0%BBi%D1%81%D0%BE%D1%83%D0%BF%D1%80%D0%B0%D0%B2%D0%BBi%D0%BD%D0%BD%D1%8F_2020.doc
Harvest amounts exceed net annual increments	Yes	Public	If harvested amounts exceed net annual increments, the justification will be presented into the Report to the public and into the annual report to the state forestry committee. This could be caused only by natural disturbances (drying, pests, natural disasters) and forestry tickets should be obtained for any felling activities.

Background information

Example evidence

Figure 22. Map of the forestry enterprise

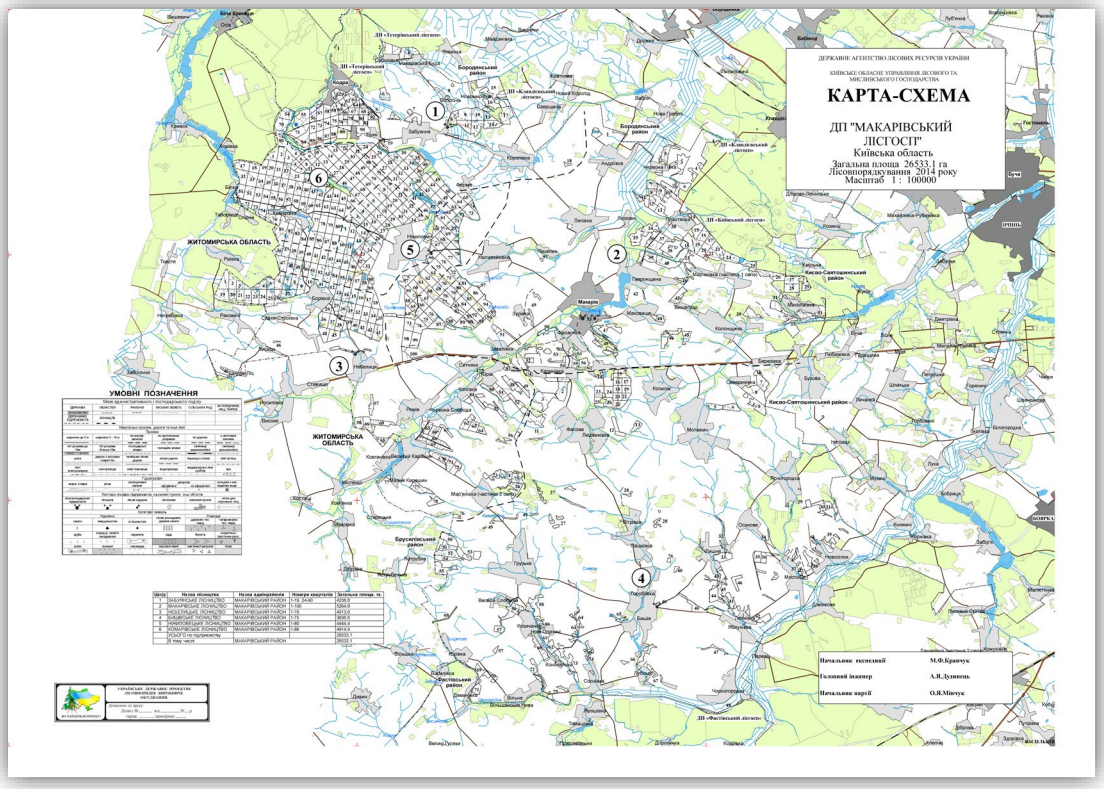


Figure 23. Example of a Ukrainian logging ticket (page 1)

Серія 02 ЛКБ
№503753

ЛІСОРУБНИЙ КВИТОК

« 24 » травня 2016 р.

Область Закарпатська Власник лісів або постійний лісокористувач ДП "ВЕЛИКОБЕРЕЗНЯНСЬКЕ ЛГ

Лісництво Лютянське Система рубок РГК - суцільні

Вид, спосіб рубки суцільна вузьколісосічна Спосіб обліку за площею

На підставі наказу Міністерства екології та природних ресурсів № 603 від 22.11.2012 р.
(наказ Мінприроди про затвердження розрахункової лісосіки, дата і номер, акт обстеження, приписи тощо)

дозволяється ДП "ВЕЛИКОБЕРЕЗНЯНСЬКЕ ЛГ"
(найменування лісокористувача)

рубати в рахунок ліміту лісосічного фонду 2016 року
(назва заходу)

Лісотаксовий пояс другий Розряд такс четвертий

Категорія лісів	Номер кварталу	Номер виділу, ділянки	Площа ділянки, гектарів	Господарство	Забезпечення збереження підросту: на площі, гектарів	Забезпечення збереження підросту: кількість, тис. штук на 1 гектар	Маса деревини, куб. метрів: ділової	дров'яної	разом ділової і дров'яної	ліквіду із крони	хворосту і сучків	разом	Нормативна вартість, гривень: ділової	дров'яної	ліквіду із крони	хворосту і сучків	разом	Належить сплатити з урахуванням індексації (знижки), гривень
4	13	18	1,1	шп			118	70	188	3	114	305	7878	235	4	-	8117	8117

Figure 24. Example of a Ukrainian logging ticket (page 2)

Підстава для індексації (знижки) _____

Строк внесення плати за деревину, що відпускається згідно строків оплати

Вирубуванню не підлягають дерева за межами лісосіки.

Строк закінчення заготівлі «31» грудня 2018 р.

Вивезення дозволяється одночасно із заготівлею

Строк закінчення вивезення «31» березня 2019 р.

Умови зберігання деревини _____

порубочні рештки подрібнити на відрізки до 1 м. скласти в купи у місці

Спосіб очищення вільні від підросту, та на трелювальний волок

Розробка лісосік проводиться згідно із технологічними картами.

Особливі умови _____

М.П. Лісорубний квиток видав _____ (підпис)

Лісорубний квиток виписав _____ (підпис)

Лісокористувачі зобов'язані дотримуватися вимог Порядку спеціального використання лісових ресурсів.

За порушення Порядку спеціального використання лісових ресурсів заготівля деревини може бути припинена в установленому порядку.

З Порядком спеціального використання лісових ресурсів і Правилами пожежної безпеки ознайомлений.

Лісокористувач _____ (підпис)

Відмітка про надання відстрочки на заготівлю та вивезення деревини _____

Figure 25. Translation of the Ukrainian logging ticket to fill-in

Series _____ STATE COAT OF ARMS OF UKRAINE
N

LOGGING TICKET

"_____" _____ 20___ .

REGION (oblast):_____
Forest owner or permanent forest user:_____
Forestry: _____
Felling system: _____
Type of felling: _____
Type of accounting: _____

On the basis of _____(order on approval of the estimated felling, date and number, survey report, instructions, etc.)
allowed _____(name of the forest user)
felling into the account __ (name of the activity)

Forest tax belt _____ Rank taxes _____

Category of forests	Quarter number	Allocation number, plot	Plot area, hectares	Forestry	Ensuring the preservation of undergrowth		Mass of wood, cube meters						Regulatory cost, hryvnias						It is necessary to pay taking into account indexation (discount), hryvnias
					on the area, hectares	number, th. pieces of 1 hectare	Business	Fuel wood	Together Stem wood	merchantable wood from the crown	firewood and twigs	together	Business	Fuel wood	Together Stem wood	merchantable wood from the crown	firewood and twigs	together	

_____
Total

Basis for indexing (discounts):_____
Term of payment for the released wood: _____
Not subject to felling: _____
_____

Harvesting period end: "___" _____ 20___ year.
Transportation is allowed: _____
Transportation expiration date: "___" _____ 20___ year.
Wood storage conditions:_____
Method of cleaning: _____
Logging is carried out in accordance with technological maps:
Special conditions: _____

Stamp

Logging ticket issued by: (signature)

Forest users are obliged to comply with the requirements of the Procedure for Special Use of Forest Resources.

For violation of the Procedure for special use of forest resources, timber harvesting may be terminated in accordance with the established procedure.

With special procedure of forest resources and fire safety aware.

Forest user _____(signature)

Note on the granting of deferral of harvesting and transportation of timber

_____

Figure 26. Translation of the Ukrainian forestry ticket to fill-in

FORESTRY TICKET
ñ___ò_____ 20___ ò.

Region _____ District _____

Forest owner or permanent forest user: _____
Forestry: _____
On the basis of : _____
allowed _____(name of the forest user, his address)
to carry out _____ in the amounts: (type of special use of forest resources)

Category of forests	Quarter number	Allocation number, plot	Area, hectares	Allowed amount of use		Unit price, hryvnias	Total amount, hryvnias
				Unit	Amount		

Total

Deadline for payment for the use of forest resources: _____
Special conditions: _____
Term of use from: ñ___ò_____ 20__ to ñ___ò_____ 20__
Stamp

Forestry ticket issued by _____(signature)

Forest user is acquainted with the Rules of harvesting of secondary forest materials and implementation of secondary forest uses, the Rules of use of useful properties of forests and the Rules of fire safety in forests.

Forest user _____(signature)
Note on the results of the use of forest resources (useful properties of forests) and payment

_____

List of references used during the case study:

1. Analysis of the legislative framework on timber flow control system in Ukraine and development of improved proposals. Pavlo Kravets. April-June 2014. FLEG II (ENPI East) Programme. http://www.enpi-fleg.org/site/assets/files/1892/analysis_of_the_legislative_framework_on_timber_flow_control_system_in_ukraine_and_development_of_improved_proposals.pdf
2. IMPLEMENTATION GUIDE FOR COMPANIES TRADING FSC-CERTIFIED MATERIALS IN THE EUROPEAN UNION https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjxkJWEpIbqAhWSsaQKHePJB80QFjAAegQIARAB&url=https%3A%2F%2Fic.fsc.org%2Ffile-download.eu-timber-regulation-implementation-guide.a-13.pdf&usg=AOvVaw1-Kh-yzGZABiX32sSS4bNP
3. Creation of the competitive biofuel market in Ukraine. UABIO Position Paper ¯ 18. Georgii Geletukha, Tetiana Zheliezna.
4. Opportunities for wood fuel harvesting in forests of Ukraine. UABio Position Paper N 19. Georgii Geletukha, Tetiana Zheliezna, Anna Pastukh, Semeon Drahniev.

5. A manual ñComprehensive analysis of the Ukrainian biomass pellets market (definition of growth points)ò UNDP/GEF project ñDevelopment and commercialization of bioenergy technologies in the municipal sector of Ukraineò G. Geletukha, V. Kramar, O. Epik, T. Antoshchuk, V. Titkov.

List of interviewees

- Sergii Kondratskyi. ы hief forester, State Enterprise ñMakariv forestryò
- Yurii Nestoryak, Deputy Director for Innovative Forestry and Sustainable Development, Boyar Forest Research Station.
- Yurii Pavliuk, managing director, Antica Natura Ltd.

Case study ï USA (sustainable harvesting criteria)

Key findings

The table below summarizes the key findings of the North Carolina case study for the sustainable harvesting criteria. The majority of the harvesting sub-criteria are covered by evidence which is already available or could become available if provided by forest owners for example.

When specifically looking at the long-term production sub-criterion, currently private forest owners do not have any legal obligations to comply on this. Evidence would only be available to demonstrate this criterion depending on the size of the sourcing area and the level of detail of the US Forest Service Forest Inventory and Analysis (FIA) program. Furthermore, additional details to monitor/determine the annual increment necessary to meet the long-term production sub-criterion will be required.

Table 23. Key findings on the USA case study

Criterion	Type of evidence	Available for this region?	Ease of access	Comment
Legality	Own Due Diligence System (DDS)	Yes	DDS framework available publicly; specific results are restricted	
	Due Diligence System (DDS) via a recognized monitoring organization	No	Public, but must be requested specifically; not searchable on agency website	
	Records kept by traders	Yes		In the NC case study with ENVIVA as the dominant pellet producer, operators and traders are one and the same
	Type of forest operation from which forest biomass results (final felling, thinning)	Yes, for tracts where current biomass operators are involved	Restricted; information is held by operators. Exception would be if harvest occurs on federal land or is audited by NC Forest Service to e.g. monitor voluntary BMP implementation.	
Forest regeneration	Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	No. There is no legal mandate regarding quality, quantity, species, etc. of forest regeneration	N/A	
Protected areas	Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the	Yes. Any nationally designated nature protection areas will have management plans that stipulate	Public	

	protected areas, including wetlands and peatlands	measures and prohibitions	
	Evidence of implementation of plans/measures in nature protection areas	Yes, for federal lands. Any federal agency will monitor for quality control and report on active forest operations	Public upon specific request
	Permissions for biomass removal in protected areas including wetlands and peatlands	Will be stated in the agency contract if biomass removal is allowed or not	Contract template available publicly through the responsible agency (e.g. US Fish and Wildlife Service, US Forest Service, Bureau of Land Management, Department of Defence), but not specific executed contracts
Soil quality and biodiversity	The existence of poor or vulnerable soils in the forest sourcing area.	Yes. USDA NRCS soils maps and data available for entire state. Wetland determination can be requested from applicable agencies	Public
	Harvesting of forest biomass on poor or vulnerable soils	No	
	Stump or residue removal	No	
	Consideration and minimizing of negative impacts on biodiversity features	Yes, but only for features that are identified as having high biological diversity by public and/or private entities	Mixture of public and private (element occurrences on private lands with undisclosed locations)
	Minimization of impacts on soil and remaining stand	Partially. Operator, supplier, and NC Forest Service harvest audits focus on BMPs for soil and water quality, not health/quality of remaining stand	Private; possibly public by special request
Long term production	Sustainable harvest levels	No, except at the macro scale using FIA data	Public
	Harvest amounts exceed net annual increments	No, except by extrapolating from the FIA data at a relevant county or defined extent that includes FIA plot locations	Public

Introduction

North Carolinaôs wood pellet industry is dominated by three pellet mills owned and operated by Enviva with an output capacity ranging between 380,000 to 550,000 tons per year. Regarding the typical sourcing area which is accessible in North Carolina, Envivaôs pellet feedstock in this region consists of 22% of pine and 78% of hardwood. Around 87% is sourced from forests directly (with over 50% being hardwoods sourced from mixed oak and pine forests) with the remaining 13% derived from forest industry residues.

Nearly all of North Carolinaôs forestland is available for timber production and classified as timberland. The forest products industry is the largest manufacturing sector in North Carolina and directly employed 75,000 people (as of 2018). The forest products sector contributes more than $US 4.5 billion to the state's gross product and provides more than $US 33.6 billion in industry output to North Carolina. Three large pellet mills produce over 1.5 million tons of wood pellets per year in North Carolina. Wood is sourced from within the state and from neighbouring states. This equals over 12% of the US total wood pellet production capacity.

The ownership of the forestry sector is structured as follow: over 75% of North Carolinaôs 7.3 million hectares of forests are privately owned and over 60% of North Carolinaôs forests are non-industrial private forests while industrial and corporate ownership is at 24%. Less than 5% is state-owned forest with the remaining public forests owned largely by the federal government through various agencies (US Forest Service National Forest System, National Park Service, US Fish and Wildlife Service, US Department of Defense). Thirty-five percent of North Carolinaôs forests are softwood dominated, 90% of which are dominated by Loblolly and Shortleaf Pine.

Responses to the case study were limited to key pieces of legislation that have some enforcement capacity. Since North Carolina is dominated by private forests, practices, regulations, and procedures typical for federal forests do not apply to the large majority of forest operations. Water and soil related guidelines are voluntary on a harvest level (Best Management Practices; BMPs) as are productivity protection measures. For instance, on a national level, the Resources Planning Act (RPA) only shows trends in productivity and some future estimate to help (states or the federal government) making informed decisions. However, the RPA does not mandate a legal rule on how harvests are to be implemented. For private forests, regeneration and productivity requirements do not exist by legal mandate. For soil and hydrology related concerns, implementation of BMPs are actively monitored but do not contain a legal mandate either.

Adherence to Best Management Practices is voluntary (though monitored) in North Carolina, the involvement of licensed foresters is not required to harvest (private) forests. While declining slightly in employment numbers, the forest sector industry in the region has been expanding over the past years. Challenges include a shift in traditional forest products industries with declines in the conventional pulp market conventional pulp mills closing and increasing loss of forests due to development.

Background questions

1.	Please indicate which region/location is looked at.
	North Carolina, USA
2.	Please indicate in 1-2 sentences why this region is of interest for this specific case study.
	North Carolina has a robust forest products market for export pellets and 58% of the stateôs land area is occupied by forested areas that are available for timber production.
3.	Please indicate if there are specific boundary conditions you want to mention.
	Only the eastern half of the state has forests within the export pellet market ñwoodshedò

Legality of harvest operations at forest sourcing area level

4.i	Is the economic operator a first placer of harvested timber or timber products on the EU market (from inside or outside the EU)? *If no, go to question 4.iv.*
	Yes.
4.ii	The operator has its own due diligence system in place to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
	Yes, ENVIVA, as the case study operator, developed their own "track and trace" system to ensure the raw materials delivered to their mills were harvested legally. ENVIVA is the world's largest pellet producer and owns and operates four pellet mills in North Carolina with a total capacity of over two million metric tonnes per year. ENVIVA pellet plants source biomass mostly from pine and hardwood species from surrounding forests and partly from sawmill residues. ENVIVA's pellets are primarily shipped to Europe for power production. Two mills, Hamlet and Ahoskie, were used as the basis for this case study. Recent supply base reports from 2019 audits conducted by the Sustainable Biomass Partnership provide the basis for much of the results below.
4.iii	The operator is assisted by a recognized monitoring organisation to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
	No.
4.iv	Traders keep records of their suppliers and customers according to Article 5 of the EU Timber Regulation ((EU) 995/2010)?
	In this case, the operators and traders are one and the same. They keep detailed records of their suppliers and the source of the supply (the timberland owner). Records of the location of the source tract/parcel is also maintained.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Own Due Diligence System (DDS)	Yes	DDS framework available publicly; specific results are restricted	https://www.envivabiomass.com/sustainability/responsible-sourcing/track-trace/ Self-reported harvest data by forest property owner. No requirement for professional forester to be involved/certify data accuracy. Third party verification in place.
Due Diligence System (DDS) via a recognized monitoring organization	No	Public, but must be requested specifically; not searchable on agency website	
Records kept by traders	Yes		In the NC case study with ENVIVA as the dominant pellet producer, operators and traders are one and the same

Forest regeneration after harvest

5.i	Does the forest biomass result from final felling or an intermediate felling or clearing of forest area after natural disturbances? *If not, forest biomass results from a precommercial thinning or pruning of standing trees. Go to question 6.*
	Yes.
5.ii	Do supplier contracts require that forest area regeneration is carried out before or after final felling or harvest, either through natural regeneration, planting and seeding, or coppice regrowth and that forest regeneration is done in a manner that ensures quantity and quality of next generation forest resources? *If yes, go to question 6.*
	Yes for the first three parts of the question. Operators ensure that the harvested area (if final felling) will be replanted or regrown through natural regeneration as forested land. Operators will not enter into a contract with a supplier on any lands where trees are to be felled to facilitate conversion to non-forest uses. However long-term evaluation of regeneration success by operators isn't currently feasible and there is no legal mandate requiring it. Operators are developing remote sensing tools to help gauge long term success of regeneration efforts.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Type of forest operation from which forest biomass results (final felling, thinning)	Yes, for tracts where current biomass operators are involved	Restricted; information is held by operators. Exception would be if harvest occurs on federal land or is audited by NC Forest Service to e.g. monitor voluntary BMP implementation.	
Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.)	No. There is no legal mandate regarding quality, quantity, species, etc. of forest regeneration		

Protected areas

6.i	Does the forest sourcing area include areas designated by international or national law of the relevant competent authority for nature protection purposes, including wetlands and peatlands, as protected? *If no, go to question 7.*
	Yes. Only federal lands contain nationally designated nature protection areas. Any timber harvesting on these lands will be both instigated by and closely regulated by the applicable federal agency. In North Carolina this would include US Forest Service lands, US Department of Defence lands, and National Wildlife Refuges (managed by the US Fish & Wildlife Service). Protected areas in the US can be

	identified through the GAP Analysis Projectõs website.[108] Additionally, Enviva has conducted a Forest Stewardship Council Controlled Wood Risk Assessment (FSC US Controlled Wood National Risk Assessment V1-0 D3-0) that requires mapping of protected areas to determine risk.[109]
6.ii	Do supplier contracts contain the provision of conditions statements from the relevant competent authority?
	Yes. Any supplier providing raw material from federally managed lands will be working under federal contracts that are available to and monitored by the operators.
6.iii	Do supplier contracts contain the required implementation evidence of the measures specified in the conditions statement?
	No. ENVIVAõs track and trace system relies on self-reporting of forest owners. Evidence is provided through third-party verification, in part relying on harvest site-access for areas identified as high risk under FSCõs controlled wood standard.
6.iv	If forest operations are restricted in the nature protection areas, do suppliers contracts require the provision of biomass removal in the protected area obtained from the relevant competent authority (including wetlands and peatlands)?
	Yes. Supplier contracts in these situations will be drawn up by the federal agency that owns/manages the nature protection area.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes. Any nationally designated nature protection areas will have management plans that stipulate measures and prohibitions	Public	National Forest, DOD, or National Wildlife Refuge management plans (specific to that Forest, military base, or Refuge)
Evidence of implementation of plans/measures in nature protection areas	Yes, for federal lands. Any federal agency will monitor for quality control and report on active forest operations	Public upon specific request	(Federally) protected area specific management plans within NC
Permissions for biomass removal in protected areas including wetlands and peatlands	Will be stated in the agency contract if biomass removal is allowed or not	Contract template available publicly through the responsible agency (e.g. US Fish and Wildlife Service, US Forest Service, Bureau of Land Management, Department of Defence), but not specific executed contracts	

[108] https://www.usgs.gov/core-science-systems/science-analytics-and-synthesis/gap/science/protected-areas

[109] See page 61: https://sbp-cert.org/wp-content/uploads/2019/09/Supply-Base-Report-v1.3_Main-Audit_Enviva-Pellets-Hamlet-FINAL.pdf

Maintenance of soil quality and biodiversity with the aim of minimizing negative impacts

7.i	Do poor or vulnerable soils exist in the forest sourcing area? *If no, go to question 8.i.*
	Yes. Typically, the most vulnerable soils would be saturated types that are periodically inundated. North Carolina Forest Best Management Practices (BMPs) address protection of these types of soils. The SSURGO database of the US Department of Agriculture contains information on soils.[110] Soil surveys specific to North Carolina can be downloaded as well.[111]
7.ii	Do supplier contracts require harvesting permission of the relevant competent authority in sensitive areas in the forest sourcing area (e.g. poor vulnerable or sensitive soils) and confirmation of appropriate precautionary measures and harvesting procedures in these areas? *If no, go to question 8.ii.*
	Permission is not required prior to harvest on private lands in general, but any harvest or other silvicultural activity done in federally jurisdictional wetlands as determined by the US Army Corps of Engineers must comply with Section 404 silvicultural exemption of the Clean Water Act. If the harvest is not part of a silvicultural activity, then federal permits are required prior to any activity.
8.i	Does the biomass include stumps and residues? *If no, go to question 9.i.*
	No. Stumps are not accepted in North Carolina export biomass market, nor are logging residues.
8.ii	Do suppliers contracts require that evidence is provided to confirm that stumps or residues have not been harvested inappropriately from poor vulnerable soils? *If no, go to question 9.ii.*
	No, but stump and residue removal are not part of a harvest operation in North Carolina. This requirement would therefore not be applicable in this case.
9.i	Do supplier contracts require that harvesting operations take into account biodiversity attributes to minimise the impact on native forest types, habitat features, rare and endangered species and their habitats, stipulated and recommended deadwood types and amounts?
	Yes. Operators will only purchase from suppliers that have addressed the unique needs of High Conservation Value Forests and/or Rare, Threatened or Endangered species and their habitats. Operators have declared they will not accept any supply from certain (self-selected) rare forest types.
9.ii	Do suppliers contracts require the proof that avoidable damage (e.g. to the soil and the remaining stand) due to the harvesting operations has not occurred and that negative impacts due to harvesting operations have been minimised?
	Yes. Operators conduct post-harvest audits to ensure compliance with state voluntary best management practices to protect water quality and soil health.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

[110] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053627

[111] https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=NC

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
The existence of poor or vulnerable soils in the forest sourcing area	Yes. USDA NRCS soils maps and data available for entire state. Wetland determination can be requested from applicable agencies	Public	North Carolina Soil maps: https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=NC
Harvesting of forest biomass on poor or vulnerable soils	No		
Stump or residue removal	No		
Consideration and minimizing of negative impacts on biodiversity features	Yes, but only for features that are identified as having high biological diversity by public and/or private entities	Mixture of public and private (element occurrences on private lands with undisclosed locations)	https://www.ncnhp.org/data/species-community-search
Minimization of impacts on soil and remaining stand	Partially. Operator, supplier, and NC Forest Service harvest audits focus on BMPs for soil and water quality, not health/quality of remaining stand	Private; possibly public by special request	https://www.ncforestservice.gov/water_quality/bmp_manual.htm

Maintenance or improvement of the long-term production capacity of the forest

10.i	Does data exist on the harvested wood amounts and net annual increments as part of the forest sourcing area? *If no, pass the rest of the questions.*
	No. The only long term published growth to drain forest data available is through the US Forest Service Forest Inventory and Analysis (FIA) program. FIA data are continuous forest inventory plots remeasured every ~5-10 years across all land ownership classes and include any forest area meeting the following criteria: ñforested areas that are undeveloped or "not developed for non-forest land users", are at least an acre in size and 120' in width, and contain a "live plus missing" canopy cover of at least 10 percentò Each plot represents ~ 2,000 ha. Data are not available on an individual ownership level (e.g., tract or parcel). The EVALIDator tool allows for an efficient and user-friendly analysis of FIA data with a limited set of predefined queries.[112] There is not a mandate for sustainable harvest yields on private forest lands. US National Forests (federal) are mandated to maintain sustainable harvest levels (growth exceeds harvest).
10.ii	Do average annual harvested timber amounts NOT exceed the average net annual increment (e.g. an average measured over a 5-year period)? *If yes, pass the rest of the questions.*
	Yes. Recent North Carolina state-wide FIA data show increasing trend in merchantable and total volume. The trend holds at the county level (smaller spatial scale). Source: See Annex for screenshot of FIA Report run June 15, 2020.

[112] https://apps.fs.usda.gov/Evalidator/evalidator.jsp

11.i	In the forest sourcing area, do average annual harvest levels exceed the average net annual increment? Due to restructuring of even-aged woodlands? Habitat management or restoration of biodiversity? Or a response to pet, disease or storm damage?
	N/A
11.ii	Do permits exist to mention or justify this in the case of exceptional higher harvest levels? *If yes, pass next question.*
	N/A

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Sustainable harvest levels	No, except at the macro scale using FIA data	Public	https://apps.fs.usda.gov/Evalidator/evalidator.jsp
Harvest amounts exceed net annual increments	No, except by extrapolating from the FIA data at a relevant county or defined extent that includes FIA plot locations	Public	https://apps.fs.usda.gov/Evalidator/evalidator.jsp

Background information

Example evidence

6/15/2020 EVALIDator Version 1.8.0.01

EVALIDator Version 1.8.0.01 - View report

Numerator attribute number and description: 0202 Average annual net growth of merchantable bole volume of growing-stock trees (at least 5 inches d.b.h.), in cubic feet, on forest land
Denominator attribute number and description: 0002 Area of forest land, in acres
This ratio estimate is based on the plot area that was forest land at both the beginning and end of the remeasurement period. This provides a more realistic ratio estimate of the actual change component (growth, removals, mortality) that has occurred on lands that remain in the forest land base.
FIADEF as the forest land definition.
State/EVAL_GRP(s):
North Carolina 372019
Page variable=None (based on values from the Current inventory).
Row variable=County code and name (based on values from the Current inventory).
Column variable=All live stocking (based on values from the Current inventory).
Filtering clause(s) applied to numerator:
Filtering clause(s) applied to numerator and denominator:

Ratio estimate:

	All live stocking					
County code and name	**Total**	**Overstocked**	**Fully stocked**	**Medium stocked**	**Poorly stocked**	**Nonstocked**
Total	84.5617	122.7906	96.3686	65.3641	36.5173	37.1019
37001 NC Alamance	75.5443	54.0499	102.0887	60.5659	18.5825	-
37003 NC Alexander	54.8614	20.3207	72.3466	45.8681	45.9427	-
37005 NC Alleghany	92.0064	-5.2519	121.3039	37.1502	-	119.7497
37007 NC Anson	128.1617	58.7749	180.2173	95.2955	93.7314	-
37009 NC Ashe	79.3176	73.4468	96.7866	70.0686	-19.3846	-
37011 NC Avery	26.4930	58.6117	12.0148	27.7280	18.4552	-
37013 NC Beaufort	108.6672	147.8957	130.9396	94.9653	46.4177	62.6432
37015 NC Bertie	129.9179	173.7100	131.0944	111.2979	21.5253	-
37017 NC Bladen	86.5839	129.9617	98.8519	65.4199	38.9734	47.5545
37019 NC Brunswick	90.3815	102.9636	121.9403	57.2005	44.0089	31.5170
37021 NC Buncombe	49.7412	67.0466	56.7161	26.6198	27.3975	-
37023 NC Burke	71.3588	79.5963	83.8384	57.4370	55.5479	-
37025 NC Cabarrus	69.6120	23.3100	102.5658	51.4188	-40.5369	99.4069
37027 NC Caldwell	68.1475	86.0435	59.3336	85.1598	48.1381	35.1590
37029 NC Camden	42.3156	-17.3146	155.9722	3.7428	42.6497	-
37031 NC Carteret	71.9609	139.1588	67.7940	65.7070	23.5014	1.6255
37033 NC Caswell	71.2571	73.1718	89.4413	35.3086	41.5991	-
37035 NC Catawba	80.2501	69.0180	80.8226	90.8172	99.5874	-
37037 NC Chatham	133.5102	144.1589	148.8466	116.3973	71.1277	-
37039 NC Cherokee	52.3448	62.5318	53.6408	49.2491	48.0164	-
37041 NC Chowan	134.0621	-	168.9250	160.0120	-18.3689	-
37043 NC Clay	32.3482	54.3861	61.5339	1.4034	41.8940	-
37045 NC Cleveland	85.2896	173.6133	94.3151	56.0643	37.2781	-

Question 12. Supply Area Map Example

Source: https://www.envivabiomass.com/sustainability/responsible-sourcing/wood-supply-map/#5/33.146/-84.930

Question 15. Stand History information examples:

ENVIVA TRACT SETUP SHEET
Stand-Level Information

FORM GUIDANCE	Please provide information for at least one stand. Complete stands 2-5, if information is available. Multiple stand definition: Different harvest type, forest type, or age class within the harvest area.

	Stand 1	Stand 2	Stand 3	Stand 4	Stand 5
Was stand established by planting?	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown
How will stand be regenerated after harvest? * As prior to harvest	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown
Describe this stand's stocking preharvest	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked
Estimated tons to Enviva					
Forest cover type	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood
Harvest type	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning
Age class	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+
Acreage					
Stand history					

Field	Explanation/Options
Stand establishment	Was the stand established by planting? Yes, No, or Unknown
Stand regeneration	How will the stand be regenerated post-harvest? Planted with same or different species, Planted with unknown species, Naturally regenerated, Unknown
Stand stocking	Describe the stand's stocking preharvest: Understocked, Fully Stocked, Overstocked
Estimated tons to Enviva	Estimate of the tons Enviva will receive from each stand
Forest cover type	Cover type of the stand: Bottomland Hardwood, Mixed Pine & Hardwood, Other Hardwood, Pine Forest, or Pine with Hardwood Understory
Harvest type	Method of extraction: Arboriculture/salvage, Clearcut, Preharvest, Seed Tree cut, Selection Cut, Thinning
Age class	10-year range estimate of forest age (choose overstory age class in case of uneven age management)
Acreage	Approximated acreage of the stand to be harvested
Stand History	An explanation of historical use of the stand. Example: "Harvested in 1950, thinned in 1965"

DEFINITIONS OF FIELDS ON OUR QUESTIONNAIRE

List of references used during the case study

1. US EIA 2020. https://www.eia.gov/biofuels/biomass/#dashboard
2. Enviva 2020. https://www.envivabiomass.com/wp-content/uploads/2019/11/Northampton-SBP-Supply-Base-Report.pdf
3. North Carolina Forest Service 2016. https://www.ncforestservice.gov/Managing_your_forest/national_forest_products_week.htm; https://ncforestservice.gov/about_ncfs.htm

4. North Carolina State University 2018. https://content.ces.ncsu.edu/economic-contribution-of-the-forest-sector-in-north-carolina
5. North Carolina State University 2013. https://content.ces.ncsu.edu/north-carolinas-forest-and-forest-products-industry-by-the-numbers
6. USDA FS Evalidator: https://apps.fs.usda.gov/Evalidator/evalidator.jsp
7. USDA Forest Service 2020. Timber Products Output (TPO) studies. https://www.fia.fs.fed.us/program-features/tpo/
8. USDA Forest Service 2022. Future of Americaôs Forest and Rangelands: Forest Service 2010 Resources Planning Act Assessment (No. Gen. Tech. Rep. WO-87). http://www.treesearch.fs.fed.us/pubs/41976/

List of interviewees

- Bruce M. White (of Gelbert & Company Forestry Consultants of Raleigh, North Carolina), Registered Forester, North Carolina, #1175

Case study ï Russia (sustainable harvesting criteria)

Key findings

The table below summarizes the key findings of the Russia case study for the sustainable harvesting criteria. Several types of evidence would be available to comply, including concessions or the Project Forest Development (PFD) document. These types of evidence are however mostly available from forest owners and are currently not included in supplier contracts. If the latter condition would be met, the harvesting criteria could then be met.

On the element of long-term production capacity, the currently available information on the annual allowable cut, is deemed not very accurate. If it is used for the assessment of the criterion on long term production capacity, there is a risk that the resulting production capacity of forests in Russia will decline. If the publicly available information would not be used, it will be difficult for operators to prove their compliance with the sub-criteria. Therefore, it would be advised that the government improve the calculations on annual allowable cuts.

Table 24. Key findings on the Russia case study

Criterion	Type of evidence	Available for this region?	Ease of access	Comment
Legality	Own Due Diligence System (DDS)	No	Restricted	
	Due Diligence System (DDS) via a recognized monitoring organization	No (nearly never)	Restricted / Paid	
	Records kept by traders	No (only records on procurement)	Restricted*	
Forest regeneration	Type of forest operation from which forest biomass results (final felling, thinning).	Yes	Restricted	
	Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	No	Restricted	
Protected areas	Condition statements from statutory bodies regarding protected areas including stipulated measures and	Yes	Public	

	prohibitions in the protected areas, including wetlands and peatlands		
	Evidence of implementation of plans/measures in nature protection areas	Yes	Restricted
	Permissions for biomass removal in protected areas including wetlands and peatlands.	Yes (often it is possible to harvest in these areas)	Restricted
Soil quality and biodiversity	The existence of poor or vulnerable soils in the forest sourcing area.	Poor soils ï **no** Vulnerable soils ï **yes** (partly)	Public
	Harvesting of forest biomass on poor or vulnerable soils	Yes	Restricted
	Stump or residue removal	No	Restricted
	Consideration and minimizing of negative impacts on biodiversity features	Yes	Restricted Public
	Minimization of impacts on soil and remaining stand	Yes	Public
Long term production	Sustainable harvest levels	No	Restricted
	Harvest amounts exceed net annual increments	Yes	Restricted

Introduction

The Russian pellet sector has grown in average with around 10% per year for the past 16 years. At present it produces around 2.2 million tons of wood pellets a year, almost all produced from saw mill and wood processing residues. In Russia over 200 companies are producing wood pellets, approximately 40% is produced by the top 10 pellet plants. Installed production capacity is near to 4 million tons a year. Domestic consumption is estimated to be around 300 kton a year. In remote regions it can exceed half the produced volumes. Around 85% of the wood pellets are exported, mostly by a few large traders.

Russian pellet market growth is supply driven. Sawmills and other wood processing companies are required to utilise their residues. There is insufficient demand for wood residues domestically, and in the past these surpluses led to illegal landfills. The government is taking action against this problem. Current and new wood processing companies must take into account the utilisation of the residues. As a result, the Russian pellet market has kept growing, and will keep growing, also during periods of low pellet prices.

Regarding certification, the Russian pellet sector is highly developed. Worldwide, Russia has the most FSC certified forests (in hectares) and the highest amount of SBP certified producers (42 valid producer certificates to date). All Russian SBP-certified biomass is based on FSC certification (not on PEFC, nor Supply Base Evaluations).

Most SBP certified pellet producers are also ENplus certified. Practically all pellets are produced from high-quality, clean wood processing residues. The pellets can be sold either to the industrial, or the residential market.

Next to wood pellets, Russia also exports wood chips, wood briquettes, and firewood. These market segments are smaller and less developed. The wood chips exported to the EU originate from regions along the borders of Europe. Wood chips are often produced from forestry residues and low-grade roundwood. During the case study, wood chip exports were kept in mind, since pellets are almost all produced from secondary processing residues.

Regarding the typical sourcing area in Russia, pellets are mainly produced in the Northwest of Russia and in Siberia. The typical wood working company is vertically integrated and holds a few large forest concessions. This are long-term lease agreements up-to 49 years, which can be prolonged. It produces planks and beams and can be reselling pulpwood to the paper industry. Its own concessions are normally FSC certified, but it is usually also buying uncertified wood from smaller companies. The company assesses these uncertified volumes itself and categorises them as FSC Controlled Wood. Siberia differs from the Northwest of Russia in ecological, economic and social terms.

On the size of the forestry sector, according to national statistics the total area of the "forest fund" is 1146 million ha. FAO data indicate 815 million hectares are actually forests (47% of the country).

Almost all segments of the forest and wood sector are developing actively. A large number of government stimulation programs are in place for wood harvesting and processing companies. Russia is stimulating the production of wood products with high added-value. In 2019, the share in GDP of the forest and wood sector increased from 0.50% to 0.67% (in comparison to 2018).

Generally, regarding the structure of the forestry sector and its ownership, the "Forest Fund" of Russia is owned by the federal government. The most common way forests are brought to the market is through long-term concessions. The Forest Code obliges each concession holder to develop a forestry plan (every 10 years). The concession holder pays a rental fee for the use of the forests. Inspections and law-enforcement are performed by State Forest Management Units (FMUs). The State FMUs are responsible for large forest areas, in which several concession holders and harvesting companies are active. The State FMUs perform forest operations in areas not covered by concessions. Whereas, the wood harvesting and processing industry has been privatised, on several aspects Russian forestry is still adapting to the present market conditions.

On the topic of particular legislation applying to the forestry sector in Russia, there are no forests with the goal to produce biomass (no energy plantations). Therefore, there is no legislation specifically related to the sustainable production of biomass.

In wood pellet production, hardly ever primary feedstock is used. Some wood pellet producers have, however, started to consider using wood from salvage and forest reconstruction operations.

Stumps are not used in Russia. Branches and treetops are also hardly ever used (if their use is not prohibited). On the contrary, it is not always profitable for harvesting companies to transport low-grade roundwood from harvesting sites. Leaving roundwood behind is, however, against the law.

A number of best practices and issues can be identified in the Russian forestry sector. Generally, it should be noted that much is being developed and improved. There are, however, still issues regarding the quality of the state forestry inventory (and, as a result, of the forest planning). Forest management plans are usually made on basis of outdated forest inventory data. Forestry planning insufficiently takes into account the local and regional specifics. Moreover, efforts on forest regeneration and maintenance are giving unsatisfactory results. Nowadays there is also the option to make forest management plans (for concession holders) on basis of up-to-date data and advanced modelling systems. These plans are already being developed on a voluntary basis by leading companies in the sector, and will become obligatory in the future.

Long transport distances and insufficient logistic facilities are important bottlenecks for the Russian biomass sector. Although the distances are long, the carbon footprint of Russian pellets is not excessively high; this because: the railway is electric traction, the pellets are made from processing

residues (no energy is spent on forestry and chipping trees), and the dryers run on low-grade biomass (e.g. bark).

It should be noted that in the past, legality risks were identified in Russia by NGOs. However, no government sources have provided a recent update on this point.. FSC certification is a sufficiently effective mitigation measure on sustainable forest management and the protection of HCVFs, but risks on the origin and trade of wood still remain. Companies placing Russian wood pellets on EU markets must assess the legality and origin of the wood and invest in due diligence. Regarding the trade in roundwood, the Russian online database EGAIS is a useful tool. Over the last decade, Russia has greatly improved the situation regarding illegal wood.

Background questions

1.	Please indicate which region/location is looked at.
	Russia. Wood chips and briquettes for export mainly originate from regions around the borders with the EU member states, namely the Republic of Karelia, and the regions of Leningrad and Pskov. Wood pellets for export are made throughout the whole country.
2.	Please indicate in 1-2 sentences why this region is of interest for this specific case study.
	Today, Russia is one of the important suppliers of biomass to the EU, it is also one of the countries which still has plenty growth potential to deliver biomass. Russia has 22% of the world's forest area (the most in the world) and its forest and wood sector are in a transition towards market economy for nearly 30 years now.
3.	Please indicate if there are specific boundary conditions you want to mention.
	The RED II investigation has in mind suppliers of primary woody biomass. Primary biomass is currently being delivered to the EU in the form of wood chips. This report focusses on a possible importer of Russian biomass. In first instance, wood chips are considered, but in terms of checking the requirements, there are no significant differences with checking the import of wood pellets and wood briquettes. Today, practically no primary wood is used in the wood pellet business. However, this is slowly changing. Biomass producers have started considering forest residues and wood from maintenance operations for biomass production. For wood briquettes the same kind of feedstock is used as wood pellets. Russian briquettes, however, are more often imported to the EU without an FSC, PEFC, SBP or other sustainability certificate. Considering the nomenclature of export categories of ñwood fuelò this category includes: wood chips, wood pellets, wood briquettes, as also charcoal and firewood. There is also a potential for agricultural biomass products as well.

Legality of harvest operations at forest sourcing area level

4.i	Is the economic operator a first placer of harvested timber or timber products on the EU market (from inside or outside the EU)? *If no, go to question 4.iv.*
	No. Primary biomass from Russia is currently being delivered to the EU in the form of wood chips. The biomass producer is normally not the importer to the EU, but could be. Normally traders import the biomass to the EU. This are Russian companies or companies registered in the EU or elsewhere. Traders can be registered in tax havens in, or outside the EU, what can result in a higher legality risk. The supply contract (and sometimes the delivery notes/ CMRs) state the incoterms of the imports to the EU. On basis of the incoterms can be determined which entity is the first placer on the EU market. Official customs declarations. Companies need to officially get approved, imports and exports. This is documented. Government agencies obtain and process the information on imported products to the EU. EUTR inspectors normally use lists of imported wood products per company. The biomass needs to be classified correctly in terms of qualities, species and quantities. To file an export declaration in Russia, the biomass exporter needs to have several documents (see Annex 4). Receipts that prove the payment of custom fees. Till date, Russia does not charge any export duties on woody biomass. Analyses indicate that the customs are well and strongly regulated in Russia. Although it is hardly possible to export non-declared wood material, in practice there is a risk the formal process of submitting documents to obtain the export permit is not fulfilled fully according the legal requirements. The full list of needed documents to export wood is extensive (Annex 4) and includes for example an official phytosanitary inspection. The Corruption Perception Index of Transparency International states a score of under 30 points for Russia, what is seen as an indication that government documents cannot be regarded as accurate all the time. Valid CITES license. There are 4 tree species in Russia that are listed by CITES, these however grow in Asia and the chance they are present in biomass is negligible. Next to CITES, there are tree species protected by the Russian red list of flora. This could be relevant for biomass exports to the EU. It is, however, difficult to find out whether the declared tree species include all the tree species used.
4.ii	The operator has its own due diligence system in place to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
	No. If the Biomass Producer (and possibly biomass trader) subtracts the biomass from its own concessions, it will not have an DDS on its own wood supply. In practice, very little biomass producers have a DDS. It is not required by law in Russia. Biomass Producers and traders that do not have own wood supply, or only partly, could in principle develop their own DDS. A DDS should include a risk assessment on legality. As a part of the DDS, there is an option to order a ñlegal sourceòrisk assessment by a third party (for example, for Russia, NEPcon is specialized in this), which will produce a report on legality of the wood supply. This ñlegal sourceòinvestigation is however very seldom ordered by biomass producers and traders. Link to the website of NEPcon on ñlegal sourceòhttps://www.nepcon.org/certification/legalsource Considering the EUTR, the biomass producer or trader must confirm that the organization responsible for forest management and wood harvesting has: • A forest lease agreement; or a forest stands sale agreement (when the forest is not taken in concession) • A Project Forest Development (PFD) that has passed state or municipal expertise (in case there is not forest lease agreement this is not needed, then the operations have to be in line with the state FMU Reglament) • Forest declarations (and payments);

- Technological maps for the harvest sites;
- Waybill confirming transportation of harvested timber from the harvest site to log yard

Additionally, the following documents could be gathered:

- State registrations as a legal entity, and at the Tax Office; Can be verified at https://egrul.nalog.ru/index.html
- Evidence of payment for required insurance fees, social security funds, the national medical insurance fund and retirement fund. Can be partly verified at https://service.nalog.ru/zd.do
- Evidence of payment the forest concession fee. Can be verified at http://rosleshoz.gov.ru/activity/economy_and_finance/stat

Biomass Producers or traders produce/obtain one or more of the following documents:

- Shipping specification
- Bill of lading or bill of lading
- Railway bill
- International consignment note (CMR)
- Consignment
- Phytosanitary certificate
- Agreements (contracts) for the supply of forest products, including with intermediaries
- Customs declarations (if relevant)

Risk assessment on legality. Biomass traders placing biomass on the EU market should have a DDS including a risk assessment on wood legality per supplier (according to the EUTR). They usually do not. However, when asked for the proof on compliance with the EUTR, the traders often get a few weeksôtime to collect data and legal documents and hand in a dossier.

Biomass Producers and their suppliers can be asked to submit a complete list (company names and legal addresses) of their suppliers and subcontractors. They sometimes are also requested to specify all relevant storage places of raw material and biomass in the supply chain and indicate whether there are risks related to mixing up wood from other sources (and intended for other purposes or clients). Suppliers can be asked to report on the risk related to the actual origin and legality of the wood, and the chance of non-eligible participants or inputs in the supply chain.

The risk assessment would do well to include a report on a stakeholder consultation on the legality of the concession rights, compliance to responsibilities towards the local population and indigenous people, compliance with conserving environmental values, such as intact forest landscapes, virgin forests, and other HCVFs. However, this is not legally required in Russia. They have to follow the PFD. It states officially protected areas, where operations can be forbidden to harvest, or e.g. have the right to perform a selective felling only.

Compliance with the aspects concerning the rights of indigenous people, is a weak point (see Annex 3).

The rules for wood circulation in Russia have been significantly tightened. According to the Federal Law dated December 28, 2013 No. 415-ʌ ÑOn Amendments to the Forest Code of the Russian Federation and the Code of Administrative Offenses of the Russian Federationò timber turnover is subject to mandatory control in a unified state accounting system. The Unified State Automated Information System (EGAIS) accounts transactions with volumes of wood (https://lesegais.ru/portal/).

The data are partly publicly accessible, the system provides information on transactions in roundwood and several other wood products, but information there is sometimes still incomplete. It is regulated by the ÑOrder of the Ministry of Natural Resources and Ecology of the Russian Federation dated April 12, 2016 N 233 On Approving the Administrative Regulation for the Execution of the State Function for the Implementation of the Federal State Forestry Supervision (Forest Protection)ò

Legal entities that have concluded a transaction with wood products are required to submit a declaration to the operator of the unified state automated information system in the form of an electronic document signed with an electronic signature.

	The declaration must include information on wood ownership, legal parties involved in the transaction, information on the volume of wood, on its tree species and assortment composition, information on the legal basis (documents) on which the timber was harvested, information on the contract under which the timber transferred, and also information about places of storage. Biomass producers and traders, just like any trading company in Russia have to register in front every truck load in a government system. The system records the delivery route and what is being transported.
4.iii	The operator is assisted by a recognized monitoring organization to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
	No. There are no Russian EUTR recognized monitoring organizations, but there are registered monitoring organizations with a department in Russia. • https://ec.europa.eu/environment/forests/timber_regulation.htm • https://ec.europa.eu/environment/forests/pdf/List%20of%20recognised%20MOs%20for%20web%20updated%2028NOV19.pdf In practice, these recognized organizations are nearly never involved in monitoring the legality of the biomass imports. Most biomass traders start investing the legality of the biomass from Russia only after they have been contacted by an EUTR inspector, or after they have obtained questions from an interested (industrial) customer. Traders consider FSC or PEFC certification sufficient risk mitigation (without performing due diligence), however, most traders also partly import uncertified wood (be it in the form of chips, pellets, and/or firewood). Some EU Member States seldom inspect biomass coming from Russia, one of the reasons inspectors mention, is that there is practically no risk that CITES tree species are present in the biomass (common tree species are used).
4.iv	Traders keep records of their suppliers and customers according to Article 5 of the EU Timber Regulation ((EU) 995/2010)?
	Yes. Specifically which company has supplied the woody biomass and to which company the woody biomass has been sold, can be found in the records of a biomass producer. By law most documents, such as contracts and primary accounting documents, accounting registers, accounting (financial) statements, and audit reports must be stored no less than 5 years after the contract, or reporting year were closed. This concerns direct suppliers and direct customers of the biomass producer. As stated in 4ii, information on the whole chain of custody is seldom gathered in a structural way. Information on how the suppliers of the suppliers obtained the wood is seldom gathered and stored. Because the forest fund is state owned, the supplier of the supplier is often the state, selling wood on stem.

Can you identify in the case study region, if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Own Due Diligence System (DDS)	No	Restricted	-
Due Diligence System (DDS) via a recognized monitoring organization.	No (nearly never)	Restricted / Paid (n/a)	-
Records kept by traders.	No (only records on procurement)	Restricted*	-

Forest regeneration after harvest

5.i	Does the forest biomass result from final felling or an intermediate felling or clearing of forest area after natural disturbances? *If not, forest biomass results from a precommercial thinning or pruning of standing trees. Go to question 6.*
	Very seldom, but this possibility is considered here. Commercial final fellings, such as clear cuts and selective fellings do not occur with the goal to produce biomass. There are no energy plantations in Russia. After final fellings, low grade wood in the form of harvesting residues, could, however, be chipped and sold as biomass. In case forest areas are cleaned after natural disturbances or with the goal of ñforest reconstructionò the percentage of low-grade wood in the form of harvesting residues used for biomass production will be substantially higher and can be the main output of the operations. There should be the official ñForest Pathology Inspection Actò this document alone is, however, too little proof, because there are still many cases of fraud regarding this Act. There is a risk that harvesting companies in cooperation with government officials too easily label forests as damaged or of undesirable quality, and thus fit for salvage operations. This risk is still significant. Arguably, this situation is slowly improving. Very seldom there are Biomass Producers in Russia (only a few), which are focussing on forest reconstruction activities as a source of biomass. In some regions, forests are dying or dominated by tree species without economical value. In forest reconstruction agreements the price for wood on stem is lower.
5.ii	Do supplier contracts require that forest area regeneration is carried out before or after final felling or harvest, either through natural regeneration, planting and seeding, or coppice regrowth and that forest regeneration is done in a manner that ensures quantity and quality of next generation forest resources? *If yes, go to question 6.*
	Very seldom. Biomass producers and traders normally do not specify this in their contracts with suppliers. At the state level, laws, rules and norms for reforestation are defined. The main ones are the Forest Code of the Russian Federation and the Order of the Ministry of natural resources and ecology of the Russian Federation of March 25, 2019 N 188 on approval of the rules of reforestation, the composition of the reforestation project, the procedure for developing the reforestation project and making changes to it. Without a valid Forest Concession Contract no PFD will be issued. Each lessee must have a valid Forest Concession Contract (Forest code Article 72) and a PFD (Forest Code Article 88); If the forest manager does not ensure reforestation as per PFD (the plan), the government officials will cancel the Forest Concession Contract. A valid Forest Concession Contract, by default means that the biomass producer harvests and plants trees according to PFD. Problems are, however, that the reforestation operations are often not planned where they are needed most, and, most importantly, that after the reforestation operations there are no requirements on maintenance of the stands, the seedlings are not taken care of and often perish. Considering the division of the responsibilities in Russian forestry, the second part of the criterion is not met: ñforest regeneration is done in a manner that ensures quantity and quality of next generation forest resourcesò Administrative offences on the reforestation requirements can serve as documented proof of poor implementation of the requirements. Too many administrative offences result in the termination of the Forest Concession Contract. However, the problem is that currently compliance with the present laws and regulations (and PFD) do not guarantee that ñforest regeneration is done in a manner that ensures quantity and quality of next generation forest resourcesò The Russian forestry system is still based on outdated norms and methods that do not guarantee the regeneration of forest stands after harvesting. Next to forest certification, there are case-studies and pilot projects in which these problems are solved. Legal documents and norms are under development, but till date these new methods on so called ñintensive forest managementòare not obligatory nation-wide. The regular PFD is too little evidence that the biomass producer complies with the second part of this criterion, but in combination with the following additional and voluntary ñintensive forest managementò requirements, the evidence could be considered sufficient:

	• PFD on basis of the advanced ñintensive forestry managementòprinciples. At present, legislation provides this option for the forest regions of Karelia (covered by 2 forest regions), Dvinsk, Baltiysk-Belozersk, Sredniy Angarsk, and Baikal Gorniy (but this is not yet a legal requirement). • PFD on basis of an advanced forest management planning investigation on basis of long-term scenarios of forest development and the principles of ñintensive forestry managementò(At present these are made by the Green Forest Foundation and non-public). Biomass Producers and/or their suppliers that have voluntarily developed a harvesting and regeneration plan on basis of the advanced model specifications, can deliver this as proof of compliance with this criterion. Every month (no later than the 10th day of each month) the concession holder has to submit a report in form 1-IL (forest use) (Order N 451 of August 21, 2017) to prove that logging is carried out in accordance with the previously submitted forest declaration. On a quarterly basis (no later than the 10th day of the month following the reporting period), the lessee has to submit a report on the protection of forests from fires to the forestry in the form 1-OL (forest protection) (appendix 2 of Order No. 78 of March 9, 2017). On a quarterly basis (no later than the 10th day of the month following the reporting period), the lessee must submit to the State FMU a report in the form 1-ŋ ∫ (forest protection) (appendix 6 of Order N 78 of March 9, 2017). On a quarterly basis (no later than the 10th day of the month following the reporting period), the lessee has to submit a report in form 1-VL (reproduction and afforestation of forests) (Order N 452 of August 21, 2017). State forestry officers conduct inspections of the cutting areas (appendix 6 of the Order N 367 of June 27, 2016) to verify compliance with the terms of: the lease agreement for a forest plot; the right to use the concession; sale agreements for forest stands; the PFDǫ the forest declaration; technological logging maps; and legislation regarding the completion of logging operations. After the inspection, the Logging Site Inspection Act is compiled (appendix 3 of the Order N 367 of June 27, 2016).

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Type of forest operation from which forest biomass results (final felling, thinning).	Yes	Public	State FMU Reglament (FM plan)
		Restricted	Forest Concession Contract and PFD of the lessee*
Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	No	Restricted	Forest Concession Contract. Project Forest Development (PFD) (regular one) PFD (on basis of the ñIntensive forestry management principlesò)**
		Restricted	Inspection reports of forest plots after harvesting and regenerating activities (Logging Site Inspection Act)***

* The Forest Declarations (in combination with possibly a Forest Pathology Inspection Act) indicate the forest harvesting type, but not the reforestation method.

Online a public summary can be found on the Forest Declarations, but it indicates only the kwartal (forest area identification squares of 1 by 1 km, usually) and planned volume of harvested timber. There is also a very short online summary on the Forest Concession Contract (EGAIS).

** An advanced model of forest harvesting and regeneration can already be implemented in the forest regions of Karelia (covered by 2 forest regions), Dvinsk, Baltiysk-Belozersk, Sredniy Angarsk, and Baikal Gorniy. In the future the needed specifications will become available for all forest regions and the sophisticated modelling option will become obligatory. At present this is done only by a few leaders in the industry.

The following legislation provides this option for the above mentioned regions:

- Order of the Ministry of Natural Resources of 22.11.2017 No.626 çOn the approval of the rules for forest maintenanceè (revision of 01.11.2018)
  https://rulaws.ru/acts/Prikaz-Minprirody-Rossii-ot-22.11.2017-N-626/
- Order of the Ministry of Natural Resources and Ecology of the Russian Federation of March 25, 2019 N 188 on the approval of the Rules of reforestation, the composition of the reforestation project, the procedure for developing a reforestation project and amending it (as amended on August 14, 2019)
  http://docs.cntd.ru/document/554151577/

This result of improved planning through advanced modelling can also be achieved by a voluntary forest management planning investigation on basis of long-term scenarios of forest development (non-public, by the Green Forest Foundation http://www.green-forest.org/links.html), which can be used as the basis of official PFD. These two options are similar, the same people are developing them. Such an advanced version of the PFD could be used as proof of compliance.

*** Companies do reforestation operations, but selecting which areas need artificial reforestation is often done poorly, and the main problem is the follow-up, during the next years and decades the young samplings are not taken care of. This is a structural problem in Russian forestry.

Protected areas

6.i	Does the forest sourcing area include areas designated by international or national law of the relevant competent authority for **nature protection purposes, including wetlands and peatlands**, as protected? *If no, go to question 7.*

	Yes, considering the officially listed protected areas (which can be found online in the Regional Forest Plan and the State FMU Regalement, as also on the website of WWF) and areas of environmental importance which were officially set aside during the Forest Inventory, the risk is low that these are incorrectly indicated in the PFD. The PFD, together with the Forest Declaration (harvest notification) are in general sufficient safeguards that the areas, which were categorized as protected areas by the government were actually found. There is, however, a risk that selective or sanitary clear cuts are done anyway in protected forests, based on incorrect Forest Pathology Inspection Acts. Checking the areas harvested on basis of Forest Pathology Inspection Acts could sometimes clarify this. However, often it is impossible to conclude the necessity of a sanitary felling by checking areas which have already been harvested and by observing the stumps that have been clear cut. If a concession holder often sources timber from sanitary harvests, it is suspicious, and in that case one (the biomass producer or an inspector) could visit salvage harvesting sites (sanitary fellings) before or during the forest operations. In exceptional cases, e.g. in cases of new (large) protection areas human error can occur. By comparing harvesting maps with the data in the public FMU Reglament and internet sources such as http://www.hcvf.ru/, these mistakes can be found. This is also being done by organisations like Greenpeace, and the chance a mistake is found and reported is high. There are no areas designated by international law (in the sense of, for example, Natura 2000, where the European Commission can make decisions on areas in certain member states). However, Russia has approved and interpreted certain international conventions. For example, in 1995, the Russian Federation approved the UN Convention on Biological Diversity, taking on a number of obligations, including the development and implementation of strategies, programs and legislative acts on the conservation of biological diversity. The Russian Federation has ratified the Convention on Biodiversity and reached its national target, which are covering 13,5% of its territory by a system of protected areas. By 2017, it was 13,6%. On basis of national law, all areas that already have an official status as a protected area are reflected in the state forest inventory, on basis of which forest management is based. Certain wetlands and sometimes peatlands can be set aside as a protection area. There are different kinds of protected areas, from closed national nature reserves, to areas appointed by regional authorities. At areas that are officially designated as a protected area or low-intensity forest operations are allowed, or none at all (by law). Next to these officially outlined protected areas, also during the Forest Inventory (smaller) areas are put aside, on basis of forest inventory rules. The State Forest Inventory report accumulates this information (indicating the large and small protected areas) and is a mandatory basis for development of subsequent documents related to forest management. For example: The Forest Inventory data are taken into account to produce Regional Forest Management Plans, which are used to make State FMU Reglaments, which are the basis for PFDs (the concession holderôs harvesting and regeneration plan). There are official forest management requirements to the different kinds of protected areas stated in the Forest Inventory. The answer to this criterion is YES, because such areas are stated per concession. However: • This does not confirm that a sufficient amount of areas (considering e.g. international conventions) are categorised as protected. Specialists state that too little (large) areas are officially designated as protected areas; and that in practise the Forest Inventory inspectors have too little time and resources to find the (small) areas of ecological importance. The data of the Forest Inventory is often out-dated and poor. • Although on paper restrictions are implemented, and several areas obtain a protected or an environmental status, the implementation of protecting HCVFs, is insufficient. • The areas that are protected on paper, are sometimes harvested anyway, for example, on basis of incorrect sanitary clear-cut declarations in riparian zones, and insufficient law enforcement. Based on a Forest Pathology Inspection Act a Forest declaration can be issues. The declaration then states the forest plot should be ñsanitary clear cutò WWF has an extensive and detailed online map on HCVF in Russia that can be used as proof on compliance (http://www.hcvf.ru/) on preserving HCVFs. This map indicates much more HCVF than the ones set aside in the State Forest Inventory. These maps can be used to prepare a PFD and to determine if a concession holder has destroyed HCVFs (this is mainly of importance for the next criterion).

6.ii	Do supplier contracts contain the provision of conditions statements from the relevant competent authority?
	No, the Biomass Producer, for example, buying wood from a harvesting company, or from a saw mill, normally does not demand any additional conditions statements from the supplier. They use simple procurement contracts. It is not uncommon that the wood is offered for free without a contract also, because the saw mills have to get rid of processing residues, such as slab wood, in a legal way. The PFD of the forest concession holder, together with the Forest Declarations (harvesting notifications), however, do ñcontain the provision of conditions statements from the relevant competent authorityòon wood harvesting in and outside protected areas. It is illegal to not comply with these conditions and the execution of the conditions is checked by government forest inspectors. The State FMU Reglament is a forest plan, which is public. The PFD, which is based on the Reglament, is, however, not publicly available. These documents state the kind of forest management operations intended per plot and the amount of to-be-harvested cubic meters. The State FMU Regalement also states the protected areas. A summary on the issued forest declarations are (should be) publicly available through the online system EGAIS. The online system does not give information on the kind of forest harvesting operation (e.g. a maintenance cut, final cut or a sanitary felling). Although much information is publicly available (State FMU Reglament and a summary on the Forest Declarations), to obtain (and check) ñthe conditions statements from the relevant competent authoritiesò on the forest operations more information is needed. One could ask for the Forest Concession Contract and the PFD, as also the Forest declarations and the relevant Forest Pathology Inspection Acts. Considering supply of biomass upstream, supply contracts can state how a legal obligation will be met (but not a list of condition statements from the relevant competent authority). Large, industrial customers of Russian biomass in the EU sometimes have a list of additional requirements on environmental and social aspects and agree on additional safeguards that these aspects are met. Till date, traders do not have their an own (standardised) DDS forms to record company visits and risk assessments.
6.iii	Do supplier contracts contain the required implementation evidence of the measures specified in the conditions statement?
	No, the Biomass Producer, for example, buying wood from a harvesting company, can find online certain relevant documents on the conditions statements. The State FMU Reglament and a short summary on the Forest Declarations of the concession holder are publicly available. It would be very time consuming, but in principle a Biomass Producer could check if the wood supplier is working in the forest sections (kwartals, squares of normally 1 by 1 km), which are indicated as exploitable in the State FMU Reglament. But the online summary on forest declarations has insufficient information to go into the precise detail of the operations per plot per kwartal. Information on certain major issues with concession holders are stated by the State Forestry Agency online: http://rosleshoz.gov.ru/activity/economy_and_finance/stat. But information on the amount of fines a concession holder obtained, related to the fulfilment of the conditions related to forestry operations stated in the PFD and Forest Declarations is not available online. The documents a Biomass Producer can find publicly is insufficient evidence on the required implementation of the measures specified in the conditions statements. Moreover, the Biomass Producer should be able to investigate possible fraud in, for example, Forest Pathology Inspection Acts. In practice, biomass producers do not study the public information, nor demand additional evidence contractually. Therefore, the answer here is NO. A Biomass Producer could additionally require in its supplier contracts that the supplier delivers copies the Forest Concession Contract and the PFD, as also a full list of changes to the PFD related to areas with a certain protected status and the Reports on Forest Use. This would include sanitary fellings on basis of Forest Pathology Inspection Acts. One could also demand a full list of fines the concession holder obtained on forest operations, but it is impossible to check if they sent the whole list. The implementation of the agreed upon forest harvesting plan and measures to conserve protected areas are indeed checked by government inspectors (the government is the owner of the forest fund). The requirements have legal force and (by law) non-compliances to the agreements are fined or brought to justice. There is a system in place in which fines are officially issued and law suits are held. However, the system has very limited (too little) capacity on determining HCVF (which should become protected areas) and law-enforcement.

	Biomass traders and customers that are currently interested in complying with the minimal EUTR requirements, also do not gather on a structural basis concrete ñimplementation evidence of the measures specified in the conditions statementò, for example in forest management in protected areas. They assess risks, do random checks, and require the suppliers to have a general package of legal evidence ñreadily availableò. To comply with legal aspects the following order is of main importance: Order N 69 of the Forestry Agency of February 29, 2012: ñComposition of the Forest Development Project and the procedure for its developmentò. Relevant documents are the general Red Lists of protected species of Russia, and the Red Lists of protected species per Subject of the Russian Federation (region). These red lists are also useful to investigate legal compliance onsite.
6.iv	If forest operations are restricted in the nature protection areas, do suppliers contracts require the provision of biomass removal in the protected area obtained from the relevant competent authority (including wetlands and peatlands)?
	No, if the area is officially protected, it is often not possible to do final harvesting operations there, only e.g. sanitary cuts. If there is no official protection status ï timber is harvested as usual. The nature protection areas the government found and mapped, forestry often is not permitted (and thus is biomass removal also not permitted), or low-impact forestry operations are allowed only. This information can be found in the public State FMU Reglament, on basis of which the PFD are based. With ñbiomassòcould be understood low-grade forest residues that could be sold as wood chips. The PFD and Forest Declaration describe which forest harvesting methods should be used, forest regulations regulate if (and which) low-grade forest residues are allowed to be left in the forest, and which have to be harvested and removed. It happens that for feasibility reasons certain trees are left in the forest, which should have been harvested and wood logs are left along the forest roads. Such results are considered juridical offences and are fined or prosecuted. The removal of peat is considered under a different economic activity, not related to forestry and it is not considered within PFDs (thus forbidden).

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region? (yes/ no/ not reviewed)	Ease of access (public, paid, restricted)	Link to source or reference to Annex[113]
Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes	Public	State FMU Reglament
Evidence of implementation of plans/measures in nature protection areas	Yes	Restricted	Forest declarations (Special attention for sanitary fellings and thus the Forest Pathology Inspection Act)* Inspection reports of forest plots after harvesting and regenerating activities (Logging Site Inspection Act)
*Precautionary approach is recommended ï biomass produced through sanitary fellings should be avoided, or such sites should be inspected prior to harvesting.			
Permissions for biomass removal in protected areas including wetlands and peatlands.	Yes (often it is possible to harvest in these areas)	Restricted	Forest declarations Special attention for sanitary fellings and thus the Forest Pathology Inspection Act

Maintenance of soil quality and biodiversity with the aim of minimizing negative impacts

7.i	Do poor or vulnerable soils exist in the forest sourcing area? *If no, go to question 8.i.*
	Yes, **o**ften vulnerable and swampy soils are present, seldom poor soils (in the sense of limited availability of nutrients). In the past the PFD indicated winter and summer harvesting areas, but not anymore. Moreover, the PFD, which takes into account the State FMU Reglament (and which is based on the Regional Forest Management Plan and State Forest Inventory), is generally based on outdated raw data. A draft Government Decision has been developed, it provides measures for the conservation of forest soils (section III, paragraphs 13-14). Draft Decree of the Government of the Russian Federation "On approval of measures to preserve forest plantations, forest soils, the habitat of wildlife, and other natural objects in forests" (prepared on 08.24.2018). https://www.garant.ru/products/ipo/prime/doc/56669938/ This draft Decree will improve the management of vulnerable and poor forest soils.
7.ii	Do supplier contracts require harvesting permission of the relevant competent authority in sensitive areas in the forest sourcing area (e.g. poor vulnerable or sensitive soils) and confirmation of appropriate precautionary measures and harvesting procedures in these areas? *If no, go to question 8.ii.*
	No (see also 6ii and 4ii), the Biomass Producer, for example, buying wood from a harvesting company, or from a saw mill, normally does not demand any additional conditions statements from the supplier. The PFD of the forest concession holder, together with the Forest Declarations (harvesting notifications) in combination to the legal framework in forestry ñcontain the provision of conditions statements from

[113] Only for relevant source or type of evidence. No need to provide for all

	the relevant competent authorityò The forests are all state owned and the system of forestry laws and regulations applies to the whole forest fund. Timber harvesting rules: paragraph 12 l) ï When harvesting wood, the destruction of the upper fertile soil layer outside the dragging and loading areas is not allowed. The approach in practice is: • Excluding of most sensitive sites (wet) from exploitable area (State Forest Inventory / Regional forest management plan) • Harvesting timber at sensitive soils in winter time (when snow covers the soil) • Strengthening of the skidding trails with branches, tops of the trees and other wood residues Supplier contracts upstream (wood chip and pellet producers, and traders) do not demand proof on this point. Sometimes (in the best case) procurement contracts demand to keep a package of proof on legality readily available in case of an EUTR inspection (see also 4ii). This would include the Forest Concession Contract, PFD, some example harvesting declarations, and some example delivery documents. Online one can check the registration of companies and their main specifics (for free).
8.i	Does the biomass include stumps and residues? *If no, go to question 9.i.*
	No, tree stumps, are not used in Russia. Forest residues, like tree tops and branches, could be used in some cases and to some degree, but in practice they are not. Wood pellets are nearly always made from processing residues. Wood chips could be made from low-grade wood stems. Chipping forest residues, especially for exports would be something new (exceptional). In practise the forest residues are left in the forest to decay, or sometimes they are burnt. Stumps are never removed from harvest sites.
8.ii	Do suppliers contracts require that evidence is provided to confirm that stumps or residues have not been harvested inappropriately from poor vulnerable soils? *If no, go to question 9.ii.*
	No (see 8i), the Biomass Producer, for example, buying wood from a harvesting company, or from a saw mill, normally does not demand any additional conditions statements from the supplier. Biomass producers are of the opinion that this is sufficiently well covered by forestry laws and regulations. The forest fund is state owned. After the company executes the planned forest operations, the plots can be checked (at random) by government officials and several Acts are issued on compliance (or non-compliance) with the forestry regulations. The regulations determine how the forest plot should look like after the operations have been finished, this covers aspects such as standing young trees, standing mature trees, harvested trees, and in which way forest residues are left behind. In some regions the forest operations are checked often, while in the remote areas only 5-10% of the forest operations are checked.
9.i	Do supplier contracts require that harvesting operations take into account biodiversity attributes to minimise the impact on native forest types, habitat features, rare and endangered species and their habitats, stipulated and recommended deadwood types and amounts?
	No (see 6ii), the biomass Producers, which procure raw material from suppliers rely on the legal framework and law-enforcement regarding these topics and do not demand additional proof. The execution of the PFD and Forest Declarations is related to forestry on laws, regulations and norms that specify most of these topics. After the company executes the planned forest operations, the plots are checked at random by government officials and several Acts are issued on compliance (or non-compliance) with the forestry regulations. Biomass Producers interested in the correct execution of the legal requirements could ask for the state inspection Acts and for an overview of obtained fines. Considered are ñative forest typesòbut based on poor raw data, normally. In theory habitat features, and rare and endangered species and their habitats are also important in Forest Inventory, but in practice most are not found (only easy to find ecosystems housing these features are found). The Russian approach does not have stipulated and recommended deadwood types and amounts, but prescribes to take care of standing deadwood, where it could be of danger, but nowadays allows to leave dead trees standing were they do not form an obvious risk to people. The State FMU Reglament (public) and the PFD (non-public) indicate areas of high biodiversity value and for example buffer zones. The size of buffer zones are defined in clause 17 of the Timber Harvesting Rules. State inspectors check is harvesting companies comply with the requirements and

	the planned regime for the use of such sites. In particular, they check if the delivered wood was harvested in areas where wood harvesting was prohibited, or if the wood was harvested in the indicated season (during which wood harvesting is allowed). Timber Harvesting Rules, paragraph 24: When allocating cutting areas for harvesting in clear cuts, the following areas are not included in the operational area of the cutting areas: a) areas of natural sites of environmental importance; b) biodiversity objects with an area of more than 0.1 ha. This clause also regulates preserving different biodiversity elements, like preserving a group of very old trees, etc. Next to government data, WWF maintains an up-to-date and detailed map on HCVFs, which Biomass Producers and their customers could consult to establish performance on these topics. Concession holders have precise information on where they have and will perform forest operations (PFD and Forest Declarations). With this information it is not difficult to establish if the supplier has or plans to fell HCVFs. Usual (uncertified) suppliers, however, will not comply with the much more demanding maps of WWF on conserving HCVFs. Some aspects, such as rare and endangered species and their habitats (which can also be protected animals) require an investigation of the plot prior to the forest operations.
9.ii	Do suppliers contracts require the proof that avoidable damage (e.g. to the soil and the remaining stand) due to the harvesting operations has not occurred and that negative impacts due to harvesting operations have been minimised?
	No (see 6ii), **the b**iomass Producers, which procure raw material from suppliers rely on the legal framework and law-enforcement regarding these topics and do not demand additional proof. The PFD of concession holders is related on laws, regulations and norms that specify these topics. Forest authorities conduct random onsite inspections of the sites where timber has been harvested in order to confirm that timber regulations were followed (including avoidable damage to the soil and the remaining stand). The inspectors issue Acts on compliance (or non-compliance). Biomass Producers and their customers could ask for these Acts on government inspection after forest operations (non-public) but would need to trust the supplier it delivered all Acts. The best way is to check these aspects at random oneself, or through an independent inspector. One could develop a monitoring system in which the supplier delivers photos of each harvesting plot after the forest operations. Forestry regulations ban certain wood harvesting operations in areas of high biodiversity value (completely, or e.g. in certain seasons), it could be checked if the available information has been used correctly to issue Forest Declarations.

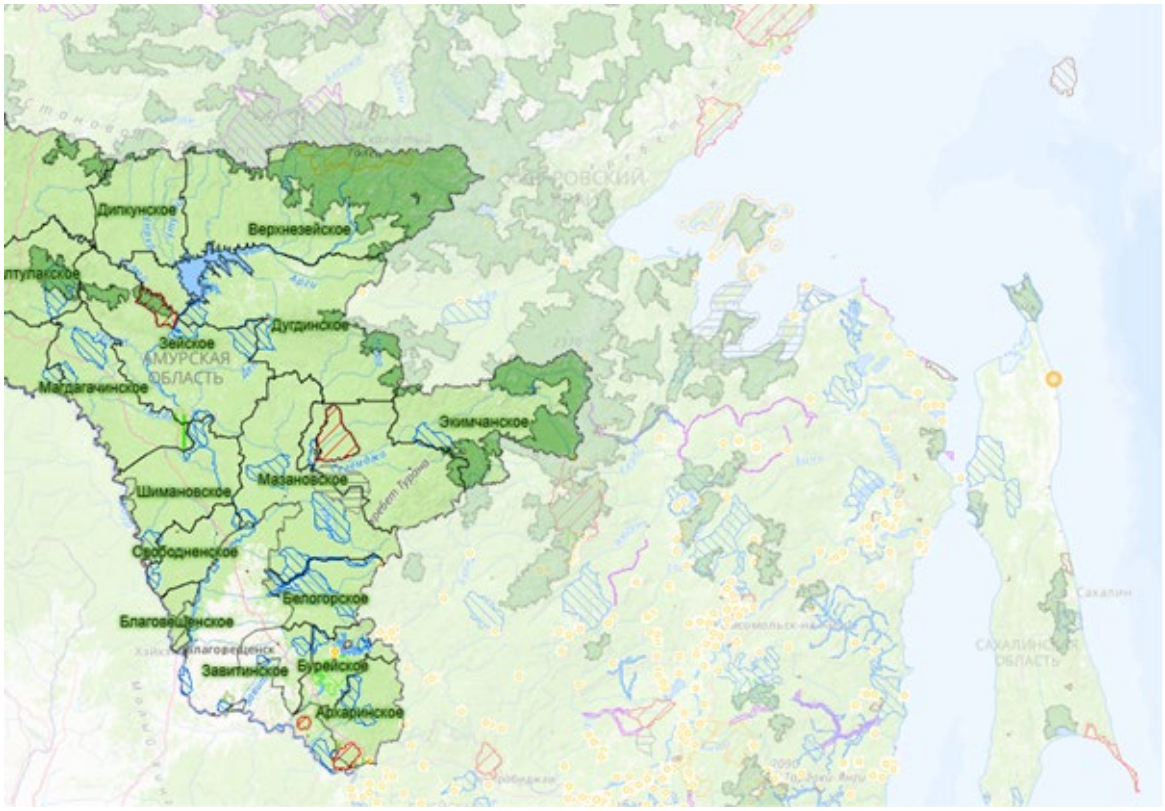
Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
The existence of poor or vulnerable soils in the forest sourcing area.	Poor soils ï **no** Vulnerable soils ï **yes** (partly)	Public	State FMU Reglament www.hcvf.ru
Harvesting of forest biomass on poor or vulnerable soils	Yes	Restricted	
Stump or residue removal	No	Restricted	Project Forest Development (PFD)
Consideration and minimizing of negative impacts on biodiversity features	Yes	Restricted Public	Project Forest Development (PFD) www.hcvf.ru

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Minimization of impacts on soil and remaining stand	Yes	Public	Act on forest operation compliance

An example of the HCVF map:



Maintenance or improvement of the long-term production capacity of the forest

10.i	Does data exist on the harvested wood amounts and net annual increments as part of the forest sourcing area? *If no, pass the rest of the questions.*
	Yes, these data are gathered by government organisations. However, the Forest Inventory data are, usually very out-dated (poor). Also, the expected results of forestry (annual increment) are too positive, as newly planted stands are not taken care of and young forests are insufficiently managed in practice (too seldom thinnings are executed). The annual allowable cut is calculated on the level of the state FMU and can be found in the State FMU Reglament. This ñannual allowable cutòis divided (considering the different age categories of forest stands) between the concession holders within the area of the state FMU. Every forest concession holder obtains a part of the ñannual allowable cutò This part is called the ñallowed volume of forest harvestingòand used in the PFD. Because the annual allowable cut of the State FMU is leading, an unexpected disturbance in the area of one concession holder influences (will lower) the ñallowed volume of forest harvestingòof all concession holders on the territory of the State FMU. Regarding the calculation of the annual allowable cut on the level of the state FMU, the planning of rotations does not correspond with reality (and the rotations are not tailored to the needs of the concession holders). This influences the accuracy of the calculated annual allowable cut negatively. However, the developments in forest legislation and planning will gradually solve this problem (see criterion 5).

	In practice maintenance and improvement of the forest production capacity is a highly neglected aspect in Russian forestry, but it is being improved currently.
10.ii	Do average annual harvested timber amounts NOT exceed the average net annual increment (e.g. an average measured over a 5-year period)? *If yes, pass the rest of the questions.*
	No (specified risk of non-compliance), there is a strict government control on not exceeding the ñallowed volume of forest harvestingò by concession holders. The data on harvested wood and allowable volume of forest harvesting are checked strictly and non-conformance is heavily fined. Biomass Producers and their customers rely on this government control system. State FMU have to comply with the annual allowable cut as well. However, the annual allowable cut, calculated for the State FMU Reglament is misleading due to practical reasons: quality of the inventory data, quality of the growth models, improper or no forest management operations, unequally distributed harvesting activities, inefficient harvesting methods, high risk of forest fires, high increment loss (decay) in forestry due to extensive forestry use (and a very poor forestry infrastructure). In Russia there is a large difference between gross and net annual increment. In case the annual allowable cut is calculated, according to the new principles and models of ñintensive forest managementò (see the bullet points in criterion 5) this issue of misleading data could be considered solved. However, forest fires are and will stay an increasing problem, destroying large amounts of the annual increment.
11.i	In the forest sourcing area, do average annual harvest levels exceed the average net annual increment? Due to restructuring of even-aged woodlands? Habitat management or restoration of biodiversity? Or a response to pet, disease or storm damage?
	Yes, on paper it is not a problem, but in practise it often is, see criteria 5 and 10. Restructuring of even-aged woodlands, is very seldom a problem regarding exceeding harvesting levels. Habitat management or restoration of biodiversity does not happen often and does not affect the harvesting level negatively. Forest fires themselves and the salvage operations after forest fires do affect the net annual increment negatively. There are often natural forest fires in Russia. See criterion 9 for other reasons why the annual harvest levels can be higher than the net annual increment (despite compliance with the calculated allowed volumes for forest harvesting). Annual allowable cut (AAC) is calculated not for certain forest concessions, but for the whole territory of State FMU. Several methods of calculation are allowed, and the final result can be a combination of the results from calculations by different methods. There is an additional restriction, stating that the AAC shall not be higher than the average net annual increment, when the volume of mature and overmature timber is less than 50% of the total volume of timberô Another restriction states that when the forests are éexhaustedôand the share of mature and overmature forests is very small, the AAC shall ensure sustainable timber harvest levels for conifers and other valuable species for a period of at least 10 years, and for broadleaved species ï 5 years. Overall, state authorities have very poor knowledge on actual volumes of timber available in the forests. Last forest inventory (usually desk-based) in many forests was undertaken in the 1990s, and the last time a forestry inventory engineers actually inspected the forests could be in the 1950s. This leads to overestimations (sometimes intentionally) of the available volumes of timber and correspondingly of AAC. The more timber can be harvested, the higher is the annual forest concession fee (paid by the concession holders). Once AAC is established for the State FMU, it is then shared between to concession holders. Sometimes this is done unproportionally, but the methods have been improved.
11.ii	Do permits exist to mention or justify this in the case of exceptional higher harvest levels? *If yes, pass next question.*
	Yes, sanitary clear cuts can be issued on basis of inspection Acts. Forests of poor ecological and/or economical value can be ñreconstructedò Please see criteria 5 and 10.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Sustainable harvest levels	No	Restricted	See criterion 5
Harvest amounts exceed net annual increments	Yes*	Restricted	See criterion 5 https://roslesinforg.ru/atlas

*high risk in many regions. In Russian there is a large difference between gross annual increment and net annual increment.

Background information

List of references used during the case study

1. SBP website: sbp-cert.org
2. HCVFs website: hcvf.ru
3. Federal Forestry Agency: rulaws.ru/acts/Prikaz-Rosleshoza-ot-09.04.2015-N-105
4. STATE OF THE RUSSIAN FEDERATION'S FOREST RESOURCES: roslesinforg.ru/atlas
5. A.V. Kolesnikova, Transbaikal State University, 2008 óANALYSIS OF EMPLOYMENT THE TIMBER INDUSTRY OF THE RUSSIAN FEDERATIONô
6. Ministry of Industry and Trade proposes to create a strategy for forest management in Russia: tass.ru/ekonomika/7885815 www.finanz.ru/novosti/aktsii/minpromtorg-predlagaet-sozdat-v-rossii-strategiyu-vedeniya-lesnogo-khozyaystva-1028958020
7. Forest restoration in Russia: lesprominform.ru/jarticles.html?id=5360
8. rulaws.ru/acts/Prikaz-Minprirody-Rossii-ot-22.11.2017-N-626/ and docs.cntd.ru/document/554151577/

Case study ï Romania (sustainable harvesting criteria)

Key findings

The table below summarizes the key findings of the Romanian case study for sustainable harvesting criteria. It shows that in principle at sourcing area level most of the information requested to demonstrate compliance would be available.

Despite the efforts made by the public authority, they have not been able to control and eradicate illegal logging activities. Hence, the Commission has initiated an infringement procedure on failing to implement the EUTR in Romania before the indicated deadline. [114]

Despite openness shown by forest authorities there are still some issues for example in illegal logging as flagged by among others NGOôs (e.g. Greenpeace) and as reported in the UNEP-WCMC briefing notes on the EU Timber regulation. There is an open EC infringement procedure regarding the implementation of the EU Timber Regulation in Romania.
The main source of dispute between different stakeholders is the wide difference between the legally harvested volume, summed up by the National Institute of Statistics to 18 million cubic meter only,

[114] https://ec.europa.eu/romania/news/20200212_infringement_taieri_ilegale_paduri_ro

and the total harvest estimated by the National Forest Inventory to 38 million cubic meter, showing a difference of about 20 million cubic meters (which could have been illegally harvested). The manner in which the forest districts have used the previous low-level DDS (i.e. the first version of the wood-tracking system) seems to result in low annual harvests, given the numerous salvage cuttings and windthrows that devasted the Romanian forests in the last period. Nowadays the second version of SUMAL is being tested and provides a basic DDS for all companies and forest districts. SUMAL is basically a wood-tracking system meant to find out the forest areas where the inflow in wood industry is greater than the outflow from the forest, spotting to illegal fellings. Unfortunately, the fuelwood harvested from small private forests is not entirely recorded in SUMAL and this is a major cause of the difference between the legal harvest and the total removal.
FSCÈ certification system has been applied by more and more companies and, and thanks to that, all these companies and forest districts have their own DDS already implemented.

Table 25. Key findings on the Romanian case study

Criterion	Type of evidence	Available for this region?	Ease of access	Comment
Legality	Own Due Diligence System (DDS).	Yes	Company specific	
	Due Diligence System (DDS) via a recognized monitoring organization.	Yes	Private	FSCÈ certification bodies (Nepcon and Soil Association) https://ocoalesilvice.ro/ocolul-silvic-romuli-r-a-jud-bistrita-nasaud/ a basic DDS is provided by Ministry of Forestry as a compulsory wood tracking system (SUMAL) where all wood flows shall be registered.
	Records kept by traders.	Yes	Private	
Forest regeneration	Type of forest operation from which forest biomass results (final felling, thinning).	Yes	Public	https://ocoalesilvice.ro/borderouri-masa-lemnoasa/ http://www.rosilva.ro/rnp/disponibil_masa_lemnoasa_2020__p_1297.htm
	Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	Yes	Public/ Private	Forest regeneration on each specific stand is described in stand description, which is public. More details can be included into the harvesting contract, which is private. Harvesting operations can be carried out all year long excepting regeneration fellings carried out into stands where the natural regeneration has been already installed. In these stands harvesting operations are allowed only in cold season (from October to April). The final felling is allowed only if 70% of the tract area is covered with the new generation (seedlings of various ages, but not higher than 30 cm, according to technical standards).
Protected areas	Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes	Public	Management plans of protected areas override the forest management plans of the forests included into protected areas. In case of changing the cutting budget for windthrows or whatever unplanned harvest, the administration of the protected areas shall endorse the new cutting budget before public authority. In so doing a checks and balances mechanism is being in place.
	Evidence of implementation of plans/measures in nature protection areas	Yes	Public	Management plan of protected areas
	Permissions for biomass removal in protected areas including wetlands and peatlands.	No	Public	However, it is possible to harvest deadwood from the buffer zone as salvage fellings. Only the FSCÈ standards require explicitly remnant deadwood into the forest (3-5 trees per hectare). Therefore, the

				biodiversity is better preserved in certified forests than in Natura 2000 sites.
Soil quality and biodiversity	The existence of poor or vulnerable soils in the forest sourcing area.	Yes	Private/ Public	Forest management plan provides information about the soil. Not all forest management plans are public
	Harvesting of forest biomass on poor or vulnerable soils	No	Public, via the 2 portals of timber sales	Technical standards ban thinning and regeneration cuttings on slopes steeper than 40 degrees already referred to.
	Stump or residue removal	No		Allowed only after poplar plantations (poplar wood is not suitable for pellets) along the Danube river.
	Consideration and minimizing of negative impacts on biodiversity features	Yes, partial	Company specific	Forest district certified under FSCÈ standards provide public maps with locations of forests with high conservation values.
	Minimization of impacts on soil and remaining stand	Yes	Public, via forest managem ent plan	A separate printed map with soil conditions is attached to each forest management plan and every stand description contains information about the type of soil.
Long term production	Sustainable harvest levels	Yes		According to the law, sustainable yield is pursued for 60 years on.
	Harvest amounts exceed net annual increments	No		Even with 20 million cubic meters illegally harvested, the annual growth is two times larger than annual harvest (see: http://roifn.ro/site/rezultate-ifn-1/)

Introduction

Due to the long period of having unclarified ownership rights, along with obsolete technical standards left untouched since the end of the communist regime, illegal logging turned into a national problem and the latest decade was marked by three major clashes between relevant stakeholders: 1) the extremely large difference (about 20 million cubic meters) between the officially documented harvest and the Ălossò of woodò estimated by the first two reports of the National Forest Inventory, 2) the fast pace of deforestation claimed by numerous NGOs across the country, many of them unable to make the difference between a regular clear-cutting, followed by reforestation, an area devastated by a windthrow or biotic pests and an illegal logging; 3) alleged political green-washing behind the race of searching for, mapping and preserving much more old-growth forests than Romania actually is being endowed (Knorn *et al.*, 2012; Holeksa *et al.*, 2017; Synek *et al.*, 2020).

The main problem with identifying and mapping old-growth forests is the methodology, which is based too much on remote sensing and stand descriptions given by the forest management plans, and too little on fieldtrip and thorough observations; consequently, many uneven-aged forests or simple old forests were mistakenly registered as old-growth (or intact) forests.

Implementing the EUTR regulation in Romania was quite controversial because Romania already had implemented a DDS in 2008, when the Ministry of Forestry implemented a wood-tracking system, assumed to control all timber flows from stump (i.e. forest district) to whatever final product. Assuming that all operators will update every month their input, output and technological stocks, the authority would have been able to spot each and every hot-spot of illegal logging by comparing what had been harvested from a forest district with what had been processed by the mills located nearby. Unfortunately, that platform was not updated at all and the whole information stored there has never been used for steering the appropriate checks. Thanks to the determination of the National Forest Administration to get more than 2 million hectares (about 67% of public forest) certified under FSCÈ system, a series of DDSs have been implemented either by NFA, private forest districts, logging companies and wood-processing companies.

In 2019 the development of the prior wood-tracking system resumed and currently the Public Authority is about to implement a country-wide basic DDS. This will be fed with data from different sources, including pictures taken by whoever wants to verify if a wood load comes out from a legal

harvesting site or not (DrŁgoi *et al.*, 2019). The new amendments to the Forest Act handed over by the public authority by 2020 are trying to fix some of the major legal drawbacks but the most important pitfalls shall be removed from the technical standards. Precisely, two insidious technical culprits survived from the communist period and they refer to scattered salvage cutting (less than 5 m^3/ha) and a sort of green-tree retention system, recommended for the buffer zones of strictly protected areas. Both provisions open the possibility of ñwhiteningò illegal cuttings because it is very difficult to check out in field if these two types of cuttings fulfil two main technical requirements: deadwood volume per hectare, and the share of natural regeneration respectively.

When it comes to pellets production and marketing, the literature on this topic recently has flourished due the numerous endeavours and initiatives of private companies and the academic interest in studying bioenergy (GlavonjiÍ , Krajnc and Palus, 2015; Kiss, Alexa and S§rosi, 2016). This conclusion was acknowledged by all interviewees; moreover, they consider that the pellet market is pretty sensitive, for example to the how tough the cold season is. For instance, one of the interviewees declared that, after latest winter, which was quite mild, his company remained with 2000 tons of unsold pellets. This shows a strong linkage with household heating and cooling demand. According to the new amendments of the Forest Act, all wood residues and even sawdust must be registered into the wood-tracking system (SUMAL 2.0), and one of the most important processors of wooden panels, the Turkish company Kastamonu[115] recently has stopped collecting wood residues, which was a very cheap input for more than 10 years.

In the pellets and briquets industry the main input has moved from sawdust by-product to ground fuelwood. The number of companies increased (Borz *et al.*, 2013), especially after the numerous windthrows that devastated the Norway spruce stands in North Romania, between 2002-2012. A period when the resinous fuelwood was very cheap. Therefore, the number of logging companies sharply increased in 2002 but didnôt decline afterwards. This causes aggressive competition on the timber market.

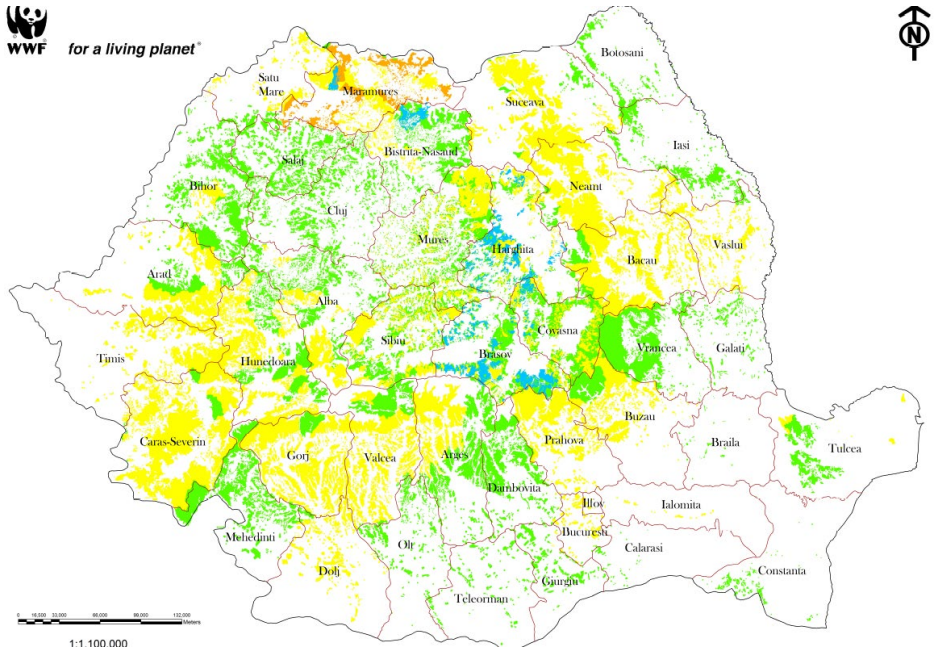
A full workflow of transactions, checks and paperwork required to buy rough wood to produce bioenergy can be found in (Borz *et al.*, 2013). According to that study, which probably is the most comprehensive one published so far about Romanian bioenergy sector, there are as many as 69 companies producing pellets and briquets. It is quite difficult to have an updated figure of the annual production because both pellets and briquets are not registered as standardized products by the Romanian Institute of Statistics.

Filtering the data provided by FSCÈ portal[116] we found as many as 31 certified producers (the two interviewees were selected from this list). The forest districts with CoC certified and/or certified forest management are shown in the following figure.

[115] https://www.kastamonu.ro

[116] https://info.fsc.org/certificate.php#result

Figure 27. Map of certified forests in Romania (yellow: public forests with CoC/FM, blue: private forest (CoC/FM, green - uncertified forests) Source: http://www.certificareforestiera.ro/pag/harta.php



As one of the interviewees reported all companies that produce furniture, briquets and pellets, swap quite often between pellets and briquets, depending on the demand on domestic market. Being a supplier to IKEA the traceability of the rough wood is a benchmark on the regional market.

According to a study carried out in 2010, about 35,000 hectares of forests shall be behind an pellets facility, supposed to work with two shifts, given the average yields of producing sawtimber from roundwood (DrŁgoi and Horodnic, 2010).

Sustainability criteria of harvesting operations have been fulfilled since the communist period, when natural regeneration and indigenous species were promoted at national level. Since then, harvesting technologies were too standardized but some pitfalls have occurred in the last thirty years due to some positive feedback loops created by a very slow process of forest ownership restitution and over-competition on wood market. The landownership restitution process took more than two decades, being ruled by three different laws. In addition to that, large volumes of timber are being sold on the stump giving leeway to different illegalities and creating two major positive feedback loops: sanitation felling after careless harvesting operations and, quite often, the high market competition (small number of bidders, leading to high roundwood prices). This generated pressure to increase supply. All individual owners are obliged to apply the same long rotations as National Forest Authority does on public forests (more than 100 years) and this causes the only affordable income can be generated from excessive sanitation fellings. The forest management applied on public forests is based on natural regeneration mainly produced by group, regular and irregular systems. Clear-cuttings are allowed just for Norway spruce, on tracts smaller than 3 hectares, and euramerican poplars, on tracts smaller than 5 hectares.

Background questions

1.	Please indicate which region/location is looked at.
	Romania, western region. ABC company, producing pellets, Apuseni Natural Park and, Ikea supplier. Wood residues are used to produce pellets and briquets.
2.	Please indicate in 1-2 sentences why this region is of interest for this specific case study.

	Most of the pellet producers are located or get rough wood from this area. Most of the FSC® certified forests and logging companies are located in this area.
3.	Please indicate if there are specific boundary conditions you want to mention.

Legality of harvest operations at forest sourcing area level

4.i	Is the economic operator a first placer of harvested timber or timber products on the EU market (from inside or outside the EU)? *If no, go to question 4.iv.*
	No
4.ii	The operator has its own due diligence system in place to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
4.iii	The operator is assisted by a recognized monitoring organisation to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
4.iv	Traders keep records of their suppliers and customers according to Article 5 of the EU Timber Regulation ((EU) 995/2010)?
	Yes

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Own Due Diligence System (DDS).	Yes	Restricted	
Due Diligence System (DDS) via a recognized monitoring organization.	Yes	Yes	FSC® certification platform
Records kept by traders.	yes	Public	On FSC® portal, one can find all wood-products retailers

Forest regeneration after harvest

5.i	Does the forest biomass result from final felling or an intermediate felling or clearing of forest area after natural disturbances? *If not, forest biomass results from a precommercial thinning or pruning of standing trees. Go to question 6*
	Yes
5.ii	Do supplier contracts require that forest area regeneration is carried out before or after final felling or harvest, either through natural regeneration, planting and seeding, or coppice regrowth and that forest

	regeneration is done in a manner that ensures quantity and quality of next generation forest resources? *If yes, go to question 6.*
	Yes, but the forest owner/manager cannot lease harvesting operations unless natural regeneration has been installed on 70% of the area in case of final felling

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Type of forest operation from which forest biomass results (final felling, thinning).	Yes	Public	Links to NFA and private forest districts (`ocoale de regim`, see bellow links) www.rosilva.ro https://ocoalesilvice.ro/borderouri-masa-lemnoasa/
Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	Yes	Public	APV, Forest management plan

Protected areas

6.i	Does the forest sourcing area include areas designated by international or national law of the relevant competent authority for nature protection purposes, including wetlands and peatlands, as protected? *If no, go to question 7.*
	Yes
6.ii	Do supplier contracts contain the provision of conditions statements from the relevant competent authority?
	Yes, the assessment forms that allow harvesting operations should be endorsed by the administrator on the protected area or Natura 2000 sites. All protected areas are included into a Natura 2000 site. Most of the Natura 2000 sites have their own administrations. The scientific councils of the national ad natural parks should endorse each assessment form.
6.iii	Do supplier contracts contain the required implementation evidence of the measures specified in the conditions statement?
	Yes, the requirements stated by the scientific council's compulsory should be conveyed into a legal liability inserted into the harvesting contracts.
6.iv	If forest operations are restricted in the nature protection areas, do suppliers contracts require the official approval for biomass removal in the protected area obtained from the relevant competent authority (including wetlands and peatlands)?
	All harvesting operations are preceded by selecting and marking up the trees that must be harvested. Having these two operations approved by the scientific council, the further harvesting operations will be also approved, without any formal notification or announcement issued by the administration of the protected area. Theoretically, the approval must be issued before marking the trees, but, by the law, the approval is issued for the assessment form, which is based on the measurements carried out when the trees are put into value.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes, for different forms of request	Public, restricted for documents with personal data	http://www.parcapuseni.ro/index.php?option=com_content&view=article&id=74&Itemid=142
Evidence of implementation of plans/measures in nature protection areas	Yes	Public Management Plan	https://www.google.com/maps/d/u/0/viewer?mid=1iP_BQ3tYbq-lfgeRTL24Fas751zQbYEy&ll=46.70213796798558%2C22.562994471679 69&z=11
Permissions for biomass removal in protected areas including wetlands and peatlands.	Yes	Only for salvage cuttings after windthrows	Form of request for harvesting operations (printscreen)

Maintenance of soil quality and biodiversity with the aim of minimizing negative impacts

7.i	Do poor or vulnerable soils exist in the forest sourcing area? *If no, go to question 8.i.*
	Yes
7.ii	Do supplier contracts require harvesting permission of the relevant competent authority in sensitive areas in the forest sourcing area (e.g. poor vulnerable or sensitive soils) and confirmation of appropriate precautionary measures and harvesting procedures in these areas? *If no, go to question 8.ii.*
	In Apuseni Mountains, the relevant competent authority is the administration of the Apuseni Natural Park. According to the law, the administration of whatever protected area (natural and national parks, Natura 2000 sites) shall check and endorse any harvesting permit (thinning or regeneration felling) issued by the forest districts that overlap the Apuseni Natural Park.
8.i	Does the biomass include stumps and residues? If no, go to question 9.i.
	No, only stumps. As for wood residues, there is a problem, in the sense that the volume estimated by the evaluation form (APV) should be equal to the volume of timber transported after harvesting operations as if wood residues do not exist. Loggers have two options: to replace the volume of wood residues with roundwood from other tracts (i.e. illegal felling), or, if there is any commercial interest, to collect all wood residues as biomass for bioenergy. Stumps are left untouched into the ground, except for euramerican poplar plantation and acacia coppice.
8.ii	Do suppliers contracts require that evidence is provided to confirm that stumps or residues have not been harvested inappropriately from poor vulnerable soils? *If no, go to question 9.ii.*
	No

9.i	Do supplier contracts require that harvesting operations take into account biodiversity attributes to minimise the impact on native forest types, habitat features, rare and endangered species and their habitats, stipulated and recommended deadwood types and amounts?
	Yes, if salvage cuttings must be carried out in a protected area, the forest districts who is in charge with managing that forest, along with the administration of the protected area, must check whether or not habitats or protected species are jeopardized by harvesting operations. As for the deadwood, there are some official obligations undertaken by those forest districts whose forest management has been certified under FSC® standard (see https://info.fsc.org/certificate.php).
9.ii	Do supplier contracts require that harvesting operations take into account biodiversity attributes to minimise the impact on native forest types, habitat features, rare and endangered species and their habitats, stipulated and recommended deadwood types and amounts?
	The proof concerning the avoidable damage is a standardized document (”process verbal de primire/reprimire” in Romanian language), being signed and endorsed by the representatives of the forest district and logging company. The template of this proof is endorsed by a ministerial order. There are two thresholds concerning the damages produced to already installed seedlings and the logging procedures are to be found in the evaluation form (see the screen capture in the ‘Background information section).

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
The existence of poor or vulnerable soils in the forest sourcing area.	Yes, especially the Karst zone where the Apuseni Natural Park in placed	Public information forest management plans where the type of soil is registered for each stand of trees.	See print-screen of the stand description where the type of soil is registered.
Harvesting of forest biomass on poor or vulnerable soils	Yes		Usually, on shallow soils developed on limestone or sandstone only shelterwood system are allowed (group or uniform system). On slopes higher than 40 degrees harvesting operations are completely banned, including thinnings.
Stump or residue removal	No, all stands on vulnerable soils are gathered into a forest unit where regular harvesting operations are completely banned	Public, via forest management plan (check out forests on slopes steeper than 40 degrees and/or on shallow soils	
Consideration and minimizing of negative impacts on biodiversity features	Yes	Yes. All forest districts whose management is certified under FSC® standards must have forest with Conservation values	http://www.certificareforestiera.ro/pag/harta_risc.php

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Minimization of impacts on soil and remaining stand	Yes	No	

Maintenance or improvement of the long-term production capacity of the forest

10.i	Does data exist on the harvested wood amounts and net annual increments as part of the forest sourcing area? *If no, pass the rest of the questions.*
	Yes. the key indicators of any forest management plan include the current growth broken down to species, being conveyed in m^3/year/hectare, along with the annual allowable cut (see Figure 31). According to the Forest Act, the forest guards (i.e. representatives of the public authority) is in charge of checking each forest district whether or not the annual yield exceeded the allowable cut calculated for each management unit. All forest management plans referring to protected areas are available on the portal of the National Agency of Environmental Protection (access restricted).
10.ii	Do average annual harvested timber amounts NOT exceed the average net annual increment (e.g. an average measured over a 5-year period)? *If yes, pass the rest of the questions.*
	Yes. the annual allowable cut never exceeds the annual growth because the allowable cut is calculated by three methods and the lowest value is being finally adopted.
11.i	In the forest sourcing area, do average annual harvest levels exceed the average net annual increment? Due to restructuring of even-aged woodlands? Habitat management or restoration of biodiversity? Or a response to pet, disease or storm damage?
	Yes. 20% the annual allowable is kept unharvested in order to compensate any salvage cutting that may occur meanwhile. It means that, if no salvage fellings occurred, the cutting budget of any given year contains two lists of tracts: one list amounts to 80% of the current allowable cut and 20% of the previous year allowable cut. In case of salvage fellings, harvesting operations for those 20% are postponed for the next year and so on. Replacing planned fellings with salvage fellings requires a special permit issued by the public authority, i.e. the Ministry of Forests and Water.
11.ii	Do permits exist to mention or justify this in the case of exceptional higher harvest levels? *If yes, pass next question.*
	Despite the aforementioned mechanism that holds the sustain yield, it is still possible to come across exceptional harvests because salvage fellings lesser than 5 m^3/year/hectare are not taken in to account as regular yields.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

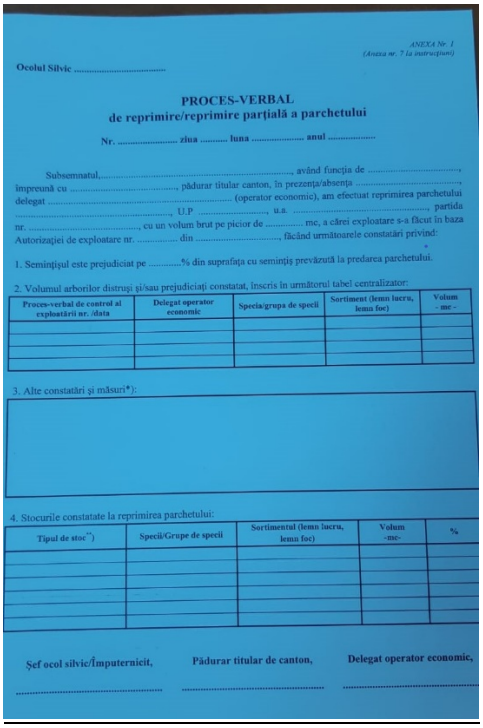
Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Sustainable harvest levels	Yes	Public for protected areas, Restricted for regular forest districts.	https://lemncontrolat.ro/link-uri-si-documente-utile/fisiere-descarcabile/

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Harvest amounts exceed net annual increments	No	Restricted	Only forest guards, who have access to SUMAL database, can make this assessment.

Background information

Example evidence

Figure 28. Check out form for a tract during and after harvesting operations. Damaged seedlings are compulsory reported



ANEXA Nr. 1
(Anexa nr. 7 la instrucțiuni)

Ocolul Silvic .....

PROCES-VERBAL
de reprimire/reprimire parțială a parchetului

Nr. ..... ziua ..... luna ..... anul .....

Subsemnatul, ..., având funcția de .....,
împreună cu ....., pădurar titular canton, în prezența/absența .....,
delegat ..... (operator economic), am efectuat reprimirea parchetului
....., U.P ....., u.a. ....., partida
nr. ....., cu un volum brut pe picior de ..... mc, a cărei exploatare s-a făcut în baza
Autorizației de exploatare nr. ..... din ....., făcând următoarele constatări privind:

1. Semințișul este prejudiciat pe .....% din suprafața cu semințiș prevăzută la predarea parchetului.

2. Volumul arborilor distruși și/sau prejudiciați constatat, înscris în următorul tabel centralizator:

Proces-verbal de control al exploatării nr. /data	Delegat operator economic	Specia/grupa de specii	Sortiment (lemn lucru, lemn foc)	Volum - mc -

3. Alte constatări și măsuri*):

4. Stocurile constatate la reprimirea parchetului:

Tipul de stoc**)	Specii/Grupe de specii	Sortimentul (lemn lucru, lemn foc)	Volum -mc-	%

Șef ocol silvic/Împuternicit, ... Pădurar titular de canton, ... Delegat operator economic, ...

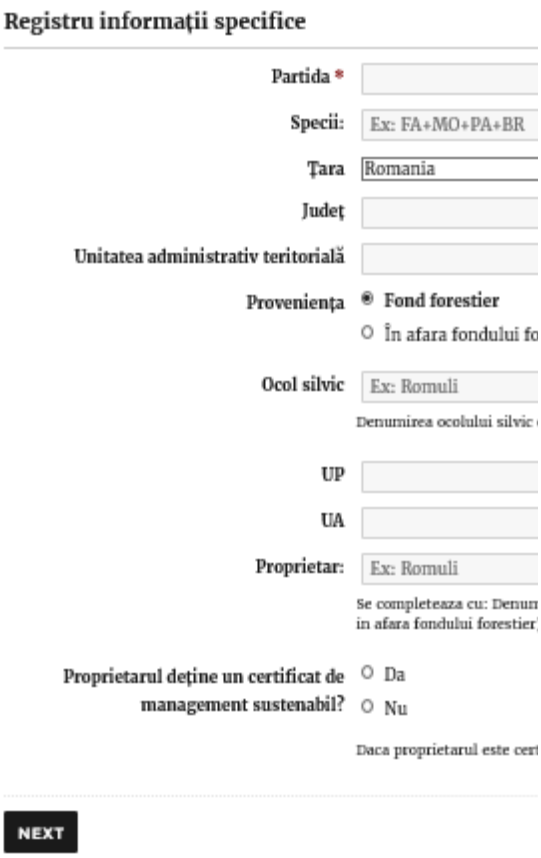
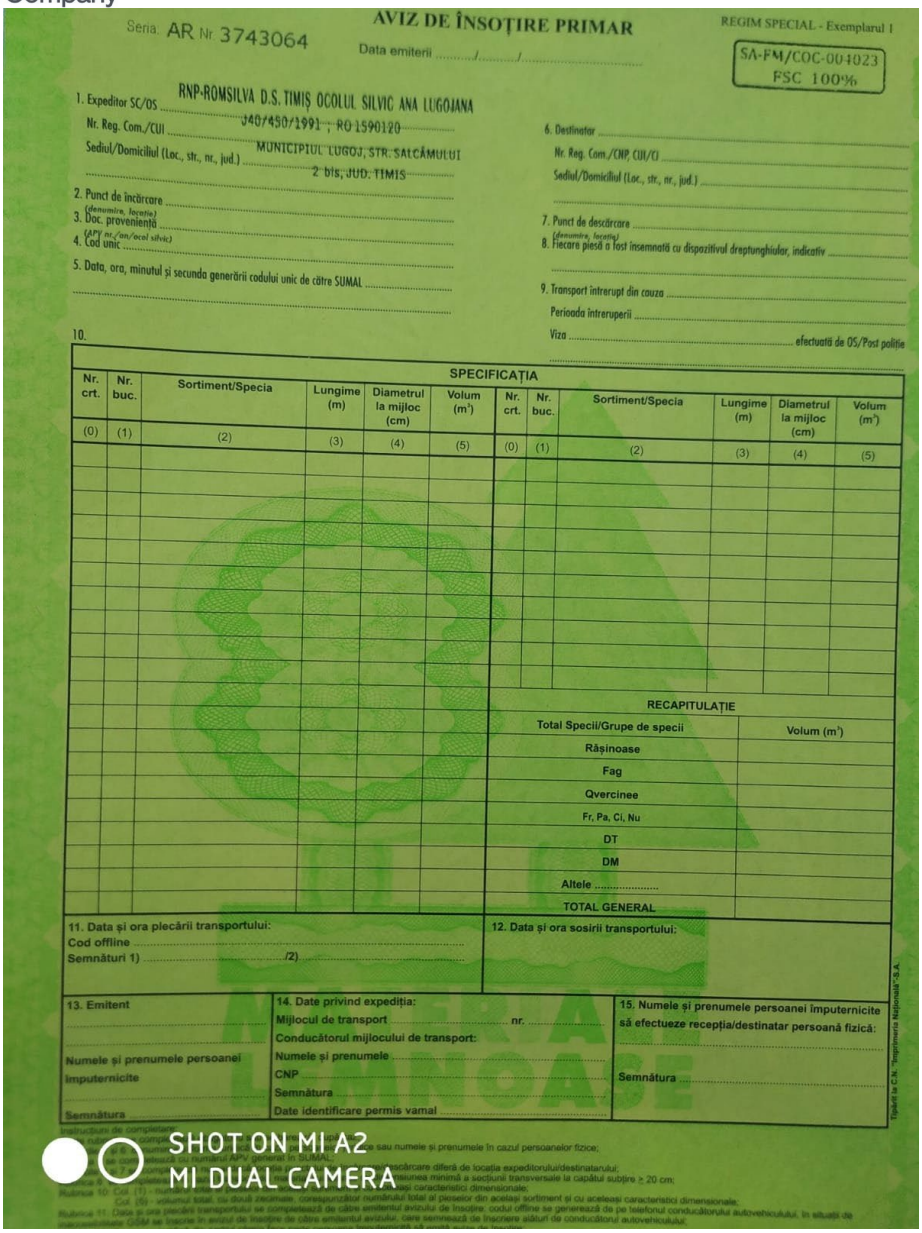


Figure 30. Print-screen of the DDS implemented by Romuli Private Forest District

Figure 29. Print-screen of risk assessment program split on four levels of risk (DDS developed and implemented by Mr. Gabriel Stanciu, head of Romuli Forest District)



AVIZ DE ÎNSOȚIRE PRIMAR

REGIM SPECIAL - Exemplarul 1

Seria AR Nr. 3743064

Data emiterii ...../...../.....

SA-FM/COC-004023
FSC 100%

1. Expeditor SC/OS RNP-ROMSILVA D.S. TIMIȘ OCOLUL SILVIC ANA LUGOJANA
Nr. Reg. Com./CUI J40/450/1991 ; RO 1590120
Sediul/Domiciliul (Loc., str., nr., jud.) MUNICIPIUL LUGOJ, STR. SALCÂMULUI 2 bis, JUD. TIMIS
2. Punct de încărcare (denumire, fecetie)
3. Doc. proveniență (APV nr./an/ocol silvic)
4. Cod unic
5. Data, ora, minutul și secunda generării codului unic de către SUMAL

6. Destinatar
Nr. Reg. Com./CNP, CUI/CI
Sediul/Domiciliul (Loc., str., nr., jud.)
7. Punct de descărcare (denumire, fecetie)
8. Fiecare piesă a fost însemnată cu dispozitivul dreptunghiular, indicativ
9. Transport întrerupt din cauza
Perioada întreruperii
Viza efectuată de OS/Post poliție

10.

SPECIFICAȚIA

Nr. crt.	Nr. buc.	Sortiment/Specia	Lungime (m)	Diametrul la mijloc (cm)	Volum (m^3)	Nr. crt.	Nr. buc.	Sortiment/Specia	Lungime (m)	Diametrul la mijloc (cm)	Volum (m^3)
(0)	(1)	(2)	(3)	(4)	(5)	(0)	(1)	(2)	(3)	(4)	(5)

RECAPITULAȚIE

Total Specii/Grupe de specii	Volum (m^3)
Rășinoase	
Fag	
Qvercinee	
Fr, Pa, Ci, Nu	
DT	
DM	
Altele	
TOTAL GENERAL	

11. Data și ora plecării transportului:
Cod offline
Semnături 1) /2)

12. Data și ora sosirii transportului:

13. Emitent
Numele și prenumele persoanei împuternicite
Semnătura

14. Date privind expediția:
Mijlocul de transport nr.
Conducătorul mijlocului de transport:
Numele și prenumele
CNP
Semnătura
Date identificare permis vamal

15. Numele și prenumele persoanei împuternicite să efectueze recepția/destinatar persoană fizică:
Semnătura

Tipărit la C.N. "Imprimeria Națională" S.A.

Figure 32. Waybill for timber: it contains data about number of logs, dimensions, species, loading platform, destination (the document with special watermark is registered by DDS

Specificări	SPECII										S.U.P.
	FA	MO	GO	CA	SAC	PAM	PI	DR	DT	DM	
Compoziția [%]	78	10	5	4	-	-	-	1	1	1	100
Clasa de producție medie	2,4	2,2	2,9	3,2	2,8	2,1	2,0	2,4	2,5	2,8	2,4
Consistența medie	0,75	0,80	0,72	0,77	0,90	0,86	0,59	0,85	0,83	0,86	0,75
Vârsta medie [ani]	80	47	102	62	20	28	56	40	32	32	76
Creșterea curentă [m^3/an /ha]	6,4	11,3	3,6	5,1	2,5	4,0	5,9	11,6	6,9	9,3	6,7
Volum mediu [m^3/ha]	319	322	293	162	47	116	242	296	93	81	307
Volum total [m^3]	816626	100086	43761	21980	488	1084	2138	4795	1584	1405	993947

Figure 31. Print-screen with key indicators of a forest management plan. Current growth (5th line, against the growing stock (6th line) for all important species of the forest unit (used as input data for updating the balance between yield and growth)

List of references used during the case study

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Schulze, E. D. *et al.* (2014) 'Opinion paper: Forest management and biodiversity', *Web Ecology*. Copernicus Publications, 14(1), pp. 3–10. doi: 10.5194/we-14-3-2014.

Synek, M. *et al.* (2020) 'Contrasting patterns of natural mortality in primary Picea forests of the Carpathian Mountains', *Forest Ecology and Management*. Elsevier, 457, p. 117734. doi: 10.1016/J.FORECO.2019.117734.

Walentowski, H. *et al.* (2013) 'Sustainable forest management of Natura 2000 sites: A case study from a private forest in the Romanian Southern Carpathians', *Annals of Forest Research*, 56(1), pp. 217–245. doi: 10.15287/afr.2013.57.

List of interviewees

Gabriel Stanciu, chief of Romuli private forest district, the first forest unit who has produced its own DDS. holder of FSC® certificate (CoC/FM).

Alin Potos Plimob Sighet, supplier to IKEA, pellets and briquets local producer holder of FSC® certificate (CoC). https://www.plimob.ro/

Daniel Popa. ABC furniture company, also pellets and briquets producer, holder of FSC® certificate (CoC) http://ecoforest.ro/

Tiberiu Oltean, administrator of OlteanProdLemn, Tg. Mureș, http://www.olteanprodlemn.ro/contacte/ a company involved in all phases of wood processing, from harvesting operations to final products, having the whole chain of custody certified under FSC® standards.

Case study – Portugal (sustainable harvesting criteria)

Key findings

The table below summarizes the key findings of the Portuguese case study for the sustainable harvesting criteria. Only for the criteria on protected areas and long term production it is uncertain if all required evidence is currently available at economic operators.

As some of the information is not publicly available (Environmental Impact Assessments, Special Authorizations, reports on evidence of measures implementation), these could not be accessed for detailed review in this case study. However, according to the adopted Due Diligence System (own and Sustainable Biomass Program, required for the ENplus A1 and by importing countries), the operator is required to gather all the required information and registries, assuring that the information is present. This could be checked by an auditor.

The operator is responsible for the risk assessment, in the cases where the suppliers or forest producers aren't capable of producing them. The operator is further responsible for the evaluation of regeneration and mitigation measures, essential for the in Portugal often used certification procedures. Since there was no possibility to consult the documents for these processes in detail, it is not clear on how the evaluation of the implementation of the measures is recorded, not to what extent it occurs. Also, it is not clear how the Environmental Impact Assessment identifies the constrains on soil, biodiversity and ecosystems, and the recommendations provided for specific situations.

Table 26. Key findings on the Portuguese case study

Criterion	Type of evidence	Available for this region?	Ease of access	Comment
Legality	Own Due Diligence System (DDS).	Yes	Public	Only guidelines, not specific information
	Due Diligence System (DDS) via a recognized monitoring organization.	Yes	Public	Only guidelines, not specific information
	Records kept by traders.	Yes	Restricted	Available to the Operator
Forest regeneration	Type of forest operation from which forest biomass results (final felling, thinning).	Yes	Restricted	Available to the National Authority
	Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	Yes	EIA[117] data restricted. Forest Management Plans are public, can be consulted at the headquarters of the management units, or National Authority web	

[117] EIA-Environmenta Impact Assessment

	Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes	Legislation is publicly available. Individual statements issued by ICNF[118] are restricted. Individual contract statements are restricted.	
Protected areas	Evidence of implementation of plans/measures in nature protection areas	Not clear	Restricted	
	Permissions for biomass removal in protected areas including wetlands and peatlands.	Yes	Legislation is publicly available. Individual statements issued by ICNF are restricted.	
	The existence of poor or vulnerable soils in the forest sourcing area.	Yes/ partial	Public/ GIS is to be purchased	Not all the northern area is covered by cartography, but there is available information
Soil quality and biodiversity	Harvesting of forest biomass on poor or vulnerable soils	Yes	Restricted	
	Stump or residue removal	Yes	Restricted	
	Consideration and minimizing of negative impacts on biodiversity features	Yes	Restricted	
	Minimization of impacts on soil and remaining stand	Yes	Restricted	
Long term production	Sustainable harvest levels	Yes	Public/general National data	
	Harvest amounts exceed net annual increments	No		

Introduction

Portuguese forest area occupies over 3,154,800 hectares (ICNF, 2018). Over 36% of Portuguese mainland is occupied by forest, being the more expressive land use, where 92% is of private ownership, 6% communitarian and only 3% public. There are over 11.7 Million rural properties registered for agro-forestry use, 1,107 communitarian land unities, and an estimated 20% of the territory that does not have known ownership. In the northern region of the country, more than half of the rural properties are less than 5 ha of area. Forest type is divided in plantation, semi-natural and natural. The main species present in the Portuguese forest are: *Eucalyptus sp.* (26%), *Pinus pinaster* (23%), *Quercus suber* (23%), *Quercus ilex ssp rotundifólia* (11%), *Pinus pinea* (6%) and *Castanea sativa* (1%).

Managed forest areas are legally protected against illegal harvesting operations and other non-authorised activities. The basis and foundations of Portuguese Forest Policy are defined by the law decree DL n.º 33/96, from August 17th, including the foundations for the development and robustness

[118] ICNF-Instituto Nacional para a Concervação da Natureza e das Florestas (National Institute for the Conservation of Nature and Forests

of institutions and management programs, conservation and sustainable forest development, as well as associated natural resources.

WWF has identified the highest threats for Portuguese forest areas such as the continuous conversion of forest areas into agriculture, grazing or urban areas. There is also mention of threats such as the frequent forest fires, harvesting of residual natural forest patches, using exotic species in forest production (main exotic species in use are *Eucalyptus globulus* and *Criptomeria japonica*) and excessive grazing. Yet, according to FSC, since 2011, Portugal has been considered as 'low risk' country in terms of forestry. Portuguese law prohibits the conversion of natural forest into plantation (Decretos de 1901 e 1903 do Regime Florestal, Decreto-Lei n. º 166/2008, de 22-08, Decreto-Lei n. º 254/2009, de 24-09 and Decreto-Lei n. º 169/2001, de 25-05). Land use changes after forest fires are also regulated by law (Decreto-Lei n. º 254 / 2009, de 24-09, Decreto-Lei n. º 169/2001, de 25-05.), and need to be communicated to the National Forest Authority. Natural forests are classified as habitats and are under the protection of yet another law, granting even more limitations. Over 268,824 hectares of forest have been certified under the PEFC scheme, and 473,179 hectares under the FSC scheme (CBD, 2015; FSC, 2019). Nevertheless, forest fires associated with pest damage remain the biggest threats to forest productivity and sustainability, having an average 65,000 hectares of burnt forest and other wooded land, every year for the last decade[119].

The pine area has shown a decrease in the past years of 0,2% per year, due to the fires and pest damage. There has been extensive public concern on the use of monocultures and the impact on forest fires and environmental impact. In Portugal, there are 2 species used in extensive monoculture: Eucalyptus globulus and Pinus pinaster. From these, Eucalyptus has been under more controversy than any other, due to the expansion of plantation area on the last years, and to the fact that it is an exotic species. Scientific studies that address this matter have not identified any increase in burnt area following Eucalyptus expansion. There is also evidence that fires occurring in Eucalyptus stands are less likely to become large forest fires, and that these large fires are irresponsive to forest composition (Fernandes, 2019). As for the environmental impact of Eucalyptus usage, studies point to the intensity of operations and type of management as the main cause for possible diversity loss (Fabião, 2007) and soil degradation (Madeira, 2007), independent of the species. Nevertheless, these questionable practices have been under scrutiny, mainly since the introduction of FSC requirements for certification. Since 2017, under the Lei nº 77/2017, de 17-08, Eucalyptus plantations are heavily regulated, and with the Decreto-Lei n.º 32/2020, there is a prohibition on the expansion of plantation area, of planting this species in burnt patches previously occupied by other species, and additional restrictions. In the present context, it is necessary to point out that the majority of the Eucalyptus area is managed by pulp companies (over 77%) (Feliciano, 2015), and nearly all of Eucalyptus wood is used for pulp production. Nevertheless, residual biomass from this activity is used for self energy production, accounting for more than 69% of energetic consumption for production of pulp (CELPA, 2015).

In terms of wood production, internal production can only supply for 80% of the industry demand for wood. Companies that process pine wood or produce pulp have to import around 20% of wood annually. The main industries operating with wood as raw material are pulp for paper, plywood, MDF, OSB, pellet production and furniture production.

Forest biomass constitutes as one of the most important energy sources in use in Portugal. It has been estimated that an average of 2.2 Mt/year of biomass is available for energy production. Portuguese pellet production is also very significant, rendering a 1.1 million tons of pellets, 80% of which are for export to the UK, Benelux, Spain and Denmark. There are 25 registered pellets producers, responsible for producing an average of 850,000 ton per year (in the period 2013-2016). Portuguese pellet production can be divided in two types. Firstly, there are highly productive factories, with over 100,000 ton of annual production capacity, aimed for export to the bigger European consuming countries. These are acquired by big energy investors, that have little or no historical connection to forestry or timber industry. The second type of pellet producers are lower production capacity facilities (4,000 to 50,000

[119] According to the PORDATA official database https://www.pordata.pt/Portugal/Inc%C3%AAndios+rurais+e+%C3%A1rea+ardida+%E2%80%93+Continente-1192

ton per year), that use mostly biomass waste for the pellet production process. In doing so, they convert residuals and sub-products into a primary energy source, at a local and regional scale (Faria, 2016).

The main raw materials for pellets production in Portugal are resulting from thinnings in Pine stands, saw dust from timber mills and residuals from wood processing industry (Faria, 2016; Sá, 2009).

The majority of wood consumption by the pellet industry derives from *Pinus pinaster*, usually sources locally or regionally. The continuous decrease of the pine source area in Portugal (IFN6, 2019), associated with the continued regular wood industry demand, and increase of raw material demand by the pellet industry, may rise some questions on the sustainability of production. There is also mention (WWF, 2011) that the increase in pellet production is not a direct consequence of national demand, but mostly influenced by the financial incentives that some European governments grant to this energy source and could lead to distortion of the market. This could eventually endanger the forest viability and the supply for raw material to other forest-dependent Industries. This idea is also partially conveyed by Gonçalves (2016), Faria (2016) and Sá (2009), who consider pellet production viable only through the consumption of biomass residuals, and processing industries leftovers (which would be desirable). Yet, the current certification aimed at export to other countries, ENplus A1, requires that the raw material used is log wood, or residuals and sub-products from wood transformation industry, without chemical treatment (Faria, 2016). Nevertheless, as the availability of these residuals and sub-products is quite reduced for the expected demand (Ferreira 2017), the main raw material used is log wood. As also stated in Ferreira (2017), “the discrepancy between the produced and available forest biomass values in Portugal is due to the fact that only a diminutive part of this residues is economically viable for energy production. Even so, for sustainable forest exploration reasons, it is recommended that part of the residues is reintegrated into forest soils. Another important issue is that part of Portuguese forest biomass is already used for energy production, especially in the pulp and paper industry.

For the past years, the pellet industry has been increasingly adopting the Sustainable Biomass Program certification (SBP, https://sbp-cert.org/), apart from the FSC and PEFC, which is expected to provide assurance that woody biomass is sourced from legal and sustainable sources. Within this framework, a certification entity provides a yearly supply base certificate, based on thorough inspections. There are 12 National Pellets producers certified by the SBP system.

Background questions

1.	Please indicate which region/location is looked at.
	Northern region
2.	Please indicate in 1-2 sentences why this region is of interest for this specific case study.
	Highly fragmented rural property, leading to higher level of uncertainty for sustainable management; The northern region presents a higher concentration of labor in wood industries.
3.	Please indicate if there are specific boundary conditions you want to mention.
	Although the northern region is the focus, the Operator receives timber from other locations in Portugal, including Azores archipelago, and even imports from Spain.

Legality of harvest operations at forest sourcing area level

4.i	Is the economic operator a first placer of harvested timber or timber products on the EU market (from inside or outside the EU)? O operador económico é um fornecedor primário de madeira de abate ou de produtos derivados no mercado Europeu? *If no, go to question 4.iv.*
	Yes.
4.ii	The operator has its own due diligence system in place to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010?

	Yes. The pellet producer (Tec Pellet as the case study operator) enforces the SBP certification through its own due diligence system and is in the process to require from all of wood suppliers to present FSC certification. Presently, there are 10 FSC certified suppliers working with Tec Pellets. Both types of certification require for proof of legality of the harvesting. The EU 995/210 TR has been transposed to the Portuguese legislation and is enforced by National Authorities. So, both certification frameworks assure that the regulation needs to be followed. Most of the information compiled in this report results from the SBP Framework Supply Base Reports from 2016 to 2019, publicly available.
4.iii	The operator is assisted by a recognized monitoring organisation to ensure that forest biomass was legally harvested as defined in the EU Timber Regulation ((EU) 995/2010)?
	Yes. The Certification body for Tec Pellets certificates is: Control Union Certifications BV; Accreditation scope: Biomass Producer and Supply Chain; Geographic scope: Worldwide Tec Pellets is also certified within the FSC and PEFC framework. Additionally, as the Operator is aiming at requiring that all suppliers present FSC certification, other certification bodies are in place to provide such certificates.
4.iv	Traders keep records of their suppliers and customers according to Article 5 of the EU Timber Regulation ((EU) 995/2010)?
	Yes. According to Portuguese legislation DL nº76/2013, the Operators that place timber products on the EU market are registered in the National Authority database, and are compelled to keep all the trading records, for further inspection.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Own Due Diligence System (DDS).	Yes	DDS framework publicly available. Specific results are restricted.	https://sbp-cert.org/certificate-holders/tec-pellets-producao-e-comercializacao-de-pellets-sbp-06-07/
Due Diligence System (DDS) via a recognized monitoring organization.	Yes – via Control Union Certifications	DDS framework publicly available, for the SBP certificates, for the yearly period, from 2016 to 2019.	https://sbp-cert.org/certificate-holders/tec-pellets-producao-e-comercializacao-de-pellets-sbp-06-07/ https://info.fsc.org/ https://www.pefc.org/
Records kept by traders.	Yes	Restricted, or in possession of the National Forest Authority for inspection, under legislation DL nº76/2013	The Operator registry is accessed privately, or by the National Authority at **http://fogos.icnf.pt/rio**

Forest regeneration after harvest

5.i	Does the forest biomass result from final felling or an intermediate felling or clearing of forest area after natural disturbances? *If not, forest biomass results from a precommercial thinning or pruning of standing trees. Go to question 6.*
	Yes, partially. Tec Pellets also uses harvesting residuals, wood working residuals, and timber resulting from thinnings.
5.ii	Do supplier contracts require that forest area regeneration is carried out before or after final felling or harvest, either through natural regeneration, planting and seeding, or coppice regrowth and that forest regeneration is done in a manner that ensures quantity and quality of next generation forest resources? *If yes, go to question 6.*
	Yes. Through the established DDS and under the framework of the certification presented by Tec Pellets, contracts require forest area regeneration. Either the supplied raw material is sourced from areas with forest management plans, regulated and inspected by the National Forest Authority. If this is not the case, Tec Pellets requires an Environmental Impact Assessment (EIA) for the operations, where the regeneration and practices need to be accounted, and are verified by the companies' forest technicians. Tec Pellets ensures the use of good practices by providing formative information, and as exchange of long-term contracts. If the suppliers do not comply with the established requirement in the contract, the raw material is not acquired.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Type of forest operation from which forest biomass results (final felling, thinning).	Yes	Registration required by the National Forest Authority, but access is restricted	Registration online https://fogos.icnf.pt/manifesto/manifestoadd.asp Harvesting Manifest example in Annex 1 All supplied raw material need to be accompanied by the manifest.
Securing of forest regeneration is done in a manner that ensures quality and quantity of next generation forest resources (e.g. assessment of abiotic and biotic natural hazards influencing tree species provenances, tree species mixtures etc.).	Yes	EIA data restricted. Forest Management Plans are Public, can be consulted at the headquarters of the management units, or National Authority web	Management plans on http://www2.icnf.pt/portal/florestas/gf/pgf

Protected areas

6.i	Does the forest sourcing area include areas designated by international or national law of the relevant competent authority for nature protection purposes, including wetlands and peatlands, as protected? *If no, go to question 7.*

	Yes.
6.ii	Do supplier contracts contain the provision of conditions statements from the relevant competent authority?
	Yes. For these cases, a special authorization and assessment from the National Forest Authority is required. The National Forest Authority is the National Competent Authority on Nature Protection and management of special protection areas (ICNF). Tec Pellets will not receive any material from unknown or unverified source. For harvesting in these areas, the contract requires that all legal documentation to be presented.
6.iii	Do supplier contracts contain the required implementation evidence of the measures specified in the conditions statement?
	Not clear. For the areas under Forest Management Plans, National Forest Authority should provide assessment and enforcement of the measures. For areas within the National Network of protected areas, the ICNF is responsible for the management by the supplier and assures the enforcement of those regulations. For areas without these plans, the Environmental Impact Assessment required by Tec Pellets contains these measures, and the operations are verified by the company technicians over the entire process, to ensure for the SBE certification of the suppliers.
6.iv	If forest operations are restricted in the nature protection areas, do suppliers contracts require the official approval for biomass removal in the protected area obtained from the relevant competent authority (including wetlands and peatlands)?
	Yes. Any economic operator requires special authorization from the National Forest Authority, for harvesting and biomass removal. The National Forest Authority is the National Competent Authority on Nature Protection and management of special protection areas (ICNF). For areas within the National Network of protected areas, the ICNF is responsible for the management by the supplier, and assures the enforcement of regulations.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Condition statements from statutory bodies regarding protected areas including stipulated measures and prohibitions in the protected areas, including wetlands and peatlands	Yes	Legislation is publicly available. Individual statements issued by ICNF are restricted. Individual contract statements are restricted.	Legislation on Protected areas: http://dre.pt/util/getpdf.asp?s=dip&serie=1&iddr=2008.142&iddip=20081848 http://www2.icnf.pt/portal/pn/biodiversidade/rn2000/gestao/em-parcer
Evidence of implementation of plans/measures in nature protection areas	Not clear	Restricted	These reports are produced by the Operator, and not publicly available, so it was not possible to assess the evidences, nor the implementation of the measures.

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Permissions for biomass removal in protected areas including wetlands and peatlands.	Yes	Legislation is publicly available. Individual statements issued by ICNF[120] are restricted.	Legislation on Protected areas http://dre.pt/util/getpdf.asp?s=dip&serie=1&iddr=2008.142&iddip=20081848 Stating the required special authorization for the operations: http://www2.icnf.pt/portal/pn/biodiversidade/rn2000/gestao/em-parcer

Maintenance of soil quality and biodiversity with the aim of minimizing negative impacts

7.i	Do poor or vulnerable soils exist in the forest sourcing area? *If no, go to question 8.i.*
	Yes. Shallow, poor in nutrients, acidic and slopes. Risk for erosion due to high precipitation and low drainage (see evidence examples in the background information to this case study).
7.ii	Do supplier contracts require harvesting permission of the relevant competent authority in sensitive areas in the forest sourcing area (e.g. poor vulnerable or sensitive soils) and confirmation of appropriate precautionary measures and harvesting procedures in these areas? *If no, go to question 8.ii.*
	No. There is no special permission needed for this, nor there is any legislation regulating this matter. There are guidelines and support measures for “Good practices”, issued by the National Authority. Tec Pellets does require an Environmental Impact Assessment that accounts for the best practices and mitigation measures to ensure the preservation of these soils and minimize impacts.
8.i	Does the biomass include stumps and residues? If no, go to question 9.i.
	Yes
8.ii	Do suppliers contracts require that evidence is provided to confirm that stumps or residues have not been harvested inappropriately from poor vulnerable soils? *If no, go to question 9.ii.*
	Yes. Tec Pellets requires an Environmental Impact Assessment (EIA) that accounts for the best practices and mitigation measures to ensure the preservation of these soils and minimize impacts. The operations are monitored by Tec Pellets’ Technicians, to ensure its correct implementation and for certification purposes.
9.i	Do supplier contracts require that harvesting operations take into account biodiversity attributes to minimise the impact on native forest types, habitat features, rare and endangered species and their habitats, stipulated and recommended deadwood types and amounts?
	Yes. Tec Pellets requires an Environmental Impact Assessment from the supplier that accounts for the best practices and mitigation measures to ensure the preservation of these and minimize impacts. The operations are monitored by Tec Pellets’ Technicians, to ensure its correct implementation and for certification purpose.
9.ii	Do suppliers contracts require the proof that avoidable damage (e.g. to the soil and the remaining stand) due to the harvesting operations has not occurred and that negative impacts due to harvesting operations have been minimised?
	Not clear. Suppliers contracts require proof of good practices, mainly by establishment of the EIA, and the mitigation measures necessary, and the implementation of these are verified on the field by Tec Pellets’ Technicians. If these are found not to be verified, the raw material is not acquired, and the supplier cannot be certified.

[120] ICNF-Instituto Nacional para a Concervação da Natureza e das Florestas (National Institute for the Conservation of Nature and Forests)

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
The existence of poor or vulnerable soils in the forest sourcing area.	Yes/Not all the northern area is covered by cartography, but there is available information	Public/ GIS is payed	https://snig.dgterritorio.gov.pt/rndg/srv/por/catalog.search#/map https://www.dgadr.gov.pt/cartografia/cartas-solos-cap-uso-analogico
Harvesting of forest biomass on poor or vulnerable soils	Yes	Restricted	For each harvest operation, a manifest need to be filled and delivered to the ICNF. This information can be crossed-checked with the areas of vulnerable soils.
Stump or residue removal	Yes	Restricted	For each harvest operation, a manifest need to be filled and delivered to the ICNF. This information is presented in the manifest.
Consideration and minimizing of negative impacts on biodiversity features	Yes	Restricted	Tec Pellets requires an Environmental Impact Assessment from the supplier that accounts for the best practices and mitigation measures to ensure the preservation of these and minimize impacts.
Minimization of impacts on soil and remaining stand	Yes	Restricted	Tec Pellets requires an Environmental Impact Assessment from the supplier that accounts for the best practices and mitigation measures to ensure the preservation of these and minimize impacts.

Maintenance or improvement of the long-term production capacity of the forest

10.i	Does data exist on the harvested wood amounts and net annual increments as part of the forest sourcing area? *If no, pass the rest of the questions.*
	Yes. There are regular Forest Inventories conducted at National level.
10.ii	Do average annual harvested timber amounts NOT exceed the average net annual increment (e.g. an average measured over a 5-year period)? *If yes, pass the rest of the questions.*
	Yes. Yet, there has been a decrease in the pine annual volume increment by 37% (between 2005-2019), due to a reduction in area by 27%, and loss of stands by fire and pests. It is worth noting that the increase rate (2018-2019) of wood consumption for pellet production was of 37%.
11.i	In the forest sourcing area, do average annual harvest levels exceed the average net annual increment? Due to restructuring of even-aged woodlands? Habitat management or restoration of biodiversity? Or a response to pet, disease or storm damage?
	See the previous answer, overall the loss by fire has contributed to overall decrease of volumes
11.ii	Do permits exist to mention or justify this in the case of exceptional higher harvest levels? *If yes, pass next question.*

	Unknown

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above? Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access?	Link to source or reference to Annex
Sustainable harvest levels	Yes	Public/ General information	Frequent National Forest Inventory, coordinate by ICNF www.icnf.pt/portal/florestas/ifn/entrada
Harvest amounts exceed net annual increments	No		

Background information

Figure 33. Portuguese Northern region (Source:Wikipedia)

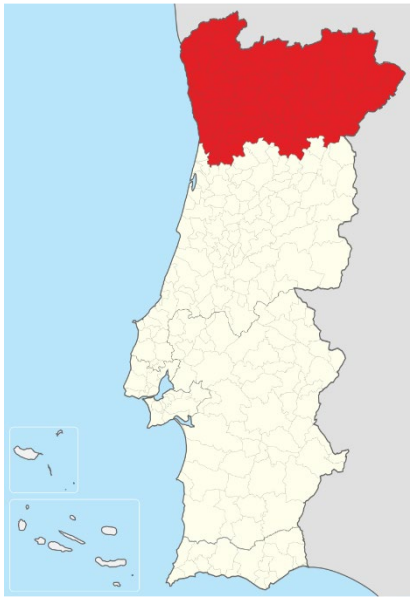


Figure 34. Portuguese Protected Areas Network (Source: ICNF)

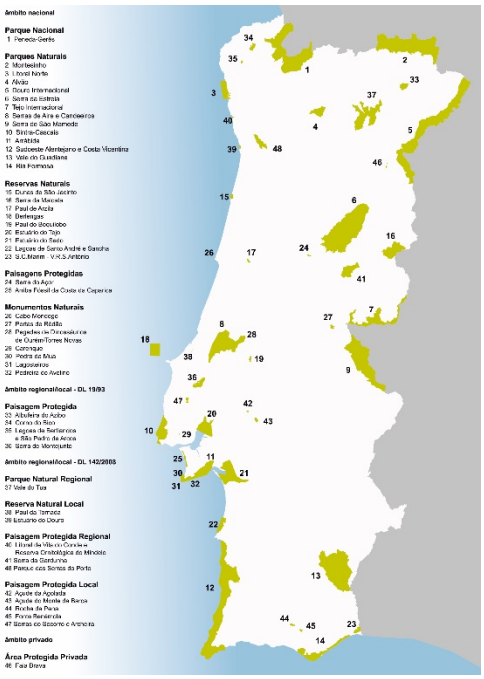
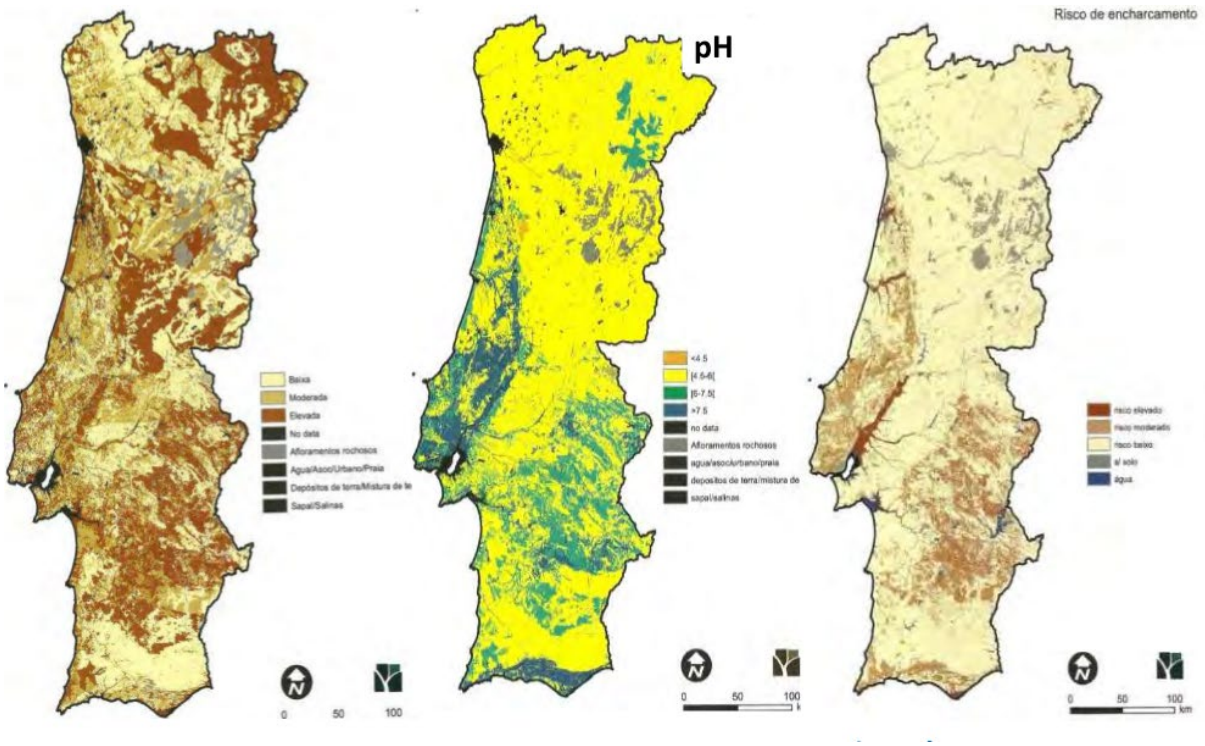


Figure 35. Portuguese Soil Characterization (Source: ISA). Left- Nutrients, Midle- pH, Right- Risk for waterlogging



Example of Forest Management Plan (Source:ICNF):

http://www2.icnf.pt/portal/florestas/gf/pgf/resource/doc/2011/pgf-alvazinhos-doc

Manifest for Harvesting (Mandatory for all harvesting operations and Operators, to be filled in and sent by mail or email). (Source:ICNF)

Manifesto de corte ou arranque de árvores
(Artigo 2º do Decreto-Lei nº174/88 de 17 de Maio)

Nome do Prédio	
Freguesia	
Concelho	

Área (ha)	
Arborizada	
Cortada	

	• Nome	• Residência ou sede
Produtor		
Comprador		

Natureza do corte					Idade do Povoamento		Anos
	Final				• Destino do material lenhoso		
	Desbaste					Venda	
	Extraordinário					Autoconsumo para a indústria	
Data do fim do corte					de		

Número de árvores cortadas ou arrancadas (preenchimento facultativo)				
Classes (centímetros)		Espécies		
DAP (1)	PAP (2)			
10.8 – 12.5	31.4 – 37.3			
12.6 – 17.5	39.4 – 55.0			
17.6 – 22.5	55.1 – 70.7			
22.6 – 27.5	70.8 – 86.4			
27.6 – 32.5	86.5 – 102.1			
32.6 – 37.5	102.2 – 117.8			
37.6 ou mais	117.9 ou mais			
Total				

(1) Diâmetro à altura do peito, medido a 1,30 m do solo. (2) Perímetro à altura do peito, medido a 1,30 m do solo.

Volume ou peso total do material lenhoso extraído (preenchimento obrigatório)				
Unidades		Espécies		
Esteres	Com casca			
	Sem casca			
Metros cúbicos	Com casca			
	Sem casca			
Toneladas	Com casca			
	Sem casca			

Qual o destino do prédio em caso de corte final	
	Aproveitamento florestal com a mesma espécie

	Aproveitamento florestal com outra			Assinaturas			
Espécie qual?				Produtor			
	Outro aproveitamento			Comprador			
Qual ?				Data			

Manifest for Harvesting, to be filled in online, at https://fogos.icnf.pt/manifesto/manifestoadd.asp

List of references used during the case study

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2. ICNF (2018). Perfil Florestal Nov. 2018. http://www2.icnf.pt/portal/florestas/ppf/estatisticas-oficiais/resource/doc/ICNF-Perfil-Florestal-v08nov2018.pdf
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4. Sustainable Biomass Program (2016). Main (Initial) Report. https://sbp-cert.org/wp-content/uploads/2019/04/Supply-Base-Report-v1-2-Tec-Pellets.pdf
5. Sustainable Biomass Program (2017). First Surveillance Report & Scope Change Report. https://sbp-cert.org/wp-content/uploads/2019/04/Supply-Base-Report-v1.2_Scope-Change-and-First-Surveillance-Audit_Tec-Pellets-FINAL.pdf
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14. Base de dados Portugal Contemporâneo (2020). Incêndios rurais e área ardida. https://www.pordata.pt/Portugal/Inc%C3%AAndios+rurais+e+%C3%A1rea+ardida+%E2%80%93+Continente-1192
15. Gonçalves, E (2016). Consumo Europeu de Pellets e suas variáveis explicativas. Thesis for Master degree, Faculdade de Economia, Universidade do Porto.
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17. ENplus (2020). ENplus certification. https://enplus-pellets.eu/en-in/
18. Ferreira, S., Monteiro, E., Brito, P., Vilarinho C. (2017). Biomass resources in Portugal: current status and prospects. Renew Sustain Energy Rev, 78 (2017), pp. 1221-1235
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List of interviewees

Tec Pellets Produção e Comercialização de Pellets
Main Office at Rua Padre Celestino Furtado, Nº 723, Balazar, Póvoa do Varzim, , 4570-077, Portugal.
Production Office: Rua Padre Celestino Furtado, Nº 723, Balazar, Póvoa do Varzim, , 4570-077, Portugal

A lot of information for this case study was extracted from the SBP reports for certification (2016-2019), available at https://sbp-cert.org/certificate-holders/tec-pellets-producao-e-comercializacao-de-pellets-sbp-06-07/

Case study – USA (LULUCF criteria)

Key findings

The case study indicates that based on currently available information and systems, compliance with the LULUCF criteria could not be demonstrated. The historic information on carbon stocks and sinks, as well as management practices would be available. But a forward-looking modelling of carbon stock and sinks would need to be added for the USA to be able to comply to the LULUCF criteria using the level B evidence (which can be done based on existing calculators).

Table 27. Key findings on the USA LULUCF case-study

Criterion	Underlying steps for compliance	Yes/No
LULUCF criteria	Are the spatial boundaries of the compliance check defined for the sourcing area?	Yes
	Are the relevant carbon pools defined?	No
	Is a historical reference period defined?	Yes
	Are forest management practices used over the sourcing area described?	Yes
	Are carbon stocks and sinks quantified as part of the forest sourcing area over the historical reference period?	Yes
	Is the length of the future long-term period defined?	No
	Are the forest management practices used over the long term described to strengthen and maintain carbon stocks and sinks?	Yes
	Are the mean carbon stocks and sinks of a sourcing area estimated over the long term using forest carbon calculators and models which consider the effects of forest growth and management practices?	No

Background questions

1.	Please indicate which region/location is looked at.
	North Carolina, USA
2.	Please indicate in 1-2 sentences why this region is of interest for this specific case study.
	North Carolina has a robust forest products market for export pellets and 58% of the state's land area is occupied by forested areas that are available for timber production.
3.	Please indicate if there are specific boundary conditions you want to mention.
	Only the eastern half of the state has forests within the export pellet market "woodshed".

Spatial boundaries

12.	Are the spatial boundaries of the compliance check defined for the sourcing area?
	Yes. Case study producer in North Carolina (Enviva) tracks wood suppliers to the "tract" or parcel level and as such is able to define spatial boundaries for the sourcing area.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Geographically explicit area belonging to a single country or a region	Yes	General supply area is public, but specific tract location is confidential to Producer	See map in Annex. https://www.envivabiomass.com/wp-content/uploads/ENV-SBP-05-AHO-Supply-Base-Report-FINAL.pdf
Compliance check for a geographically explicit area having common forest management practices	Yes	Public Report	https://www.envivabiomass.com/wp-content/uploads/ENV-SBP-05-AHO-Supply-Base-Report-FINAL.pdf https://www.envivabiomass.com/sustainability/responsible-sourcing/wood-supply-map/#5/33.146/-84.930

Carbon pools

13.	Are the relevant carbon pools defined?
	No. The Producer does not track individual carbon pools but concludes overall stocks are increasing based on growth rates exceeding harvest rates within the supply area (e.g., Hamlet supply area in North Carolina). FIA data does not track belowground carbon stocks. Aboveground live and dead stocks can be monitoring using FIA data, but aboveground pools were not separated in the Producer reports. Reference values for carbon stocks can be obtained for any desirable date range based on FIA data.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Do forest carbon pools include above and below ground biomass, litter, deadwood and soil organic carbon?	Partially	Public Data	https://apps.fs.usda.gov/Evalidator/evalidator.jsp
Do forest carbon pools exclude the Harvested Wood Product pool?	No	Not easily available from landowners or public data sources	

Historical reference

Is a historical reference period defined?

14.	Is a historical reference period defined?
	Not explicitly. Reporting by the Producer evaluates net carbon stock change based on the national forest inventory data that is reported on a rolling basis for a re-measurement period that is roughly five years. A period of 10 years could be calculated from that.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Are average carbon stocks and sinks for the last years used as a reference period?	Yes	Public	https://apps.fs.usda.gov/Evalidator/evalidator.jsp https://sbp-cert.org/wp-content/uploads/2019/09/Supply-Base-Report-v1.3_Main-Audit_Enviva-Pellets-Hamlet-FINAL.pdf
Is a period of ten years used?	No (but data could be combined to come to the ten years period)	Public	https://apps.fs.usda.gov/Evalidator/evalidator.jsp *The link is a report generator. The user chooses a specific geography, date range, and response variable (e.g., aboveground carbon stocks) to generate a report.* https://sbp-cert.org/wp-content/uploads/2019/09/Supply-Base-Report-v1.3_Main-Audit_Enviva-Pellets-Hamlet-FINAL.pdf

Forest management practices in a sourcing area

15.	Are forest management practices used over the sourcing area described?
	Yes. They are described based on data collected by the producer. The Producer describes different forest management practices for different broad forest types. For example, the Enviva Hamlet Supply Base Report describes both even- and uneven-aged practices for hardwood stands. Where even-aged systems employ a 40-year rotation and rely on natural regeneration. Pine systems are managed on an even-aged basis with a rotation age of 25-30 years. They also note that forest management practices in the region vary greatly due to landowner demographics and forest types.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Is historical data on harvesting and thinning intensity, harvesting levels and age class structure collected as part of historical management plans?	Yes	Internal	https://www.envivabiomass.com/sustainability/responsible-sourcing/wood-supply-map/#5/33.146/-84.930 and See Annex (harvest type, age class, but not explicitly harvest level)
Is historical data on harvesting and thinning intensity, harvesting levels and age class structure collected as part of forest inventories?	No	Internal	See Annex. Some information is collected on harvesting history, but not explicitly on historical age class structure or harvest levels.

Lastly, are the following factors included in the forest management plan?
Tick the appropriate box.

	Yes	No
Annual harvest level		X
Site index		X
Tree species composition (e.g. including basic wood density, carbon content, whole-tree biomass in relation growing stock volume		X
Forest reproductive material used (e.g. provenance)		X
Thinning intensity and frequency		X
Cutting regime (e.g. even-aged clearcutting, shelterwood, group or tree selection, coppice)	X	
Other management decisions (e.g. fertilization, drainage, herbicide and pesticide application, etc.)		X
Average minimum and maximum rotation length		X

Quantification of carbon stocks and sinks

16.	Are carbon stocks and sinks quantified as part of the forest sourcing area over the historical reference period?
	Yes. Using national forest inventory data (FIA) described above.

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Is existing data on carbon stocks and sinks collected as part of the sourcing area over the historical reference?	Yes	Public	https://apps.fs.usda.gov/Evalidator/evalidator.jsp

Does a producer estimate mean data on carbon stocks and sinks collected as part of the sourcing area over the historical reference?	Yes	Public	FIA Data: https://apps.fs.usda.gov/Evalidator/evalidator.jsp
Does the producer apply the forest carbon calculators and models recommended?	Yes	Public	US Forest Service tools based on FIA Data: https://apps.fs.usda.gov/Evalidator/evalidator.jsp
Does the producer estimate reference values for all the relevant carbon pools by stratifying the sourcing area in homogenous units?	No (but the inventory data are stratified by forest type and could be used to estimate reference values for aboveground carbon pools, but the Producer did not report on these pools.)		Pools are not separated. See for example, page 101 in: https://sbp-cert.org/wp-content/uploads/2019/09/Supply-Base-Report-v1.3_Main-Audit_Enviva-Pellets-Hamlet-FINAL.pdf

Lastly, does the stratification process follow the indicators below?
Tick the appropriate box.

Conditions	Indicator	Yes	No
Administrative conditions	Administrative region where sourcing level is located (e.g. region, province, municipality).	X	
	Ownership type (e.g., private public)	X	
Biophysical conditions	Topography		X
	Site conditions (e.g. forest site index)		X
Forest characteristics	Tree species composition		X
	Forest management regime	X	

Future long-term period

17.	Is the length of the future long-term period defined?
	No. There is no mechanism or defined plan for checking voluntary compliance in the future (e.g., regeneration, avoiding land conversion). This could however be done, once a forward-looking modelling is added.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex

Is a compliance check for a period of at least 30 years done?	No	Public report	No evidence of future planned compliance checks https://sbp-cert.org/wp-content/uploads/2019/09/Supply-Base-Report-v1.3_Main-Audit_Enviva-Pellets-Hamlet-FINAL.pdf

Forest management practices

18.	Are the forest management practices used over the long term described to strengthen and maintain carbon stocks and sinks?
	Yes. Described practices would be expected to strengthen or maintain carbon stocks.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Do the expected forest management practices deviate from the historical practices?	No	Public Report	https://sbp-cert.org/wp-content/uploads/2019/09/Supply-Base-Report-v1.3_Main-Audit_Enviva-Pellets-Hamlet-FINAL.pdf
Is the deviation affecting the future development of carbon stocks and sinks, described in the forest management plan?	Not applicable		

Mean carbon stocks and sinks

19.	Are the mean carbon stocks and sinks of a sourcing area estimated over the long term using forest carbon calculators and models which consider the effects of forest growth and management practices?
	No. Long-term projections are not made. This is however possible to do, for example projections could be made using FIA data and accepted growth models such as the US Forest Service's Forest Vegetation Simulator. For this case/producer, this was not done.

Can you identify in the case study region if any of the following types of evidence is available to determine the status of the country based on the answers to the questions above?

Please fill in the table and when there are relevant links or examples of the evidence available, please add them in the annex (and indicate so in the column most to the right).

Possible sources of evidence	Available for this region?	Ease of access	Link to source or reference to Annex
Does the producer estimate mean carbon stocks and sinks for all the relevant carbon pools by stratifying the sourcing area in homogenous units?	No	Public report	https://sbp-cert.org/wp-content/uploads/2019/09/Supply-Base-Report-v1.3_Main-Audit_Enviva-Pellets-Hamlet-FINAL.pdf

Are the carbon pools and same forest carbon calculator or model employed for estimating carbon stocks and sinks of a reference level?	Not applicable.

Example evidence

Question 10ii. FIA Evalidator Summary Output for North Carolina (county level data)

6/15/2020 EVALIDator Version 1.8.0.01

EVALIDator Version 1.8.0.01 - View report

Numerator attribute number and description: 0202 Average annual net growth of merchantable bole volume of growing-stock trees (at least 5 inches d.b.h.), in cubic feet, on forest land
Denominator attribute number and description: 0002 Area of forest land, in acres
This ratio estimate is based on the plot area that was forest land at both the beginning and end of the remeasurement period. This provides a more realistic ratio estimate of the actual change component (growth, removals, mortality) that has occurred on lands that remain in the forest land base.
FIADEF as the forest land definition.
State/EVAL_GRP(s):
North Carolina 372019
Page variable=None (based on values from the Current inventory).
Row variable=County code and name (based on values from the Current inventory).
Column variable=All live stocking (based on values from the Current inventory).
Filtering clause(s) applied to numerator:
Filtering clause(s) applied to numerator and denominator:

Ratio estimate:

	All live stocking					
County code and name	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked
Total	84.5617	122.7906	96.3686	65.3641	36.5173	37.1019
37001 NC Alamance	75.5443	54.0499	102.0887	60.5659	18.5825	-
37003 NC Alexander	54.8614	20.3207	72.3466	45.8681	45.9427	-
37005 NC Alleghany	92.0064	-5.2519	121.3039	37.1502	-	119.7497
37007 NC Anson	128.1617	58.7749	180.2173	95.2955	93.7314	-
37009 NC Ashe	79.3176	73.4468	96.7866	70.0686	-19.3846	-
37011 NC Avery	26.4930	58.6117	12.0148	27.7280	18.4552	-
37013 NC Beaufort	108.6672	147.8957	130.9396	94.9653	46.4177	62.6432
37015 NC Bertie	129.9179	173.7100	131.0944	111.2979	21.5253	-
37017 NC Bladen	86.5839	129.9617	98.8519	65.4199	38.9734	47.5545
37019 NC Brunswick	90.3815	102.9636	121.9403	57.2005	44.0089	31.5170
37021 NC Buncombe	49.7412	67.0466	56.7161	26.6198	27.3975	-
37023 NC Burke	71.3588	79.5963	83.8384	57.4370	55.5479	-
37025 NC Cabarrus	69.6120	23.3100	102.5658	51.4188	-40.5369	99.4069
37027 NC Caldwell	68.1475	86.0435	59.3336	85.1598	48.1381	35.1590
37029 NC Camden	42.3156	-17.3146	155.9722	3.7428	42.6497	-
37031 NC Carteret	71.9609	139.1588	67.7940	65.7070	23.5014	1.6255
37033 NC Caswell	71.2571	73.1718	89.4413	35.3086	41.5991	-
37035 NC Catawba	80.2501	69.0180	80.8226	90.8172	99.5874	-
37037 NC Chatham	133.5102	144.1589	148.8466	116.3973	71.1277	-
37039 NC Cherokee	52.3448	62.5318	53.6408	49.2491	48.0164	-
37041 NC Chowan	134.0621	-	168.9250	160.0120	-18.3689	-
37043 NC Clay	32.3482	54.3861	61.5339	1.4034	41.8940	-
37045 NC Cleveland	85.2896	173.6133	94.3151	56.0643	37.2781	-

Question 12. Supply Area Map Example

Source: https://www.envivabiomass.com/sustainability/responsible-sourcing/wood-supply-map/#5/33.146/-84.930

Question 15. Stand History information examples

ENVIVA TRACT SETUP SHEET

Stand-Level Information

FORM GUIDANCE	Please provide information for at least one stand. Complete stands 2-5, if information is available. Multiple stand definition: Different harvest type, forest type, or age class within the harvest area.

	Stand 1	Stand 2	Stand 3	Stand 4	Stand 5
Was stand established by planting?	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No ☐ Unknown
How will stand be regenerated after harvest? * As prior to harvest	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown	☐ Planted- same species* ☐ Planted- different species* ☐ Planted- unknown species ☐ Naturally regenerated ☐ Unknown
Describe this stand's stocking preharvest	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked	☐ Understocked ☐ Fully stocked ☐ Overstocked
Estimated tons to Enviva					
Forest cover type	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood	☐ Pine w/ HW understory ☐ Pine w/ NO HW understory ☐ Mixed Pine- Hardwood ☐ Bottomland Hardwood ☐ Other Hardwood
Harvest type	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning	☐ Arboriculture/Salvage ☐ Clearcut ☐ Preharvest ☐ Seed tree ☐ Selection ☐ Thinning
Age class	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+	☐ 0-10 ☐ 11-20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ 61-70 ☐ 71-80 ☐ 81-90 ☐ 90+
Acreage					
Stand history					

Field	Explanation/Options
Stand establishment	Was the stand established by planting? Yes, No, or Unknown
Stand regeneration	How will the stand be regenerated post-harvest? Planted with same or different species, Planted with unknown species, Naturally regenerated, Unknown
Stand stocking	Describe the stand's stocking preharvest: Understocked, Fully Stocked, Overstocked
Estimated tons to Enviva	Estimate of the tons Enviva will receive from each stand
Forest cover type	Cover type of the stand: Bottomland Hardwood, Mixed Pine & Hardwood, Other Hardwood, Pine Forest, or Pine with Hardwood Understory
Harvest type	Method of extraction: Arboriculture/salvage, Clearcut, Preharvest, Seed Tree cut, Selection Cut, Thinning
Age class	10-year range estimate of forest age (choose overstory age class in case of uneven age management)
Acreage	Approximated acreage of the stand to be harvested
Stand History	An explanation of historical use of the stand. Example: "Harvested in 1950, thinned in 1965"

DEFINITIONS OF FIELDS ON OUR QUESTIONNAIRE

Appendix D. CASE STUDIES AGRICULTURAL BIOMASS

This appendix outlines how case studies for the new agricultural sustainability criteria were selected, developed, including the presentation of the results obtained.

D.1. Selection of agricultural case studies

Selection of case studies on waste and residues

The top five Member States in order of average crop production are France, Germany, Poland, UK and Spain, followed by Denmark, as shown in Table 29. Among such countries, it is considered that Denmark, despite overall lower residue production capacity, would make up an interesting case study it has one of the highest utilisation rates of agricultural residues, including straw, in the EU. In addition, use of straw for energy production, among other agricultural residues, has been established for over 25 years in the country.
In order to offer a balanced geographical coverage among case studies, it is proposed that Spain is pursued as a case study representative of Southern Europe and a specific sub-set of agricultural systems. A case study is also justified by the average annual production capacity, as shown in Table 29, which makes the country the 5th producer in Europe. Italy was also considered an important country of production of cereals and, therefore, straw. However, its overall production capacity is significantly lower than France, Germany, Poland, UK, Spain or Denmark. It is also considered that a Southern European perspective can be offered by pursuing Spain, instead.

Table 28. Average annual production of selected crops in the EU-27 between 2002 and 2011 (1,000 tons)

Member State	Wheat	Barley	Oat	Rye	Triticale	Total
Austria	1,511	880	140	183	215	2,929
Belgium	1,794	356	30	3	44	2,225
Bulgaria	3,642	782	48	15	23	4,510
Cyprus	12	68	1	0	0	81
Czech Republic	4,126	1,988	172	167	219	6.672
Denmark	4,880	3,468	283	188	168	8,987
Estonia	268	310	81	34	15	709
Finland	769	1,837	1,176	63	0	3,845
France	36,768	10,598	741	134	1,837	50,078
Germany	23,045	11,180	970	3,176	2,415	40,786
Greece	1,704	251	105	31	7	2,091
Hungary	4,425	1,102	145	92	448	6,212
Ireland	737	1,193	133	0	0	1,326
Italy	7,308	1,128	345	10	0	8,791
Latvia	751	285	132	116	31	1,316
Lithuania	1,483	847	147	141	254	2,873
Luxembourg	79	50	9	7	22	165
Malta	0	0	0	0	0	0
Netherlands	1,218	282	10	12	17	1,539
Poland	8,909	3,485	4,966	3,534	4,184	25,078
Portugal	176	50	61	23	27	337
Romania	5,579	1,052	339	33	102	7,104
Slovakia	1,480	691	41	65	40	2,318
Slovenia	146	65	5	3	12	230
Spain	6,037	8,724	1,025	254	120	16,158
Sweden	2,215	1,515	908	138	223	5,009
UK	15,004	5,783	706	35	65	21,593
EU-27	**134,068**	**57,968**	**12,220**	**8,455**	**8,395**	**221,105**

Source: Ecofys (2013) Low ILUC potential of wastes and residues for biofuels. URL: http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdf

Table 29. Estimates for the low ILUC potential of straw (million tons – wet matter)

Member State	Sustainable potential	Straw uses (excluding energy generation, incorporation and burning)	Low ILUC potential
Denmark	3.2	1.8	1.4
France	19.6	10.9	8.7
Germany	11.6	5.6	6.0
Hungary	2.8	2.5	0.2
Italy	4.0	1.7	2.3
Netherlands	0.5	1.3	-0.8
Poland	11.2	16.7	-5.5
Romania	3.6	1.2	2.4
Spain	8.2	2.7	5.5
UK	7.4	6.3	1.1
Total	**72.2**	**50.7**	**21.4**

Source: Ecofys (2013) Low ILUC potential of wastes and residues for biofuels. URL: http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdf

As reported in Table 30, some Member States such as Poland reportedly use significantly more straw than the sustainability potential. In addition, Poland, unlike many other Member States, has a straw deficit[121]. This makes Poland an interesting case study to explore, knowing the extent to which the implementation of the REDII sustainability criteria could help to mitigate such practice. Intra-EU trade usually takes place between countries with straw surpluses (Germany, France, Poland and UK) to countries with straw deficits (Netherlands, Belgium and Austria). Traded volumes are highly variable and are influenced by the weather conditions in both the importing and exporting country and the resulting impact that this has on the straw price in that year.[122]

The Netherlands typically imports large volumes of straw from northern France, western Germany, UK and Spain. Straw is exported from Castilla y León region in Spain to Portugal, and from northern Spain to France, Belgium, Netherlands and Germany.[123] We are also aware of straw export from Poland to Denmark, Germany and the Netherlands, however the traded volumes are understood to be relatively low. In 2016, around 19 kt of straw was reportedly exported from Poland.[124]

Straw can also be traded internationally. Imports of straw-based pellets from Ukraine to the EU are currently limited. However recent modelling foresees a potential increase to 2020 and beyond linked to the implementation of the sustainability criteria for biomass for energy in the REDII.[125] Ukraine is therefore proposed to look at within an in-depth case study.

[121] Ecofys (2013) Low ILUC potential of wastes and residues for biofuels. URL: http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdfb

[122] Ecofys (2013) Low ILUC potential of wastes and residues for biofuels. URL: http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdfb

[123] Ecofys (2013) Low ILUC potential of wastes and residues for biofuels. URL: http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdfb

[124] Nadwyżka słomy dostępnej do wykorzystania na potrzeby energetyczne w 2016 r, Hryniewicz, M. & Grzybek, A. (2017). http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.baztech-41a7efcf-a9bd-4c1b-9db9-cacacd3a57d8/c/hryniewicz_grzybek_nadwyzka_3-2017.pdf

[125] Lamers et al (2015) Global solid biomass trade for energy by 2020: an assessment of potential impact streams and supply costs to North-West Europe under different sustainability constraints. URL: https://bioenergy.inl.gov/InternationalReports/Global%20Solid%20Biomass%20Trade%20for%20Energy%20by%202020.pdf

Brazil is currently exporting soybeans that are transformed into soy oil and biodiesel in the EU. Due to trade negotiations, it is possible that increased exports of crops and crop residues from Brazil may be established with the EU, especially in relation to imported bagasse (outside the scope of this study).[126] It is considered that the likeliness and magnitude of developed imports of straw-based pellets from Brazil to the EU is rather low. One this basis, Brazil is not proposed to be taken forward as an in-depth case study.

Denmark, Spain, Poland and Ukraine were selected as case studies, following discussions with the European Commission.

Table 30. Waste and residue criteria case studies[127]

Country	Rationale for the selection
Denmark	Total straw production is Denmark accounts for 5.5 Mt, of which approximately 1.5 Mt of straw/year is used for energy. Pellets made from straw have been used significantly in recent years (5% of overall national consumption), especially in the Amagervaerket Unit 1 plant near to Copenhagen and for biogas production. Denmark has one of the highest utilisation rates of agricultural residues, including straw, in the EU. Use of straw for energy production, among other agricultural residues, has been established for over 25 years.
Spain	Spain is a large straw EU producer. This is mainly based on the cultivation of cereals and on permanent crops such as olive trees, given its location in Southern Europe. Straw is used at commercial scale at several dedicated power plants.[128]
Poland	Poland is a top EU producer of triticale and rye and a relevant case study to test technical input to the guidance in relation to straw harvesting in an Eastern European agricultural context. Cereal straw utilisation was considered to exceed the sustainable potential by 5 Mt /year in the Ecofys (2013) study.
Ukraine	Imports of straw-based pellets from Ukraine to the EU are currently limited. Recent modelling exercises, however, foresee a potential increase to 2020 and beyond linked to the implementation of the sustainability criteria for biomass for energy in the REDII. We also note that the Ukraine already exports significant volumes of sunflower husk briquettes / pellets for heat and power generation. These residues are generated at a processing facility rather than on the field.

Selection highly biodiverse forest land case studies

For the criterion on highly biodiverse forest examples, the case studies focus on analysing the option to use remote sensing/GIS for drafting guidance maps for a specific region, 'test' the protocol to check for compliance drafted specific to highly biodiversity forests necessary in a specific region or (possibly together with a scheme or standard) analyse possible difficulties of including the definitions of highly biodiverse forest and other wooded land as an additional land category to the existing 'no-go' areas.

The Consortium proposes to select the case studies on the basis of:

i) a potential or perceived risk for biomass to be sourced from highly biodiverse areas and

ii) their current importance or future potential in providing feedstock used in Europe.

[126] USDA (2018) EU

[127] Camia A., Robert N., Jonsson R., Pilli R., García-Condado S., López-Lozano R., van der Velde M., Ronzon T., Gurría P., M'Barek R., Tamosiunas S., Fiore G., Araujo R., Hoepffner N., Marelli L., Giuntoli J., Biomass production, supply, uses and flows in the European Union. First results from an integrated assessment, EUR 28993 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-77237-5, doi:10.2760/539520, JRC109869. P. 15-19.

[128] https://www.acciona-energia.com/areas-of-activity/other-technologies/biomass/

Table 32 summarizes the identified case studies on the highly biodiverse forest criteria including its rationale for selection, as decided in collaboration with the Commission.

Table 31. Highly biodiverse forest land case studies

Country	Rationale for the selection
Brazil	• We have performed 1 case study in Brazil where there could be a savannah system relevant as example to test the applicability of the stepwise approach for a specific region in Brazil. We selected the federal state Bahia that covers Tropical semideciduouse forest, Cerrado (Savanna) and Caatinga (Thorny Shrub). It will review available evidence/tools that can be used for demonstrating compliance.

D.2. Findings waste and residues cases studies

In the following table we present the summary of evidence types that were identified in the case studies as available to demonstrate compliance.

Some resulting findings were used to detail the approach (of which the resulting approach is presented in section 3.2.

- All of the case studies needed a combination of Tier 1 and Tier 2 evidence (none were able to demonstrate all elements on Tier 1) – a combination of tiers is possible, so this is not a problem (specified in the approach).
- Most case studies presented similar results (types and level of evidence) – except for Poland where they had one additional practice available through Tier 1 evidence.
- In some cases, not all management practices appeared to be relevant for that specific setting (e.g. acidic soils). An addition has been made to the approach to allow operators to supply evidence in case a specific measure is not relevant in their case.
- In most cases demonstrating evidence was possible, some of the management practices are not that wide-spread yet, but the new CAP as well as other initiatives will likely make these practices more wide-spread/applied.

Table 32. Summary of types of evidence identified in the case studies to demonstrate compliance

Requirement	Level of demonstration	Evidence and monitoring system
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Tier 2	Self-declaration by the farmer + government inspections Self-declaration by the farmer + Independent third-party auditor Documentation on crop rotation and area used for CAP subsidy calculation.
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Tier 2	Self-declaration by the farmer + government inspections Self-declaration by the farmer + Independent third-party auditor Documentation on crop rotation and area used for CAP subsidy calculation.
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Tier 2	Self-declaration by the farmer+ government inspections Self-declaration by the farmer
	Tier 1 (PL)	Compliance with CAP subsidy requirements as monitored by ARiMR
No burning of arable stubble except where authority has granted an exemption for plant health reasons	Tier 1	Evidence of farmers receiving CAP subsidies (conditionality) Municipalities are responsible for monitoring and enforcement. Compliance with CAP subsidy requirements as monitored by ARiMR
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Tier 2	Self-declaration by the farmer+ government inspections Self-declaration by the farmer Self-declaration by the farmer + Independent third-party auditor

Case study – Spain

Key findings

The market for residues of non-perennial crops for bioenergy is still limited in Spain, because of their low profitability. In general, it is a local market, comprised of small companies that buy the residues from producers, process it and sell it to final consumers as a complement to other activities. The most used residue is straw, which is used to produce electricity and to produce thermal energy with small domestic heaters.

There are no national rules on soil management in Spain, besides those established by the conditionality and greening rules of the CAP. Therefore, evidence gathering and monitoring of soil management practices need to be done at the farm level (Tier 2). An exception is the requirement of stubble burning, which is a conditionality rule of the CAP. Compliance with this rule can be demonstrated by farmers with a proof of receipt of CAP funding, so it can be considered Tier 1.

As regards the list of essential soil management practices examined in this report, the consulted stakeholders provided the following remarks:

- A 5-crop rotation may be too demanding and not always possible in Spain (4 crops is probably more reasonable). In addition, different requirements should be established for different ranges of farm sizes (as in the greening rules).
- In Spain (and especially in rainfed land) coverage with live plants is not always possible (during the summer the plants dry out). The requirement should rather be of non-bare soil (soil could be covered by stubble rather than with live plants).
- Intermediary crops cannot be used in rainfed land, because in non-irrigated land there is only a harvest per year (in less productive areas even a harvest every two or three years).
- In Spain, the main concerns are not so much soil compaction or acid soils but soil loss due to erosion. For this reason, the rules aiming at preventing soil compaction or applying liming on acidic soils are not very relevant.

Requirement	Level of demonstration	Evidence and monitoring system
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Tier 2	Self-declaration by the farmer + government inspections
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Tier 2	Self-declaration by the farmer + government inspections
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Tier 2	Self-declaration by the farmer+ government inspections
No burning of arable stubble except where authority has granted an exemption for plant health reasons	Tier 1	Evidence of farmers receiving CAP subsidies
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Tier 2	Self-declaration by the farmer+ government inspections

Introduction

Spain is the fifth most important producer of straw-generating crops in the EU[129], and therefore has a great potential as regards bioenergy generation from agricultural residues. Agricultural residues from non-perennial crops are mostly used on a small scale and on farm or locally, with the exception of straw, which is also used as a feedstock by some power plants.

Besides law 22/2011 and Royal Decree 9/2005 on soil pollution, there is no legislation to protect soil in Spain. However, some of the cross-compliance rules of the CAP are relevant to soil quality, including GAEC 6 (ban on stubble burning, except for phytosanitary reasons), GAEC 1 (establishment of buffer strips along watercourses), GAEC 5 (tillage management or other appropriate cultivation techniques to limit the risk of soil degradation, taking into account slope), GAEC 4 (protection of landscape features).

In addition, CAP's greening rules (as detailed in Royal Decree 1078/2014) have relevance for soil quality. They require that farms with farmland between 10 and 30 ha use at least two crops (none of them must cover more than 75% of farmland), whereas farmland over 30 ha must include at least three different crops (none of them must cover more than 75% of the overall farmland, and the two main crops cannot cover more than 95% of the farmland). In addition, farms with more than 15 ha of farmland are required to dedicate at least 5% of their land to one of the four Ecological Focus Areas that have been chosen by Spain (nitrogen-fixing crops, fallow, forests and agroforestry). Compliance is monitored by FEGA (the Spanish paying agency).

There are no rules in place to limit the extraction of agricultural residues or to require farmers to prepare a soil management plan. Residue retention on land is not commonly practiced in Spain. Farmers leave on land sunflower stems and heads, as well as corn hobs, which do not have other use and does not have a market. However, straw is often removed and used for livestock or industrial purposes (e.g. animal feed and bedding, mushroom production, construction/packaging/paper industry). In general, straw is only left on land when there is no other use and no market for it (this can vary significantly from year to year, because the amount of straw produced can vary each year). The market for agricultural residues is usually local because its low calorific value makes transport expensive. Agricultural residues are normally traded by small companies that process and sell the residues as a complement to other activities.

In general, Spanish farmers are increasingly aware of the practices needed to improve soil quality and maintain organic matter. Minimum tillage and direct sowing are more and more used, and the use of seasonal deep tillage has decreased significantly over recent years. Although still not common, plant cover crops are being introduced in irrigated land and for permanent crops. Crop rotation is not common, but it is increasingly practiced to improve soil quality, reduce the need of fertilisers and herbicides. Legumes as part of crop rotation are mainly used in rainfed land (in irrigated land they are only used for some types of crops, e.g. beets).

As regards future developments, the National Energy and Climate Plan 2021-2030 (Plan Nacional Integrado de Energía y clima - PNIEC) envisages a significant increase in the use of residues for bioenergy.

According to information provided by the Ministry of Agriculture, the current discussion on best practices to include in the post-2020 CAP to maintain soil quality are:

- Incorporation of pruning remains in the soil,
- Establishment of cover crops,
- Conservation agriculture (direct sowing),
- Promotion of organic farming,
- Promotion of rotations with crops that improve soil quality.

In the post 2020 CAP conditionality rules will probably include GAECs related to adequate tillage management to limit erosion, minimum soil cover in sensitive periods, crop rotation / diversification

[129] Ecofys (2013) Low ILUC potential of wastes and residues for biofuels. http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdf

(they are still being negotiated). In addition, eco-schemes related to the retention of pruning wastes in the land and crop rotation practices including legumes are currently being discussed. These will strengthen the agro-environment measures that the Autonomous Communities (i.e. regional governments) will include in their RDPs. The future CAP will probably include simple obligatory rotations as a conditionality rule and more sophisticated rotation systems for eco-schemes and agro-environmental measures of the RDPs. In addition, measures put in place to implement the Farm to Fork Strategy will contribute to improve soil quality, and in particular those related to increasing organic production and reducing fertilizers and plant protection products.

The provision of advisory services to farmers will be essential to guide decisions as to whether soil management practices are required and which ones to use, be they retention of agricultural residues on soil or other practices like e.g. minimum tillage, conservation agriculture, grass/leguminous cover, crop rotation, use of organic compost, etc.

Background questions

1.	*Please indicate which region/location is looked at.*
	Spain
2.	*Please indicate in 1-2 sentences why this region is of interest for this specific case study.*
	Spain is the fifth country in the EU as regards production of straw-generating crops[130], and therefore has a great potential for bioenergy generation from agricultural residues (see González Sánchez et al., 2018[131]).
3.	*Please indicate if there are specific boundary conditions you want to mention.*
	Not applicable – this report is about the entire country
4.	*Please indicate the make-up of the farming sector in the country under consideration ie average farm size, productivity, extent of organic production, intensive vs extensive management etc. Are there regional differences in the scale of farms?*
	Spain is very heterogeneous in terms of size, dimension, productive orientation and productivity of farms. In general, irrigated land is used for intensive agriculture, while rainfed land is generally used for extensive agriculture and husbandry.

Understanding soil protection baselines

To check whether the sustainable production criteria is met, the following questions are the main focus of this section based on the five sub-criteria previously outlined:

4.i	*Is legislation in place to protect soil quality and soil carbon? (if yes, please briefly reference and describe this)*
	Law 22/2011 on contaminated waste and soil regulates waste management, promotes measures that prevent generation of wastes and mitigate the adverse impacts on human health and the environment. Royal Decree 9/2005 establishes the list of potentially polluting soil activities and the criteria and standards for the declaration of contaminated soil. The first one is being revised and will be replaced by a law that will transpose EU Directive 2018/851 on waste and Directive (EU) 2019/904 on reducing the impact of certain plastic products on the environment. Law 42/2007 on Natural Heritage and Biodiversity establishes the basic legal regime for the conservation, sustainable use, improvement and restoration of biodiversity and natural resources (among which soil is listed).

[130] Ecofys (2013) Low ILUC potential of wastes and residues for biofuels. http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdf

[131] González Sánchez E. J., Veroz Gonzáles O., Gil Ribes J., Ordóñez Fernández R. M. (2018). Iniciativa 4 por mil: el carbono orgánico del suelo como herramienta de mitigación y adaptación al cambio climático en España. Informe por la Oficina Española de Cambio Climático. Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente https://www.miteco.gob.es/es/cambio-climatico/publicaciones/publicaciones/4por1000_tcm30-438109.pdf

	Some of the CAP's conditionality rules are relevant for soil quality. They were transposed through Royal Decree 1378/2018, which sets the rules for the application in Spain of the Common Agricultural Policy. The relevant rules are: • GAEC 6 Ban on stubble burning, except for phytosanitary reasons. This measure aims to protect the organic matter of the soil, its microbiota and to reduce erosive processes. • GAEC 1 Establishment of buffer strips along watercourses. This measure aims to reduce water contamination and also indirectly reduce runoff. • GAEC 5 Tillage management or other appropriate cultivation techniques to limit the risk of soil degradation, taking into account the slope. This measure aims to minimize the risk of erosion by forbidding tilling the land across contour lines. Arable land should not be tilled in the direction of the maximum slope when slope is equal to or greater than 15%, unless the actual slope is compensated by terraces. • GAEC 4 Minimum soil cover in the most sensitive periods and areas. This measure also aims to reduce soil erosion, • GAEC 7 Maintenance of topographical features and prohibition of cutting hedges and trees during the breeding and reproduction season of birds In addition, the greening rules have relevance for soil quality, and in particular those related to crop rotation and diversification. They are largely adopted, because they lead to an increase of the basic payment by 50%. According to information provided by the Ministry of Agriculture, rules to maintain soil quality will be included in a future royal decree on sustainable nutrition that is currently being developed. In addition, the Action Plans for nitrate vulnerable zones and the integrated production labels require the preparation of fertilization plans. The National Action Programme to Combat Desertification is also relevant to soil quality, which stems from the UN Convention to Combat Desertification. The Programme sets an integrated framework for the management and possibly forecasting of desertification process and aims to integrate and complement existing initiatives both on agricultural and forest land. The Spanish NAP only includes a small number of actions to complement existing initiatives. These include integrating the evaluation and prediction of desertification in the country, analysing and disseminating research results, and establishing a network of pilot projects for restoration and sustainable management of areas affected by desertification. It also proposes an institutional framework for this integration of existing efforts: a Desertification Observatory, and a Technical Office.
4.ii	*Is soil quality and/or soil carbon/soil organic carbon defined in legislation in the country? (if yes, please briefly reference and describe this)*
	No
4.iii	*What mechanisms are there in place in country to monitor soil quality?*
	The Spanish National Inventory of Soil Erosion is a Geographical Information System for monitoring and assessing soil erosion processes in both forest and agricultural land. Its main objectives are to identify, quantify and cartographically reflect the main areas of soil erosion in the country and to assess the development of soil erosion in Spain by comparing consecutive inventories. The five types of erosion assessed are: sheet and rill erosion, gully erosion, mass movements, stream-bed erosion and wind erosion. Data are collected with a 10 years frequency, with 1:50,000 scale maps and an intense fieldwork under taken to gather vegetation, land use and soil data (5x5 km UTM grid sampling plot). Results inform the National Plan of Priority Actions for Forest-Hydrological Restorations and for the National Action Plan to Combat Desertification (both included in the Spanish Forest Law). They are also used to define CAP Greening Payment Requirements and CAP Rural Development Programme 2014-20, National and Regional Programmes. In addition, Autonomous Communities (i.e. regional governments) are required to prepare an inventory of the contaminated soils and to prioritise the most important ones (Law 22/2011 on contaminated residues and soils and Royal Decree 9/2005, which establishes the list of potentially soil activities and the criteria and standards for the declaration of contaminated soils). The Ministry of Agriculture, Food and Environment uses this information to prepare the state inventory of contaminated soils. Beyond erosion/desertification and contamination, no other soil threats or functions are monitored at the national level, and there is no official national soil monitoring programme. However, some Autonomous Communities are collecting data on the organic content of soil[132].

[132] Information provided by UPA

4.iv	*Are land managers required to develop soil management plans or similar? (if yes, please explain their specification/coverage)*
	No.
4.v	*Are rules in place to limit residue extraction linked to agricultural crops?*
	No. GAEC 6 establishes that extraction of residues should be carried out in accordance with existing legislation.
4.vi	*Are incentives or rules in place promoting the use of agricultural residues for bioenergy? (if yes please briefly reference and describe)*
	There is no specific target in Spain for the use of agricultural residues for bioenergy (electrical or thermal production)[133]. The Royal Decree 413/2014 establishes a premium tariff for power plants using renewable energy, including agricultural residues, to top up the market price of electricity. The premium tariff is calculated on the basis of the additional investment and operation costs with respect to competitive electricity sources. The Royal Decree 947/2015 set a call for the allocation of the specific premium tariffs for new plants of electricity production from biomass (the required installed power for bioenergy is 200 MW). The first auction for the allocation of specific remuneration regime to facilities for the production of electrical energy from biomass was issued in 2016[134]. Finally, IDAE (a public body) offers grants for the development of businesses that use bioenergy from residues[135]. The Ministry of Agriculture, Fisheries and Food offers grants in the framework of the national RDP to analyse the potential cooperation between agri-food producers and bioenergy producers to develop a more efficient use of energy in the transformation of agri-food products. The budget for these grants is 240,000.00 per year (of which, 80% is provided by the EAFRD). The maximum budget per project is € 60,000. Also, some of the measures included in the RDPs of the Autonomous Communities support the production of bioenergy. Spain's RDP 2014-2020 includes Focal Area 5 C "Facilitate the supply and use of renewable energy sources, by-products, waste and residues and other non-food raw materials to drive the development of the bioeconomy". This Focal Area is covered by Measure 16 "Cooperation", which, among other objectives, aims to "facilitate the supply and use of renewable energy sources, by-products, waste, residues and other non-food raw materials to promote the development of the bioeconomy".

Understanding use of agricultural residues/residue market

5.i	*Is there evidence of use of agricultural residues already within the bioenergy sector? (if yes for what purposes and to what extent)*
	34 biomass power generation plants are currently operating in Spain, with a cumulative installed power slightly over 700 MW. Of these, about 180 MW use agricultural residues, with an annual consumption of approximately one million tonnes per year[136]. The agricultural residues that are mainly used to produce thermal energy and electricity in Spain are olive pits, olive pomace, and pruning / removals of permanent crops (mostly in southern Spain), as well as almond shells[137]. As regards agricultural residues from non-permanent crops, their use as an energy source is not widespread. According to Rodero et al. (2019), a wide range of barriers hinder the use of agricultural residues for bioenergy, including logistics, difficult combustion and inadequate equipment[138]. The residue that is mostly employed is straw, which is used as a feedstock in a few power plants and on farm to produce thermal energy with small heaters (see for example ACR Ecocalderas). Acciona, a renewable energy company, has three power plants that use straw as a feedstock. They are:

[133] Information provided by UPA.

[134] http://blog.bioplat.org/2018/04/29/normativa-espanola-de-bioenergia/

[135] Information provided by CIRCE.

[136] Information provided by UPA.

[137] Information provided by AVEBIOM.

[138] Rodero Masdemont P., García Galindo D., Mira Uguina A., Jarauta Córdoba C. Á. (2019). Marco actual y nichos de innovaciónpara la agrobiomasa para generarcalor. Claves tecnológicas para el uso de calor con agrobiomasa en pequeña potencia. Presentation at the conference Agrobiomasa, Valladolid, Spain, 26th September 2019. Provided by AVEBIOM.

	1) Sangüesa in Navarra (installed power: 30.2 MW; feedstock: 160,000 tonnes of straw per year; average production: 200 GWh per year. It covers 5% of the electricity demand of Navarra); 2) Briviesca in Burgos (installed power: 16 MW; feedstock: 102,000 tonnes of straw per year; electricity production: 128 GWh per year); 3) Miajadas in Cáceres province (installed power: 15 MW; feedstock: 110,000 tonnes of corn cane, tree pruning and forest remains per year; electricity production: 128 GWh per year). The company is building two additional power plants for bioenergy in Leon and La Coruña provinces[139]. Most of the cooperatives represented by Agri-food Cooperatives Spain use their residues from wine and oil production to generate energy (through self-consumption or selling it to the electricity network) or to produce biofuels which are then sold. The most interesting experiences as regards the use of residues from non-perennial crops are the following: • The Agropal cooperative makes use of straw residues to produce bioenergy for self-consumption. The straw is mainly pelletized and is used as a solid bio-fuel to generate the energy employed in a cheese factory and a dehydrator owned by the cooperative. The cooperative has access to significant amounts of herbaceous waste (especially cereal straw) from the plots of its members. These residues have only limited use as fertilisers and have no market (due to the high costs of their collection as compared to their calorific content). For this reason, AGROPAL has recently bought two new heaters, which use biomass as sole feedstock. Industries in the area, as well as public buildings (local and regional administration), have recently shown interest in purchasing biomass pellets that AGROPAL could produce using agricultural residues of its partners. • The Sovena company has a plant in Andújar where sunflower pipes are husked and used for self-consumption in a mixed boiler. They are also pelletized for sale. Corn hobs are not used to produce bioenergy in Spain yet. The European project Sucellog analysed the feasibility of its use by Agrària de Miralcamp, a company specialising in cereal dehydration located in Catalonia, both for self-consumption and commercialisation to a nearby pig farm, and concluded that such an initiative can be successful[140].
5.ii	*Is the use of residue retention on land common practice as a mechanism for soil protection? Or required legally?*
	Mechanisms for soil protection are not mandatory in Spain, and the farmers can decide how to use their residues. According to the information provided by the Ministry of Agriculture and Agri-food Cooperatives, residue retention on land is not commonly practiced in Spain, except in farms practicing organic agriculture and direct sowing (regenerative agriculture). Herbaceous rainfed agricultural residues are usually removed from the land once harvested and are used in the livestock or industrial sector. In general, farmers leave on land the straw that they cannot sell. The decision on whether or not to remove the straw depends significantly on the needs of the livestock and the amount of straw that is available each year. In general, it is important to note that in dry land the amount of straw produced each year can vary significantly. In irrigated land, and especially the land used for spring cereals, residues are retained in the soil not so much as a protection measure but as an agricultural practice to facilitate a second sowing. The sunflower stems and heads are often chopped and left on land. Since the yield of this crop is usually quite low, the amount of residues generated is low and therefore organising a logistic chain for the collection and use of this residue for bioenergy would not be economically feasible. Corn cobs are often returned to the land because they don't have a market, and not really as an agronomic practice. Woody agricultural residues (pruning remains) are removed and in most cases burned to prevent the spread of pests. In recent years, the use of this type of waste for energy use has increased [141].
5.iii	*If residues are not used for bioenergy are there other existing uses of agricultural residues? (i.e. material uses)*
	Agricultural residues used for bioenergy are those that remain once other needs have been covered. The residues of cereal crops are normally used for: • Animal feed, either directly or in the composition of granulated feed and fodder

[139] https://www.acciona-energia.com/es/areas-de-actividad/otras-tecnologias/biomasa/

[140] https://www.sucellog.eu/images/Publications_and_Reports/SUCELLOG_D6.5a_Individual_auditing_studies_and_diagnosis_in_Spain_ES.pdf

[141] Information provided by Agri-food Cooperatives Spain and UPA.

	• Animal bedding • Agri-food industry (mushroom production) • Other uses (construction, packaging, paper industry) Woody agricultural residues (from pruning of fruit trees, olive trees and vines) have no other significant uses besides the production of thermal energy on farm with small-scale domestic heaters[142].
5.iv	*What is the market infrastructure for the buying and selling of residues at present? (informal/local; coordinated/through traders or other points at which material is gathered together?)*
	The market for agricultural residues is usually local in nature, since transport costs tend to undermine the competitiveness of this type of biomass if the distance covered is too long. In general, agricultural biomass tends to have lower quality than forest biomass, both in terms of calorific value and ash concentration / chlorine problems. For this reason, in general it is only competitive close to where it is produced[143]. Agricultural residues are mostly traded by small companies that process the residues at the origin or destination point, and then market them to final consumers. In many cases, agricultural residues are sold as a complement to other activities. There is a national association of straw production and marketing companies, ANIP[144].
5.v	*If residues are already being used for bioenergy feedstock, what is the sourcing area from which they are taken before the first processing step? (ie. are there details of how far the raw material is transported?)*
	The average distance between the producers of the herbaceous residues and the bioenergy production plants has been estimated by UPA at about 60 km. According to UPA, for woody agricultural residues, the average distance may increase up to 80 km, as it is a higher density fuel. According to Agri-food Cooperatives Spain, agricultural residues in a range of 30-50 km are normally used. Transport is very expensive compared to the calorific value if densification work is not carried out (pelletizing, chipping, packing, etc.), but this entails high costs that in general are not covered by the low market value. The Ministry of Agriculture indicated that residues are not traded at more than 50 km from the production point, in order to make transport costs feasible.

Legal requirements at national level – land management best practices

6.i	*Are rules in place determining the practices that should be applied on arable land (for non-perennial crops or cereals) to support soil quality? (if yes, please specify – FYI this could be legal requirements or requirements linked to funding such as under the CAP. Please briefly explain the measures and instruments that support them and how widely they are adopted (if non binding).*
	There are a number of cross-compliance rules that aim to maintain soil quality (see above). In addition, the Greening Measures mentioned above are widely followed in Spain because they result in an increase of the basic payment by 50%.
6.ii	*Please complete table a) below regarding support for management practices in country. Provide any comments on coverage in the box below*
6.iii	*How are measures for promoting soil quality monitored to ensure that land management practices comply with requirements? What evidence is used?*
	The measures related to cross-compliance and greening are monitored based on the self-declarations that farmers need to prepare to obtain CAP payments.
6.iv	*How is compliance with measures to promote soil quality enforced?*
	Through the farmers' self-declarations for the CAP, remote sensing monitoring and data crossing with other control authorities such as Seprona (Servicio de Protección de la Naturaleza - Nature Protection service), as well as through the registers of phytosanitary products that farmers need to keep according to Royal Decree 1311/2012.

[142] Information provided by UVA and Avebiom

[143] Information provided by Agri-food Cooperatives Spain.

[144] Information provided by UPA.

	Compliance with the measures of the CAP Conditionality are guaranteed through the National Plan of Controls and Criteria for the Application of Penalties of Conditionality, established by the Spanish Fund for Agricultural Guarantee (Fondo Español de Garantía Agraria - FEGA). Control activities are carried out by the organizations competent of the regional administrations.
6.v	*Does the country have access to/make use of remote sensing that would be able to differentiate crop type, type of land cover or proportion of land cover? What is the time horizon over which data is replicated (ie annual monitoring, once every 5 years? Etc) (if yes please describe briefly the systems in place, tools used etc)*
	Remote sensing is increasingly used in Spain[145], but not significantly used in the agricultural sector. There are some cooperatives and agro-industries that currently use this type of technology. Public bodies do use remote sensing to monitor farmers' practices. The National Remote Sensing Plan can be read here: https://pnt.ign.es/que-es-pnt[147]. The National Plan of Controls and Criteria for the Application of Penalties of Conditionality states that, when appropriate, on-the-spot checks may be carried out using remote sensing techniques. These techniques, currently applied through pilot projects in various Autonomous Communities, will be increasingly used and will allow to distinguish the types of crops and land cover and move towards a digitized, claimless CAP Management and Control System (farmers will be monitored through satellite images and will not need to submit self-declarations). See https://www.fega.es/es/node/50788.[148]
6.vi	*Are there other forms of relevant monitoring or compliance rules that could be relevant to support evidence that measures are implemented?*

[145] Information provided by UPA
[146] Information provided by Agri-food Cooperatives Spain.
[147] Information provided by Agri-food Cooperatives Spain.
[148] Information provided by the Ministry of Agriculture

Table 33. Overview of the essential soil management practices referencing where rules are in place at the national level (or regional depending on case study) to support these practices[149]

Requirement	Rules in place of relevance (description, scope)		Reference to legal text	Details of relevant compliance/monitoring approaches
	Y/N Partial	Description		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Partial	The practice of crop rotation is not mandatory in Spain, with the exception of specific farming systems such as organic farming or in the integrated production of certain crops. In conventional agriculture, however, crop diversification (different crops in space, not temporal succession) is mandatory under the CAP's greening rules, which require farms with farmland of between 10 and 30 ha (both included) to employ at least two different types of crops (none of them must cover over 75% of the overall farmland). If the farmland is above 30 ha, there must be at least three different crops (none of them must cover more than 75% of the overall farmland, and the two main crops cannot cover more than 95% of the farmland).	Royal Decree 1078/2014, which establishes the rules of conditionality to be met by beneficiaries of direct payments. Regulation 2018/848 on organic agriculture. As regards integrated production, different Autonomous Communities have different rules. Royal Decree 1075/2014 (art. 20), based on Regulation 1307/2013 on crop diversification.	FEGA (Spain paying agency), tracks green payment measures (see here one of its reports here)
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Partial	These practices are not mandatory at the moment, although there are measures that support cover crops in the RDPs of some Autonomous Communities (for example, to promote cover crops in olive groves in Andalusia). The current GAEC 4 establishes a minimum ground cover in certain circumstances. The CAP's greening rules require farms with more than 15 ha of farmland to dedicate at least 5% of it to one of the four Ecological Focus Areas that Spain has chosen (nitrogen-fixing crops, i.e. legumes, fallow, forests and	Royal Decree 1078/2014 Royal Decree 1075/2013, based on Regulation 1307/2013 on Ecological Focus Areas.	See above

[149] The information used to compile this table has been provided by UPA and the Ministry of Agriculture.

Requirement	Rules in place of relevance (description, scope)		Reference to legal text	Details of relevant compliance/monitoring approaches
	Y/N Partial	Description		
		agroforestry). To optimize the environmental benefit of nitrogen-fixing crops, they need to be kept on land at least until the beginning of the flowering season. Furthermore, to avoid the risk of leaching of the nitrogen accumulated in the soil by these crops during the fall, leaving the land fallow is not allowed.		
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	No			
No burning of arable stubble except where authority has granted an exemption for plant health reasons[150].	Yes	GAEC 6 requires the maintenance of the level of organic matter in the soil through appropriate practices, including the prohibition of burning stubble, except for phytosanitary reasons. This prohibition does not include the remains of pruning woody crops.	Royal Decree 1078/2014	See above
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	No			

[150] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392

On farm land management best practices

7.i	*What tools are being made use of on farm to ensure soil quality is protects and soil carbon promoted? What is considered best practices, what is considered standard good practices?*
	The conditionality rules of the CAP determine the practices to ensure soil quality (see above). In general, farmers are increasingly aware of the practices needed to improve soil quality, and in particular to maintain organic matter. Minimum tillage and direct sowing are more and more used in Spain. Both techniques improve the organic carbon content of the soil[151]. According to Agri-food Cooperatives Spain, seasonal deep tillage on arable crops has decreased significantly in recent years. Although still not common, plant cover crops are being introduced in land used for permanent crops. A number of measures included the RDPs of some Autonomous Communities aim to improve soil quality. The following table lists those related to non-perennial crops[152]:

Autonomous Community	Measure	Practice
Andalusia	Sustainable herbaceous crops in rainfed land	Direct sowing
Aragón	Maintenance of stubble	No tillage
La Rioja	Fight against erosion in fragile land	No tillage
Murcia	Soil and water conservation	Vegetal cover
Extremadura	Steppe birds and promotion of conservation agriculture in herbaceous crops	Minimum tillage
	Conservation agriculture in slope areas	Vegetable crops
Castilla la Mancha	Agricultural practices in extensive rainfed arable copes in SPA zones of steppe birds	No tillage
	Soil protection against erosion with herbaceous rain-fed crops	No tillage

7.ii	*Are there quality standards or best practices standards or labels, supply chain schemes that promote better soil quality or soil carbon as part of their requirements? If yes, please provide details including the management practices covered*
	The agri-food sector is currently moving towards more ambitious sustainability standard, including on conservation of soil quality, through operational projects within the Rural Development Strategy EIP (e.g. the Go Innovatrigo group)[153].
7.iii	*Is crop rotation standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what crop rotations are being implemented?*
	According to estimates of the Ministry of Agriculture, a 3-year crop rotation is practiced in around 7% of the 8.5 million ha of rainfed land used for cereals, fallow, oilseeds and legumes. The most common rotations are: • Cereal / legume / cereal • Legume / cereal / legume • Legume / cereal / fallow • Oilseed / cereal / legume According to information provided by UPA, even if crop rotation is not common in Spain, its use is increasing significantly for agronomic reasons, i.e. to increase efficiency in the use of inputs, fight against weeds and improve soil quality. In rainfed land, the most commonly used rotation is: cereals (barley, wheat), oilseeds (sunflower, rapeseed), nitrifying crops (legumes, protein crops). Most corn farmers practice monoculture[154].

[151] Information provided by UPA.
[152] Information provided by Spanish Association of Soil Conservation
[153] Information provided by the Ministry of Agriculture.
[154] Information provided by Agri-food Cooperatives Spain.

7.iv	*Are cover crops standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what are they being used as (intercrops, winter crops etc) and are there strategies in place to limit bare soil?*
	According to the Ministry of Agriculture, the use of cover crops is not a standard practice. However, while in general cover crops are not used in rainfed land, they are sometimes used in irrigated land, e.g. for beets (a legume is sown in autumn, which is incorporated into the soil before the sowing of the beet). In general, residues are not removed when there is more risk of strong storms, and therefore erosion)[155].
7.v	*Are legumes standard practices as part of crop rotations and cover cropping regimes?*
	They are in rainfed land. In irrigated land, they are practiced only for some type of crops, such as beets. In general, they are used only in some areas, where they are traditional and where there is a market for them[156]. The CAP promotes legumes through coupled payments to protein crops, subsidies to the quality of legumes, as well as through the Ecological Focus Areas in the greening rules (see above). In addition, legumes are promoted through different agri-environmental measures in the RDPs prepared by the Autonomous Communities[157]. Legumes will be supported in the future through the CAP, in the framework of the National Protein Plan, which aims to reduce dependence on imported plant proteins. The possibility of establishing eco-schemes in the future CAP to promote legumes and crop rotation involving legumes is under discussion.
7.vi	*Are there standard practices adopted in terms of working of wet soils?*
	Not especially, only the ones that are best for agronomic reasons[158].
7.vii	*What advisory services are in place or would be needed to support and promote the adoption of practices in table b?*
	Regulation 1305/2013, which rules the rural development policy, establishes the obligation for RDPs to adopt measures aimed at ensuring that sufficient advisory capacity is available on regulatory requirements, and includes incentives for it. In addition, producer associations, such as professional agricultural organizations or cooperatives, have technical advisory services[159]. However, advisory services are poorly developed in Spain and need to be improved to inform farmers about the need to improve soil fertility[160].
7.viii	*What sources of information to demonstrate compliance would be held on farm or could be produced to meet compliance needs (see list in table 2)? Please briefly describe examples of evidence and what they could be used to demonstrate*
	The control and monitoring of CAP measures is carried out by the Spanish Fund for Agrarian Guarantee (Fondo Español de Garantía Agraria - FEGA) at the national level (in a coordinating role), and by the various competent bodies of the Autonomous Communities at the regional level. The indicators to be used to monitor the achievement of the post 2020 CAP's objectives are currently being discussed[161]. An indicator that can be used to monitor compliance is the organic matter content of the soils. The problem with this indicator is that changes are not immediate, and also the indicator gives different results in different climatic conditions, besides being expensive to measure. However, it could still be viable to monitor trends within each geographic area[162].

[155] Information provided by UPA.
[156] Information provided by Agri-food Cooperatives Spain.
[157] Information provided by the Ministry of Agriculture.
[158] Information provided by Agri-food Cooperatives Spain.
[159] Information provided by the Ministry of Agriculture.
[160] Information provided by UPA.
[161] Information provided by the Ministry of Agriculture.
[162] Information provided by UPA.

Table 34. Overview of the essential soil management practices referencing where it is known farmers are already implementing some aspects either as standard practice, or best practice

Requirement	Adopted as standard or best practice		What evidence might be used on farm to prove adoption?	Are there limits to potential application?
	Y/N Partial	Description of how and where is noted to be applied and what the drivers are for this		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Partial	CAP conditionality rules require larger farms to use at least 3 different crops (see above)	Farmers' self-declaration	According to the UPA representative consulted for this report, different requirements should be established for different size ranges of farms. He believes that requiring a 4-crop rotation is more reasonable. The representative of the Ministry of Agriculture also believes that a 5-crop rotation is too demanding and not always possible.
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Partial	CAP conditionality rules require that a share of the farmland is covered by nitrogen fixing crops or is left fallow (see above)	Farmers' self-declaration	In Spain and especially in rainfed land, coverage with live plants is not possible, because during the summer the plants dry out. Non-bare soils should be required instead, either by live plants or by stubble. The concept of intermediary crops cannot be used in rainfed land either, because they have one harvest per year and in less productive areas even one harvest every two or three years. In general, encouraging the use of nitrogen-fixing crops is a good practice (it also reduces the periods when the soil is bare).
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	No	Farmers who practice direct sowing already put in place these practices.	Difficult to prove adoption.	Soil compaction is not the main concern of rainfed land farmers (the majority of farmers in Spain). The problem of rainfed land is the lack of water, not the excess of it, even though there may be excess of water due to torrential rains at specific times. All in all, in Mediterranean countries the concern is not so much compaction, but soil loss due to erosion.

Requirement	Adopted as standard or best practice		What evidence might be used on farm to prove adoption?	Are there limits to potential application?
	Y/N Partial	Description of how and where is noted to be applied and what the drivers are for this		
No burning of arable stubble except where authority has granted an exemption for plant health reasons[163].	Yes	GAEC N 6 establishes a prohibition to burn arable stubble.	Through controls, data crossing with Seprona (Servicio de Protección de la Naturaleza - Nature Protection service),	
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	No		Fertilization plans that are required by the Action Programmes for nitrate vulnerable zones or for integrated production labels	Not so relevant in Spain, where there are many more basic agricultural soils than acid soils.

Background information

The stakeholders who provided information for this case-study are:

- Clara Á. Jarauta-Córdoba. Centro de Investigación de Recursos y Consumos Energéticos - Research Center for Energy Resources and Consumption (CIRCE), https://www.fcirce.es/
- Javier Alejandre. Unión de Pequeños Agricultores y Ganaderos - Association of Small Farmers and Breeders (UPA), https://www.upa.es
- Óscar Veroz González. Asociación Española Agricultura de Conservación / Suelos Vivos – Spanish Association for Conservation Agriculture
- Pablo Fernández Álvarez de Buergo. Cooperativas Agro-alimentarias España - Agri-food Cooperatives Spain (the organization that represents the economic and social interests of the Spanish agri-food cooperatives), http://www.agro-alimentarias.coop/inicio
- Pablo Rodero Masdemont. Asociación Española de Valorización Energética de la Biomasa - Spanish Bioenergy Association (AVEBIOM), https://www.avebiom.org
- Paz Fentes Piñeiro, General Sub-directorate for Herbaceous and Industrial Crops and Olive Oil, General Directorate of Agricultural Productions and Markets, Ministry of Agriculture, Fisheries and Food.

[163] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392

Case study – Denmark

Key Findings

The case study for Denmark is based on literature review of a number of journal articles and other publicly available documents, as well as interviews with a number of stakeholder expert interviews, including the Danish Biogas Association, The Danish Straw Supply Association, and the Danish Agriculture & Food Council. Other stakeholders and academics were contacted, including government officials, but these did not respond or did not wish to respond to questions. Although some regional differences are noted, the analysis can apply to all of Denmark since the same legal framework is applicable throughout the country. Ideally it may have been ideal to correspond with more stakeholders particularly form civil society to give different perspectives. However, those who were interviewed represent the most important sectors in the field, and in combination with the literature review give a reasonably complete overview of the situation in Denmark with regard to the sustainability of bioenergy from agricultural residues.

The agricultural residues market has been fairly stable for quite a few years now and remains dominated by straw from cereal crops. There is room for considerable additional use of straw for bioenergy, with the right technological and regulatory conditions.[164] Although there are experiments in terms of alternative uses outside of bioenergy these are still very experimental. Some indication that biogas is increasingly using straw, but still a small proportion. The government's new headline target for 70% GHG reduction by 2030 will necessitate ambitious new policies in all sectors. In general, the use of bioenergy for heat and electricity is expected to increase slightly over the early 2020s and decrease thereafter due to reductions of subsidies and increased use of heat pumps. This will mostly affect wood-based bioenergy but may have some influence on agricultural residues as well, though broadly speaking these will remain stable.[165]

Denmark has a number of regulations in place to protect soil from pollution, but these in deal only with additions to or contaminations of the soil, not other elements of soil quality, at least not directly, such as compaction, or SOC. Regulations do cover crop rotation and cover crops, in connection with fertiliser rules, although these do not exactly match the proposals in the REDIIBIO project. Some good practices are employed on farms that could be demonstrated at that level. There is a good monitoring and reporting framework in place for the regulations that do exist.

[164] Gylling, M., Jørgensen, U., Bentsen, N. S., Kristensen, I. T., Dalgaard, T., Felby, C., ... Johannsen, V. K. (2016). The + 10 million tonnes study: increasing the sustainable production of biomass for biorefineries. (Updated edition 2016 ed.) Frederiksberg: Department of Food and Resource Economics, University of Copenhagen.
[165] Danish NECP. https://ec.europa.eu/energy/sites/ener/files/documents/dk_final_necp_main_en.pdf

The demonstration of essential soil management practices implementation

Requirement	Level of demonstration	Evidence and monitoring system
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Tier 2	Self-declaration by the farmer + government inspections
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Tier 2	Self-declaration by the farmer + government inspections. Satellite monitoring
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Tier 2	Self-declaration by the farmer
No burning of arable stubble except where authority has granted an exemption for plant health reasons	Tier 1	Municipalities are responsible for monitoring and enforcement.
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Tier 2	Self-declaration by the farmer

Introduction

This case study looks at the use of agricultural residues for bioenergy in Denmark. In Denmark's case this is overwhelmingly straw from wheat and barley, as well as some oil crops. The industry and market for agricultural residues is relatively developed and mature and has existed at some scale since the 1990s. Straw is used in a variety of small and large installations to produce heat and electricity, as well as a smaller portion for biogas and liquid fuels. Approximately 1.6 million tonnes of straw is used for bioenergy every year, accounting for about 14% of all bioenergy feedstocks in 2017. Straw accounted for about 6.5% of all renewable energy produced in Denmark. The country has a number of laws and measures to protect soil quality, although not specifically focused on the removal of agricultural residues for bioenergy purposes.

Denmark has a number of regulations in place to protect soil quality, but these deal directly only with additions to, or contaminations of the soil, not other elements of soil quality such as compaction or Soil Organic Content (SOC). Regulations do cover crop rotation and cover crops, in connection with fertiliser rules and the protection of water sources. These rules do not exactly match the proposed sustainability criteria but are similar in laying out proposed crop rotations and rules for cover crops. Farmers of commercial scale are required to report on their use of fertilisers, crop rotations, and use of cover crops and establish management plans. Monitoring and inspections take place to ensure compliance. In addition, the burning of crop stubble is illegal. Other regulations for the control of pesticides and designation of protected natural areas have an impact on soil quality.

Farmers do generally use a number of good practices for protecting soil quality, including to limit compaction of soils, and use of lime where soils are degraded. Farmers producing straw for bioenergy are aware of the issues around soil quality and the removal of residues and take measures not to remove too much straw, or to otherwise compensate for the loss of organic matter through the addition of other organic matter.

The agricultural residues market has been fairly stable for quite a few years now and remains dominated by straw from cereal crops. There is room for considerable additional use of straw for bioenergy, with the right technological and regulatory conditions.[166] Although there are experiments in terms of alternative uses outside of bioenergy these are still very experimental. Some indication that biogas is increasingly using straw, but still a small proportion. The government's new headline target for 70%

[166] Gylling, M., Jørgensen, U., Bentsen, N. S., Kristensen, I. T., Dalgaard, T., Felby, C., ... Johannsen, V. K. (2016). The + 10 million tonnes study: increasing the sustainable production of biomass for biorefineries. (Updated edition 2016 ed.) Frederiksberg: Department of Food and Resource Economics, University of Copenhagen.

GHG reduction by 2030 will necessitate ambitious new policies in all sectors. In general, the use of bioenergy for heat and electricity is expected to increase slightly over the early 2020s, and decrease thereafter due to reductions of subsidies and increased use of heat pumps. This will mostly affect wood based bioenergy but may have some influence on agricultural residues as well, though broadly speaking these will remain stable.[167]

Denmark has a good framework for the protection of soils, but some additional measures to deal directly with elements such as soil organic carbon or compaction could be usefully integrated. The issue of residue removal is not dealt with by law, but the resulting losses in soil quality is a challenge that relevant farmers are aware of and generally take steps to mitigate. There are tools available to them to help in decision making around soil quality issues.

Background questions

1.	*Please indicate which region/location is looked at.*
	Eastern Denmark (although regulatory regime is the same nationally)
2.	*Please indicate in 1-2 sentences why this region is of interest for this specific case study.*
	Denmark has had a well-developed market for agricultural residues for bioenergy market for about thirty years. The situation is broadly similar nationally, although some details of market operation are slightly different from west to east. However, the regulatory regime is the same nationally.
3.	*Please indicate if there are specific boundary conditions you want to mention.*
	n/a
4.	*Please indicate the make-up of the farming sector in the country under consideration ie average farm size, productivity, extent of organic production, intensive vs extensive management etc. Are there regional differences in the scale of farms?*
	• Average farm size: 70 ha, 20% larger than 100 ha[168] • The dominating field crops are cereals. Most of the cereals, 75%, are used for animal feed. In value terms dairy and pigs are the most important agricultural products.[169] More than half of the cultivated land is devoted to cereals, with barley and wheat accounting for a large percentage of the total grain harvest. Sugar beets are another leading crop. Oats, rye, turnips, and potatoes are grown in western Jutland, where the soil is less fertile.[170] • Denmark is the most intensively farmed country in the EU.[171] In 2016, the agricultural area was approximately 2.65 million hectares corresponding to 61.8% of the total area, and 88% of the agricultural area were in rotation with intensive production.[172] Since 2015, organic farming has experienced a renewed growth after some years of stagnation and even decline.[173] • In 2019, the total organic area was 11.3% of Denmark's farmland[174] • DK is a net agricultural exporter. Agriculture accounts for 16.8% of total exports. • The country has a generally highly productive, intensive agricultural sector[175]

[167] Danish NECP. https://ec.europa.eu/energy/sites/ener/files/documents/dk_final_necp_main_en.pdf

[168] Danish Agriculture and Food Council. (2016) Facts & Figures: Denmark – a farming country.

[169] https://ec.europa.eu/info/food-farming-fisheries/farming/facts-and-figures/markets/production/production-country/statistical-factsheets_en

[170] https://www.britannica.com/place/Denmark/Agriculture-and-fishing

[171] Lundsgaard R, Nygaard T, Ogstrup L, Damm BI, Fenger NA, Holmstrup G (eds) (2016) Sådan ligger landbruget—tal om landbruget 2015. Danmarks Naturfredningsforening og Dyrenes Beskyttelse, København

[172] DS Nyt (2016) Landmændene dyrkede flere vårafgrøder i 2016. Nyt fra Danmarks Statistisk Nr. 313, 12. juli 2016

[173] Jespersen, L.M., Baggesen, D.L., Fog, E. et al. Contribution of organic farming to public goods in Denmark. Org. Agr. 7, 243–266 (2017). https://doi.org/10.1007/s13165-017-0193-7

[174] https://foodnationdenmark.com/strongholds/organic/

[175] https://www.irishexaminer.com/farming/news/no-one-near-denmarks-farm-worker-productivity-351687.html

	• Farms in eastern Denmark tend to be somewhat smaller than in Jutland.[176]

Understanding soil protection baselines

To check whether the sustainable production criteria is met, the following questions are the main focus of this section based on the five sub-criteria previously outlined:

4.i	*Is legislation in place to protect soil quality and soil carbon? (if yes, please briefly reference and describe this)*
	There are a number of laws in place to protect soil quality, not explicitly soil carbon, though it may be protected as a result of some laws, most specifically nature protection rules. These relate primarily to the addition of substances to the soil such as fertilisers, and slurry. Soil pollution regulation in Denmark can primarily be seen through the lens of groundwater and drinking water protection.[183] The Waste to Soil Order (*Affald til jord-bekendtgørelsen*)[177] regulates the direct use of waste for agricultural purposes including sewage sludge. The Order regulates the types of waste that can be used for agricultural purposes. It sets requirements for the quality of the waste, including the sewage sludge, with regard to both the content of heavy metals and selected environmental foreign substances including plastics, as well as hygienic and treatment requirements. A number of regulations are also in place to implement the Nitrates Directive with important implications for soil quality. These involve the regulation of nitrogen inputs, based on location, time of year, condition of soil, quantities, types of inputs, storage, method of spreading, crop rotation, afforestation, establishment of mini-wetlands, and use of catch crops.[178] Details can be found in the EPA's Overview of the Danish regulation of nutrients in agriculture.[179] Important regulations having an impact on fertiliser use and soil include : the Law on the Agricultural Use of Fertilisers and Nutrient reducing measures,[180] the Environmental Approval Act for Livestock Holdings, and the statutory acts pursuant to these. The Environmental Protection Act also contains provisions for the protection of soil. The Environmental Protection Act § 1 act has the general aim inter alia to protect against pollution of the soil and subsoil, including through the release of solid, liquid or gaseous substances, through noise and vibrations; including shaking, noise.[181] Statutory orders lay down rules with regard to farmyard manure and silage use. The Contaminated Soil Act may have relevance although primarily to industrial pollution.[182] Pressure on biodiversity of soils is addressed by a specific national Act on taxation of pesticides, adopted in 2013, containing some fiscal measures to reduce the use of fertilizers and harmful pesticides. Soil protection is not explicitly mentioned in the Act, but the effect of the pesticides on earthworms is included in the calculation of the tax.[183] There are some regulatory tools which have an indirect positive impact on erosion (Act on Surveying, Preventing and Remedying Environmental Damages; Act on Agricultural Use of Fertilizers and on Plant Cover). The act adopts the "polluter pays" principle in defining the environmental damage and how to establish responsibility or to remedy it.[183]

[176] https://pdfs.semanticscholar.org/1e9b/151c27754b15e658c8fc2c696fcf3babafc3.pdf

[177] Danish Environmental Protection Agency, Affald til jord-bekendtgørelsen, https://mst.dk/affald-jord/affald/affaldsfraktioner/spildevandsslam/affald-til-jord-bekendtgoerelsen/

[178] Danish EPA, Implementation of the Nitrates directive in Denmark, https://eng.mst.dk/trade/agriculture/nitrates-directive/implementation-in-denmark

[179] Danish EPA, Overview of the Danish regulation of nutrients in agriculture, https://eng.mst.dk/media/186211/overview-of-the-danish-regulation-of-nutrients-in-agriculture-the-danish-nitrates-action-programme.pdf

[180] Lov om jordbrugets anvendelse af gødning og om næringsstofreducerende tiltag, https://www.retsinformation.dk/eli/lta/2019/338

[181] Environmental Protection Act (lov om miljøbeskyttelse) LBK nr 1218 of 2019, https://www.retsinformation.dk/eli/lta/2019/1218

[182] Basse, Ellen Margrethe, (2020) Environmental Law in Denmark. Kluwer Law International B.V., 2020.

[183] Ronchi, S., Salata, S., Arcidiacono, A., Piroli, E., & Montanarella, L. (2019). Policy instruments for soil protection among the EU member states: A comparative analysis. Land Use Policy, 82, 763–780. https://doi.org/10.1016/j.landusepol.2019.01.017

4.ii	*Is soil quality and/or soil carbon/soil organic carbon defined in legislation in the country? (if yes, please briefly reference and describe this)*
	Soil carbon and soil carbon/soil organic carbon are not defined in legislation.
4.iii	*What mechanisms are there in place in country to monitor soil quality?*
	Monitoring for accumulation of unwanted substances in soil is mandated in the law (see 4.i). Municipalities monitor and ensure compliance. The municipalities must inspect all livestock farms of more than 3 LU regularly (every 3-6 years). The frequency of inspections is not only determined by the size of the farm, but by a systematic appraisal of the environmental risks as well. Industry needs to communicate where sludge is being applied to help enable monitoring. The Danish Agricultural Agency has the supervisory obligation to ensure that sewage sludge used for agricultural purposes complies with the quality requirements. The vast majority (approx. 90%) of all Danish farmers must submit data to the Fertilizer Accounting system each year, which is administrated by the Danish Agricultural Agency. All submitted fertilizer accounts are automatically checked at submission by the IT-system, according to a set of previously defined risk criteria. In addition, the Agency will inspect farms to check cover control of crop rotation planning, including plant cover and catch crops, integrated fertilizer accounting and planning, but also the provisions regarding application of the amount of livestock manure applied. These on-spot inspections regarding fertilizer accounts support the control carried out on basis of the annually submitted data in the fertilizer accounting system. Approx. 1.9 % (data from 2014) of all agricultural holdings are inspected annually.[179]
4.iv	*Are land managers required to develop soil management plans or similar? (if yes, please explain their specification/coverage)*
	No specific soil management plan is required. However, land managers have obligations to develop an agricultural management plan under the implementation of the Nitrates Directive. This is Intended to manage nitrates and nutrient inputs, but also has implications for carbon. Measures related to fertiliser use, crop rotation, and cover crops are reported on.
4.v	*Are rules in place to limit residue extraction linked to agricultural crops?*
	There are no rules to limit residue extraction.
4.vi	*Are incentives or rules in place promoting the use of agricultural residues for bioenergy? (if yes please briefly reference and describe)*
	There are subsidies in place for the production of bioenergy, including from agricultural residues. The *Biomass Agreement of 1993* was a policy milestone in the promotion of biomass. The agreement stipulated a clear objective for cogeneration plants: by 2000, these plants were to be using, on an annual basis, 1.4 million tons of straw and chips (wood biomass) for electricity and district heat production. This stimulated the utilisation of biomass both in central CHP plants as well as in decentralised CHP units. After the year 2000 energy taxes, subsidies, and tariffs were used to further promote biomass. More recently, the *Danish Act on the promotion of renewable energy* of 2008 provided a support scheme for biomass (among other renewables). For electricity generated by burning biomass, a premium of DKK 0.15 per kWh has been paid, irrespective of whether the electricity is generated by plants using biomass exclusively or by plants using biomass in combination with other fuels.[184] Heat generated by biomass is not given a price support as such, since this market is not liberalised in the same way as the electricity market. As of 2019, this support is limited for existing plants to 15 or 20 years after their construction (depending if they were newly built or converted).[185] The *Natural Gas Supply Act* provides various premiums for biogas. These subsidies in combination with energy and carbon taxes give biomass and biogas a significant price advantage compared to fossil fuels.

[184] Danish Energy Agency (2017b) *Memo on the Danish support scheme for electricity generation based on renewables and other environmentally benign electricity production*. https://ens.dk/sites/ens.dk/files/contents/service/file/memo_on_the_danish_support_scheme_for_electricity_generation_based_on_re.pdf . Some details of specific premiums as of 2017 for electricity can be found here: https://ens.dk/sites/ens.dk/files/contents/service/file/memo_on_the_danish_support_scheme_for_electricity_generation_based_on_re.pdf

[185] Wittrup, S (2019) *Ny lov sætter udløbsdato på tilskud til biomasse-strøm*. https://ing.dk/artikel/ny-lov-saetter-udloebsdato-paa-tilskud-biomasse-stroem-222547

	A *Public Service Obligation (PSO)* surcharge on electricity bills has been used to generate funds to invest in renewable energy projects since the 1990s. This will be phased out by 2022 and replaced by funding from general government revenues because the Government aimed to decrease electricity prices and because questions had been raised about the scheme by the European Commission on state aid grounds. Oil boilers were banned in all new constructions by 2017. Taken together, these tax incentives shift the cost/benefit ratio toward biomass use, as well as other renewables.

Understanding use of agricultural residues/residue market

5.i	*Is there evidence of use of agricultural residues already within the bioenergy sector? (if yes for what purposes and to what extent)*
	Agricultural residues traditionally used for energy are straw from cereal (wheat and barley) and oil crop (rape seed) production.[186] In Denmark, the total acreage of cereal and oil crops is about 16,000km^2 and the actual use of straw for energy purposes about 1.3Tg y^{-1}. The Danish market for primary crop residues is dominated by cereal (wheat, barley) straw. The total annual production of agricultural residues is around 6 Tg with cereal straw accounting for 90% or more. Rapeseed straw accounts for the bulk of the remainder with a marginal contribution of residues from pulses (peas) (0.1–0.3%).[187] According to the DSSA. the production level of straw has been fairly consistent for the last few years, with fluctuations from year to year, but with a total production of about 6 million tonnes of straw on average. Slightly more than 1.5 million tonnes are used on average for bioenergy, and roughly the same amount for animal feed and bedding. Roughly 2 million tonnes are unused and left to decompose. **History** In Denmark, straw has been used as a source of energy for a few decades, but before the mid-1980s predominantly for heating in individual households, farmhouses and in agricultural production facilities. Straw is combusted at a range of scales and for different end-uses. The first straw-fired CHP plants, DH and farm-based installations appeared in 1980s when the first subsidy schemes supporting biomass use in the country were introduced. In addition, the Danish government continuously promotes and supports research and development in the field of bioenergy, and information disclosure on straw opportunities among farmers and other parties. In 1997 there were already an estimated 10 000 straw-fired boilers on farms, and in the period 1980-1999 65 straw-fired DH plants were commissioned in DK. Large-scale CHP plants are operating in Denmark, and have been now for some decades, and this is considered to be one of the backbones of the functioning market for straw.[188] The use of straw for energy has increased over time and peaked in 2010 at 1.6 Tg. In 2015 consumption was 1.3 Tg with 1.0 Tg used for CHP and district heating. This accounts for 12% of the renewable energy production in Denmark or 2.8% of the production of primary energy. In 2018 around 50% of the straw production was collected and of this fraction, 45–50% was used for energy generation.[186] The costs for straw varies widely depending on yield, harvest techniques, transport distances, storage facilities, payment to farmers for the straw (incl. compensation for removal of nutrients) etc. Thus, the production costs are strongly dependent on local or regional harvesting and handling conditions. In Denmark, the farm gate price of baled straw is estimated to 3.4–3.9 € GJ^{-1}. The direct cost of straw production includes field operations (e.g. baling and transport), storage, insurance, administration and road transport. The nutrient value of straw that must be replaced when straw is harvested, risk and profit should be added to this. Road transport cost has been estimated to 1.2–1.7 € GJ^{-1}, and road transport account for 25–30% of the total cost. **Biogas:** The biogas industry is starting to use straw. But it is relatively very expensive compared to other feedstocks (primarily manure). However, in recent years there has been an increase in usage, primarily

[186] Bentson et al, 2018.

[187] StatBank Denmark, Business Sectors: Agriculture, Horticulture and Forestry [In Danish: Erhvervslivets Sektorer: Landbrug, Gartneri og Skovbrug], Statistics Denmark, Copenhagen, DK, 2016.

	from used straw, but also other agricultural residues. Still below 100,000 tonnes annually, and about 2% of all feedstock for biogas from all agricultural residues.
5.ii	*Is the use of residue retention on land common practice as a mechanism for soil protection? Or required legally?*
	Yes, it is a common practice, but not legally required. Land managers will certainly be aware of soil quality issues on their fields and moderate residue extraction if needed, as well as taking other steps to protect the soil such as adding other organic matter to the soil as required by local conditions.
5.iii	*If residues are not used for bioenergy are there other existing uses of agricultural residues? (i.e. material uses)*
	Straw use for bedding and feed for animals is the primary competing use for agricultural residues, and the only one of any consequence. There are small demonstration projects for waxes, creams made from straw. But these are at a very early demonstration stage. Small amounts. Experiments are being conducted on using straw for textile manufacturing, but again at an initial demonstration phase.
5.iv	*What is the market infrastructure for the buying and selling of residues at present? (informal/local; coordinated/through traders or other points at which material is gathered together?)*
	With regard to straw plants often have contracts directly with producing farmers. However, it is also often the case that distributors will sell collected straw to plants. Direct contracts are more common in the east, and distributors are more common in the west. This is mainly a result of historical patterns and habits. When straw is sold for animal feed this is typically done more informally between farmers. The Danish Straw Supply Association (DSSA - Danske Halmleverandører) has played an important role in the maturation of the Danish straw for energy market.[189] In particular it managed to push its "codes of conduct" on straw price establishment with electricity companies. These among other things resulted in farmers setting their straw price offers for power companies and demonstrating that a sufficient amount of straw was available for the completion of the agreement. DSSA was also responsible for the establishment of basic criteria for straw supply tenders with electricity companies. Historically the price of straw and wood chips has followed each other closely with straw being 5–15% cheaper than wood chips on energy basis.[186] Voytenko and Peck described the market operations of large CHP plants like this in 2012: "In the majority of cases straw is handled as big bales, which is considered to be the most cost-effective method. Straw delivery is organised in trucks with trailers, which unload bales at the plants. Contracts are established between the plant and farmers or farmer associations. Straw price is set in the contracts and is a market price that is initially suggested by straw suppliers. The bottom ash from straw combustion is landfilled, treated or returned back to farmers and spread on the fields. In DK the contracts do not regulate the proportion of ash returned to the farmers, and thus its amount does not depend on the amount of straw delivered to the plant, which is considered to be imperfect."
5.v	*If residues are already being used for bioenergy feedstock, what is the sourcing area from which they are taken before the first processing step? (i.e. are there details of how far the raw material is transported?)*
	In terms of straw use, consumption is almost completely domestic sourcing, primarily quite close to the consuming plants, although larger plants will have a larger sourcing area. Typically, they will have specific supply contracts with particular farms, although sometimes also with distributors (primarily in Jutland). There is some small amount of export of straw to the Netherlands for agricultural use. For biogas, local farmers will use local residues. Larger plants will import residues from olive production in Spain for example or some straw pellets from Poland. There are intermediate suppliers as well as direct purchase.

[189] Voytenko, Y., & Peck, P. (2012). Organisational frameworks for straw-based energy systems in Sweden and Denmark. Biomass and Bioenergy, 38, 34–48. https://doi.org/10.1016/j.biombioe.2011.01.049

Legal requirements at national level – land management best practices

6.i	*Are rules in place determining the practices that should be applied on arable land (for non-perennial crops or cereals) to support soil quality? (if yes, please specify – FYI this could be legal requirements or requirements linked to funding such as under the CAP. Please briefly explain the measures and instruments that support them and how widely they are adopted (if non-binding).*
	There are rules limiting soil tillage in autumn before spring sown crops. The purpose is reduction of risk of N-leaching, though the rule has a positive effect to soil erosion as well. As other EU members We do have waste regulation that limits application of heavy metals, environmental compounds as PAH's aso – and fertilizer regulation that limits the application of nutrient. And a strong pesticide regulation.
6.ii	*Please complete table a) below regarding support for management practices in country. Provide any comments on coverage in the box below*
6.iii	*How are measures for promoting soil quality monitored to ensure that land management practices comply with requirements? What evidence is used?*
	Use of (analyzed and approved) waste products and pesticides are reported to The Danish Agricultural Agency every year. But no measurements of soil quality. There is surveillance of grazing areas by remote surveillance. Satellites and drones are used.
6.iv	*How is compliance with measures to promote soil quality enforced?*
	A good soil quality is not yet defined – only as limit values for contaminants
6.v	*Does the country have access to/make use of remote sensing that would be able to differentiate crop type, type of land cover or proportion of land cover? What is the time horizon over which data is replicated (i.e. annual monitoring, once every 5 years? Etc) (if yes please describe briefly the systems in place, tools used etc)*
	Absolutely. We use satellite measurements of biomass production and crop height and correlate it to the actual crops in the fields. The programs are CropSat and CropManager that use information about the actual crops from the planning program MarkOnline. The Danish Agricultural Agency are testing the programs for use as monitoring, testing catch crops and perennial grass management.
6.vi	*Are there other forms of relevant monitoring or compliance rules that could be relevant to support evidence that measures are implemented?*
	Soil quality? Content and development of SOM? Soil density?

Table 35. Overview of the essential soil management practices referencing where rules are in place at the national level to support these practices

Requirement	Rules in place of relevance (description, scope)		Reference to legal text	Details of relevant compliance/monitoring approaches
	Y/N Partial	Description		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	P	Actual legislation: Farms < 10 ha: No rules for minimum crops Farms 10-30 ha: Minimum 2 crops and minimum 10% catch crops – more if animal production (14%) or in N-sensible area. Farms > 30 ha: minimum 3 crops and catch crops	Guidance for Danish fertiliser and 'harmony' rules (*Vejledning om gødskningsog harmoniregler*) https://lbst.dk/fileadmin/user_upload/NaturErhverv/Filer/Landbrug/Goedningsregnskab/Vejledning_om_goedsknings-_og_harmoniregler_i_planperioden_2019_2020_version2.pdf	Reporting required by farms of given size. Compliance check by Agriculture Agency. Inspection regime in place.
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	P	Actual legislation: Danish legislation contains 10-50% catch crops for farms above 10 ha and no tillage in autumn before spring sown crops. So, it is implemented by law – except for the legumes in catch crops Use of Cruciferous, cereals, grass without clover, chicory and bluebell.	Guidance for Danish fertiliser and 'harmony' rules (*Vejledning om gødskningsog harmoniregler*) https://lbst.dk/fileadmin/user_upload/NaturErhverv/Filer/Landbrug/Goedningsregnskab/Vejledning_om_goedsknings-_og_harmoniregler_i_planperioden_2019_2020_version2.pdf	Reporting required by farms of given size. Compliance check by Agriculture Agency. Inspection regime in place. See also 6.v for details on satellite monitoring.
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	N	Not a requirement. See Table b		
No burning of arable stubble except where authority has granted an exemption for plant health reasons[190].	Y	Implemented in DK. Only burning of grass stubble for seed is allowed	Executive Order on the Prohibition of Field Burning of Straw, etc. (*Bekendtgørelse om forbud mod markafbrænding af halm m.v.,)* https://www.retsinformation.dk/eli/lta/2015/1459	
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	N	Not a requirement. See Table b		

[190] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392

On farm land management best practices

7.i	*What tools are being made use of on farm to ensure soil quality is protects and soil carbon promoted? What is considered best practices, what is considered standard good practices?*
	A calculation sheet 'PlantePro' (developed from C-Tool, AU), can estimate the SOC-content over time, according to soil type, crops, yield, catch crop, crop residues and application of organic manure/slurry/sludge also. A good practise is increasing/levelled C-content in the soil and a Dexter-ratio above 10. But the tool is purely used and a new C-tool-model is in development. The Field planning program, MarkOnline will be extended with a soil C-balance.
7.ii	*Are there quality standards or best practices standards or labels, supply chain schemes that promote better soil quality or soil carbon as part of their requirements? If yes, please provide details including the management practices covered*
	No.
7.iii	*Is crop rotation standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what crop rotations are being implemented?*
	Crop rotation is the standard practice in Denmark, and only a quite small area is cultivated with the same crop every year. 2. Winter wheat and 2. Winter rye is quite common, and maize for silage is also widely used in rotations with maize in 2 or three years followed by a rotational crop and grass.
7.iv	*Are cover crops standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what are they being used as (intercrops, winter crops etc) and are there strategies in place to limit bare soil?*
	Bare soil is only widely used on organic farms, while most of the other seed-rotations are either seeded with winter crops, or by catch crops either under sown in the main crop (typical in sandy soils), or established after harvest as cruciferous crops, followed by a spring crop the following year.
7.v	*Are legumes standard practices as part of crop rotations and cover cropping regimes?*
	Legumes are not a standard practice, but a lot of farmers would be happy to bring in more legumes, if prices were better, and yields were more stable. The area with horse beans have increased lately. In the catch-crops, the legumes are not allowed because of an estimated higher risk of N-leaching, as it is right now, but farmers hope that it will change very soon.
7.vi	*Are there standard practices adopted in terms of working of wet soils?*
	No.
7.vii	*What advisory services are in place or would be needed to support and promote the adoption of practices in table b?*
	Education in soil health, no-till and CA cropping. Farmer/advisor experience groups
7.viii	*What sources of information to demonstrate compliance would be held on farm or could be produced to meet compliance needs (see list in table 2)? Please briefly describe examples of evidence and what they could be used to demonstrate*
	Registration of praxis. Calculations of water balance and registration of dates for tillage and slurry application. Chosen application technique.

Table 36. Overview of the essential soil management practices referencing where it is known farmers are already implementing some aspects either as standard practice, or best practice

Requirement	Adopted as standard or best practice		What evidence might be used on farm to prove adoption?	Are there limits to potential application?
	Y/N Partial	Description of how and where is noted to be applied and what the drivers are for this		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	P	Standard practice: Farms above 30 ha must have 3 crops and catch crops today, whereas farms of 10-30 ha must have 2 crops and catch crops. Why 5? – and why obligatory legumes?	Knowledge about effects of different species on soil fertility and diversity	Not relevant for small farms
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Y	Standard practice: The Danish legislation already contains 10-50% catch crops for farms above 10 ha and no tillage in autumn before spring sown crops. So it is implemented by law – except for the legumes in catch crops		Legumes are not allowed in catch crops
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	P	*Improved drainage?/subsidies for drainage?* In wet soils Increased focus on avoiding traffic on wet soils and use of best technique. Light weight, low tire pressure, robot technology. Use of Terranimo to calculate soil stress. Reduced tillage improves soil strength. No till as best practice, drivers are better soil structure, easier establishment. Subsidies for sowing machinery for reduced/no tillage	Lower use of fuel – climate effect Faster establishment Better soil structure and more insects Yield stabilization Subsidy for sowing machinery	From practice it seems that no till systems have a lower rate of success in wet soils than dry soils. Wet soils are cold, establishment weak and there are increasing challenges with slugs and weeds.
No burning of arable stubble except where authority has granted an exemption for plant health reasons[191].	Y	Standard practice: Already implemented in DK. Only burning of grass stubble for seed are allowed		
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Y	Standard practice Is in general adopted in Denmark. We measure field pH every 5-8th year and apply lime when needed.		

[191] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392

Background information

List of references used during the case study:

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- Danish Agriculture and Food Council. (2016) Facts & Figures: Denmark – a farming country.
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- Voytenko, Y., & Peck, P. (2012). Organisational frameworks for straw-based energy systems in Sweden and Denmark. Biomass and Bioenergy, 38, 34–48. https://doi.org/10.1016/j.biombioe.2011.01.049

List of interviewees:

- **Bruno Sander Nielsen – Chief Operating Officer, Danish Biogas Association**
  Discussion of use of agricultural residues in biogas.
- **Thomas Holst - Chief Policy Advisor**
  Dept. for Sustainability, Environment and EU-affairs
  Danish Agriculture & Food Council
  & The Danish Straw Supply Association (DSSA - Danske Halmleverandører)
  Information on use of straw in DK, regional differences, etc… Discussion on legal requirements for land use. Overview of the straw industry.
- **Troels Toft - Sector Director**
  Sector for Crops
  Danish Agriculture & Food Council F.m.b.A.
  SEGES
  Details on agricultural practices – section 6 & 7
- **Annette Vibeke Vestergaard**
  Specialists on soil-quality, fertility and the use of Conservation Agriculture in Denmark
  Danish Agriculture & Food Council F.m.b.A.
  SEGES
  Details on agricultural practices – section 6 & 7

Case study – Poland

Key Findings

The case study for Poland is based on analysis of Polish legislation and interviews with bioenergy and agricultural experts (See Appendix B). Agricultural residue volumes and end-use was assessed using statistical sources and academic publications (See References section).

Trading in domestic biomass (including straw) was fuelled in the past via support in the form of "green certificates" issued for bioenergy generation. However, policy changes have led to a fall in the value of "green certificates" and subsequent reduction in use of straw for bioenergy. As a result, the agricultural residue market is currently localised and very limited in scale. However, future renewable targets and changes resulting from RED II are likely to lead to increased use of agricultural residues for biomethane and biofuel production in the future.

This increases the risk of excessive removal of agricultural residues in the future. Sustainable farming practices can be implemented through a mix of national-level and farm-level solutions. Prevention of soil compaction and the prohibition on stubble burning is already in place as part of GAEC rules in Polish legislation. The on-going governmental review of these rules provides an opportunity to strengthen compulsory sustainability practices. Practices not covered under GAEC will have to be demonstrated at farm level through documentation of land use and additional auditing.

The demonstration of essential soil management practices implementation

Requirement	Level of demonstration	Evidence and monitoring system
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Tier 2	Documentation on crop rotation and area used for CAP subsidy calculation.
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Tier 2	Documentation on crop rotation and area used for CAP subsidy calculation.
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Tier 1	Compliance with CAP subsidy requirements as monitored by ARiMR
No burning of arable stubble except where authority has granted an exemption for plant health reasons	Tier 1	Compliance with CAP subsidy requirements as monitored by ARiMR
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Tier 2	Self-declaration by the farmer

Introduction

Given the scale of its agricultural production, Poland produces a large amount of agricultural residue, including around 35Mt of straw every year. It is important that this by-product is used by farmers in a sustainable manner that does not affect the quality of agricultural soil.

The structure of Poland's agricultural sector is highly diverse, and the sophistication of farming practices varies geographically and across different types of farm size. Larger and more advanced farms take a more pro-active approach to maintaining sustainability of agricultural soil, whilst smaller and often less educated farmers tend to be driven more by short-term economic drivers and less by long-term sustainability considerations.

Whilst legislation is in place to protect soil quality in Poland, its current focus is on the presence of pollutants and land re-cultivation, not on the carbon content of agricultural soil. Crop rotation and

agricultural residue removal is considered as part of the Good Agricultural and Environmental Conditions (GAEC) which are tied to the payment of farmer subsidies under the EU's CAP. In practice, there are currently limited sources of demand for straw as it is currently not highly competitive for bioenergy production. This was not the case in the past when "green certificates" for bioenergy production rewarded the use of straw (and other biomass) more generously than today.

GAEC rules are currently being reviewed for the EU's next financial framework 2021-2027. Experts expect that the Government will extend and strengthen the set of GAEC rules to better protect soil quality and improve agricultural sustainability. Some of the higher sustainability standards currently required under the "Sustainable Agriculture" and "Water and Soil Protection" programmes (in which farmers receive additional EU subsidies) may be moved to the compulsory set of GAEC rules.

Given the lack of alternative uses for agricultural residues, the majority of straw is currently incorporated into the soil. Most farmers view this as a lower-cost alternative to the use of fertilizers, also given the lack of manure in many areas. Other typical farming practices include two- or three-crop rotations and the use of cover crops in mountainous or erosion-prone land. Farming practices vary significantly across farms and depend on farm size and sophistication of agricultural production (including available farming equipment).

Given the growing interest in bioenergy in Poland, the country's future straw balance may look very different than today. Increasing need for biomethane in transport and heating may cause an increase in the use of straw in anaerobic digestion. Large energy players are also investing in biofuel production facilities which may run on straw and create another source of future demand for agricultural residues.

It is therefore important that there are appropriate rules for agricultural residue management and other farming practices that protect the quality of agricultural soils. Poland has well-developed monitoring and advisory institutions that can facilitate the introduction of such standards and future-proof the agricultural sector amid potential competing uses for agricultural residues.

Background questions

1.	*Please indicate which region/location is looked at.*
	Poland
2.	*Please indicate in 1-2 sentences why this region is of interest for this specific case study.*
	Poland is a significant agricultural producer in Europe. Given the scale of cereal production, Poland produces significant amounts of agricultural residue in the form of straw, estimated at around 35Mt per year. Main sources of straw are crops of winter wheat (7.6Mt), maize (5.88Mt), triticale (4.5Mt) and winter rye (3.9Mt). (See reference number 6)
3.	*Please indicate if there are specific boundary conditions you want to mention.*
	n/a
4.	*Please indicate the make-up of the farming sector in the country under consideration i.e. average farm size, productivity, extent of organic production, intensive vs extensive management etc. Are there regional differences in the scale of farms?*
	Poland's farming sector differs across geographies. Whilst the average farm size was 10.3ha in 2016, farms tend to be larger in the North and West of the country and smaller in the South-east. 99.8% of farms had arable land (84% had crop land) and 51% had farm animals. In terms of land used for crops, 70% of surface area was used for cereals, 10.2% industrial crops (e.g. rapeseed), 10.2% fodder plants, 3% legumes and 3% potatoes. The most important cereals were winter wheat (40% of farms), winter triticale (34.2%), spring barley (26%) and spring cereal mixes (25.3%). The share of farms growing intensive cereals (wheat, barley and triticale) has increased from 61% in 2013 to 70% in 2016. (1) Poland, along with other Eastern European countries, has a relatively large yield gap estimated at around 50-60% of yield potential. (8)

	Average annual income of a farm household was €17,700 in 2016. For 34% of all farms, farming was the main source of income – these farms recorded a higher income of €36,600 in 2016. (1)

Understanding soil protection baselines

To check whether the sustainable production criteria is met, the following questions are the main focus of this section based on the five sub-criteria previously outlined:

4.i	*Is legislation in place to protect soil quality and soil carbon? (if yes, please briefly reference and describe this)*
	Farmers receiving agricultural subsidies need to comply with the Good Agricultural and Environmental Conditions (GAEC) which have been adopted in the Agriculture Minister's ordinance in 2010. (2) The Act on the Protection of Agricultural and Forest Land lays down principles of protection of agricultural and forest land, re-cultivation and improvement of land quality. Agricultural lands are protected by: limitation of their allocation for other purposes; prevention from degradation and devastation; re-cultivation; and preservation of peat areas and natural water reservoirs. (4) Section IV of the Environmental Protection Act contains rules on the protection of soils. Article 101 states that soil needs to be protected to maintain its productive purposes and as a carbon reservoir. Soil quality should be ensured by protecting it from erosion, compaction, salination and acidification and by maintaining soil humus concentration. (3)
4.ii	*Is soil quality and/or soil carbon/soil organic carbon defined in legislation in the country? (if yes, please briefly reference and describe this)*
	Good soil quality is defined through the maximum concentration of various pollutants allowed in soil, depending on type of land and depth. These standards were defined in the Environment Minister's Regulation nr 1359 from 9th September 2002.
4.iii	*What mechanisms are there in place in country to monitor soil quality?*
	The Chief Inspectorate of Environmental Protection (GIOS) monitors agricultural soil quality (the chemical composition of soil) in a 5-year cycle across a network of 216 measuring stations located on agricultural land across Poland.
4.iv	*Are land managers required to develop soil management plans or similar? (if yes, please explain their specification/coverage)*
	According to Article 16 of the Act on the Protection of Agricultural and Forest Land, management plans need to be prepared for agricultural land located in limited use areas, located around industrial facilities. The land management plans are prepared at the expense of the industrial facility owner and covers: type of pollutants and their concentration, impact of pollution on land use and productivity, current production type on the land, ways of preventing the degradation of soil, expected agricultural yield, etc.
4.v	*Are rules in place to limit residue extraction linked to agricultural crops?*
	The Good Agricultural and Environmental Conditions (GAEC) have been adopted in the Agriculture Minister's ordinance (Dz. U. Nr 39, poz. 211, z późn. zm.) in 2010. These specify that agricultural residue needs to be incorporated into the soil after three years of crop monoculture, or else, crops need to be rotated (see 6.i).
4.vi	*Are incentives or rules in place promoting the use of agricultural residues for bioenergy? (if yes please briefly reference and describe)*
	Indirect incentives are for the generation of electricity from biomass and biogas. Biomass and biogas plants can participate in auctions for renewable support. Alternatively, biogas plants can choose to receive "blue certificates" for the energy they produce. "Blue certificates" have a market value and are traded on the Polish Power Exchange (www.tge.pl). Despite renewable auctions, there hasn't been much investment in dedicated plants for biomass or biogas because of a low reference price, unstable regulatory environment, high risk perception from lenders, lack of guaranteed offtake prices for biomethane (there are currently only guaranteed prices for renewable power).

Understanding use of agricultural residues/residue market

5.i	*Is there evidence of use of agricultural residues already within the bioenergy sector? (if yes for what purposes and to what extent)*
	In general, the use of straw for bioenergy production is limited. Straw can be used in solid form as biomass. In 2016 around 2.6Mt (7% of total) of straw (in the form of pellets) was used in power plants but since then the use of biomass has roughly halved (and use of straw has become negligible) due to the lower value of "green certificates" and competition from wood pellets and biomass imports from other regions (Ukraine, Africa). Some straw mixed with manure is used for biogas generation. This is currently at a small-scale and localised. Biogas production may increase in the future due to growing demand in the transport sector which is leading to gradual restructuring of the market. ORLEN has obtained a license to build a 25kt cellulosic ethanol plant using agricultural residues) in south eastern Poland (Podkarpacie region)[192]. The plant will require around 150kt feedstock (likely cereal straw) annually, and so the facility has the potential to significantly change the regional straw balance. It is unclear whether feedstock will also be imported from Ukraine.
5.ii	*Is the use of residue retention on land common practice as a mechanism for soil protection? Or required legally?*
	Yes, straw is incorporated into the soil in order to maintain proper soil quality. Around 13.5Mt (38%) is reported to be ploughed into the soil every year. However, the figures may be higher than this due to limited alternative uses for straw. (6) There is a difference between farm type: smaller farms will incorporate more straw into the soil given the lower cost of using straw compared to fertilizers. Larger farms are more likely to bail some of the straw and remove it from the land. Whether a farm maintains farm animals also impacts the amount of residue retention.
5.iii	*If residues are not used for bioenergy are there other existing uses of agricultural residues? (i.e. material uses)*
	Straw is also used for animal bedding (depending on source 5.3-10Mt per annum), animal feed (depending on source 3.5-5.6Mt per annum) and as a substrate for mushroom cultivation (around 1Mt per annum). At a smaller scale, demand for straw pellets also comes from large horse farms, domestic pet shops, as well as import demand from other countries.
5.iv	*What is the market infrastructure for the buying and selling of residues at present? (informal/local; coordinated/through traders or other points at which material is gathered together?)*
	Straw is traded through intermediaries and marketed via online exchanges. The market is small and fragmented with no dominant players. Straw can be purchased in the form of pellets in limited quantities (max. 5-15kt). The high cost of transporting straw pellets limits the commercial viability of straw trade over long distance.
5.v	*If residues are already being used for bioenergy feedstock, what is the sourcing area from which they are taken before the first processing step? (ie. are there details of how far the raw material is transported?)*
	The straw balance is regionally very diverse. There tends to be a surplus in the North-West where farms tend to be larger and agriculture is less diverse (less animal farming) so end-use demand for straw is limited.

Legal requirements at national level – land management best practices

6.i	*Are rules in place determining the practices that should be applied on arable land (for non-perennial crops or cereals) to support soil quality? (if yes, please specify – FYI this could be legal requirements or requirements linked to funding such as under the CAP. Please briefly explain the measures and instruments that support them and how widely they are adopted (if non-binding).*

[192] https://www.clariant.com/en/Corporate/News/2019/09/Clariant-and-ORLEN-Poudnie-announce-license-agreement-on-sunliquidreg-cellulosic-ethanol-technology

	These are included in the Good Agricultural and Environmental Conditions (GAEC) which have been adopted in the Agriculture Minister's ordinance (Dz. U. Nr 39, poz. 211, z późn. zm.) in 2010. Adhering to GAEC is a crucial condition for farmers obtaining subsidies under the CAP. Wheat, rye and barley cannot be cultivated longer than 3 years. This period can be extended to 5 years if before the fourth and fifth year of sowing, straw or manure is incorporated into the soil. Farmers can also apply to obtain additional subsidies under the "Sustainable Agriculture" and "Water and soil protection" programme funded under the CAP. Payments from these programmes are tied to stricter farming practices, including requirement for three different crops over a 5-year period or use of cover crops.
6.ii	*Please complete table a) below regarding support for management practices in country. Provide any comments on coverage in the box below*
6.iii	*How are measures for promoting soil quality monitored to ensure that land management practices comply with requirements? What evidence is used?*
	The Agency for Restructuring and Modernisation of Agriculture (ARiMR) is responsible for farming subsidy payments and monitoring that all requirements (incl. GAEC) are fulfilled. ARiMR controls around 4% of farms per year either by in-person inspection or satellite pictures. In-person controlling is done through the agency's employees or subcontractors. In-person inspections include interviews (questions about fertiliser use, manure management, etc.), field inspections and measuring surface areas with GPS technology.
6.iv	*How is compliance with measures to promote soil quality enforced?*
	ARiMR is responsible for paying out farming subsidies and can decide to withhold these if GAEC requirements are not met.
6.v	*Does the country have access to/make use of remote sensing that would be able to differentiate crop type, type of land cover or proportion of land cover? What is the time horizon over which data is replicated (i.e. annual monitoring, once every 5 years? Etc) (if yes please describe briefly the systems in place, tools used etc)*
	The Polish government is starting to use new technologies (satellite imaging, photomaps made from planes and using drones) to control farms – although this is not widely applied yet (perhaps more established in 5-10 years' time).
6.vi	*Are there other forms of relevant monitoring or compliance rules that could be relevant to support evidence that measures are implemented?*
	No.

Table 37. Overview of the essential soil management practices referencing where rules are in place at the national level to support these practices

Requirement	Rules in place of relevance (description, scope)		Reference to legal text	Details of relevant compliance/ monitoring approaches
	Y/N Partial	Description		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	N			
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	N			
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Y	Tillage operation with heavy vehicles is forbidden on wet soils under par. 3.2 of the Agriculture Minister's ordinance. Article 101, Point 4 of the Environmental Protection Act requires that soil is protected from soil compaction.	Ordinance: Dz. U. Nr 39, poz. 211, z późn. zm. http://www.fao.org/faolex/results/details/en/c/LEX-FAOC060001/	
No burning of arable stubble except where authority has granted an exemption for plant health reasons[193].	Y	Burning of arable land is forbidden under par. 3.1 of the Agriculture Minister's ordinance.	Dz. U. Nr 39, poz. 211, z późn. zm.	
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	N			

[193] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392

On farm land management best practices

7.i	*What tools are being made use of on farm to ensure soil quality is protects and soil carbon promoted? What is considered best practices, what is considered standard good practices?*
	Agricultural residues tend to be incorporated into the soil on most farms, particularly smaller farms which find it more cost-effective than the use of fertilisers. Large farmers are more sophisticated in that they take soil samples to measure soil quality, in particular, nitrogen concentration to decide the amount and quality of fertiliser to be applied.
7.ii	*Are there quality standards or best practices standards or labels, supply chain schemes that promote better soil quality or soil carbon as part of their requirements? If yes, please provide details including the management practices covered*
	No, such standards or labels do not currently exist.
7.iii	*Is crop rotation standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what crop rotations are being implemented?*
	Crop rotation depends on type of farm production and soil quality. A three-crop rotation is most typical in the following cycles: cereal-cereal-other crop (typically rapeseed, maize or buckwheat). On high quality soil, winter wheat and rapeseed are rotated. Triticale (wheat and rye hybrid) and maize is also used as a typical crop rotation.
7.iv	*Are cover crops standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what are they being used as (intercrops, winter crops etc) and are there strategies in place to limit bare soil?*
	Cover crops are used in mountainous areas and land prone to erosion (around 30% of all agricultural land has been classified by the Agricultural Ministry as at threat of erosion). Cover crops are also applied after specific crops, e.g. rapeseed. Typical cover crops are lucerne, shamrock, mixes of grass and shamrock, field peas, etc. Straw in the form of mulch is also used to protect bare soil.
7.v	*Are legumes standard practices as part of crop rotations and cover cropping regimes?*
	Legumes are used in crop rotations and as intercrops. However, legumes constitute only 4% of total crops so their role is limited. Field peas, lucerne and lupines are typical legumes used in agriculture.
7.vi	*Are there standard practices adopted in terms of working of wet soils?*
	Farmers will typically avoid farming on arid or wet soils. Their capability to manage soil compaction depends on availability of equipment, e.g. seedbed cultivators which reduce the number of rounds vehicles make on the land.
7.vii	*What advisory services are in place or would be needed to support and promote the adoption of practices in table b?*
	Each administrative region (wojewodztwo) has an advisory centre which provides free-of-charge education, information and advisory services for farmers. There are 16 of such “agricultural advice centres”.
7.viii	*What sources of information to demonstrate compliance would be held on farm or could be produced to meet compliance needs (see list in table 2)? Please briefly describe examples of evidence and what they could be used to demonstrate*
	Farmers will gather information about type of crops, land area, fertilizer use,

Table 38. Overview of the essential soil management practices referencing where it is known farmers are already implementing some aspects either as standard practice, or best practice

Requirement	Adopted as standard or best practice		What evidence might be used on farm to prove adoption?	Are there limits to potential application?
	Y/N Partial	Description of how and where is noted to be applied and what the drivers are for this		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Partial	A 3-crop rotation is currently most typical.	Documentation on land use and crop type as required by the farmer subsidy payment agency (ARiMR).	
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Partial	Catch/intermediary crops are sowed but the use of legumes is limited.	As above.	
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Partial	Farmers' ability to avoid soil compaction will depend on the type of equipment they have that can reduce tillage or number of field operations.		Application of best practices will be limited by the type of equipment that farmers own.
No burning of arable stubble except where authority has granted an exemption for plant health reasons[194].	Y			
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Partial	Larger and/or more sophisticated farmers do apply liming, whilst other farmers do not. Farmers smaller than 70ha can apply for subsidies for up to 50% of cost of lime.		

[194] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392

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List of interviewees:

- Prof. Mariusz Matyka, IUNG Pulawy
- Adam Stepien, Polish Chamber of Biofuels
- Delfina Rogowska, Biomass Certification Systems Office
- Prof. Grzegorz Siebielec, IUNG Pulawy

Case study – Ukraine

Key Findings

The case study for Ukraine is based on a literary analysis of publications of the National Academy of Agrarian Sciences and specialized universities, publication of articles and interviews with farmers on specialized web platforms and the analysis of the Ukrainian legislation. There were also interviews with practicing farmers, who represent the two most common forms of agricultural enterprises in Ukraine: medium-sized farms and large Agro Holdings. The energy sector of agricultural residues was analyzed on the basis of available statistics, publications of profile associations and interview with the producer of straw pellets. Coverage of information allows indicating the high reliability of the study results.

Residue market in Ukraine is not well developed. Currently consumers (pellet producers and small boiler houses) enter into direct contracts with suppliers of agricultural residues. With the future development of bioenergy according to the national goals set up in the Energy Strategy of Ukraine and the Concept of the Green Transition the involvement of agricultural residues into the energy balance will heavily increase. There is a proposition of Bioenergy Association of Ukraine to establish of the biofuel electronic trading system (BETS). BETS is intended to provide transparent and market-oriented ways of biomass trading and non-discriminatory and competitive way to incentivize both supply and demand sides of the emerging biomass market.

The essential soil management practices application mostly should be proven at the farm level. Relevant recommendations exist, but their compliance is not monitored. Only burning of the arable straw is prohibited and monitored at the national level.

The demonstration of essential soil management practices implementation

Requirement	Level of demonstration	Evidence and monitoring system
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Tier 2	Self-declaration by the farmer + Independent third-party auditor
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	Tier 2	Self-declaration by the farmer + Independent third-party auditor
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Tier 2	Self-declaration by the farmer + Independent third-party auditor
No burning of arable stubble except where authority has granted an exemption for plant health reasons	Tier 1	The open data on bringing individuals to administrative responsibility for burning stubble
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Tier 2	Self-declaration by the farmer + Independent third-party auditor

Introduction

According to experts, in the coming years, Ukraine may increase the production of grain and oilseed crops to 100 Mt per year. Thus, we can state that the country has steadily high production volumes of main crops with the prospect of further growth, which is a big source of various types of residues and by-products. With this approach, the potential of agribiomass can increase from the current 9 Mtoe/yr to 11.3 Mtoe/yr.

Legislative acts do exist in Ukraine to encourage enterprises to adopt environmentally sustainable rational approaches in agriculture production (e.g. the white documents expressing Land, Water and Air Codes in addition to laws on Environmental Protection, Land Protection, Protection of Atmospheric Air etc.). Thus, in terms of land use, the Land Code of Ukraine (Land Code, 2002) and the Law of Ukraine on Land Protection (Land Law, 2003) specify the main measures for the economic stimulation of the protection and use of land and the increase of soil fertility by landowners and land users. However, at the same time, the practical implementation of the measures is restrained by the lack of a legally established procedure.

There are no legal restrictions for the extractions of residues. Farmers decide on the possibility of removing residues based on their own practices, the amount of applied organic and mineral fertilizers, the demand for this type of raw material. Only 3% of the total energy potential of the grain crops straw was utilized in 2017. The share of the utilization of stalks and cobs of corn was at the level of 0.1%. Agricultural residues are already used for pellets and briquettes production and for thermal energy production (straw bales). The residues market is currently formed by several large producers of pellets and boilers for periodic combustion of large bales of straw.

Recommendations on crop rotation system, prevention of soil compaction and application of liming on acidic soils are provided, but their compliance is not verified at the national level. There is only a mechanism to control and bring to administrative responsibility for arable stubble burning. Therefore, confirmation at Tier 1 level is currently not possible in Ukraine.

The farm approach on essential soil management practices implementation depends on farm location, the level of technical equipping, the availability of working capital, the level of awareness of the chief agronomist, conjuncture of prices for crop production (high impact) and other factors. Some practices are more commonly used, such as preventing soil compaction, liming, and no burning of arable stubble, while the use of 5-crop rotation and cover crops is somewhat limited. In general, the situation is improving, and more and more farmers are implementing these recommendations as standard farming practices.

Current practice of using agricultural lands that are leased (for many years in Ukraine there was a moratorium on the sale of agricultural land) is not conducive to long-term planning of soils fertility and using of the best soil management practices. The situation may change with the opening of the land market that is scheduled for July 1, 2021. Additionally, Ukraine's Energy Strategy sets an ambitious goal of reaching 11 Mtoe of biomass, biofuels and waste in the total primary energy supply by 2035. The Concept of Ukraine's green energy transition until 2050 implies the rejection of coal generation by 2050. Wide involvement of solid agribiomass in fuel and energy complex of the country is an important prerequisite for achieving national bioenergy targets taking into account that share of utilization of the woody biomass potential is almost 100%.

Climate change is also forcing farmers to rethink their approaches to management practices, such as tillage. International projects (FAO), the National Academy of Agricultural Science, Universities and companies that offer modern agricultural technologies provide consulting support of farmers. They are also supported by the International financial organizations and agro-industrial development departments of the authorities.

Background questions

1.	*Please indicate which region/location is looked at.*
	Ukraine
2.	*Please indicate in 1-2 sentences why this region is of interest for this specific case study.*
	Ukraine is a big agrarian country and is one of the five largest exporters of cereals in the world. Biomass of agrarian origin (straw of grain crops and rape, by-products of grain corn and sunflower production, sunflower husk) remains the main component of the biomass energy potential in Ukraine. According to 2017 data, the economic potential of these types of biomass available for energy production is almost 9 Mtoe, which is 43% of the total biomass potential (20.9 Mtoe).
3.	*Please indicate if there are specific boundary conditions you want to mention.*
	Ukraine is an associated member of the European Union and the member of the Energy Community. The agricultural capacity of Ukraine is concentrated in the steppe and forest-steppe zones.
4.	*Please indicate the make-up of the farming sector in the country under consideration ie average farm size, productivity, extent of organic production, intensive vs extensive management etc. Are there regional differences in the scale of farms?*
	There are two main groups of agricultural producers in Ukraine: first is medium-sized agricultural enterprises with a land area of 1 to 3 th. hectares, and the second is large farms with an area of more than 7,000 hectares. Together, these two groups of farms account for 62.7% of the total area of agricultural land used in agricultural production [1]. A dualistic farming structure is a key feature of the agricultural sector in Ukraine. Many smaller farms operate in parallel with a much smaller number of large farms. Partly these large farms are subsidiaries of agroholdings [2]. Agroholding farms are comparably more productive in terms of output per input unit such as per ha. They have relatively high profitability due to a vertically integrated structure, intensive management and implementation of new technologies. Ukraine has 381 thousand hectares of organic lands occupying the 11th place in Europe according to this indicator. However, it's only 1% of the total volume of agricultural lands [3]. Big agroholding farms are concentrated in the central, east and south parts of Ukraine in the steppe and forest-steppe zones; small farms are located mostly in the west and north (Polissia) due to landscape characteristics.

Understanding soil protection baselines

To check whether the sustainable production criteria is met, the following questions are the main focus of this section based on the five sub-criteria previously outlined:

4.i	*Is legislation in place to protect soil quality and soil carbon? (if yes, please briefly reference and describe this)*
	Articles 35, 36, 37 of the Law of Ukraine "On land protection" set up rules for the land protection during agricultural activities and define basic requirements for soil fertility protection.
4.ii	*Is soil quality and/or soil carbon/soil organic carbon defined in legislation in the country? (if yes, please briefly reference and describe this)*
	The Law of Ukraine "On land protection" provides definitions for: humus as an organic component of the soil, which is formed in the process of biochemical decomposition of plant and animal remains and forms its fertility; soil fatigue - violation of the bioenergetic regime of soils and a sharp decrease in crop yields due to their constant cultivation or frequent return to the previous field of crop rotation, which leads to deterioration of soil quality, accumulation of specific pathogens and weed seeds in soils; soil degradation - deterioration of useful properties and soil fertility due to the influence of natural or anthropogenic factors; Soil fertility - the ability of soil to meet the needs of plants in nutrients, water, air and heat in sufficient quantities for their normal development, which together are the main indicator of soil quality.
4.iii	*What mechanisms are there in place in country to monitor soil quality?*
	According to the Regulations on soil quality monitoring on agricultural lands (https://zakon.rada.gov.ua/laws/show/z0383-04) the monitoring is conducted by the analysis of archival data fund, soil surveys, agrochemical land passportization, functioning of the network of stationary and field plots experiments, remote sensing usage etc.

4.iv	*Are land managers required to develop soil management plans or similar? (if yes, please explain their specification/coverage)*
	Crop rotation control system was cancelled recently due to the deregulation strategy of the government. Thus, the requirement to develop the land management projects that provide ecological and economic justification for crop rotation and land management is under amending now.
4.v	*Are rules in place to limit residue extraction linked to agricultural crops?*
	There are official recommendations “The use of straw and crop residues as organic fertilizers to improve the humus condition of soils” of the Ministry of Agriculture of Ukraine developed by research institutions of the National Academy of the Agrarian Science of Ukraine [4]. 40-45% of agricultural residues is recommended to use as an organic fertilizer.
4.vi	*Are incentives or rules in place promoting the use of agricultural residues for bioenergy? (if yes please briefly reference and describe)*
	No separate incentives to promote the use of agricultural residues for energy purposes [5]. Feed-in tariff for electricity production and special “stimulating” tariff for thermal energy production from biomass are the main supporting mechanisms for bioenergy development in Ukraine.

Understanding use of agricultural residues/residue market

5.i	*Is there evidence of use of agricultural residues already within the bioenergy sector? (if yes for what purposes and to what extent)*
	Agricultural residues (mostly straw) are already used for pellets and briquettes production and for thermal energy production (straw bales). In addition, there is one example of thermal energy production from corn cobs. According to the estimates of UABIO experts, only 135 ktoe was used in 2017 within the bioenergy sector [5]. Straw pellets were produced in the amount of 155 kt, and 200 kt of straw bales were combusted for energy production.
5.ii	*Is the use of residue retention on land common practice as a mechanism for soil protection? Or required legally?*
	Residue retention is a common practice for soil protection if a farmer uses the technologies for the minimum soil tillage. These technologies are widely spread in Ukraine: mini/minimum tillage preparation technology was used on 80% of crop lands in 2009 [7].
5.iii	*If residues are not used for bioenergy are there other existing uses of agricultural residues? (i.e. material uses)*
	Residues are only used in the agricultural sector: as a litter and feed in livestock production, as a substrate for growing mushrooms at the warehouses.
5.iv	*What is the market infrastructure for the buying and selling of residues at present? (informal/local; coordinated/through traders or other points at which material is gathered together?)*
	Residues are sold through direct contracts between farmers and consumers. Big pellets producers own all necessary equipment to organize the collection and transportation of residues from the field to the production facility [6]. Small boiler houses, which use big straw bales for thermal energy production in boilers of periodic combustion, buy the bales from farmers who provide straw harvesting. To date, the biofuel market in Ukraine remains poorly developed.
5.v	*If residues are already being used for bioenergy feedstock, what is the sourcing area from which they are taken before the first processing step? (ie. are there details of how far the raw material is transported?)*
	Two biggest boiler houses that use (square) straw bales as a fuel (10 MW boiler house in Nikopol town and 1 MW boiler house in Myrgorod town) has the sourcing radius of 15-25 km [8]. Big pellets producers (Aver-Tech, Uman town and Vin-Pelleta, Turbiv town) with annual pellets production at the level of 10-30 kt transport the feedstock within the 50 km radius.

Legal requirements at national level – land management best practices

6.i	*Are rules in place determining the practices that should be applied on arable land (for non-perennial crops or cereals) to support soil quality? (if yes, please specify – FYI this could be legal requirements or requirements linked to funding such as under the CAP. Please briefly explain the measures and instruments that support them and how widely they are adopted (if non-binding).*
	Normative standards for crops rotation in different natural and agricultural regions (https://zakon.rada.gov.ua/laws/show/164-2010-%D0%BF) are in force in Ukraine. The standards are obligatory for organic products producers, but they are voluntary for other agriculture producers.
6.ii	*Please complete table a) below regarding support for management practices in country. Provide any comments on coverage in the box below*
	National legislation in Ukraine envisages several management practices to support soil quality, although most of them are voluntary.
6.iii	*How are measures for promoting soil quality monitored to ensure that land management practices comply with requirements? What evidence is used?*
	Documentary evidence is mainly used to prove that land management practices were realised.
6.iv	*How is compliance with measures to promote soil quality enforced?*
	The compliance with measures is enforced by the state control that is provided according to the Law of Ukraine “On state control over land use and protection” (https://zakon.rada.gov.ua/laws/show/z1321-18). The Law envisages the legal grounds for inspections conducting and bringing to responsibility.
6.v	*Does the country have access to/make use of remote sensing that would be able to differentiate crop type, type of land cover or proportion of land cover? What is the time horizon over which data is replicated (ie annual monitoring, once every 5 years? Etc) (if yes please describe briefly the systems in place, tools used etc)*
	In 2019, Ukraine and the World Bank, with EU financial support, has launched a pilot project for satellite monitoring of agricultural land under the global 5-year Land Transparency Program to improve the transparency and efficiency of land asset management in Ukraine. Currently, the project has been implemented in three regions of Ukraine: Lviv, Kyiv and Mykolaiv. Based on space monitoring data, an analysis of the vegetation layer of the earth's surface was conducted, which allowed to create maps of crops, determine the exact boundaries of fields, as well as identify major types of coverage. The detailed map has been created: https://eos.com/cropmap/?utm_source=Liga&utm_medium=pr&utm_campaign=cropmap
6.vi	*Are there other forms of relevant monitoring or compliance rules that could be relevant to support evidence that measures are implemented?*
	The law “On Land Protection” states that in order to control the dynamics of soil fertility, their agrochemical inspection is carried out systematically, agrochemical passports are issued, which record the initial and current levels of soil nutrient supply and levels of soil pollution. Agrochemical certification of arable land is carried out every 5 years, hayfields, pastures and perennials - every 5-10 years and is mandatory for all landowners and land users.

Table 39. Overview of the essential soil management practices referencing where rules are in place at the national level to support these practices

Requirement	Rules in place of relevance (description, scope)		Reference to legal text	Details of relevant compliance/ monitoring approaches
	Y/N Partial	Description		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Partial	Permissible standards for the frequency of cultivation on the same field vary from 1 year to 10 years for different crops.	Normative standards for crops rotation in different natural and agricultural regions https://zakon.rada.gov.ua/laws/show/164-2010-%D0%BF	Standards are voluntary for agriculture producers. The monitoring is not applied
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	No			
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Partial	There are recommendations from Institute of Agriculture of NAAS of Ukraine and other scientific organisations only.	http://agro-business.com.ua/agro/ahronomiia-sohodni/item/11195-borotba-z-pereushchilnenniam-hruntiv.html	N/a
No burning of arable stubble except where authority has granted an exemption for plant health reasons.	Yes	Burning of stubble, meadows, pastures, areas with steppe, wetland and other natural vegetation, vegetation or its remains and fallen leaves on agricultural lands is prohibited. Administrative liability for these actions is foreseen.	Administrative Code of Ukraine as of 7 December 1984 https://zakon.rada.gov.ua/laws/show/80731-10	State Ecological Inspectorate of Ukraine provides control and monitoring.
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Partial	Liming is considered as a part of chemical land-reclamation. It can be used to improve the physico-chemical and physical quality of soils, their chemical composition.	Law of Ukraine “On Land reclamation” as of 14 January 2000 https://zakon.rada.gov.ua/laws/show/1389-14	Ministry for Economic Development, Trade and Agriculture is responsible for land-reclamation organization.

On farm land management best practices

7.i	*What tools are being made use of on farm to ensure soil quality is protects and soil carbon promoted? What is considered best practices, what is considered standard good practices?*
	Ploughing is considered a standard practice. The best practice is the combination of minimal tillage with ploughing and application of organic fertilizers.
7.ii	*Are there quality standards or best practices standards or labels, supply chain schemes that promote better soil quality or soil carbon as part of their requirements? If yes, please provide details including the management practices covered*
	There are no standards. Farmers use the recommendations of seed suppliers, the department of agro-industrial regional state administration and district state administration. Agronomists are undergoing internships. Farmers take into account the experience of the best farms and the recommendations of scientists and practitioners.
7.iii	*Is crop rotation standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what crop rotations are being implemented?*
	Crop rotation is a standard practice. From 5 to 10 crop rotation system is used.
7.iv	*Are cover crops standard practices on farm (in particular those producing high residue crops such as cereals (including maize)? If so, what are they being used as (intercrops, winter crops etc) and are there strategies in place to limit bare soil?*
	Cover crops are not used due to lack of moisture.
7.v	*Are legumes standard practices as part of crop rotations and cover cropping regimes?*
	Legumes are grown (mostly peas).
7.vi	*Are there standard practices adopted in terms of working of wet soils?*
	Agrarians do not work on the wet soils.
7.vii	*What advisory services are in place or would be needed to support and promote the adoption of practices in table b?*
	There are consultants from the companies that sell seeds, and from departments at the authorities.
7.viii	*What sources of information to demonstrate compliance would be held on farm or could be produced to meet compliance needs (see list in table 2)? Please briefly describe examples of evidence and what they could be used to demonstrate*
	Field maps, photos and invoices for the purchase of seeds can be used to demonstrate compliance.

Table 40. Overview of the essential soil management practices referencing where it is known farmers are already implementing some aspects either as standard practice, or best practice

Requirement	Adopted as standard or best practice		What evidence might be used on farm to prove adoption?	Are there limits to potential application?
	Y/N Partial	Description of how and where is noted to be applied and what the drivers are for this		
At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1	Partial	Corn and silage corn, winter wheat, winter and spring barley, peas, soybeans, alfalfa, sunflower, winter and spring rape and sugar beets.	Cartograms, photographs, invoices for the purchase of seeds	Focus on proven practices and rainfall
Sowing of cover/catch crops/intermediary crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	No			Moisture deficiency for cover crops
Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; controlled traffic planning can be used).	Yes	Minimize movement on moist soil. The fields are in the zone of insufficient moisture.		
No burning of arable stubble except where authority has granted an exemption for plant health reasons[195].	Yes	We do not practice burning plant remains in the field. Straw is collected for livestock, briquette production and for sale.	Invoices for the sale of briquettes and straw. Photographs	The amount of straw extraction depends on the available amount of organic waste that will be used to fertilize the fields
On acidic soils that liming is applied, where soils are degraded and acidification impacts on crop productivity	Yes	If necessary, use liming	Photographs	

[195] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392

Background information

List of references used during the case study

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List of interviewees:

- Semen Drahniev, Expert of the Bioenergy Association of Ukraine, PhD in agriculture
- Sergii Kudriia, Candidate of Agricultural Sciences, Associate Professor, Professor of Kharkiv National University of Agriculture
- Oleh Riabov, Gals Agro Group of companies
- Oleksii Cherniak, agronomist at Tkachuk farm company (Odesa region)
- Dmytro Muravskyi, “Aver tech” LLC (straw pellets producer)
- Volodymyr Osadchyi, agrofarm “Bazis”, owner

D.3. Findings highly biodiverse case study

Case study – Brazil

Key findings

As summarized in the following table, the case study shows sources of evidence available to determine of the area was cropland/agricultural land or if it was forest or other wooded land.

For the evidence to determine of the area was highly biodiverse, the main element missing is scientific field data.

For the last element (if harvesting did not interfere with the protection of biodiversity), that was not available in this case, but parties were identified that could provide this evidence.

Overall, during the case study it showed that the experts in the environmental agency have a very good knowledge about the nature related value of the regions in Bahia. The main problem is the documentation and scientific proof of the value. This will be improved in the future because the government is working on remote sensing modeling and techniques to reconstruct the past land use and landscape structure.

Additionally, for the last two elements information is available for some parts of the state of Bahia and will be soon available for the whole state. The cadaster data dates back to 2012. In some cases, there might be data from local studies that provide information about the land use before 2008 but there is surely no comprehensive information for the whole state of Bahia. This might be changing when there is satellite data available from before 2008.

Possible sources of evidence	Yes/No	Comment
Was there evidence available to determine that the area was cropland / agricultural land?	Yes	
Was there evidence available to determine that the area was forest/other wooded land?	Yes	
Was there evidence to determine if the area was highly biodiverse?	No/Partially	The information is available for some parts of the state of Bahia and will be soon available for the whole state. The cadastre data dates back to 2012 (so data can only be checked from 2012 onwards, not from 2008)
Was there evidence that the harvesting did not interfere with the protection of its biodiversity?	No/Partially	

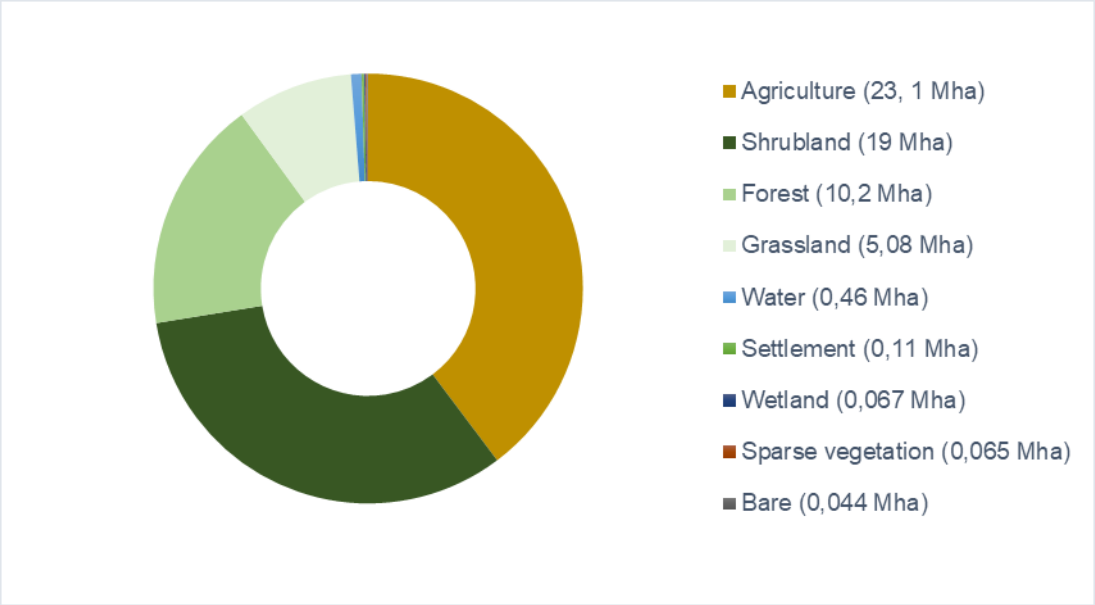
Introduction

The case study region is the state Bahia (56 million hectares; 15 million inhabitants), located in the north-eastern part of Brazil on the Atlantic coast. Bahia was chosen because it is covered by three biodiverse biomes: The Mata atlântica (Atlantic rainforest) which is naturally located along the Atlantic coast of Brazil and was mostly destroyed in the past. The Caatinga, a thorny shrubland, boarders further west and the Cerrado (savanna), which is the most western biome. The Caatinga and Cerrado are sparsely vegetated and therefore vulnerable for rapid unnoticed land conversion. From 2008 to 2018, Bahia lost 2.26 Mha of tree cover (> 10% tree canopy, GFW 2020[196]). According to Curtis et al. (2018)[197] the main reason for forest loss since 2008 is shifting agricultural activity, mainly in the Mata atlântica and Caatinga, whereas in the Cerrado it is commodity driven deforestation. Agricultural area is also the dominating land cover followed by shrubland and forests (see Figure 36).

[196] Global Forest Watch. “Tree Cover Loss in Brazil”. Accessed on 27/05/2020 from www.globalforestwatch.org.

[197] Curtis, P.G., C.M. Slay, N.L. Harris, A. Tyukavina, and M.C. Hansen. 2018. “Classifying Drivers of Global Forest Loss.” *Science.* Accessed through Global Forest Watch on 14/05/2020. www.globalforestwatch.org.

Figure 36. The land use of Bahia in 2015[198]



Identifying forest and other wooded land (Art. 29.3b)

The following question is the main focus of this section:

- Is the identified area forest or other wooded land in or after 2008:
  - Is the area cropland, or other agricultural land in use (ether in use or fallow) in or after 2008?
  - Is the area forest or other wooded land in or after 2008?

The following table summarizes the availability of evidence for each of the questions.

Possible types of evidence to identify forest and other wooded land	Available for this region?	Ease of access	Examples or background information?
Can you find field checks (e.g. photos, field surveys) documenting the status of the cultivation area (copping activity, tree cover, vegetation structure)?	Partially (the information is currently available for some parts of the state of Bahia and will soon be available for the whole states. The cadastre dates back to 2012	Public	See example 1
Do historical mappings/documentations exist?	No	-	See example 1
Does remote sensing data exist that is suitable (e.g. spatial and temporal resolution --> existing ISCC-methodology)?	Yes	Paid	See example 2
Do examples exist in the country/region applying remote sensing tools?	Yes	Restricted	See example 3

[198] Source: Global Forest Watch. “Land cover in Bahia, Brazil”. Accessed on 14/05/2020 from www.globalforestwatch.org

Do management plans exist (operation, administration) and do they cover spatially explicit information on cultivation/fallow?	No	-	See example 1

Determining highly biodiverse forests and other wooded land (Art. 29.3b)

The following question is the main focus of this section:

- Can you determine if the harvesting area has been highly biodiverse forest or other wooded land in or after 2008:
  - The area of forest or other wooded land has not been identified as being highly biodiverse by the relevant competent authority in or after January 2008
  - The area of forest or other wooded land is degraded, that is to say it is characterised by long-term loss of biodiversity in and after January 2008.
  - The area of forest or other wooded land is not species-rich which means that the area has not been in or after January 2008

Possible types of evidence to determine highly biodiverse	Available for this region?	Ease of access	Examples or background information?
Which national and/or sub-national competent authorities can provide information on the location of identified highly biodiverse areas?	Yes	Public	Bahia Forum on Climate Change and Biodiversity
International competent authorities are IUCN and CBD. Do they list identified highly biodiverse areas in the study region?	Yes	Public	See example 4
Is information on restauration programmes available in the study region? If yes, at which institution?	Yes	Public	See example 5
Are there field checks (e.g. photos, field surveys) documenting the degradation status and species richness of the cultivation area, including species composition, habitat structure and species richness? Do historical mappings/documentations exist?	No	-	There are no regular field checks but when there is evidence (e.g. satellite imagery) the degradation is documented.
If data on biodiversity are available, are they enough to prove the five indicators specifying species richness?	No/partially	Public	See example 6
Do examples exist in the study region monitoring land degradation and/or species richness (including biodiversity)?	Yes	Public	See example 2 and 7
Does published research exist on species composition and habitat structure covering trends at comparable sites in the study region?	Yes	Public	See example 7

Exception for highly biodiverse forests and other wooded land (article 29.3b)

The following question is the main focus of this section, in those cases where the region is classified as highly biodiverse forests and other wooded lands:

- Showing evidence that that the production of raw material did not interfere with the protection of the high biodiversity value of highly biodiverse forests and other wooded land

Possible types of evidence to determine the exceptions	Available for this region?	Ease of access	Examples or background information?
Are independent third parties (e.g. biological/ecological planning offices, universities, research institutes, NGO-experts etc.) available in the study region that have the technical and content competence to provide proofs?	Yes	Public	See example 8

Background information

Example evidence:

Example 1 - Rural Environmental Cadastre (CAR)

In Bahia, the Rural Environmental Cadastre (CAR) has been implemented since 2012, being called Cadastro Estadual Florestal de Imóveis Rurais (CEFIR) (State Register of Rural Properties), as provided for in State Law No. 10,431 of December 20, 2006. It is very difficult to verify the data provided by the land owner, but the state administration works on an automated monitoring. Farmers are not obligated to provide plans on their cultivation management, but some most likely provide data to CEFIR. Earlier references before 2012 are not available. The administration uses satellite data to gain information about landscape development, but the images do not always cover the whole area according to the interview partner.
Web link: http://www.inema.ba.gov.br/programas/car-bahia-cefir/

It is possible to access some of the data in CEFIR on a webpage (Cadastro Ambiental Rural, http://www.car.gov.br/publico/imoveis/index).

Example 2 - Harpia project

The Harpia Project started in 2017 and provides a system for monitoring vegetation cover in Bahia based on the image analysis of several satellites (e.g. ESA Sentinel with 10 – 60 m resolution) from 2016 until present. Currently the Atlantic Forest is mainly monitored but the Cerrado biome will be included soon. It is designed by the Information and Communication Technology Coordination (COTIC/GEO) of the Administrative and Financial Direction (DIRAF). The aim is to implement an alert system to reduce illegal deforestation.

There is no official web page of the project but an example:
http://www.inema.ba.gov.br/2019/05/operacao-do-inema-identifica-e-interdita-areas-de-desmatamento-no-litoral-norte/

Additionally, there is the Global Risk Assessment Tool (GRAS Tool) supported by the German Federal Ministry of Food and Agriculture through the Agency for Renewable Resources (FNR) within the project "Development of the GRAS prototype to support an environmentally friendly use of resources for a sustainable bioeconomy" to provide high resolution imagery and analysis to monitor land use.

Web link: https://www.gras-system.org/

Example 3 - Example of Remote Sensing application

The Institute of Environment and Water Resources (INEMA) carried out an inspection in southern Bahia from September 22nd to October 5th because the vegetation monitoring project Harpia identified approximately 295 hectares of degraded forests. Due to the operation areas of deforestation for coal production, areas converted to pasture, banana plantations and selective logging were also identified to enable the cultivation of cocoa-cabruca.
Web link: http://www.inema.ba.gov.br/2019/10/operacao-do-inema-constata-295-ha-de-area-decrementada-no-sul-da-bahia/

Example 4 - Highly biodiverse areas in Bahia

In Bahia especially the southern Atlantic forests has very high significance for biodiversity according to the **International Union for Conservation of Nature (IUCN), BirdLife International, and United Nations Environment World Conservation Monitoring Centre (UNEP-WCMC)**. Also, parts of the Cerrado and Caatinga were classified as important for biodiversity.

Reference: IUCN, BirdLife International, and UNEP-WCMC (2016). "Biodiversity importance". Accessed from Global Forest Watch on 15/05/2020. www.globalforestwatch.org. World Database of Key Biodiversity Areas (http://www.keybiodiversityareas.org)

Additional information is available, e.g.:

The **Alliance for Zero Extinction** identified 13 sites where species (mammals, birds, amphibians, reptiles, conifers, reef-building corals) were found that have extremely small global ranges and populations. Any changes to their habitat within a site may lead to the extinction of a species in the wild.

Reference: Alliance for Zero Extinction (2019). 2019 AZE Update. www.zeroextinction.org. Accessed through Global Forest Watch on 15/05/2020. www.globalforestwatch.org

The **WWF Brazil** also identified areas of high significance for biodiversity in Bahia from 2013 to 2015.
Web link:
https://panda.maps.arcgis.com/apps/Cascade/index.html?appid=fcdf07cc5f3e49cc8ceb2681e74675e0

Example 5 - Restoration programs in Bahai

In Bahia the **Reference Centers for Forest Restoration** (Centros de Referência em Restauração Florestal , CRRFs) was implemented in 2012 as a result of the new Forest Code. It provides research on native tree species and guidelines for the restoration of the environment. Additionally, rural landowners with environmental liabilities according to the State Register of Rural Property (Cefir) can access support for the implementation of their Environmental Regularization Programs (PRAs) in the CRRFs. The CRRFs operate through the partnerships of the **State Secretariat of the Environment** (Secretaria Estadual do Meio Ambiente, Sema) and the **Institute of Environment and Water Resources** (Instituto do Meio Ambiente e Recursos Hídricos, Inema) with higher education institutions at the state and federal level like the Federal University of Western Bahia (UFOB).

Reference: http://www.meioambiente.ba.gov.br/2017/04/11077/Centros-de-Referencia-em-Restauracao-Florestal-apoiam-proprietarios-rurais-na-implantacao-de-PRADs.html
Web Links: Secretaria Estadual do Meio Ambiente; Instituto do Meio Ambiente e Recursos Hídricos

There are also Atlantic forest restauration programmes presented by the local NGO “FlorestaViva”.
Web link: http://www.florestaviva.org.br/en/portfolio/atlantic-rainforest-biome-restoration/

Example 6 - Examples for data on biodiversity in Bahia

The Institute of Environment and Water Resources (Inema) executes the programs related to the State Environmental and Biodiversity Protection Policy, the State Water Resources Policy and the State Policy on Climate Change. They created a map indicating priority areas for conservation, sustainable land use and sharing of benefits from biodiversity

Web link: http://www.inema.ba.gov.br/wp-content/files/MTematico_areas_prioritarias.pdf

The WWF Brazil also identified areas of high significance for biodiversity in Bahia from 2013 to 2015 and for endemic species.

Web link:
https://panda.maps.arcgis.com/apps/Cascade/index.html?appid=fcdf07cc5f3e49cc8ceb2681e74675e0

The Universities in Bahia conduct a lot of research on biodiversity in the state (see evidence example 7).

The information on biodiversity doesn’t cover all five indicators of biodiversity. Especially data on the intra-species genetic diversity is missing.

Example 7 - Research examples on land degradation and species richness in Bahia

The researchers at the Universities in Bahia do a lot of research on the effects of agriculture on biodiversity. Their main focus is the Atlantic Forest and only a few studies were conducted in the other biomes like the Cerrado.

- Benchimol, M., Mariano-Neto, E., Faria, D., Rocha-Santos, L., de Souza Pessoa, M., Gomes, F. S., ... & Cazetta, E. (2017). Translating plant community responses to habitat loss into conservation practices: Forest cover matters. Biological conservation, 209, 499-507.
- Batistella, M., & Valladares, G. S. (2009). Farming expansion and land degradation in Western Bahia, Brazil. Biota Neotropica, 9(3), 61-76.
- Leite, C. M. P., Mariano-Neto, E., & da Rocha, P. L. B. (2018). Biodiversity thresholds in invertebrate communities: The responses of dung beetle subgroups to forest loss. PloS one, 13(8).
- Mariano, D. A., dos Santos, C. A., Wardlow, B. D., Anderson, M. C., Schiltmeyer, A. V., Tadesse, T., & Svoboda, M. D. (2018). Use of remote sensing indicators to assess effects of drought and human-induced land degradation on ecosystem health in Northeastern Brazil. Remote Sensing of Environment, 213, 129-143.
- Pardini, R., Faria, D., Accacio, G. M., Laps, R. R., Mariano-Neto, E., Paciencia, M. L., ... & Baumgarten, J. (2009). The challenge of maintaining Atlantic forest biodiversity: a multi-taxa conservation assessment of specialist and generalist species in an agro-forestry mosaic in southern Bahia. Biological Conservation, 142(6), 1178-1190.
- Püttker, T., Crouzeilles, R., Almeida-Gomes, M., Schmoeller, M., Maurenza, D., Alves-Pinto, H., ... & Metzger, J. P. (2020). Indirect effects of habitat loss via habitat fragmentation: A cross-taxa analysis of forest-dependent species. Biological Conservation, 241, 108368.

- Silva, A. A. D. S., Alvarez, M. R. D. V., Mariano-Neto, E., & Cassano, C. R. Is shadier better? The effect of agroforestry management on small mammal diversity. Biotropica.
- Valdujo, P. H., Silvano, D. L., Colli, G., & Martins, M. (2012). Anuran species composition and distribution patterns in Brazilian Cerrado, a Neotropical hotspot. South American Journal of Herpetology, 7(2), 63-78.
- Vasconcelos, R. N., Cambui, E. C. B., Mariano-Neto, E., da Rocha, P. L. B., & Cardoso, M. Z. (2019). The role of Eucalyptus planted forests for fruit-feeding butterflies' conservation in fragmented areas of the Brazilian Atlantic forest. Forest Ecology and Management, 432, 115-120.
- WWF Brasil 2015. Àreas Prioritárias para Conservação da Biodiversidade do Estado do Bahia. https://panda.maps.arcgis.com/apps/Cascade/index.html?appid=fcdf07cc5f3e49cc8ceb2681e74675e0

Example 8 - Examples of independent third parties in Bahia

- Federal University of Western Bahia
- Federal University of Eastern Bahia
- Federal University of Southern Bahia
- State University of Bahia
- WWF Brasil

Appendix E. FOREST DEFINITIONS OF EU MEMBER STATES

Table 41. Minimum Values for Area Size, Tree Crown Cover and Tree Height Parameters in the forest definitions of EU Member States (as in LULUCF regulation Annex II) and as in the global standard definition of the FAO Global Forest Resources Assessment (GFRA)

Applicable area	Area (ha)	Tree crown cover (%)	Tree height (m)
FAO GFRA	0,5	10	5
Belgium	0,5	20	5
Bulgaria	0,1	10	5
Czech Republic	0,05	30	2
Denmark	0,5	10	5
Germany	0,1	10	5
Estonia	0,5	30	2
Ireland	0,1	20	5
Greece	0,3	25	2
Spain	1,0	20	3
France	0,5	10	5
Croatia	0,1	10	2
Italy	0,5	10	5
Cyprus	0,3	10	5
Latvia	0,1	20	5
Lithuania	0,1	30	5
Luxembourg	0,5	10	5
Hungary	0,5	30	5
Malta	1,0	30	5
Netherlands	0,5	20	5
Austria	0,05	30	2
Poland	0,1	10	2
Portugal	1,0	10	5
Romania	0,25	10	5
Slovenia	0,25	30	2
Slovakia	0,3	20	5
Finland	0,5	10	5
Sweden	0,5	10	5
United Kingdom	0,1	20	2

[source: Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU. Official Journal of the European Union L156/1].

[source: FAO, 2018. Terms and Definitions. Global Forest Resource Assessment 2020. Forest Resources Assessment Working Paper 188. Food and Agriculture Organization of the United Nations, Rome, 2018. URL on 20191003: http://www.fao.org/forest-resources-assessment/en/].

Appendix F. LONG TERM PRODUCTION CAPACITY CRITERION

As referred to in section 2.2.5, for the long-term production capacity criterion, two different approaches can be taken to demonstrate compliance. One retrospective – looking back at the historic balance of harvesting, the other prospective – looking forward to future production of the forest.

In Table 43 a brief overview of potential advantages and disadvantages of the two approaches is presented.

Table 42. Advantages and disadvantages of the two suggested alternative approaches for long-term production capacity.

Approach	Pro's	Con's
Option 1 - Historic balance of felling over net annual increment	. Easier to implement than option 2 . Data should be readily available or relatively easy to assess . A standard approach to assessing harvesting sustainability	. Approach oversimplifies assessment of sustainable harvesting level . Ignores potential impacts of climate change
Option 2- Retro- and Prospective forest productivity assessment	. More in line with LULUCF criteria requirements at forest sourcing area and a precursor to the LULUCF assessment at sourcing area level . Possible effects of climate change should be duly taken into consideration.	. Much more demanding method . More costly to implement than option 1 . Historical data do not guarantee that the same practices are prolonged in time. Past practices can change and this approach can legitimize a negative change.

In the main text a detailed description of the retrospective approach is provided (which we feel is the preferred direction to take). Below the prospective approach is presented.

Option 2: Prospective approach

An economic operator must be able to ensure that forest management practices maintain or improve long-term production capacity in the forest sourcing area. The following description of the stepwise approach presents four steps to demonstrate compliance with the above-mentioned criterion, as summarized in Figure 37.

Step 1: Definition of historical reference period for the forest sourcing area
A historical reference period needs to be defined in step 1, so the management practices prior the harvesting intervention can be described and assessed in step 2. REDII does not require or specify a historical year or period that can serve as a reference to compare the future development of production capacity in the sourcing area with.

It is recommended that the historical reference period is at least as long as a typical rotation period in the region of the forest sourcing area, but it can be shorter or longer to facilitate the use of available forest inventory data or to mitigate the impact of recent forest disturbances or other exogenous events on the levels of production capacity in the sourcing area. In any case, the selected reference period should reflect a representative production frame (i.e. rotation period) in the supply area (i.e. is consistent with any broader historical data used as evidence). The economic operators are encouraged to provide argumentation for the definition of their reference period.

Step 2: Description of forest management practices in sourcing area for the historical reference period
It is recommended that an economic operator uses information on management practices, derived from inventory data, management plans or other verifiable evidence over a reference period that will serve as a benchmark against which maintenance or strengthening of production capacity of a sourcing area will be compared.

To assess the production capacity of a sourcing area, it is necessary to describe forest management practices employed in the area. It is recommended that an operator describes forest management practices (e.g. harvesting and thinning intensity, age class structure etc.) by collecting data on historical activities from forest inventories, historical management plan(s) or other verifiable evidence.

If management plans or forest inventories are not available see step B.4 in chapter 2.3.3.2

When constructing a forest management practices scenario, it is recommended to consider the following indicators that affect the forest development, for each forest management type that occurs in the forest sourcing area:

- Average annual growing stock
- Average net annual increment
- Site productivity (e.g. site index)
- Tree species composition
- Forest reproductive material used (provenance)
- Average annual amounts of harvested wood (whether or not separated into thinnings and final fellings)
- Thinning intensity (volume of wood extracted) per type of thinning
- Type of final cut (e.g. even-aged clearcutting, shelterwood, group or tree selection, coppice)
- Average annual amount of removed harvesting residues, differentiating between 'residue removal including' or 'residue removal excluding' their nutrient-rich foliage
- Other management decisions that affect productivity (e.g. fertilization, drainage, herbicide and pesticide application).
- Average minimum and maximum rotation length

This assessment is to be used as a forest productivity benchmark, compared to which future management approaches must show a same or improved level of sustainable productivity.

Step 3: Define the length of future long-term period
REDII requires that the long-term production capacity of a sourcing area is maintained or improved. However, the Directive does not define what long term means, specify the time period that needs to be considered. It is recommended that the assessment period covers the 30 years following the year in which the harvesting is implemented, or longer.

Step 4: Description of forest management practices in the forest sourcing area for the future long-term period
To prove that the long-term production capacity of the sourcing area will be improved or maintained, an economic operator should describe forest management practices that are reasonably expected to be practiced in the long term. The assessment will require developing future forest management scenarios, taking the indicators into consideration as mentioned in the retrospective Step 2. The data sources for doing so include forest management plans, inventory data or other verifiable evidence to estimate future productivity.

Especially when the expected forest management will deviate from historical sustainable forest management practices then it has to be assessed and explained how this will most probably affect the development of the production capacity.

However, the future development scenarios should also factor in impacts that are detrimental to forest productivity, such as from biotic and abiotic forest disturbance, of which the effect and frequency may be more intense and recurrent due to climate change. When evidence exists from reputable scientific sources that such impacts are to be expected for the forest sourcing area, then forest development scenarios are to outline in an anticipatory way what measures will be taken to maintained or improve forest productivity.

If future wood productivity can only be maintained through inputs of inorganic fertilizers and/or application of pesticides, then the effect thereof should be discounted.

Step 5: Forest management will be continued or improved

At the forest sourcing area level, long-term production capacity of the forest is considered to be maintained or improved if forest management will be continued or improved on the basis of regionally adopted specific site-suitable practices under current and future conditions.

The assessment conducted in these steps, which may include the inspection of management plans, inventory data and documentation on past and future forest management practices (steps 2 and 4) are to be checked continuously, working along a moving time window, and updated in regular intervals by the operator. The initialization of this assessment will require significant effort, but once all information is in place, routine updates would be especially required when a notable change in forest management practices can be observed in the forest sourcing area or when severe impacts from forest disturbances will require intervention.

Figure 37. Stepwise approach for compliance with the long-term production capacity criterion, with a historical reference period as benchmark for future management requirements

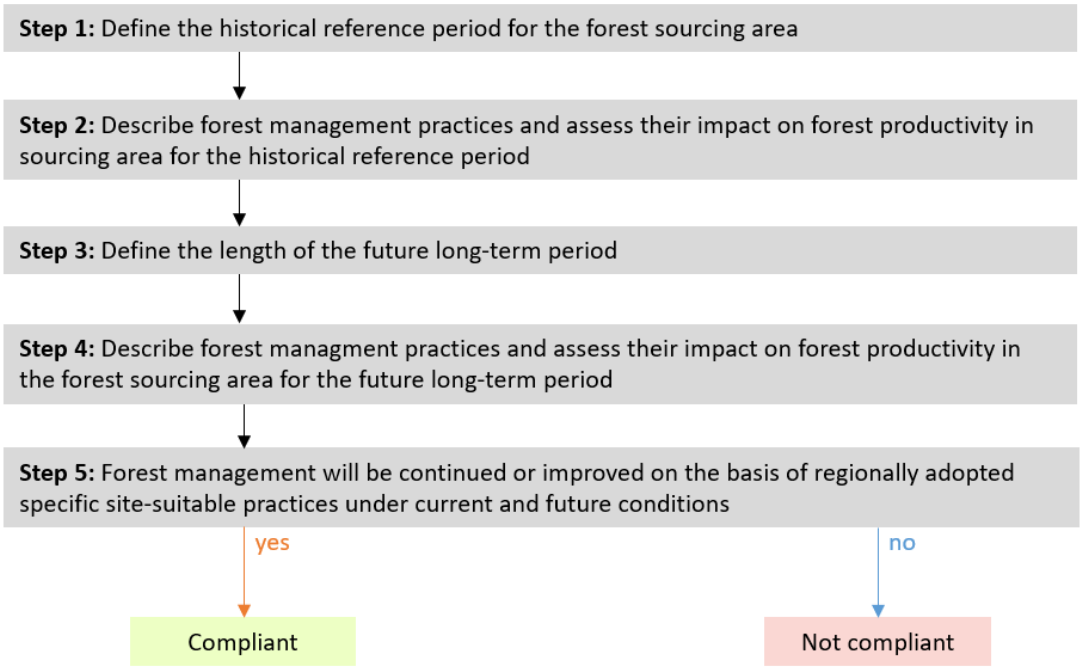


Table 43. Checklist for demonstrating compliance with the long-term production capacity criterion, following the prospective approach

Step	Indicator	Sources for verification of the indicator
1	Historical reference period represents a typical forest rotation period	• Forest management plans; exceptions to the rule are explained in the text.
2	Historical forest management practices and impact on productivity are described	• Forest management plans, inventory data or other verifiable evidence to estimate historic productivity
3	Future long-term period is at least 30 years	• Forest management plans
4	Future forest management practices and impact on productivity are described	• Forest management plans, inventory data or other verifiable evidence to estimate future productivity • Reputable scientific sources on climate change impacts on forest productivity, site suitability and forest disturbances
5	Long-term productivity is maintained or improved	• By comparing the historic productivity of step 2 and the future productivity of step 4.

Appendix G. PARIS AGREEMENT

To this date, 187 Parties have ratified of 197 Parties to the Convention[199]. Table 45 presents an overview of all parties and if they have ratified the Paris Agreement. Please note, that a few countries have made additional declarations.

Table 44. Parties that ratified Paris Agreement - status of ratification

No.	Participant	Signature	Ratification, Acceptance(A), Approval(AA), Accession(a)
1	Afghanistan	22-Apr-16	15-Feb-17
2	Albania	22-Apr-16	21-Sep-16
3	Algeria	22-Apr-16	20-Oct-16
4	Andorra	22-Apr-16	24-Mar-17
5	Angola	22-Apr-16	
6	Antigua and Barbuda	22-Apr-16	21-Sep-16
7	Argentina	22-Apr-16	21-Sep-16
8	Armenia	20-Sep-16	23-Mar-17
9	Australia	22-Apr-16	9 Nov 2016
10	Austria	22-Apr-16	5 Oct 2016
11	Azerbaijan	22-Apr-16	9 Jan 2017
12	Bahamas	22-Apr-16	22-Aug-16
13	Bahrain	22-Apr-16	23-Dec-16
14	Bangladesh	22-Apr-16	21-Sep-16
15	Barbados	22-Apr-16	22-Apr-16
16	Belarus	22-Apr-16	21 Sep 2016 A
17	Belgium	22-Apr-16	6 Apr 2017
18	Belize	22-Apr-16	22-Apr-16
19	Benin	22-Apr-16	31-Oct-16
20	Bhutan	22-Apr-16	19-Sep-17
21	Bolivia (Plurinational State of)	22-Apr-16	5 Oct 2016
22	Bosnia and Herzegovina	22-Apr-16	16-Mar-17
23	Botswana	22-Apr-16	11-Nov-16
24	Brazil	22-Apr-16	21-Sep-16
25	Brunei Darussalam	22-Apr-16	21-Sep-16
26	Bulgaria	22-Apr-16	29-Nov-16
27	Burkina Faso	22-Apr-16	11-Nov-16
28	Burundi	22-Apr-16	17-Jan-18
29	Cabo Verde	22-Apr-16	21-Sep-17
30	Cambodia	22-Apr-16	6 Feb 2017
31	Cameroon	22-Apr-16	29-Jul-16
32	Canada	22-Apr-16	5 Oct 2016
33	Central African Republic	22-Apr-16	11-Oct-16

[199] Source: Status as of: 10 December 2019; CHAPTER XXVII ENVIRONMENT: 7. d, Paris Agreement https://unfccc.int/process/the-paris-agreement/status-of-ratification

No.	Participant	Signature	Ratification, Acceptance(A), Approval(AA), Accession(a)
34	Chad	22-Apr-16	12-Jan-17
35	Chile	20-Sep-16	10-Feb-17
36	China	22-Apr-16	3 Sep 2016
37	Colombia	22-Apr-16	12-Jul-18
38	Comoros	22-Apr-16	23-Nov-16
39	Congo	22-Apr-16	21-Apr-17
40	Cook Islands	24-Jun-16	1 Sep 2016
41	Costa Rica	22-Apr-16	13-Oct-16
42	Côte d'Ivoire	22-Apr-16	25-Oct-16
43	Croatia	22-Apr-16	24-May-17
44	Cuba	22-Apr-16	28-Dec-16
45	Cyprus	22-Apr-16	4 Jan 2017
46	Czech Republic	22-Apr-16	5 Oct 2017
47	Democratic People's Republic of Korea	22-Apr-16	1 Aug 2016
48	Democratic Republic of the Congo	22-Apr-16	13-Dec-17
49	Denmark	22-Apr-16	1 Nov 2016 AA
50	Djibouti	22-Apr-16	11-Nov-16
51	Dominica	22-Apr-16	21-Sep-16
52	Dominican Republic	22-Apr-16	21-Sep-17
53	Ecuador	26-Jul-16	20-Sep-17
54	Egypt	22-Apr-16	29-Jun-17
55	El Salvador	22-Apr-16	27-Mar-17
56	Equatorial Guinea	22-Apr-16	30-Oct-18
57	Eritrea	22-Apr-16	
58	Estonia	22-Apr-16	4 Nov 2016
59	Eswatini	22-Apr-16	21-Sep-16
60	Ethiopia	22-Apr-16	9 Mar 2017
61	European Union	22-Apr-16	5 Oct 2016
62	Fiji	22-Apr-16	22-Apr-16
63	Finland	22-Apr-16	14-Nov-16
64	France	22-Apr-16	5 Oct 2016
65	Gabon	22-Apr-16	2 Nov 2016
66	Gambia	26-Apr-16	7 Nov 2016
67	Georgia	22-Apr-16	8 May 2017 AA
68	Germany	22-Apr-16	5 Oct 2016
69	Ghana	22-Apr-16	21-Sep-16
70	Greece	22-Apr-16	14-Oct-16
71	Grenada	22-Apr-16	22-Apr-16
72	Guatemala	22-Apr-16	25-Jan-17
73	Guinea	22-Apr-16	21-Sep-16
74	Guinea-Bissau	22-Apr-16	22-Oct-18

No.	Participant	Signature	Ratification, Acceptance(A), Approval(AA), Accession(a)
75	Guyana	22-Apr-16	20-May-16
76	Haiti	22-Apr-16	31-Jul-17
77	Honduras	22-Apr-16	21-Sep-16
78	Hungary	22-Apr-16	5 Oct 2016
79	Iceland	22-Apr-16	21 Sep 2016 A
80	India	22-Apr-16	2 Oct 2016
81	Indonesia	22-Apr-16	31-Oct-16
82	Iran (Islamic Republic of)	22-Apr-16	
83	Iraq	8 Dec 2016	
84	Ireland	22-Apr-16	4 Nov 2016
85	Israel	22-Apr-16	22-Nov-16
86	Italy	22-Apr-16	11-Nov-16
87	Jamaica	22-Apr-16	10-Apr-17
88	Japan	22-Apr-16	8 Nov 2016 A
89	Jordan	22-Apr-16	4 Nov 2016
90	Kazakhstan	2 Aug 2016	6 Dec 2016
91	Kenya	22-Apr-16	28-Dec-16
92	Kiribati	22-Apr-16	21-Sep-16
93	Kuwait	22-Apr-16	23-Apr-18
94	Kyrgyzstan	21-Sep-16	
95	Lao People's Democratic Republic	22-Apr-16	7 Sep 2016
96	Latvia	22-Apr-16	16-Mar-17
97	Lebanon	22-Apr-16	
98	Lesotho	22-Apr-16	20-Jan-17
99	Liberia	22-Apr-16	27-Aug-18
100	Libya	22-Apr-16	
101	Liechtenstein	22-Apr-16	20-Sep-17
102	Lithuania	22-Apr-16	2 Feb 2017
103	Luxembourg	22-Apr-16	4 Nov 2016
104	Madagascar	22-Apr-16	21-Sep-16
105	Malawi	20-Sep-16	29-Jun-17
106	Malaysia	22-Apr-16	16-Nov-16
107	Maldives	22-Apr-16	22-Apr-16
108	Mali	22-Apr-16	23-Sep-16
109	Malta	22-Apr-16	5 Oct 2016
110	Marshall Islands	22-Apr-16	22-Apr-16
111	Mauritania	22-Apr-16	27-Feb-17
112	Mauritius	22-Apr-16	22-Apr-16
113	Mexico	22-Apr-16	21-Sep-16
114	Micronesia (Federated States of)	22-Apr-16	15-Sep-16
115	Monaco	22-Apr-16	24-Oct-16

No.	Participant	Signature	Ratification, Acceptance(A), Approval(AA), Accession(a)
116	Mongolia	22-Apr-16	21-Sep-16
117	Montenegro	22-Apr-16	20-Dec-17
118	Morocco	22-Apr-16	21-Sep-16
119	Mozambique	22-Apr-16	4 Jun 2018
120	Myanmar	22-Apr-16	19-Sep-17
121	Namibia	22-Apr-16	21-Sep-16
122	Nauru	22-Apr-16	22-Apr-16
123	Nepal	22-Apr-16	5 Oct 2016
124	Netherlands	22-Apr-16	28 Jul 2017 A
125	New Zealand	22-Apr-16	4 Oct 2016
126	Nicaragua		23 Oct 2017 a
127	Niger	22-Apr-16	21-Sep-16
128	Nigeria	22-Sep-16	16-May-17
129	Niue	28-Oct-16	28-Oct-16
130	North Macedonia	22-Apr-16	9 Jan 2018
131	Norway	22-Apr-16	20-Jun-16
132	Oman	22-Apr-16	22-May-19
133	Pakistan	22-Apr-16	10-Nov-16
134	Palau	22-Apr-16	22-Apr-16
135	Panama	22-Apr-16	21-Sep-16
136	Papua New Guinea	22-Apr-16	21-Sep-16
137	Paraguay	22-Apr-16	14-Oct-16
138	Peru	22-Apr-16	25-Jul-16
139	Philippines	22-Apr-16	23-Mar-17
140	Poland	22-Apr-16	7 Oct 2016
141	Portugal	22-Apr-16	5 Oct 2016
142	Qatar	22-Apr-16	23-Jun-17
143	Republic of Korea	22-Apr-16	3 Nov 2016
144	Republic of Moldova	21-Sep-16	20-Jun-17
145	Romania	22-Apr-16	1 Jun 2017
146	Russian Federation	22-Apr-16	7 Oct 2019 A
147	Rwanda	22-Apr-16	6 Oct 2016
148	Samoa	22-Apr-16	22-Apr-16
149	San Marino	22-Apr-16	26-Sep-18
150	Sao Tome and Principe	22-Apr-16	2 Nov 2016
151	Saudi Arabia	03-Nov-16	3 Nov 2016
152	Senegal	22-Apr-16	21-Sep-16
153	Serbia	22-Apr-16	25-Jul-17
154	Seychelles	25-Apr-16	29-Apr-16
155	Sierra Leone	22-Sep-16	1 Nov 2016
156	Singapore	22-Apr-16	21-Sep-16
157	Slovakia	22-Apr-16	5 Oct 2016

No.	Participant	Signature	Ratification, Acceptance(A), Approval(AA), Accession(a)
158	Slovenia	22-Apr-16	16-Dec-16
159	Solomon Islands	22-Apr-16	21-Sep-16
160	Somalia	22-Apr-16	22-Apr-16
161	South Africa	22-Apr-16	1 Nov 2016
162	South Sudan	22-Apr-16	
163	Spain	22-Apr-16	12-Jan-17
164	Sri Lanka	22-Apr-16	21-Sep-16
165	St. Kitts and Nevis	22-Apr-16	22-Apr-16
166	St. Lucia	22-Apr-16	22-Apr-16
167	St. Vincent and the Grenadines	22-Apr-16	29-Jun-16
168	State of Palestine	22-Apr-16	22-Apr-16
169	Sudan	22-Apr-16	2 Aug 2017
170	Suriname	22-Apr-16	13-Feb-19
171	Sweden	22-Apr-16	13-Oct-16
172	Switzerland	22-Apr-16	6 Oct 2017
173	Syrian Arab Republic		13 Nov 2017 a
174	Tajikistan	22-Apr-16	22-Mar-17
175	Thailand	22-Apr-16	21-Sep-16
176	Timor-Leste	22-Apr-16	16-Aug-17
177	Togo	19-Sep-16	28-Jun-17
178	Tonga	22-Apr-16	21-Sep-16
179	Trinidad and Tobago	22-Apr-16	22-Feb-18
180	Tunisia	22-Apr-16	10-Feb-17
181	Turkey	22-Apr-16	
182	Turkmenistan	23-Sep-16	20-Oct-16
183	Tuvalu	22-Apr-16	22-Apr-16
184	Uganda	22-Apr-16	21-Sep-16
185	Ukraine	22-Apr-16	19-Sep-16
186	United Arab Emirates	22-Apr-16	21 Sep 2016 A
187	United Kingdom of Great Britain and Northern Ireland	22-Apr-16	18-Nov-16
188	United Republic of Tanzania	22-Apr-16	18-May-18
189	United states of America	22-Apr-16	3 Sep 2016 A
190	Uruguay	22-Apr-16	19-Oct-16
191	Uzbekistan	19-Apr-17	9 Nov 2018
192	Vanuatu	22-Apr-16	21-Sep-16
193	Venezuela (Bolivarian Republic of)	22-Apr-16	21-Jul-17
194	Viet Nam	22-Apr-16	3 Nov 2016 AA
195	Yemen	23-Sep-16	
196	Zambia	20-Sep-16	9 Dec 2016
197	Zimbabwe	22-Apr-16	7 Aug 2017

Appendix H. OVERVIEW OF VOLUNTARY SCHEME AND OTHER INITIATIVE REQUIREMENTS ON SOIL CONSERVATION

Table 45. Overview of Voluntary Scheme (Better Biomass, Bonsucro, ISCC, RSB, RTRS) and Other Initiative (GBEP, RTFO Meta-Standard) requirements on Soil Conservation

Voluntary Scheme or Initiative	Principle	Criterion / Indicator
Better Biomass (NTA 8080-1:2015)	6.5.1 Soil	6.5.1.1 Preservation and improvement of soil quality The organization shall take measures that are necessary in order to ensure that: a. erosion is prevented and controlled, in which topographic risks are taken into account; b. the nutrient balance is maintained, at least as regards nitrogen (N), phosphorus (P) and potassium (K); c. the soil organic matter (SOM) is preserved and improved over time; d. the soil fertility and soil structure are maintained and improved over time. NOTE 1 An organization can apply crop rotation or intercropping to maintain and improve soil fertility and soil structure. e. soil salination is prevented; f. emission of greenhouse gases from the soil during the production is reduced; g. risks for the soil as a consequence of the storage and the use of chemicals and other business processes are prevented and controlled, where: […] NOTE 2 BioESoil can be used in order to provide an understanding of the impacts of the production of bioenergy on soil quality. BioESoil provides an understanding of: nutrient losses during the production of bioenergy, the potential of nutrients being returned by means of residual flows and the effect on the soil organic matter.
Bonsucro (Production Standard v4.2, 2016)	4.1 To assess impacts of sugarcane enterprises on biodiversity and ecosystems services	4.1.3 The key environmental issues are covered by an appropriate and implemented environmental impact and management plan (EIMP). Standard: >90%. (Notes: The EIMP addresses key environmental issues: biodiversity, ecosystem services, soil, water, air, climate change, use of crop protection chemicals, use of artificial fertilisers, cane burning and noise. The plan shall be implemented, and progress monitored. A summary of the EIMP shall be made available to relevant stakeholders.)

Voluntary Scheme or Initiative	Principle	Criterion / Indicator
	5.2 To continuously improve the status of soil and water resources	5.2.3 % Ground cover of tops or leaves after harvest. Standard: >30%. (Notes: To ensure the continuous improvement of soil organic carbon). 5.2.4 Soil surface mechanically tilled per year (% of area under cane). Standard: <20%. (Notes: To minimise the opportunity for erosion. Percentage of soil surface tilled per year. Only tillage deeper than 20 cm shall be taken into consideration. If any portion of the field has tillage, 100% of the field area would be considered as being tilled). 5.2.5 Percentage fields with samples showing analyses within acceptable limits for pH. Standard: <80%. (Notes: To ensure the maintenance an optimum soil pH. Sampling to be carried out at least once per crop cycle. Acceptable pH is between 5.0 and 8.0).
ISCC (ISCC 202 – Sustainability Requirements, v3.0, 2016)	2.2 Use of best practices to maintain and improve soil fertility	2.2.1 Improvement of soil fertility Crops should be grown on suitable soils. In order to ensure the sustainable treatment of soils, good agricultural practices with respect to soil quality, soil contamination and soil erosion are addressed in the soil management. They refer to: • The prevention and control of erosion • Maintaining and improving soil nutrient balance • Maintaining and improving soil organic matter • Maintaining and improving soil pH • Maintaining and improving soil structure • Maintaining and improving soil biodiversity • The prevention of salinization A soil management plan aimed at sustainable soil management, erosion prevention and erosion control must be documented. Topographical characteristics must also be considered. Annual documentation of applied good agricultural practices with respect to the above-mentioned aspects must be in place. Applying precautionary measures prevents soil degradation. Appropriate management measures include, inter alia, optimum plant spacing, crop rotation and intercropping, landscaping elements or an appropriate type and use of machinery. In order to maintain or improve soil conditions, periodical soil analysis should be conducted, on, for example, soil pH, macro- and micronutrients, heavy metals or other contaminants or soil organic matter.

Voluntary Scheme or Initiative	Principle	Criterion / Indicator
		2.2.2 Avoidance of soil erosion and compaction Measures and cultivation techniques are used to reduce risk of soil erosion. Maps of fragile soils and topographic characteristics must be available. A management strategy including measures should exist for plantings on slopes above a certain limit (specified in terms of soil, climate and topographical characteristics). A management strategy including identified measures should be in place for other fragile and problematic soils (e.g. sandy, low organic matter soils). Appropriate measures to prevent the risk of soil erosion from wind or water and to maintain the natural soil structure are, inter alia, field tillage practices (minimisation of uncovered soil e.g. between harvest and next sowing), crop rotation and the adaptation of field cultivation techniques (e.g. limitation of mechanized harvesting). Measures and cultivation techniques are adapted to reduce the risk of soil compaction. Applied techniques are suitable for the respective processed ground. The soil structure shall be maintained, and soil compaction shall be prevented, e.g. by an appropriate use of machinery, an appropriate timing of on-field work and an appropriate tire pressure.
	2.3 Use of best practices in fertiliser application	2.3.5 Use of wastes and agricultural residues Agricultural waste is reduced, reused and/or recycled. Agricultural waste and co-products can be, for example, composted on-farm and used as soil conditioning, sold to alternative markets or used for alternative purposes. The use of agricultural residues should not jeopardize the function of local uses of the co-products, soil organic matter or soil nutrients balance. Documentation must be available to state that the use of residues does not occur at the expense of the soil nutrient balance, soil organic matter balance or important traditional uses (such as fodder, natural fertiliser, material or local fuel), unless documentation is available to suggest that similar or better alternatives are available and are applied.
		2.3.7 Soil organic matter balance is compiled A soil organic matter balance is compiled (can be generic) or every six years a soil organic matter analysis takes place. Results are kept for seven years.

Voluntary Scheme or Initiative	Principle	Criterion / Indicator
RSB (Principles & Criteria, v3.0, 2016)	8. Soil – Operations implement practises that seek to reverse soil degradation and/or maintain soil health	8a. Operators shall implement practices to maintain or enhance soil's physical, chemical, and biological conditions. 1. Soil erosion shall be minimised through the design of the feedstock production site and use of sustainable practices in order to enhance soil physical health on a watershed scale. 2. Operators shall implement practices to protect soil structure, including the prevention of compaction, and maintain or enhance soil organic matter on the feedstock production site. 3. The use of agrarian and forestry residual products for feedstock production, including lignocellulosic material, shall not be at the expense of long-term soil stability and organic matter content. 4. Operators shall implement practices to maintain and improve the soil nutrient balance and reduce nitrate pollution. 5. Operators shall implement measures to improve soil health, such as the following Conservation Agriculture practices: a. Direct seeding or planting: Involves growing crops without mechanical seedbed preparation and with minimal soil disturbance; b. Maintenance of a permanent soil cover, by mulch or growing cover crops to protect the soil surface; c. Diversifying and fitting crop rotations and associations in the case of annual crops and plant associations in the case of perennial crops. 6. Where the screening exercise has triggered the need for a Soil Impact Assessment (RSB-GUI-01-008-01), operators shall: a. Develop a soil management plan as part of the Environmental and Social Management Plan (ESMP); b. Perform periodic sampling of soil on the feedstock production site to evaluate the effect of the soil management plan on the organic matter content. Where the practices included in the soil management plan are not seen during monitoring to maintain soil organic matter at the optimal level, alternative practices shall be investigated.

Voluntary Scheme or Initiative	Principle	Criterion / Indicator
RTRS (Standard for Responsible Soy Production, v3.1, 2017)	5.3 Soil quality is maintained or improved and erosion is avoided by good management practices (Note: For group certification of small producers – Monitoring of soil fertility and soil quality should be part of the internal control system and can be carried out on a sampling basis within the group.)	5.3.1 Appropriate monitoring of soil quality including taking soil samples (soil organic matter) is in place. 5.3.2 Knowledge of techniques to maintain soil quality (physical, chemical and biological) is demonstrated and these techniques are implemented. Guidance: • Techniques to maintain soil quality may include: Conservation agriculture, Crop rotation, Balanced fertilization. • Techniques to maintain soil quality may include: Management of on-farm roads, Management of sloping areas, Maintenance of permanent soil cover, Zero tillage (no-till farming). 5.3.3 Knowledge of techniques to control soil erosions demonstrated f these techniques are appropriately implemented. 5.3.4 A crop rotation plan shall be established to prevent soy from being planted immediately soy and to promote a gap on the same field. During this gap, a second or pasture should be cultivated or, at least, land shall be left fallow or under cover vegetation for regeneration purposes. This plan shall consider adapting specific climate and agro-ecological regional conditions.
GBEP (Sustainability Indicators for Bioenergy, 2011)	Indicator 2 Soil quality	**Description:** Percentage of land for which soil quality, in particular in terms of soil organic carbon, is maintained or improved out of total land on which bioenergy feedstock is cultivated or harvested. **Relation to themes:** This indicator is primarily related to the theme of Productive capacity of the land and ecosystems. Soils are an essential determinant of the productive capacity of the land. Soil degradation, which can be caused by climatic factors, poor agricultural practices and their interactions, can lower the productive capacity of the land. Appropriate agricultural and soil management practices can help to maintain or improve soil quality, and therefore have a positive effect on the productive capacity of the land. The development and use of technologies for soil conservation and management are also key. To maintain or improve soil quality on land used for bioenergy feedstock production, it is necessary to address the effects of soil and crop management, and in some cases forest and woody vegetation management, on five key factors that contribute to soil degradation: 1. Loss of soil organic matter, leading to decreased carbon and soil fertility 2. Soil erosion, leading to soil loss (especially of fertile topsoil) 3. Accumulation in soils of mineral salts (salinization) from irrigation water and/or inadequate drainage, with possible adverse effects on plant growth 4. Soil compaction, reducing water flow and storage, and limiting root growth 5. Loss of plant nutrients, e.g. through intensive harvest. […]

Voluntary Scheme or Initiative	Principle	Criterion / Indicator
RTFO (RTFO Meta-Standard)	3. Biomass production does not lead to soil degradation	3.2 Application of good agricultural practices with respect to: • Prevention and control of erosion • Maintaining and improving soil nutrient balance • Maintaining and improving soil organic matter • Maintaining and improving soil pH • Maintaining and improving soil structure • Maintaining and improving soil biodiversity • Prevention of salinization
		3.3 The use of agricultural by-products does not jeopardize the function of local uses of the by-products, soil organic matter or soil nutrients balance (recommendation only).

Appendix I. OVERVIEW OF LITERATURE REVIEWED TO INFORM THE OPTIONS FOR COMPLIANCE WITH ARTICLE 29.2

Reference	Hyperlink	Abstract	Geographical focus
Allen B, Baldock D, Nanni S, and Bowyer C (2016) Sustainability criteria for biofuels made from land and non-land-based feedstocks. Report for the European Climate Foundation. Institute for European Environmental Policy (IEEP), London.	https://ieep.eu/uploads/articles/attachments/cc72ca6f-7361-4e9b-b208-3c90e8308c98/ieep_2016_sustainability_criteria_for_biofuels_post_2020.pdf?v=63664509950	Creation of sustainability criteria to address environmental impacts of biofuel production.	Europe
American Society of Agronomy (2010) Energy crops impact environmental quality, review finds, ScienceDaily, 5 April 2010.	https://www.sciencedaily.com/releases/2010/04/100404203119.htm	Impacts of residue removal on soil quality.	North America
Baral A and Malins C (2014) Assessing the climate mitigation potential of biofuels derived from residues and wastes in the European context. International Council on Clean Transportation.	https://theicct.org/sites/default/files/publications/ICCT_biofuels_wastes-residues_20140130.pdf	Analysis of biofuel production from 11 main waste and residue feedstocks.	Europe
Blanco-Canqui (2012) Crop Residue Removal for Bioenergy Reduces Soil Carbon Pools: How Can We Offset Carbon Losses?	https://www.researchgate.net/publication/257772089_Crop_Residue_Removal_for_Bioenergy_Reduces_Soil_Carbon_Pools_How_Can_We_Offset_Carbon_Losses	Analysis of crop residue removal for bioenergy and the implications on soil organic carbon (SOC) pools.	Global
Cherubin et al. (2018) Crop residue harvest for bioenergy production and its implications on soil functioning and plant growth: A review.	http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-90162018000300255	Crop residue management for bioenergy production.	Global
Creutzig et al. (2015) bioenergy and climate mitigation: an assessment.	http://onlinelibrary.wiley.com/doi/10.1111/gcbb.12205/full	Analysis of bioenergy deployment in 2050 and assessment of environmental impacts, including on soil, from harvesting.	Global
Ecofys (2013) Low ILUC potential of wastes and residues for biofuels: straw, forestry residues, UCO, corn cobs.	http://www.mvak.eu/test5674213467/Ecofys_2013_low_ILUC.pdf	Assessment of the sustainable low ILUC risk potential for cereal straw and corn cobs-based biofuel production.	Europe
Ecofys and IEEP (2016) Options to further improve the efficiency of sustainability certification for biofuels and bioliquids.	Not published	Study to elaborate detailed approaches that have the potential to further improve the reliability of certification, but at the same time avoid unnecessary administrative burdens on operators.	Global
ENRD (2018) EU Rural Review No. 25. Resource Efficiency. Soil and carbon conservation.	https://enrd.ec.europa.eu/sites/enrd/files/enrd_publications/publi-enrd-rr-25-2018-en.pdf	Discussion paper on soil carbon capture potential and needs.	Europe

Reference	Hyperlink	Abstract	Geographical focus
ETIP Bioenergy (2019) Agricultural residues as feedstocks for biofuel production.	http://www.etipbioenergy.eu/value-chains/feedstocks/agriculture/agricultural-residues	Repository of presentations, studies and briefings on using agricultural residues for biofuel in Europe.	Europe
FAO (2017) Voluntary guidelines for sustainable soil management.	http://www.fao.org/3/a-bl813e.pdf	Internationally recognised guidelines to develop a soil management plan.	Global
Gang Zhao et al. (2015) Sustainable limits to crop residue harvest for bioenergy: maintaining soil carbon in Australia's agricultural lands.	https://onlinelibrary.wiley.com/doi/pdf/10.1111/gcbb.12145	Sustainable removal of residue for bioenergy.	Australia
Ghimire et al. (2017) Cover Crop Residue Amount and Quality Effects on Soil Organic Carbon Mineralization.	https://www.google.it/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=2ahUKEwjqyruYgPHkAhVmTBUIHaqnC3oQFjACegQIARAC&url=https%3A%2F%2Fwww.mdpi.com%2F2071-1050%2F9%2F12%2F2316%2Fpdf&usg=AOvVaw3mXx1QVfEKv-b6a12EoE1M	Analysis of SOC mineralization kinetics with different cover crop residue amendments.	Global
Gobin et al. (2011) Soil organic matter management across the EU – best practices, constraints and trade-offs.	https://ec.europa.eu/environment/soil/som_en.htm	Assess the relative contributions of the different inputs and outputs of organic carbon and organic matter to and from the soil.	Europe
HGCA (2014) Straw incorporation review.	https://cereals.ahdb.org.uk/media/470361/rr81-web.pdf	Examination of the environmental, economic and practical impacts of wheat and oilseed rape straw incorporation versus removal.	Europe
ICCT and NNFCC (2014) Wasted. Europe's untapped resource. An assessment of advanced biofuels from wastes and residues.	https://europeanclimate.org/wp-content/uploads/2014/02/WASTED-final.pdf	Review of the sustainability issues, including soil impacts, linked to the use of wastes and residues for biofuel production.	Europe
IEEP (2012) Mobilising cereal straw in the EU to feed advanced biofuel production.	https://ieep.eu/uploads/articles/attachments/7027de1e-dc4d-43e8-8126-16402efe66ed/IEEP_Agricultural_residues_for_advanced_biofuels_May_2012.pdf?v=63664509775	Environmental and soil considerations in using straw as a bioenergy feedstock.	Europe
IEEP (2013) Technology options for feeding 10 billion people. Recycling agricultural, forestry & food wastes.	http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/513513/IPOL-JOIN_ET%282013%29513513%28SUM01%29_EN.pdf	Assessment of the sustainability of mobilising agricultural crop waste and residue streams, including impacts on soil.	Europe
IEEP and BIO (2008) Land degradation and desertification.	http://www.europarl.europa.eu/RegData/etudes/etudes/join/2009/416203/IPOL-ENVI_ET(2009)416203_EN.pdf	Integrated picture of soil degradation issues and actions within the EU.	Europe

Reference	Hyperlink	Abstract	Geographical focus
IFAD (2019) Climate change mitigation potential of agricultural practices supported by IFAD investments.	https://www.ifad.org/documents/38714170/41066943/35_research.pdf/73e25d17-2d7b-b268-1edc-69c87d8d5668	Effects of a large set of agricultural practices promoted by IFAD on soil organic carbon stocks, nitrous oxide emissions from soils, and methane emissions from rice paddies.	Global
Joint Research Centre (2018) Biomass production, supply, uses and flows in the European Union.	http://publications.jrc.ec.europa.eu/repository/bitstream/JRC109869/jrc109869_biomass_report_final2pdf2.pdf	Assessment of EU biomass production, uses, flows and related environmental impacts for the sectors agriculture, forestry, fisheries and aquaculture, and algae.	Europe
Lafond et al. (2009) Quantifying Straw Removal through Baling and Measuring the Long-Term Impact on Soil Quality and Wheat Production, Agronomy Journal 101(3).	https://www.researchgate.net/publication/250103295_Quantifying_Straw_Removal_through_Baling_and_Measuring_the_Long-Term_Impact_on_Soil_Quality_and_Wheat_Production	Evaluate impacts of 50 year of straw removal with baling on soil quality and wheat production.	North America
Laird and Chang (2013) Long-term impacts of residue harvesting on soil quality. Soil and Tillage Research, 134, 33-40.	https://ir.nctu.edu.tw/bitstream/11536/22941/1/000326553700005.pdf	Impacts of harvesting residues on soil quality.	Global
Lal (2009) Soil quality impacts of residue removal for bioethanol production.	https://www.researchgate.net/publication/240391586_Soil_quality_impacts_of_residue_removal_for_bioethanol_production	Impact of residue removal on soil quality.	Global
Lesschen et al. (2015) How much straw can be removed in the EU without negative effects on soil carbon?		Assessment of straw removal potential in Europe.	Europe
Mann et al (2002) Potential environmental effects of corn stover removal with emphasis on soil organic matter and erosion. Agriculture Ecosystems & Environment, 89, 149-166.	https://www.researchgate.net/publication/223094399_Potential_environmental_effects_of_corn_Zea_mays_L_stover_removal_with_emphasis_on_soil_organic_matter_and_erosion	Impacts of corn stover removal on soil organic matter and erosion.	Global
Mohammed et al. (2018) Significance of agricultural residues in sustainable biofuel development.	https://www.intechopen.com/books/agricultural-waste-and-residues/significance-of-agricultural-residues-in-sustainable-biofuel-development	Assessment of availability of residue feedstocks for bioenergy and related environmental impacts, including on soil carbon.	Global
Monteleone et al. (2015) Cereal Straw Management: A Trade-Off Between Energy and Agronomic Fate, DOI: 10.4081/ija.2015.655.	https://agronomy.it/index.php/agro/article/view/ija.2015.655/584	Estimate of long-term SOM using modelling simulation.	Europe
Monteleone et al. (2015) Straw-to-soil or straw-to-energy? An optimal trade off in a long term sustainability perspective.	http://www.sciencedirect.com/science/article/pii/S0306261915005711	Examination of management strategies of wheat cultivation system and its sustainability in using straw as an energy feedstock.	Europe

Reference	Hyperlink	Abstract	Geographical focus
Neill (2011) Impacts of crop residue management on soil organic matter stocks: a modelling study.	https://www.researchgate.net/publication/251561708_Impacts_of_crop_residue_management_on_soil_organic_matter_stocks_A_modelling_study	Modelling study on the impacts of crop residue management on soil organic matter.	Europe
NL Agency of Ministry of Economic Affairs (2013) Rice straw and Wheat straw; Potential feedstocks for the Biobased Economy.	http://edepot.wur.nl/288866	Use of rice and cereal straw for bioenergy - includes section on sustainable straw removal.	Europe
Oeko, IIASA, IEEP, Indufor and EFI (2016) Study on impacts on resource efficiency of future EU demand for bioenergy - ReceBio. Task 2: Analysis of impacts of biomass production on natural resources and the global environment.	https://ec.europa.eu/environment/enveco/resource_efficiency/pdf/studies/Task%202.pdf	Review of environmental and economic impacts of extracting biomass for energy, including soil-related.	Europe
Powlson et al (2011) Soil carbon sequestration to mitigate climate change: a critical re-examination to identify the true and false.	http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2389.2010.01342.x/abstract	Examination of soil carbon sequestration benefits, including ILUC impacts and use of land for bioenergy.	Europe
Powlson et al. (2008) Carbon sequestration in European soils through straw incorporation: limitations and alternatives.	https://www.sciencedirect.com/science/article/pii/S0956053X07003224	Review of the alternative uses of cereal straw (incorporation into soil or electricity production) and their effectiveness in relation to climate change mitigation.	Europe
Powlson et al. (2011), Implications for Soil Properties of Removing Cereal Straw: Results from Long-Term Studies, Agronomy Journal, Volume 103, Issue 1, pages 279-287.	https://www.researchgate.net/publication/273069854_Implications_for_Soil_Properties_of_Removing_Cereal_Straw_Results_from_Long-Term_Studies	Review of 25 long-term studies on impact of straw removal on SC.	Europe
Ransom et al. (2011) Introduction: evaluating long-term impacts of harvesting crop residues on soil quality.	https://www.researchgate.net/publication/274246670_Introduction_Evaluating_Long-Term_Impacts_of_Harvesting_Crop_Residues_on_Soil_Quality	Evaluation of impacts of crop residue removal on soil carbon.	Europe, Canada, Australia, and the US
Rural Development Service (2005) Producing a Soil Management Plan for Environmental Stewardship.	http://adlib.everysite.co.uk/resources/000/107/821/soil-management-plan.pdf	Guidelines to develop a soil management plan in England.	UK
Scarlat et al. (2010) Assessment of the availability of agricultural crop residues in the European Union: Potential and limitations for bioenergy use.	https://www.sciencedirect.com/science/article/pii/S0956053X10002436	Assessment of the availability of agricultural crop residues in the EU.	Europe
Scarlat et al. (2019) Integrated and spatially explicit assessment of sustainable crop residue potential in Europe.	https://www.researchgate.net/publication/330933202_Integrated_and_spatially_explicit_assessment_of_sustainable_crop_residues_potential_in_Europe	Assessment of sustainable crop residue potential in Europe.	Europe
Searle & Bitnere (2017) Review of the impact of crop residue management on soil organic carbon in Europe.	https://theicct.org/sites/default/files/publications/EU-crop-residue-mgmt_ICCT-working-paper_15122017_vF.pdf	Reviews of the evidence on the environmental impacts of crop residue harvest in the EU.	Europe

Reference	Hyperlink	Abstract	Geographical focus
Searle & Malins (2016) Waste and residue availability for advanced biofuel production in EU Member States.	http://www.sciencedirect.com/science/article/pii/S0961953416300083	Elaboration on the environmental risks (including on soil quality) to model the amount of residues needed.	Europe
Tarkalson et al. (2009) Impact of Removing Straw from Wheat and Barley Fields: A Literature Review, Better Crops/Vol. 93 (2009, No. 3).	http://www.ipni.net/publication/bettercrops.nsf/0/579DC82AB18278F785257980006F84AF/$FILE/Better%20Crops%202009-3%20p17.pdf	Literature review of the effects of straw removal on SOC and nutrient depletion.	North America
Wilhelm WW, Hess JR, Karlen DL et al. (2010) Review: balancing limiting factors & economic drivers for sustainable Midwestern US agricultural residue feedstock supplies. Industrial Biotechnology, 6, 271–287.	https://naldc.nal.usda.gov/download/47215/PDF	Examination of agronomic factors defining the limits and opportunities for harvesting crop residue for biofuel feedstock in the Midwestern US.	United States

Appendix J. EU SUSTAINABLE FINANCE TAXONOMY

In order to inform its work on the action plan: financing sustainable growth published in March 2018, the European Commission established a Technical Expert Group (TEG) on sustainable finance in July 2018. Action 1 of the action plan calls for the establishment of an EU classification system for sustainable activities, i.e. an EU taxonomy. The European Commission followed through on this action in May 2018 with a proposal for a regulation on the establishment of a framework to facilitate sustainable investment (Taxonomy regulation). On 5 December 2019, the Council and the European Parliament reached a political agreement on the Taxonomy Regulation. Within the framework of the Taxonomy Regulation, the TEG was asked to develop recommendations for technical screening criteria for economic activities that can make a substantial contribution to climate change mitigation or adaptation, while avoiding significant harm to the other environmental objectives set out in the taxonomy.

The management practices proposed in the EU Sustainable Finance Taxonomy for Agriculture are based on a consultative exercise with the Agriculture Technical Expert Group (AgriTEG) (including DG AGRI, CLIMA, ENER, EIB, Industry representatives, NGOs and others), invited external experts, and two consultants (IEEP and Ecologic) – these are set out in full for the whole Taxonomy in chapter 6 – pages 64 – 66 of the main Taxonomy document (https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf). The management practices are designed to provide an alternative means of demonstrating substantial contribution to climate mitigation as explained on pages 103 and 104 of the Technical Annex to the Taxonomy (https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf) and set out below in an edited extract.

The Taxonomy recognises that specific GHG improvement targets are a fairly blunt instrument and require farm level GHG accounting, which is not yet widespread. Therefore, an additional, alternative approach was proposed and included in the Taxonomy. Namely, **demonstration of the deployment of a specified bundle of land and, if appropriate, animal management practices across the production area**. From a review of the scientific literature, these practices have been selected because they deliver substantial mitigation with relatively high certainty across a range of biophysical and farming conditions. They should therefore be widely applicable [globally] and provide a more directly communicable approach to farmers, although this would benefit from testing with key stakeholders globally, including small- and large-scale farmers. It will, of course, be necessary to regularly review this list of practices to integrate new advances in scientific knowledge.

Whichever approach is taken in the Taxonomy, three yearly audits are required to demonstrate ongoing compliance with the criteria and thresholds. This is to address the multi-year timeframes over which emissions reductions and carbon stocking can occur and acknowledges the risks to the permanence of carbon stocks. The establishment of a pool of proxy indicators for compliance with these Criteria (such as vetted and approved existing standards, certification schemes, carbon credit schemes and similar) would greatly facilitate uptake of and disclosure against the Criteria.

More information can be found on the European Commission's website: https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en

The essential management practices listed for non-perennial crops are set out in the table below:

Management category	Management practice	GHG ↓	C-Seq ↑	Co-benefits
Farm GHG assessment	Undertake a GHG assessment of sources of emissions and sinks on the farm. Existing and verified tools should be used. No auditing of the GHG assessment is required.	√	√	√
Crop choice and rotation ***(to increase carbon sequestration in soil, reduce fertilizer need, and N20 emissions)***	At least a 5-crop rotation, including at least one legume, where a multi-species cover crop between cash crops counts for 1.	√	√	√
	Sowing of cover/catch crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.	√	√	√
	Residue management	√		
Soil management ***(in order to prevent soil erosion and carbon losses from soils, and maintain soil health and agricultural productivity)***	Prevent soil compaction (frequency and timing of field operations should be planned to avoid traffic on wet soil; tillage operation should be avoided or strongly reduced on wet soils; stock density should be reduced to avoid compaction, especially on wet soils; controlled traffic planning can be used). For best long-term results, drainage assessment and improvements needed to be carried out regularly).	√		√
	Management of carbon-rich soils • Avoiding deep ploughing on carbon-rich soils • Avoiding row crops and tubers • Maintaining a shallower water table – peat • Maintaining a shallower water table – arable	√		√
	Avoid water-logging and compaction on drained soils	√		
	Maintain permanent grassland[200]	√	√	√
	No burning of arable stubble except where authority has granted an exemption for plant health reasons[201].	√		
Nutrient management ***(in order to reduce N20 emissions)***	Nutrient management plan to optimize fertilization and improve nitrogen use efficiency. The plan should be based on soil testing, estimating of crops nutrient requirements, recording of nutrient applications, considering field characteristics and soil type, estimating soil nitrogen supply, and where applicable analysis of manure nutrient content prior to application. In addition, it is required that a low emission N- application technology is used (e.g. slurry injection, incorporating manure in the soil within two hours of spreading) and fertilizer spreaders which have low coefficient of variation (synthetic fertilizer and farmyard manure (e.g. placing N in the soil via injection), combined with calibration of spreaders.	√	√	√

Paddy Rice management	Shallow flooding	√		
	Mid-season drying event	√		
	Off-season straw	√		
Structural elements with mitigation potential *(in order to increase C sequestration)*	Conversion of low productivity land (e.g. along field edges) into woodland to increase C sequestration and protect against soil erosion.		√	√
Waste management	Minimize post-harvest loss	√		
Energy use	Where energy emissions represent more than 20% of total emissions from non-perennial crop production activity, these emissions should be appropriately for the term of the investment, in line with the trajectory outlined on P11 (of the Technical annexes to the Taxonomy) i.e. by at least 10% compared to a 2020 baseline for a five year investment period, 20% compared to a 2020 baseline for a 10 year investment period to 2030, and 30% compared to a 2020 baseline for a 20 year investment period – with pro-rata adjustments for investments of intermediate durations.	√		

[200] Consistent with GAEC 1 of Annex III of COM(2018)392.

[201] In the EU, this should be interpreted as Member States granting an exemption in line with GAEC 3 of Annex III of COM(2018)392.

Appendix K. KEY REFERENCE STUDIES AND ASSOCIATED RESIDUE REMOVAL RATES AT EU AND GLOBAL LEVEL

Reference	Geographical scope	Feedstock scope	Sustainable removal rate	Comments
Lafond et al. (2009)	North America	Wheat	<40%	The study concluded that potential exists to use crop residues for ethanol production or other industrial purposes without adversely affecting the long-term productivity of medium- to heavy-textured soils providing that <40% of the total above ground residues other than grain are removed and the frequency of removal is no more than 2 year out of 3.
Scarlat et al. [Joint Research Centre] (2010)	EU	Cereal crops, maize, rapeseed, sunflower, rice	40% for wheat, rye, barley, oats 50% for maize, rice, rapeseed, sunflower	The estimated sustainable removal rates were based on expert estimations derived from data reported in the literature review. Of the 13 data sources identified (covering 1995 to 2007), the majority of these data sources were relevant for cereal crops and maize. In contrast, only 2 data sources were relevant for sunflower, rapeseed and rice. The sustainable removal rates cited in the literature are presented in the paper and seen to vary across a wide range. • 15-60% for wheat, rye, barley, oats • 25-82% for maize (the higher value is for no-till) • 30-60% for sunflower • 30-50% for rapeseed • 60% for rice
Powlson et al. (2011)	Global	Wheat	N/A	An assessment of the results from 25 long-term studies concluded that, although changes in SOC resulting from addition or removal of straw are small, it would be unwise to remove straw every year as this is likely to lead to deterioration in soil physical properties. Local assessments are required to determine the frequency of straw removal that is acceptable for soil functioning; this will influence the capacity of bioenergy installations.

Reference	Geographical scope	Feedstock scope	Sustainable removal rate	Comments
Ecofys (2013)	EU-10	Cereal crops	40% default, tailored to Member States' specific soil conditions (between 33% and 50%)	The estimated sustainable removal rates proposed by Scarlat et al. (2010) were applied as a default. These were validated based on a literature review and expert interviewed. On this basis, the estimates were tailored per Member State. The experts consulted in Denmark and Romania considered that 40% was representative. A removal rate of 33% was recommended for Hungary. Removal rates for France and Germany were 50% and 34% respectively, based on literature. 40% was applied in all other Member States (Italy, Netherlands, Poland, Spain, UK).
Professor Powlson, Rothamstead Research (2013)	EU	Cereal crops	25-50% 33% as default	Professor Powlson, a soil science expert associated with the Rothamsted Research centre in England, provided expert input to the Ecofys (2013) study. His view is that the sustainable removal rate is site specific and likely to vary across a wide range, depending on a number of factors, including the resilience of the soil. It is recommended that local studies are undertaken to establish the necessary straw input to maintain appropriate soil properties before embarking on a straw-based bioenergy program.
Baral A and Malins C (2014)	EU	Not specified	33%	33% of residues are assumed to be left in the field to maintain soil fertility, whilst 33% are set aside for existing uses (i.e. animal husbandry). The study does not provide any supporting evidence for a 33% removal rate.
Zhao et al. (2015)	Australia	Wheat	50-75%	Environmental conditions and management practices should be considered to guide the harvest of crop residue for bioenergy production (including sustainable removal of residues). Modelling indicated that with up to 75 kg N/ha fertilisation, 50-75% of crop residue could be sustainably harvested. Higher fertilisation rates achieved little further increase in sustainable residue harvest rates.

Reference	Geographical scope	Feedstock scope	Sustainable removal rate	Comments
Lesschen et al. (2015)	EU	Cereal crops, maize, rapeseed, sunflower, rice	0-100%	It is indicated that many studies suggest that a default fraction (e.g. 40%) should remain, but without clear scientific foundation. The removal rate is variable, depending on crop yield, soil and climate conditions. Stubbles, chaff and below ground carbon input can be sufficient to maintain current SOC levels. However, uncertainty is large, particularly for below ground carbon.
Bonsucro Production Standard, v4.2 (2016)	Global	Sugar cane	Max. 70%	The standard includes a requirement (5.2.3) to leave over 30% of the ground cover of tops or leaves after harvest to ensure the continuous improvement of soil organic carbon.
RSB Certification Protocol and Guidance for Harvesting Corn Stover as a feedstock for Biofuels or Bio-products	North America	Corn stover	Max. 30%	Remove only the amount of stover which will not adversely affect the level of erosion protection and maintenance of soil organic matter levels (typically no more than 30% of the stover, or 2.5-5.0 mt/ha. As a general rule, if a field is not producing at least 7.4 mt/ha of corn yield, then no stover shall be removed.
Scarlat et al. [Joint Research Centre] (2019)	Europe	Cereal crops, maize, rapeseed, sunflower, rice	25-75%	The fraction of sustainable crop residue extraction is difficult to quantify because it depends on cultivated crops, soil conditions (soil type, soil organic carbon, etc.), farming practices (crop rotation, fertiliser application) and climate (temperature, precipitations), which are all very location specific.

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