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# Fifth Progress Report on the Promotion and Use of Energy from Renewable Sources in Greece

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Submitted under Article 22 of Directive  
2009/28/EC

2020

## **PREFACE**

Greece's commitments towards the higher penetration of RES in the Greek energy system have been translated into a series of regulatory initiatives and support programs, placing the exploitation of RES as a key driver towards sustainable development and ensuring of energy supply.

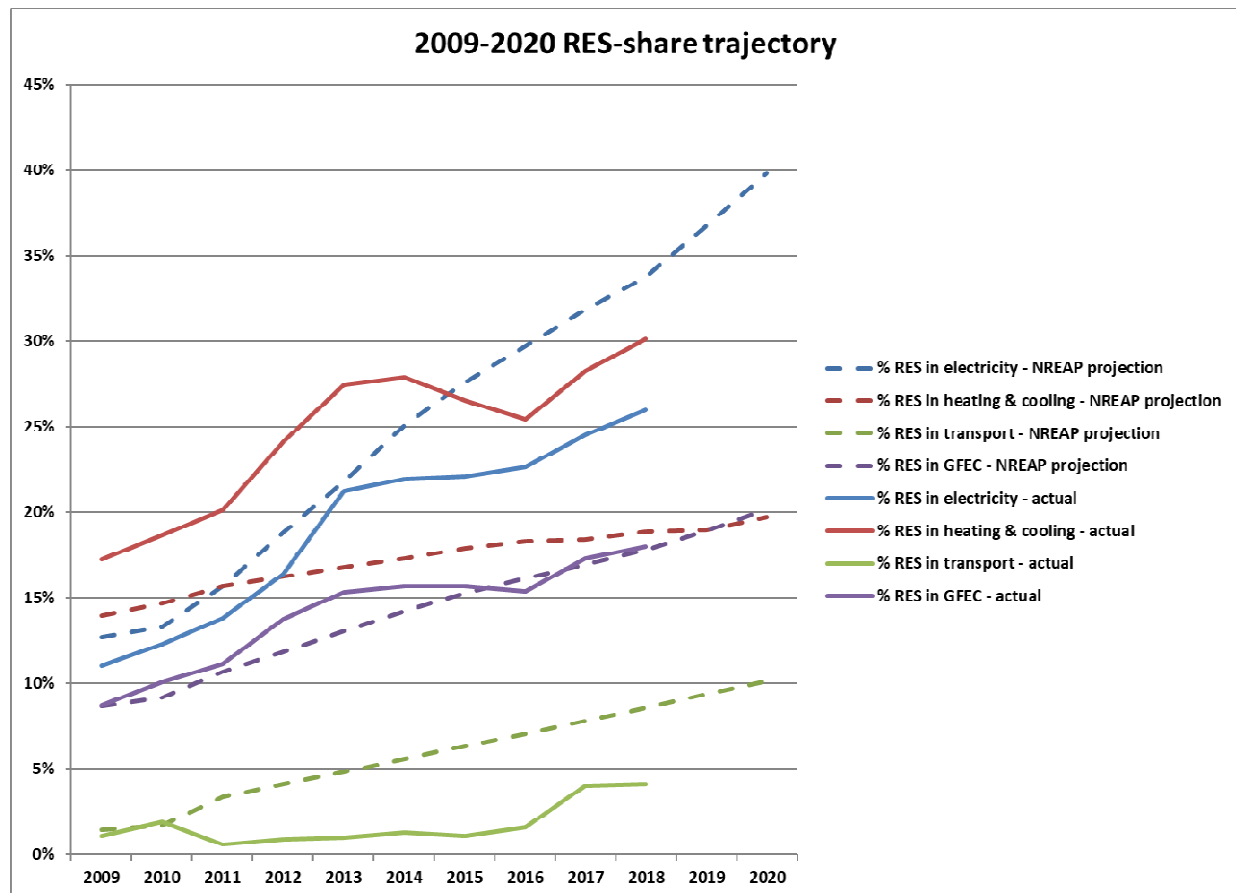
Ministry of Environment and Energy (MEE) considers this progress report as a part of the comprehensive national energy planning to 2020 and beyond whereas RES increased penetration, energy efficiency improvement at end-use and cost effectiveness of the energy mix is of high importance and that it exhibits both the progress and commitment towards the 2020 RES targets.

The present progress report is submitted under Art. 22 of Directive 2009/28/EC and it discusses all issues regarding the progress of RES penetration in the Green energy system, whether this concerns statistical reporting of renewable energy production and final consumption, or in regards to adoption of measures to support RE deployment in all relevant sectors.

This report prepared under the supervision of Directorate for Renewable Energy Sources and Alternative Fuels of the MEE in collaboration with the competent authorities of General Secretariat for Energy and Mineral Raw Materials of the MEE and the technical and scientific support by the Centre for Renewable Energy Sources and Saving (CRESS), according to Art. 27 of Law 4062/2012.

**1. Sectoral and overall shares and actual consumption of energy from renewable sources in 2015 and 2016 (Article 22 (1) a of Directive 2009/28/EC).**

The penetration of RES in the gross final energy consumption (GFEC) increased by 17% in 2018 compared to 2016 being in compliance with the respective projected penetration of the National Renewable Energy Action Plan (NREAP) as presented in Figure 1. Moreover, the current penetration of RES in the gross final energy consumption (18.05%) surpassed slightly the respective target of Greece for 2020 as specified by the Directive 2009/28/EC (18%).



**Figure 1: RES share trajectory from 2009 to 2020.**

The penetration of RES for heating already stands at 30.29% in 2018 surpassing even the corresponding indicative target for 2020, as presented at the NREAP (20%). Moreover, the utilization of RES for heating purposes increased 19% in 2018 compared to 2016 reversing the adverse trend, which was observed in 2015 and 2016. The main reason for this increase was the continuously increased penetration of solar thermal systems mainly for domestic hot water production and heat pumps, which was equal to 5% and 27% respectively in 2018 compared to 2016. Moreover, the use of biomass, remained relatively stable in 2018 compared to 2016, while amounted to the corresponding levels of consumption prior to 2011. Finally, it should be noted that the denominator for the calculation of the penetration of RES for heating and cooling decreased by 11% in the period 2016-2018.

Regarding the penetration of RES in gross final electricity consumption, an increase has been observed (15% in 2018 compared to 2016) reaching the level of 25.99%. However, a small offset from the projected figures for 2018 in the NREAP is evident (see Figure 1). The installed capacity of RES stations increased 7% in 2018 compared to 2016 due to the installation of wind parks (additional installation of 491 MW in the period 2017-2018), photovoltaics (additional installation

of 41 MW in the period 2017-2018) and biomass stations (additional installation of 25 MW in the period 2017-2018). It should be noted that the electricity production from net-metering systems has not been counted for the calculation of the penetration of RES in gross final electricity consumption. The integration of the produced electricity from net-metering systems will be added to the next progress report and it is expected to increase the performance in the corresponding target.

Finally, even if the penetration of RES in transport increased by 154% in 2018 compared to 2016 a reaching penetration levels equal to 4.10%, a significant deviation from the foreseen target has been observed. The increase of the respective figure is owned to the total quantities of biodiesels, which have been certified as sustainable biofuels and bioliquids according to the provisions of the JMD “Biofuels and bioliquids sustainability system according to Article 32 of Law 3468/2006” (JMD ΥΠΕΝ/ΔΑΠΠΕΕΚ/32218/1051/03.05.2019, OG B 1473/2019). The respective JMD sets the requirements and the procedures for the certification and verification of compliance with the sustainability criteria, while replaced the JMD “Biofuels and bioliquids sustainability system” (JMD οικ.175700/14.04.2016, OG B 1212/2016).

Finally, it has to be mentioned that the targets set for the penetration of renewable energy in the national energy system in 2020 were revised within the framework of the National Energy and Climate Plan (NECP), which was submitted in the end of 2019, taking into consideration, among others, the degree of effectiveness of implemented policies, the actual penetration of specific RES technologies in the last years, the development of investment costs for all RES technologies, as well as the consequences of the economic recession both in shaping the energy demand of end use sectors and in the investing environment.

Table 1.i presents the in the near future, in the framework of the upcoming national energy roadmap to 2030 and the assessment of the national energy mix.

**Table 1.i: The expected sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources in 2020 according to the NECP.**

Shares from RES	2020
RES-H&C <sup>2</sup> (%)	30.6%
RES-E <sup>3</sup>	29.2%
RES-T <sup>4</sup>	6.6%
Overall RES share	19.7%

**Table 1: The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources.<sup>1</sup>**

Shares from RES	2017	2018
RES-H&C <sup>2</sup> (%)	28.25%	30.29%
RES-E <sup>3</sup> (%)	24.49%	25.99%
RES-T <sup>4</sup> (%)	3.99%	4.10%
Overall RES share <sup>5</sup> (%)	17.30%	18.05%

<sup>1</sup> Facilitates comparison with Table 3 and Table 4a of the NREAPs.

<sup>2</sup> Share of renewable energy in heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Articles 5(1)b) and 5(4) of Directive 2009/28/EC divided by gross final consumption of energy for heating and cooling. The same methodology as in Table 3 of NREAPs applies.

<sup>3</sup> Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1)a) and 5(3) of Directive 2009/28/EC divided by total gross final consumption of electricity. The same methodology as in Table 3 of NREAPs applies.

<sup>4</sup> Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1)c) and 5(5) of Directive 2009/28/EC divided by the consumption in transport of 1) petrol; 2) diesel; 3) biofuels used in road and rail transport and 4) electricity in land transport (as reflected in row 3 of Table 1). The same methodology as in Table 3 of NREAPs applies.

<sup>5</sup> Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

Shares from RES	2017	2018
<i>Of which from cooperation mechanism<sup>6</sup> (%)</i>		
<i>Surplus for cooperation mechanism<sup>7</sup> (%)</i>		

**Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe).<sup>8</sup>**

RES contribution	2017	2018
(A) Gross final consumption of RES for heating and cooling	1,491.9	1,523.3
(B) Gross final consumption of electricity from RES	1,289.1	1,325.1
(C) Gross final consumption of energy from RES in transport	168.8	163.9
(D) Gross total RES consumption <sup>9</sup>	2,949.8	3,012.3
(E) Transfer of RES to other Member States	0.0	0.0
(F) Transfer of RES from other Member States and 3rd countries	0.0	0.0
(G) RES consumption adjusted for target (D)-(E)+(F)	2,949.8	3,012.3

**Table 1b: Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in Greece to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity.<sup>10</sup>**

RES technologies	2017		2018	
	MW	GWh	MW	GWh
Hydro <sup>11</sup> :	3,392.0	5,210.5	3,409.0	5,266.8
<i>non pumped</i>	2,693.0	4,650.2	2,710.0	4,705.5
<i>pumped</i>	0.0	76.0	0.0	16.0
<i>mixed</i> <sup>12</sup>	699.0	560.4	699.0	561.3
Geothermal	0.0	0.0	0.0	0.0
Solar:	2,605.5	3,991.5	2,645.4	3,790.7
<i>photovoltaic</i>	2,605.5	3,991.5	2,645.4	3,790.7
<i>concentrated solar power</i>	0.0	0.0	0.0	0.0
Tide, wave, ocean	0.0	0.0	0.0	0.0
Wind:	2,624.0	5,534.5	2,860.5	6,085.4
<i>onshore (not normalised)</i>	2,624.0	5,537.0	2,860.5	6,300.3
<i>offshore (not normalised)</i>	0.0	0.0	0.0	0.0
Biomass <sup>13</sup> :	61.0	310.0	83.1	328.3
<i>solid biomass</i>	3.2	9.8	12.5	11.9
<i>biogas</i>	57.8	300.2	70.6	316.3
<i>bioliquids</i>	0.0	0.0	0.0	0.0
<b>TOTAL</b>	<b>8,682.5</b>	<b>15,046.5</b>	<b>8,998.1</b>	<b>15,471.2</b>
<i>of which in CHP</i>		249.2		260.5

<sup>6</sup> In percentage point of overall RES share.

<sup>7</sup> In percentage point of overall RES share.

<sup>8</sup> Facilitates comparison with Table 4a of the NREAPs

<sup>9</sup> According to Art.5(1) of Directive 2009/28/EC gas, electricity and hydrogen from renewable energy sources shall only be considered once. No double counting is allowed.

<sup>10</sup> Facilitates comparison with Table 10a of the NREAPs.

<sup>11</sup> Normalised in accordance with Directive 2009/28/EC and Eurostat methodology.

<sup>12</sup> In accordance with new Eurostat methodology.

<sup>13</sup> Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

**Table 1c: Total actual contribution (final energy consumption<sup>14</sup>) from each renewable energy technology in Greece to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe).<sup>15</sup>**

RES contribution	2017	2018
Geothermal (excluding low temperature geothermal heat in heat pump applications)	8.8	8.9
Solar	271.4	277.2
Biomass <sup>16</sup> :	921.6	913.4
<i>solid biomass</i>	903.9	883.6
<i>biogas</i>	17.8	21.4
<i>bioliquids</i>	0.0	8.4
Renewable energy from heat pumps:		
- of which aerothermal	289.9	323.8
- of which geothermal		
- of which hydrothermal		
<b>TOTAL</b>	1,491.9	1,523.3
<i>Of which DH<sup>17</sup></i>		
<i>Of which biomass in households<sup>18</sup></i>	741.9	715.0

**Table 1d: Total actual contribution from each renewable energy technology in Greece to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe).<sup>19, 20</sup>**

RES contribution	2017	2018
- Bioethanol		
- Biodiesel (FAME)	164.17	158.79
- Hydrotreated Vegetable Oil (HVO)		
-Biomethane		
- Fischer-Tropsch diesel		
- Bio-ETBE		
- Bio MTBE		
- Bio-DME		
- Bio-TAEE		
Biobutanol		
- Biomethanol		
- Pure vegetable oil		
Total sustainable biofuels	164.17	158.79
Of which		
sustainable biofuels produced from feedstock listed in Annex IX Part A		
other sustainable biofuels eligible for the target set out in Article 3(4)e	7.44	9.08
sustainable biofuels produced from feedstock listed in Annex IX Part B	23.28	34.45
sustainable biofuels for which the contribution towards the renewable energy target is limited according to Article 3(4)d	133.44	115.26

<sup>14</sup> Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.

<sup>15</sup> Facilitates comparison with Table 11 of the NREAPs.

<sup>16</sup> Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

<sup>17</sup> District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

<sup>18</sup> From the total renewable heating and cooling consumption.

<sup>19</sup> For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.

<sup>20</sup> Facilitates comparison with Table 12 of the NREAPs.

<b>RES contribution</b>	<b>2017</b>	<b>2018</b>
Imported from third countries	6.63	18.77
Hydrogen from renewables		
Renewable electricity	4.66	5.15
Of which		
consumed in road transport	0.6	0.6
consumed in rail transport	4.06	4.55
consumed in other transport sectors	0.0	0.0
others (Please specify)		
others (Please specify)		

**2. Measures taken in the preceding 2 years and/or planned at national level to promote the growth of energy from renewable sources taking into account the indicative trajectory for achieving the national RES targets as outlined in your National Renewable Energy Action Plan (Article 22(1)a) of Directive 2009/28/EC).**

**Table 2.i: Overview of all policies and measures.**

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and or activity***	Existing or planned****	Start and end dates of the measure
1) Invitation for the participation in 2020 biodiesel allocation MD YPIEN/ΔΑΠΕΕΚ/108819/3551/25.11.2019/, OG B 4297/2019)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2020
2) Allocation of biodiesel for the year 2019 in accordance with the provisions of art. 15A of law 3054/2002 (JMD YPIEN/ΔΑΠΕΕΚ/46361/1521, OG B 2003/2019)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2019
3) Invitation for the participation in 2019 biodiesel allocation MD YPIEN/ΔΑΠΕΕΚ/15266/388/19.02.2019 /, OG B 709/2019)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2019
4) MD “Categories of infringements and determination of the procedure of fines enforcement regarding compliance with biofuels and bioliquids sustainability criteria according to Article 32H of Law 3468/2006” (MD YPIEN/ΔΑΠΕΕΚ/48125/1579, OG B 2102/2019) which replaced MD 184182/05.10.2016, OG B 3278/2016	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2019-
5) JMD “Biofuels and bioliquids sustainability system according to Article 32H of Law 3468/2006” (JMD YPIEN/ΔΑΠΕΕΚ/32218/1051/03.05.2019, OG B 1473/2019), which sets the requirements and the procedures for the certification and verification of compliance with the sustainability criteria and replaced the JMD “Biofuels and bioliquids sustainability system” (JMD ouk.175700/14.04.2016, OG B 1212/2016).	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2019-
6) Introduction of a blending obligation of petrol with biofuels (Articles 29 of Law 4546/2018, OG A 101/2018 which amends article 15A of Law 3054/2002)	Regulatory		Public administration, biofuel producers/importers, refineries, wholesalers	Complementary to NREAP	2019-
7) Amendment of the Ministerial Decision YPIEN/ΔΑΠΕΕΚ/25512/883/20.03.2019 (OG B 1020/2019) regarding Last Resort RES Aggregator (FOSETEK), in accordance with article 5 (5) of Law 4414/2016 as amended and in force (MD YPIEN/ΔΑΠΕΕΚ/122670/4245, OG B 4922/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
8) Energy market liberalization, PPC modernization, DEPA privatization and RES support and other provisions (Articles 19-27, 41, 43, 44-47, 61-63) (Law 4643/2019, OG A 193/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019



9) Amendment of the Ministerial Decision ΑΠΕΗΛ/Α/Φ1/οικ.187480/7.12.2016 (OG B 3955/2016) «Methodology for the calculation of the special purchase price of Renewable Energy Technologies and High-efficiency Electricity and Heat Cogeneration, Criteria and Restrictions on the Growth and Participation Preparation and Process impairment of operating aid for stations that have received Investment Aid pursuant to Articles 3, 5 and 6 of Law 4414/2016, as amended and in force (MD YΠEN/ΔΑΠΕΕΚ/93892/3114, OG B 3848/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
10)Amendment of Ministerial Decision YΠEN/ ΔΑΠΕΕΚ/25512/883/20.03.2019 (OG B 1020/2019) regarding Last Resort RES Aggregator (FOSETEK), in accordance with article 5 (5) of Law 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/87325/2923, OG B 3617/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
11)Amendment of MD YΠEN/ΔΑΠΕΕΚ/25512/883/20.03.2019 (Government Gazette B '1020), regarding Last Resort RES Aggregator (FOSETEK) in accordance with article 5 (5) of Law 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/56751/1949, OG B 2665/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
12)Special fee allocation to household consumers in areas where RES stations and Hybrid stations operate, in accordance with article 25 of Law 3468/2006, as applicable (JMD YΠEN/ΔΑΠΕΕΚ/48653/1597, OG B 2172/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
13)Amendment of the Ministerial Decision Α.Π. ΑΠΕΗΛ/Α/Φ1/οικ. 187480/7.12.2016 (OG B '3955/2016) Methodology for the calculation of the special purchase price of Renewable Energy Technologies and High-efficiency Electricity and Heat Cogeneration, Criteria and Limits of the Growth Stakeholder Assistance Growth Scheme, and its Dispatch Operating Procedure, as well as its Operating Procedure have received Investment Aid pursuant to Articles 3, 5 and 6 of Law 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/48144/1581, OG B 2076/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
14)Amendment of MD YΠEN/ΔΑΠΕΕΚ/25512/883/20.03.2019 (OG B 1020/2019) regarding the Last Resort RES Aggregator (FOSETEK) in accordance with article 5 (5) of Law 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/48128/1580/03.06.2019, OG B 2027/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
15)Clarifications of the application of the provisions of article 72, paragraph 3 and paragraph 7 of law 4602/2019, and article 7, paragraph 8B of law 4414/2016 (Circular YΠEN/ΔΑΠΕΕΚ/50234/1658/03.06.2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
16) Amending Ministerial Decision YΠEN/ΔΑΠΕΕΚ/ 76292/202/31.10.2018 on the Establishment of a Monitoring Committee for the Support of the Electricity Plants from RES and HECHP of article 12 of Law 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/30653/1014/07.05.2019, OG B 1547/2019)			Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019

17) Determination of installed capacity, by technology and / or category of RES and HECHP power plants, tendered through competitive bidding procedure until 2020, minimum number of competitive bidding procedures per year, maximum bid price for each competitive bidding procedure and participation fee in competitive bidding procedure , pursuant to par. 3 and 6 of article 7 of Law 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/34495/1107/18.04.2019, OG B 1341/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
18) Correction of an error in the Ministerial Decision YΠEN/ΔΑΠΕΕΚ/ 15084/382/19.02.2019 (OG B 759/2019) (OG B 1058/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
19) Definition of the Last Resort RES Aggregator (FOSETEK) and the definition of obligations, its operating framework and the charges it imposes for the provision of its services, in accordance with Article 5 (5) 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/25512/883/27.03.2019 OG B 1020/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
20) Redefining classes of onshore wind power plants determining the reference rates in accordance with paragraphs 5 and 6 of Article 4 of Law 4414/2016 and determining the rate of reference for onshore stations in accordance with paragraph 10 of article 3 of Law. 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/25511/882/27.03.2019 OG B 1021/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
21) Research, exploitation and management of the geothermal potential of the country, establishment of a Hellenic Authority for Geological and Mining Research, proprietary separation of natural gas distribution networks and other provisions (Law 4602/2019, OG A 45/03.2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
22) Amendment of MD ΑΠΕΕΚ/Α/Φ1/οικ. 184573/ 13.12.2017 (OG B 4488/2017) in accordance with Article 7 (2) of Law 4414/2016 (MD YΠEN/ΔΑΠΕΕΚ/18135/511/06.03.2019, OG B 779/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
23) Installation of power plants by auto-producers by applying energy net metering or virtual net metering in accordance with article 14A of Law 3468/2006, as applicable, and by Energy Communities applying virtual energy net metering in accordance with article 11 of Law 4513/2018 (MD YΠEN/ΔΑΠΕΕΚ/15084/382, OG B 759/2019)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2019
24) Allocation of biodiesel for the year 2018 in accordance with the provisions of art. 15A of law 3054/2002 (JMD οικ, 177501 OG B 3081/2018)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2018
25) Invitation for the participation in 2018 biodiesel allocation MD οικ. 173343/04.04.2018 /, OG B 1311/2018)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2018

26) Transposition of Directive (EE) 2015/1513 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (Articles 16-21 of Law 4546/2018, OG A 101/2018)	Regulatory		Public administration, biofuel producers/importers, refineries, wholesalers	Complementary to NREAP	2018-
27) Setting up of the monitoring committee for the support of RES and HECHP power plants of article 12 of Law 4414/2016 (MD ΥΠΕΝ/ΔΑΠΕΕΚ/76292/202/31.10.2018, OG B 5345/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018
28) Amendment of MD ΑΠΕΕΚ/Α/Φ1/οικ.184573/13.12.2017 (OG B 4488/2017) in accordance with Article 7 (2) of Law 4414/2016 (MD ΑΠΕΕΚ/Α/Φ1/ οικ. 179988/09.10.2018, OG B 4580/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018
29) Determination of the conditions for the inclusion of wind farms in a radical renewal of their production equipment, technical requirements applicable to these stations and their framework for participation in competitive bidding procedures, pursuant to Article 22 par. 22 of Law 4414/2016 (MD ΑΠΕΕΚ/Α/Φ1/ οικ. 179746/02.10.2018, OG B 4716/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018
30) Amendment of Ministerial Decision ΑΠΕΕΚ/Α/Φ1/οικ.172859/ 22.03.2018 (OG B 1267/2018) according to Article 7 (3) and (6) of Law 4414/2016 (MD ΑΠΕΕΚ/Α/Φ1/ οικ. 180215/15.10.2018, OG B 4528/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018
31) Determination of the delineation day of the interconnection of the autonomous electrical systems of Syros, Paros and Mykonos with the Interconnected System and their integration into it (MD ΑΠΕΕΚ/Α/Φ1/ οικ. 176459/22.06.2018, OG B 2839/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018
32) Incorporation into the Greek legislation of Directive 2014/89/EU "establishing a framework for maritime spatial planning" and other provisions (Articles 46, 47, 49, 50, 53, 54, 56, 60, 61, 62 ) (Law 4546/2018, OG A 101/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018
33) Type and content of the Hybrid Power Plant Purchase Contract on the Ikaria network, in accordance with Article 12 par. 3 of Law 3468/2006 (MD ΑΠΕΕΚ/Α/Φ1/οικ. 174594/04.05.2018, OG B 1728/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018
34) Determination of installed power, by technology or category of power plants by RES and HECHP, which is auctioned through competitive bidding for 2018, 2019 and 2020, minimum number of competitive bidding procedures per year, maximum bid price for each competitive bidding process and fee participation in a competitive tendering procedure, according to Article 7 (3) and (6) of Law 4414/2016 (Ministerial Decision ΑΠΕΕΚ/Α/Φ1/οικ. 172859/22.03.2018, OG B 1267/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/investors, producers	Complementary to NREAP	2018

35) Amendment of Ministerial Decision ΑΠΕΕΚ/Α/Φ1/οικ. 184573/13.12.2017, OG B 4488/2017 (Ministerial Decision ΑΠΕΕΚ/Α/Φ1/οικ. 172858/22.03.2018, OG B 1263/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2018
36) Framework for electricity market participation, methodology and procedure for the clearance, pricing and settlement of RES and HECHP power plants with an Operating Aid Contract pursuant to Articles 9 to 11 of Law 4414/2016 (Α' 149) or a Power Sale Contract pursuant to Article 12 of Law 3468/2006 (Α' 129) or a related electricity purchase and sale agreement before of Law 3468/2006 (Α' 129), and which continue to operate after the expiry date of the respective contracts, provided that all permits and approvals required by the applicable law are valid, pursuant to par. 4414/2016 as in force (Ministerial Decision ΑΠΕΕΚ/Α/Φ1/οικ. 172857/22.03.2018 (OG B 1150/2018)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2018
37) Energy Communities and other provisions (L.4513/2018, OG A 9/23.01.2018)	Regulatory		Public administration, energy administrative authorities, local authorities, energy companies/ investors, producers, citizens	Complementary to NREAP	2018
38) RAE's Decision 908/2017 (OG B 4461/19.12.2017) Allocation of all non-interconnected island systems from the electricity supply derogation from 01.01.2018 according to the 2014/536 European Commission Decision and par. 1 of Art.137A/2017 of L.4001/2011	Technical		Energy administrative authorities, energy companies/ producers, end users,	Complementary to NREAP	2018
39) Establishment of the technologies and/or the categories of RES and HECHP power plants falling within the scope of the competitive bidding processes, whether competitive bidding processes can be characterized as 'technologically neutral' or not, the methodology and the power allocation procedure provided for the participation of RES power plants established in countries outside the European Economic Area, provided that there is active cross-border trade in energy with such countries, according to par. 2, Art. 7 of L. 4414/2016 (MD ΑΠΕΕΚ/Α/Φ1/οικ. 184573/13/12/2017, OG B 4488/19/12/2017)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2017
40) Production of electricity in agricultural areas of high productivity with exploitation of biomass, biogas or bioliquids (Art.26, L.4496/2017, OG A 170 08.11.2017)	Regulatory		energy administrative authorities, biomass-biogas-bioliquids energy companies/ investors, producers	Complementary to NREAP	2017
41) Amendments to provisions of L.4414/2016 and other provisions (Art.129-133, L.4495/2017, OG A 167 03.11.2017)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2017
42) Allocation of biodiesel for the year 2017 in accordance with the provisions of art. 15A of law 3054/2002 (JMD οικ.176636/16.5.2017, OG B 1881/2016)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2017
43) PV Net Metering and Virtual Net Metering installations' framework according to L.3468/2006, Art.14A (MD ΑΠΕΗΛ/Α/Φ1/οικ.175067/ 19.04.2017, OG B 1547/05.05.2017)	Regulatory		PV investors, PV plant owners, end users	Complementary to NREAP	2017

44) Amendments to forest legislation provisions and other provisions (Article 10: Amendments to L. 4414/2016) (L. 4467/2017, OG A 56/ 13.04.2017)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2017
45) RAE's Decision 150/2017 Determination of values for regulatory parameters for the application of the Methodology of calculation of the revenue of the Market Sub-Account of the Special Account for RES and CHP	Technical		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2017
46) RAE's Decision 149/2017 Amendment of the Electricity Transactions Code regarding the Methodology of Calculation of the Revenue of the Market Sub-account of the Special RES and HECHP	Technical		Energy administrative authorities, energy companies/ producers	Complementary to NREAP	2017
47) Invitation for the participation in 2017 biodiesel allocation MD οικ. 171024/26.1.2017, OG B 219/2017)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2017
48) RAE's Decision 618/2016 (A) Modification of the Electricity Transactions Code, (B) Modification of the Operation Code of the Greek Power Transmission System, (C) Modification of the Electricity Transaction Code for the Forward Electricity Products Auctions System	Technical		Energy administrative authorities, energy companies/ producers	Complementary to NREAP	2017
49) RAE's Decision 410/2016 Amendment of 1599/2011 RAE's Decision, with which it was approved the dossier of "Meter Specifications and Measurements under the requirements of Δ6/Φ1/οικ.8786/6.5.2010 Ministerial Decision for the implementation of the Origin Guarantee System for Electricity from RES and HECHP and its Safeguarding Mechanism". (OG B 4081/20.12.2016)	Technical		Energy administrative authorities, energy companies/ producers	Complementary to NREAP	2017
50) RAE's Decision 516/2016 (A) Amendment of the Electricity Transactions Code (B) Amendment of the Transactions Code for the Forward Electricity Products Auctions System	Technical		Energy administrative authorities, energy companies/ producers	Complementary to NREAP	2017
51) RAE's Decision 395/2016 Operation Code of the Greek Power Transmission System as approved by the OG B 78/20.01.2017	Technical		Energy administrative authorities, energy companies/ producers	Complementary to NREAP	2017
52) RAE's Decision 334/2016 Amendment of the Electricity Transactions Code and its Manual for the application of the provisions for the charges imposed on load representatives	Technical		Energy administrative authorities, load representatives	Complementary to NREAP	2016
53) Spatial Planning - Sustainable Development and Other Provisions (Article 28: Provisions for the Conclusion of Operating Aid Contracts for RES and CHP and issues for Power Production Permits of RES & HECHP) (L. 4447/2016, OG A 241/ 23.12.2016)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
54) Type and content of Differential Premium Operating Aid Contracts for dispatchable Solar Thermal power plants in Non Interconnected Islands,, according to par. 3, Art. 10, L.4414/2016 (MD ΑΠΕΗΛ/Α/Φ1/οικ.187702/12.12.2016, OG B 4073/19.12.2016)	Regulatory		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
55) Type and content of Differential Premium Operating Aid Contracts for RES and HECHP power plants (excluding hybrid power plants) in the Interconnected System and the Interconnected Network, according to par. 3, Art. 9, L.4414/2016 (MD ΑΠΕΗΛ/Α/Φ1/οικ.187706/12.12.2016, OG B 4072/19.12.2016)	Regulatory		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016

56) Type and content of Fixed Price Operating Aid Contracts for non dispatchable RES power plants in Non Interconnected Islands, which are subject to rules of integration and operation, according to par. 3, Art. 10, L.4414/2016 (MD АПЕHA/A/Φ1/оук.187705/12.12.2016, OG B 4069/19.12.2016)	Regulatory		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
57) Type and content of Fixed Price Operating Aid Contracts for RES and HECHP power plants (excluding hybrid power plants) in the Interconnected System and the Interconnected Network, according to par. 3, Art. 10, L.4414/2016 (MD АПЕHA/A/Φ1/оук.187701/12.12.2016, OG B 4068/19.12.2016)	Regulatory		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
58) Type and content of Fixed Price Operating Aid Contracts for non dispatchable RES power plants in Non Interconnected Islands, which are not subject to rules of integration and operation, according to par. 3, Art. 10, L.4414/2016 (MD АПЕHA/A/Φ1/оук.187704/12.12.2016, OG B 4046/16.12.2016)	Regulatory		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
59) Type and content of Fixed Price Operating Aid Contracts for dispatchable Biomass power plants in Non Interconnected Islands, according to par. 3, Art. 10, L.4414/2016 (MD АПЕHA/A/Φ1/оук.187703/12.12.2016, OG B 4045/16.12.2016)	Regulatory		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
60) Methodology for calculating the special purchase price per RES and HECHP technology, criteria and limitations and payment process of the Market Participation Readiness Development Premium, as well as the procedure for reducing the Operating Aid revenue for the stations that have received investment aid, according to Art. 3, 5 and 6 of L.4414/2016. (MD АПЕHA/A/Φ1/оук.187480/07.12.2016, OG B 3955/09.12.2016)	Regulatory		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
61) Chemical Council decision 52/2016 setting common specifications for biodiesel (FAME) used in transport and heating (JMD OG B 3953/2016)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2016-
62) RAE's Decision 417/2016 for Pilot Competitive Bidding Process (OG B 3627/09.11.2016)	Technical		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
63) Allocation of biodiesel for the year 2016 in accordance with the provisions of art. 15A of law 3054/2002 (JMD оук.177451/12.5.2016 OG B 1417/2016 amended by оук. 181547/27.10.2016, OG B 3534/2016)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2016
64) RAE's Decision 238/2016 Energy Efficiency Assessment for granting Production Permits for PV power plants (OG B 3286/13.10.2016)	Technical		energy administrative authorities, energy companies/ investors, producers of pv power plants	Complementary to NREAP	2016
65) Categories of infringements and determination of the procedure of fines enforcement regarding compliance with biofuels and bioliquids sustainability criteria" (MD 184182/05.10.2016, OG B 3278/2016)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2016-

66) RAE's Decision 280/2016 Approval of the 10-year Development Program of the National Electricity Transmission System of period 2017-2026 (OG B2534/17.08.2016)	Technical		Energy administrative authorities	Complementary to NREAP	2017-2026
67) RAE's Decision 207/2016 Determination of "Methodology for calculating the variable cost of Hydro power plants" and amendment of the Electricity Transactions Code, the Manual of the Electricity Transactions Code, as well as the Operation Code of the Greek Power Transmission System	Technical		energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
68) New support scheme for renewable energy sources power plants and high efficiency combined heat and power plants. Provisions on the legal and functional separation of the supply and distribution branches in the natural gas market and other provisions. (L.4416/2016, OG A 149/ 09.08.2016)	Regulatory		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2016
69) Framework for the security in offshore works for exploration and exploitation of hydrocarbons, transposition of the Directive 2013/30/EC, amendment of PD.148/2009 and other provisions (L.4409/2016, OG A136, 28.07.2016, Art. 39, 44, 46-47 – special provisions for solar thermal power plants and farmers that own pv power plants)	Regulatory		Public administration, energy administrative authorities, companies/ investors of solar thermal power stations, farmers-owners pv power plants	Complementary to NREAP	2016
70) Biofuels and bioliquids sustainability system” (JMD οικ.175700/14.04.2016, OG B 1212/2016)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2016
71) Type and content of the electricity sales contract from solar thermal plants (with energy storage) on non-interconnected power grid, according to par. 3, Art. 12, L.3468/2006, as applicable (MD ΑΠΕΗΛ/Α/Φ1/ οικ.171302/29.01.2016, OG B 271/11.02.2016)	Regulatory		Energy administrative authorities, solar thermal plants	Complementary to NREAP	2016
72) Type and content of the electricity sales contract from hybrid plants (with energy storage) on non-interconnected power grid, according to par. 3, Art. 12, L.3468/2006, as applicable (MD ΑΠΕΗΛ/Α/Φ1/ οικ.185028/ 15.12.2015, OG B 3832/23.12.2015)	Regulatory		Energy administrative authorities, hybrid plants	Complementary to NREAP	2015
73) Invitation for the participation in 2016 biodiesel allocation οικ. 184157/30.11.2015, OG B 2601/2015)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2016
74) HEDNO's Infrastructure Action Plan approval, according to European Commission's 2014/536/EK/14.08.2014 decision and implementation of the Management Code for Power Distribution Systems on non- interconnected islands (RAE 389/2015, OG B 2542/25.11.2015)	Technical		Energy administrative authorities, energy companies/ producers, end users	Complementary to NREAP	2015
75) Law 4342/2015, Part C, production licenses and connection security payments (OG A 143/ 09.11.2015)	Regulatory		Energy companies/ investors, public administration, energy administrative authorities	Complementary to NREAP	2015
76) Law 4336/2015, paragraph B, Memorandum of Understanding for 3-year program of EFS (OG A 94/ 14.08.2015)	Regulatory		Public administration	Complementary to NREAP	2015-2018
77) Allocation of biodiesel for the year 2015 in accordance with the provisions of art. 15A of law 3054/2002 οικ. 176374/18.5.2015 (OG 911/2015)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2015

78) Requirements for providing information at the sales point for biofuel blends (MD 1/2012, OG B 1288/11.4.2012 as amended by MD 33749, OG B 623/2015)	Regulatory		End users, public administration, retailers	Complementary to NREAP	2012
79) RES Net Metering installations' framework according to L.3468/2006, Art.14A (MD ΑΠΕΗΛ/Α/Φ1/οικ.24461/ 30.12.2014, OG B 3583/31.12.2014)	Regulatory		PV and small wind plant investors, PV plant owners, end users	Complementary to NREAP	2014
80) Allocation of Special Levy for the domestic electricity consumption in areas with operating RES installations (MD ΑΠΕΗΛ/Α/Φ1/ οικ. 23840/23.12.2014, OG B 3583/31.12.2014)	Regulatory/ Financial		End users <sup>21</sup> , Local administration	Complementary to NREAP	2014
81) Law 4315/2014, Art. 54 concerning reviving of installation licences subjecting to judicial judgement (OG A 269/ 24.12.2014)	Regulatory		Energy companies/ investors, public administration	Complementary to NREAP	2014-2015
82) Invitation for the participation in 2015 biodiesel allocation οικ. 23327/19.12.2014, OG B 3549/2015)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2015
83) Amendment of the Transaction Code of Electricity Market, regarding accounting issues of the Special Account for RES (RAE 625/2014, OG B 3305/2014)	Financial		Public administration, energy administrative authorities	Complementary to NREAP	2015
84) Law 4296/2014, Art. 8 concerning priority of licencing of specific RES and Biomass, Biogas or Biofuel installations (OG A 214/ 02.10.2014)	Regulatory		Energy companies/ investors, public administration	Complementary to NREAP	2014
85) Law 4281/2014, Art. 210 concerning Ministry's RES electronic registry (OG A 160/ 08.08.2014)	Regulatory		Public administration, energy administrative authorities	Complementary to NREAP	2014
86) Allocation of biodiesel for the year 2014 in accordance with the provisions of art. 15A of law 3054/2002 Δ1/Α/οικ.13316/7.8.2014 (OG B 2220/2014) 87)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2014
88) Law 4277/2014, Art. 47 concerning financial resources of special RES account of L.4001/2011, Art. 143(OG A 156/ 01.08.2014)	Financial		Public administration, energy administrative authorities	Complementary to NREAP	2014
89) Invitation for the participation in 2014 biodiesel allocation (MD Δ1/Α/οικ.6769/14.04.2014, OG B 937/2014) 90)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2014
91) Law 4254/2014 "Support and development measures of Greek economy in the context of implementation of Law 4062/2012 and other provisions" (OG A 85/07.04.2014)	Regulatory/ Financial		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2014
92) Supplementation of RAE 560/2013 referring to "IPTO's Ten-year Development Program of Hellenic Electricity Transmission System 2014-2023" (RAE 77Α/2014, OG B 556/2014) 93)	Technical		Energy administrative authorities, energy companies/investors, end users,	Complementary to NREAP	2014-2023
94) Specification of criteria and methodology for the allocation of biodiesel (JMD Δ1/Α/οικ. 2497, OG B 253/8.2.2013 amended by Δ1/Α/οικ. 4075/5.3.2014, OG B 586/2014, οικ.185546/27.10.2016, OG B 3534/2016 and article 23 of Law 4447/2016, OG A 241)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2013-

<sup>21</sup>Residents in areas with RES installations.



95) Specification of criteria and methodology for the allocation of biodiesel (JMD Δ1/A/οικ. 2497, OG B 253/8.2.2013 and its modification Δ1/A/οικ. 4075/5.3.2014 (OG B 586/2014))	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2013-
96) Management Code for Power Distribution Systems on non- interconnected islands (RAE 39/2014, OG B 304/11.02.2014)	Technical		Energy administrative authorities, energy companies/producers	Complementary to NREAP	2013
98) IPTO's Ten-year Development Program of Hellenic Electricity Transmission System 2014-2023 (RAE 560/2013, OG B 3297/2013)	Technical		Energy administrative authorities, energy companies/producers, end users,	Complementary to NREAP	2014-2023
100) Law 4203/2013 "Arrangement of topics on Renewable Energy Sources and other provisions" (OG A 235/01.11.2013)	Regulatory		Investors, end users, public administration	Complementary to NREAP	2013-2020
101) Solid biomass fuels for non-industrial use - Requirements and testing methods (MD 198, OG B 2499/04.10.2013)	Regulatory		End users, biomass production companies	Complementary to NREAP	2013-2020
102) Technical regulation for storage and transport of biofuels at oil refineries and oil products facilities (Δ3/A/οικ. 15225, OG B 2055/23.8.2013)	Regulatory		Public administration, biofuel producers/importers, refineries, wholesalers	Complementary to NREAP	2013
103) Determination of the coefficients related to the allocation methodology of the Special Levy, as defined in Article 143, par. 2, case c of L.4001/2011, for the second semester of 2013 (RAE, 323/2013, OG B 1784/24.07.2013)	Financial		Investors, end users, public administration	Complementary to NREAP	2013
104) Allocation of 92,000 kiloliters of biodiesel for the year 2013 in accordance with the provisions of art. 15A of law 3054/2002 (JMD Δ1/A/οικ. 11750/14.6.2013, OG B 1452/14.6.2013)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2013
106) Supplementation to MD Y.A.Π.E./Φ1/1289/9012 which amended the special program for the deployment of photovoltaics up to 10kW on buildings and especially roofs (MD Y.A.Π.E./Φ1/1506/οικ. 10662, OG B 1310/30.05.2013)	Financial		Investors, public administration	Complementary to NREAP	2013-2020
107) Law 4146/2013 "Establishment of a friendly developmental environment for strategic and private investment and other provisions" (OG A 90/18.04.2013), as amended by Art.68 of Law 4155/2013 (OG A 120/29.05.2013): Provisions for tax incentives for all RES technologies and investment subsidies for hydro, pumped hydro, hybrid, biomass and biogas stations	Financial		Investors, public administration	Complementary to NREAP	2014-2020
108) Law 4152/2013 "Urgent measures for implementing laws 4046/2012, 4093/2012 and 4027/2013" (OG A 107/09.05.2013): Section I - Arrangements concerning Renewable Energy Sources	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
109) Amendment of the special program for the deployment of photovoltaics on buildings and especially roofs (MD Y.A.Π.E./Φ1/1289/9012, OG B 1103/02.05.2013)	Financial		Investors, public administration	Complementary to NREAP	2013-2020
110) Amendment of MD Y.A.Π.E./Φ1/οικ.2262/31.01.2012 concerning the feed-in tariffs for electricity produced by photovoltaics, as applicable (MD Y.A.Π.E./Φ1/1288/9011, OG B 1103/02.05.2013)	Financial		Investors, public administration	Complementary to NREAP	2013-2020
111) Invitation for the participation in 2013 biodiesel allocation (MD Δ1/A/οικ.3008/18.2.2013, OG B 335/2013 as amended by Δ1/A/οικ. 5206/14.3.2013, OG B 626/2013)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2013

113) Additional obligations for the environmental licensing of electricity and thermal energy production units using biogas from anaerobic digestion of biomass (MD οικ. 166640, OG B 554/08.03.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
114) Law 4123/2013, Art. 24 concerning PV connection contracts, guarantees and farmer PV plants (OG A 43/19.02.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2015
115) Law 4122/2013 "Energy Performance of Buildings - 2010/31/EC Directive Transposition and other provisions" (OG A 42/19.02.2013)	Regulatory		Energy auditors, energy companies, end users, public administration	Complementary to NREAP	2013-2020
116) Assessment based on the energy efficiency criterion for granting a production license to geothermal power plants (MD 120/2013 OG B 240/08.02.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2021
117) Supplementing 1291/2011 RAE decision regarding the margin for the deployment of photovoltaics in Evia (RAE, 2/2013, OG B 240/08.02.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
118) Standard Environmental Commitments (SEC) for RES projects classified in category B of group 10 "Renewable Energy" of Annex X of MD 1958/2012 (MD 3791, OG B 104/24.01.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
119) Determination of the coefficients related to the allocation methodology of the Special Levy, as defined in Article 143, par. 2, case c of L.4001/2011, for the first semester of 2013 (RAE, 1/2013, OG B 14/10.01.2013)	Financial		Investors, end users, public administration	Complementary to NREAP	2013
120) "Demonstration projects utilizing Renewable Energy and Energy Saving measures in new, under construction or existing buildings, gyms and swimming pools, belonging to public authorities and municipal enterprises" Program (NSRF 2007-2013)	Financial		Public administration, public authorities, planners	Complementary to NREAP	2013-2015
121) Law 4093/2012 "Approval of the Medium Term Fiscal Strategy Program 2013 - 2016 - Urgent Measures for implementing L.4046/2012 and the Medium Term Fiscal Strategy Program 2013-2016" (OG A 222/12.11.2012): Section I.2 - Arrangements concerning RES and CHP	Regulatory		Investors, public administration	Complementary to NREAP	2012-2016
122) Licensing for the production and trade of biofuels or bioliquids (MD Δ2/A/22285/9.11.2012, OG B 2998/12.11.2012)	Regulatory		Public administration, biofuel producers/importers	Complementary to NREAP	2012
123) Modifications on provisions regarding the electricity transactions code (MD 771, OG B 2673/02.10.2012): RES registry development and maintenance by the Electricity Market Operator	Regulatory		Electricity Market Operator	Complementary to NREAP	2012-2020
124) Suspension of the licensing procedure and the issuance of grid connection offers for photovoltaic plants due to having met the targets set by the MD A.Y./F1/oik.19598 (MD Y.A.II.E./Φ1/2300/οικ.16932, OG B 2317/10.08.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2012-2020
125) Amendment of the special program for the deployment of photovoltaics up to 10kW on buildings and especially roofs (MD Y.A.II.E./Φ1/2302/οικ16934, OG B 2317/10.08.2012)	Regulatory/ Financial		Investors, public administration	Complementary to NREAP	2012-2020
126) Procedure for granting grid access to groups of small-scaled RES producers in cases where there is no sufficient local medium- or low-voltage grid capacity (RAE, 787/2012, OG B 2655/28.09.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2012-2020
127) Management system of data and information for the surveillance of production, refining, storage, import, export and transport of crude oil semi-processed and final oil products (MDΔ1/B/7364, OG B 1116/10.4.2012 as amended by Δ1/οικ. 16421 OG B 2328/16.8.2012)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2012
128) Determination of the coefficients related to the allocation methodology of the Special Levy, as defined in Article 143, par. 2, case c of L.4001/2011, for the period August 2012-June 2013 (RAE, 698/2012, OG B 2325/16.08.2012)	Financial		Investors, end users, public administration	Complementary to NREAP	2012-2013
129) Amendment of MD Y.A.II.E./Φ1/2262 regarding the feed-in tariffs for electricity produced by photovoltaics (MD Y.A.II.E./Φ1/2301/οικ.16933, OG B 2317/10.08.2012)	Financial		Investors, public administration	Complementary to NREAP	2012-2020

130) Determination of the share of contribution to ERT SA according to article 14 of L.1730/1987, which is a resource of the Special Account of Article 40 of L2773/1999 (MD Y.A.II.E. /Φ1/2303/οικ.16935, OG B 2317/10.08.2012)	Financial		Investors, public administration, Electricity Market Operator	Complementary to NREAP	2012-2020
131) Peloponnesus: Declaration of power grid as congested for absorption of RES electricity load and ascertainment of safe RES load limits (RAE 699/2012)	Technical		Energy administrative authorities, investors	Complementary to NREAP	2012
132) Specification of raw materials for biofuels whose contribution is double counted towards RES targets (JMD Δ1/A/οικ. 10839, OG B 1667/16.5.2012)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2012
133) Bureau for the Monitoring of Sustainability of Biofuels and Bioliquids (JMD Δ1/A/οικ. 10838, OG B 1661/15.5.2012)	Regulatory		Public administration, economic operators, biodiesel producers, refineries, wholesalers	Complementary to NREAP	2012
134) Amending and supplementing MD 1958/2012 (MD 20741/12, OG B 1565/08.05.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
135) Environmental licensing of electricity and thermal energy production units using biogas from biomass anaerobic digestion (Circular οικ. 1604.81/03.04.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
136) Law 4062/2012 "Utilization of the former Airport at Elliniko - HELIOS Project - Promoting the use of energy from renewable sources (Transposition of Directive 2009/28/EC) - Sustainability criteria of biofuels and bioliquids (Transposition of Directive 2009/30/EC)" (OG A 70/30.03.2012)	Regulatory		Investors, end users, public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2012-2020
137) Modification of the JMD ΦB1/E2.1/244/6/26.01.2011 for the implementation of the "Energy Efficiency at Household Buildings" Program (MD ΦB1/2.1/5332/238 OG B 675/07.03.2012): Eligible interventions including the installation of RES systems in buildings	Financial		End users, energy companies, energy auditors, public administration	Complementary to NREAP	2012 until program budget per region has been spent
138) Supreme Chemical Council decision 316/2010 transposing directive 2009/30/EC and setting specifications for gasoline-bioethanol blends (OG B 501/29.02.2012)	Regulatory		Public administration, biofuel producers, refineries, wholesalers	Complementary to NREAP	2012
139) 96. Law 4042/2012 "Protection of the environment through criminal law - Transposition into national law of Directive 2008/99/EC – Framework for the production and the treatment of waste - Transposition into national law of Directive 2008/98/EC – Arrangement of issues related to the Ministry of Environment, Energy and Climate Change" (OG A 24/13.02.2012)	Financial		Investors, end users, public administration	Complementary to NREAP	2012-2020
140) Amendment of the special program for the deployment of photovoltaics up to 10kW on buildings and especially roofs (MD Y.A.II.E. /Φ1/οικ.2266, OG B 97/31.01.2012)	Financial		Investors, public administration	Complementary to NREAP	2012-2020
141) Feed-in tariffs for electricity produced by photovoltaics (MD Y.A.II.E. /Φ1/οικ.2262, OG B 97/31.01.2012)	Financial		Investors, public administration	Complementary to NREAP	2012-2020
142) Projects and activities classification into categories/subcategories according to their potential environmental impacts as well as into groups of similar projects-activities (MD 1958/12, OG B 21/13.01.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
143) Modification on the MD 9154/28.02.2011 regarding the special terms for the deployment of photovoltaics and solar systems on fields and buildings (MD οικ.52911, OG B 14/11.01.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2012-2020
144) Allocation of 132,000 kiloliters for the year 2011 in accordance with the provisions of art. 15A of law 3054/2002 (JMD Δ1/A/17970/29.7.2011, OG B 1700/29.7.2011)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2011

145) Invitation for the participation in 2011 biodiesel allocation (MD Δ1/A/13972/16.6.2011, OG B 1307/16.6.2011)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2011-2012
146) Report under article 19 (2) of directive 2009/28/EC on the promotion on the use of energy from renewable sources	Regulatory		Public administration, biofuel producers/importers, refineries, wholesalers	Complementary to NREAP	2012-2020
147) Reinforcement of the interconnection capacity with neighboring countries (increase of NTC on the existing interconnections + new interconnection with Turkey). Further actions and projects for the integration of the electricity system into the European grid through western Balkans	Technical		Investors, public administration, planners	Existing/ planned in NREAP	2010-2020
148) Development of storage facilities in the interconnected system by exploiting hydro pumping system at existing large hydro plants and new installations (public consultation RAE)	Technical		public administration, planners	Planned in NREAP	2014-2020
149) 10-year Plan for the Development of the Electricity Transmission System, elaborated by the System Operator	Technical		Investors, public administration	Complementary to NREAP	2014-2023
150) Interconnection of Cyclades with the mainland by 2017	Technical		Investors, public administration	Complementary to NREAP	2014-2022

- \* Indicate if the measure is (predominantly) regulatory, financial or soft (i.e. information campaign).
- \*\* Is the expected result behavioural change, installed capacity (MW; t/year), energy generated (ktoe)?
- \*\*\* Who are the targeted persons: investors, end users, public administration, planners, architects, installers, etc? or what is the targeted activity / sector: biofuel production, energetic use of animal manure, etc)?
- \*\*\*\* Does this measure replace or complement measures contained in Table 5 of the NREAP?

**2.a. Please describe the progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of renewable energy. (Article 22(1)e) of Directive 2009/28/EC).**

Various regulatory measures were initiated the last two years in order to specialise and apply the foreseen provisions of the L.4414/2016 “New Support Scheme for Renewable Energy Power Plants and High Efficiency Combined Heat and Power Plants”. Specifically, several ministerial decisions were issued for specific issues, which are related with the unhampered development of RES projects, such as indicatively the development of the framework for electricity market participation including the role of aggregators, the specification of the methodology and procedure for the clearance, pricing and settlement of RES and HECHP power plants with an Operating Aid Contract, the determination of the special purchase price of specific RES technologies, the conduction of the competitive bidding auctions, the establishment of the monitoring committee for the support of RES and HECHP power plants and the operation of the Last Resort RES Aggregator. Moreover, Article 5 of the L. 4414/2016 specifies all the provision for the direct participation of the RES and HECHP power plants in the electricity market without operating aid.

According to the NECP, special emphasis will be placed on updating, simplifying and operating more efficiently both the licensing and the RES planning framework. The key objective of this process is to license and implement effectively the required RES projects for the fulfilment of the national targets. In any case, the planned licensing and spatial planning reform must be completed taking into account the fact that the development of new RES projects demands the fair and transparent reconciliation and incorporation of the various entrepreneurial, environmental and social considerations.

In this context, a Committee has already been established consisting of representatives from the Ministry of Environment and Energy, the energy Operators, the Energy Regulatory Authority and other RES market players and authorities. The objective of the Committee is to propose specific measures and policies capable of leading to a reduction of the overall time of completion of the

licensing process to two years being harmonized with the Directive 2018/2001/EU. The achievement of the objectives will contribute to the preparation of the required legislative documents for the adoption of the developed licensing framework for the new RES projects, the formulation of proposals in order to tackle the identified barriers (e.g. production license, environmental licensing, network and land-use issues), the digitization of the licensing procedure and the possibility for the operation of one or more one stop shops, which will provided technical support to the potential investors about the licensing issues.

The JMD “Biofuels and bioliquids sustainability system according to Article 32H of Law 3468/2006” (JMD ΥΠΕΝ/ΔΑΠΕΕΚ/32218/1051/03.05.2019, OG B 1473/2019), which replaced the JMD “Biofuels and bioliquids sustainability system” (JMD οικ.175700/14.04.2016, OG B 1212/2016), sets the requirements and the procedures for the certification and verification of compliance with the sustainability criteria and specifies the ways of demonstrating compliance, the reporting items and the economic operators with reporting obligations. Following the “Biofuels and bioliquids sustainability system according to Article 32H of Law 3468/2006” JMD, the MD “Categories of infringements and determination of the procedure of fines enforcement regarding compliance with biofuels and bioliquids sustainability criteria according to Article 32H of Law 3468/2006” (MD ΥΠΕΝ/ΔΑΠΕΕΚ/48125/1579, OG B 2102/2019), which replaced MD 184182/05.10.2016, OG B 3278/2016 was issued to set categories of infringements and to determine the procedure of fines enforcement regarding compliance with biofuels and bioliquids sustainability criteria. Currently, all producers/traders of biofuels are certified by a voluntary scheme.

**2.b. Please describe the measures in ensuring the transmission and distribution of electricity produced from renewable energy sources and in improving the framework or rules for bearing and sharing of costs related to grid connections and grid reinforcements (*Article 22(1)f) of Directive 2009/28/EC*).**

According to the recently submitted NECP (December 2019), almost all the autonomous electricity systems will be interconnected with the mainland electricity system until the end of 2030 removing gradually much of the technical limitations for the further penetration of RES in the Aegean. Currently, the completion of the first phases of the Cyclades interconnection project by the Hellenic Power Transmission Operator (ADMIE) led to the interconnection of the electrical systems of Paros (including Naxos, Antiparos, Ios, Sikinos, Folegandros, etc.), Syros and Mykonos.

During the period 2020-2030, the majority of the Aegean islands (Crete, other Cyclades, Dodecanese, NE Aegean) will be interconnected with mainland interconnected system, while the interconnection of Crete will be completed by 2023.

Specifically, the interconnections projects, which are already launched or planned from ADMIE and/or its affiliates, include:

- The completion of the interconnection of the Cyclades islands.
- The interconnection of Crete (Phases I and II).
- The interconnection of the Dodecanese.
- The interconnection of the North Aegean islands.

It should be noted that the detailed time plan for the completion of the foreseen interconnection projects is included in the NECP.

Moreover, emphasis is given within the NECP for the reinforcement of the distribution electricity network so as to allow the higher penetration of RES. Specifically, the distribution networks will be

designed taking into account the electricity production from RES additionally to the electricity consumption increasing the geographic coverage and enhancing and modernizing technologically the high voltage transmission systems and the distribution networks. Within this context, the technically-economically optimal reinforcement and expansion of the infrastructure both in the transmission and distribution networks is considered as a crucial policy measure for the optimal integration of RES in order to deal with the various saturation phenomena, which hampers the further penetration of RES projects in specific areas.

Furthermore, new cost-sharing regulatory models for the development of new infrastructure transmission and distribution networks will be designed so as to facilitate especially the implementation of small RES projects. To this direction, the Hellenic Electricity Distribution Network Operator (HEDNO) has already prepared preliminary studies for determining the required financial aid for the reinforcement of the distribution networks. Moreover, a methodology will be developed for the estimation of the investment costs, the most critical geographical areas for enhancing the distribution network will be identified and the need for increasing the existing substations will be quantified taking into consideration the new planned RES projects including also the provisions for the repowering of the existing ones.

Finally, new financing models for the development of the required infrastructures will be designed, while the administrative complexity and the time delays will be reduced through the conduction of more efficient and transparent consultation procedures.

**3. Please describe the support schemes and other measures currently in place that are applied to promote energy from renewable sources and report on any developments in the measures used with respect to those set out in your National Renewable Energy Action Plan (Article 22(1)b) of Directive 2009/28/EC).**

**Previous Feed-in-Tariff (FiT) Support Scheme**

Until 31.12.2015, in terms of compensation prices for electricity from RES, the main support scheme in Greece was based exclusively on the principle of FiT compensation price scale, as initialized by L. 3468/2006 and reviewed by L.3851/2010 and L.4254/2014 in order to take into account the continuous cost reduction of RES technologies per kW of installed capacity and to ensure the sustainability of the RES Special Account, as described in the Second, Third and Fourth Progress Report.

RES and HECHP power plant owners who have signed a PPA, as described in Article 12 of L. 3468/2006 by 31 December 2015, not fall within the scope of the provisions of L. 4414/2016, and receive remuneration in accordance with the provisions of Article 13 of L. 3468/2006, as in force, in so far as their plants have being commissioned (in commercial or trial operation), by 31 March 2018 for wind parks, small hydroelectric power plants and plants using biomass or biogas; or 31 December 2017 for other RES and HECHP power plants.

RES and HECHP power plant owners who have signed a PPA, as described in Article 12 of L. 3468/2006 by 31 December 2015, which have not been or are not commissioned (in commercial or trial operation), by 31 March 2019 for wind parks, small hydroelectric power plants and plants using biomass or biogas; or 31 December 2017 for other RES and HECHP power plants, shall be placed mandatorily under the new support scheme described in L. 4414/2016. The owners of these plants shall be exempt from the obligation to participate in a bidding process, in so far as their plants are commissioned (in commercial or trial operation) by 30 September 2020.

## **The new RES support scheme, effective from the January 1<sup>st</sup>, 2016**

The L. 4414/2016 entered into force on the 9<sup>th</sup> of August 2016, effective from January 1<sup>st</sup>, 2016 onwards. The provisions of this law reformed the support scheme of electricity production from RES and CHP power plants in order to achieve the progressive integration and participation of these generation units into the electricity market in an optimal and cost-effective way. This law introduced a new RES support scheme in Greece based on feed-in premiums (FIP) for larger RES projects, along with the obligation to participate in the electricity market. Their remuneration takes place on the basis of a contract for difference (CfD) against the applicable reference tariffs (RTs) as per published list by technology or as auctioned, after taking into account the market value of renewable electricity per technology. FIP provides an incentive for RES generators to respond to price signals of the electricity market, i.e. to produce electricity when demand is high and/or production from other energy sources is low. They also encourage RES investors to consider expected load patterns in the engineering and operation of the RES project (e.g. choice of site and turbine type for wind parks, orientation of PV modules), if this is linked with a properly formed technology-specific Reference Market Price. FIP therefore contribute to an increased integration of RES into the electricity market, resulting in a more efficient combination of supply with demand. Exceptions include the following:

- Small scale (<3 MW wind, <500 kW other RES) and demonstration projects are exempt from the new scheme, in which case a standard PPA with FIT is concluded in line with L. 4414/2016. With L. 4643/2019 the limit of 500 kW decreased to 400 kW.
- Projects entering into commercial or trial operation in the Non-Interconnected Islands (NIIs) after the 1<sup>st</sup> of January 2016 continue to access a FIT-based scheme (through PPA) as long as these islands are either not interconnected with the mainland of Greece or do not have a fully operational daily electricity market.

Also, there is the possibility for RES plants with capacity above 5 MW, with PPA for FIT of the previous RES support scheme, to voluntarily shift to the new RES support scheme.

The FIP is calculated on a monthly basis as the difference between technology- and capacity-specific RTs, and technology-specific reference market prices. RES generators that participate in the electricity market are subject to a gradual transfer of balancing responsibilities, named Transitional Accurate Forecasting Mechanism that foresees charges on the ground of the induced imbalances when the forecasting error surpasses specific tolerance bands. The law foresees a management premium in order to cover the additional market participation costs for RES generators especially in the context of the transitory mechanism for accurate forecasting. This premium will amount initially to 3 €/MWh for wind parks with an installed capacity up to 10 MW and to 2 €/MWh for all other renewable energy projects (including wind parks with an installed capacity above 10 MW) and will be reviewed annually. The above premium with the MD ΑΠΕΗΛ/Α/Φ1/οικ.187480/07.12.2016 which was amended by MD ΥΠΕΝ/ΔΑΠΕΕΚ/48144/1581/28.05.2019, was determined to be 1 €/MWh for 2019 and less than 1€/MWh for the next years.

The law also provides the basis for the establishment of RES aggregators as new market participants.

On the 16<sup>th</sup> of November 2016, the new RES support scheme has been officially approved by the DG COMP of the EC (SA 44666) under the Decision C (2016)7272. Following this approval, a number of Ministerial Decisions (MDs) have been adopted in December 2016 under which the detailed provisions of the new RES support scheme are defined. The MD ΑΠΕΗΛ/Α/Φ1/οικ.187480 that was adopted on the 7<sup>th</sup> of December 2016 defines the methodology for the calculation of the reference market prices, the criteria and restrictions for the payment of the management premium as well as the procedures for the adjustment of operating aid in the case of RES projects that have been granted investment aid.

The six MDs ΑΠΕΗΛ/Α/Φ1/οικ.187701-187706 that were adopted on the 12<sup>th</sup> of December 2016 establish the new model contracts for the support of new RES and CHP installations, both in the interconnected system as well as on the non-interconnected islands. The term of the new FIP and FIT contracts, and therefore of the associated operating aid, will be 20 years for all renewable energy projects, other than solar thermal power plants which will enjoy a 25 year term. On this basis, LAGIE and DEDDIE have started in December 2016 to sign the first contracts under the new RES support scheme.

L. 4414/2016 also foresees a shift towards a general RES tendering scheme from the 1<sup>st</sup> of January 2017, including a partial opening for RES projects from other European Economic Area (EEA) countries. The details of this tendering scheme were defined by the MD ΑΠΕΕΚ/Α/Φ1/οικ. 184573/13.12.2017, as amended by the MDs ΑΠΕΕΚ/Α/Φ1/οικ. 172858/22.03.2018, ΑΠΕΕΚ/Α/Φ1/οικ. 179988/9.10.2018 and ΥΠΕΝ/ΔΑΠΕΕΚ/18135/511/27.02.2019, which established:

- the technologies (PV and Wind) and/or the categories of RES and HECHP power plants falling within the scope of the competitive bidding processes,
- the conditions under which the technologies and/or the categories of RES power plants excepted from competitive bidding processes until the end of 2020 will be included,
- the types of tenders (technology specific, neutral, site specific),
- the methodology and procedure for power allocation of participation in the tendering processes of RES stations established in other European Economic Area countries with cross-border electricity trade with Greece.

As of January 1<sup>st</sup>, 2017, and until the publication of the MD ΑΠΕΕΚ/Α/Φ1/οικ.184573/13.12.2017, RES projects of a capacity higher than 1 MW or 6 MW for wind parks, were not allowed to conclude CfDs, following the provisions of L. 4447/2016 that entered in force on December 23<sup>rd</sup>.

The tendering scheme has been officially approved by the DG COMP of the EC (SA 48143) under the Decision C (201)9102 on January 4<sup>th</sup>, 2018.

For new PV projects above 500 kW, it has been already foreseen by the L. 4416/2016 that they will be supported if only they successfully participate in a tender. In this context, a pilot tender for capacity of 40 MW of new PV installations has been held by RAE on December 12<sup>th</sup>, 2016. The tender was competitive in the sense that the awarded capacity was adjusted in order to ensure always a minimum oversubscription of 40%. The tender consisted of two lots for PV projects with an installed capacity below and above 1 MW (i.e. with and without exemption from the obtainment of a production license) and has been conducted through an electronic continuous bidding process among the participants. Under the first tender lot, 9 PV projects with a total capacity of around 4.8 MW were selected (mean capacity per project of around 530kW) at an average weighted reference tariff of 98.99 €/MWh (compared with a price ceiling of 104 €/MWh). Under the second tender lot, 7 PV projects with a total capacity of around 35.1 MW (mean capacity per project of around 5 MW) were selected at an average weighted reference tariff of 83.3 €/MWh (compared with a price ceiling of 94 €/MWh).

The MDs ΑΠΕΕΚ/Α/Φ1/οικ.172859/22.03.2018, ΥΠΕΝ/ΔΑΠΕΕΚ/34495/1107/8.04.2019 and ΥΠΕΝ/ΔΑΠΕΕΚ/11163/409/31.01.2020, specified the total capacity that is going to be awarded through competitive bidding procedures until the end of 2020, the minimum number of tenders per year, the maximum bid price allowed for each tender and the cost of participating in a competitive bidding process.

According to the relevant MD, the years 2018, 2019 and 2020 at least six technology-specific tenders (three for photovoltaic and three for wind power plants), at least two common tenders and at least one specific to region tender will be held with a total capacity ~ 3GW to be auctioned.



In this context, RAE announced the first technology-specific tender for 2018, which was completed in July 2018 and repeated in December of the same year, leading to the selection of a total capacity of approximately 500 MW of new projects. The results of the 2018 tenders are shown on the table below:

**Table 3.i: Results of tenders for RES projects, 2018.**

	<b>Bidding capacity (MW)</b>	<b>Awarded capacity (MW)</b>	<b>Average weighted reference tariff (€/MWh)</b>
<b>Category</b>	<b>PV plants 0-1 MW</b>		
July 2018	70	53.48	78.42
December 2018	90	61.94	66.66
Annually	<b>160</b>	<b>115.42</b>	
<b>Category</b>	<b>PV plants 1-20 MW</b>		
July 2018	230	52.92	63.81
<b>Category</b>	<b>Wind 3-50 MW</b>		
July 2018	300	170.93	69.53
December 2018	229	159.65	58.58
Annually	<b>529</b>	<b>330.58</b>	64.24
<b>All technologies</b>	<b>919</b>	<b>498.92</b>	

In 2019 RAE announced two technology-specific competing processes, which were completed in July 2019, leading to the selection of new projects with a total capacity of almost 330 MW. The results of the 2019 tenders are shown in the next table:

**Table 3.ii: Results of technology-specific tenders for RES projects, 2019.**

	<b>Bidding capacity (MW)</b>	<b>Awarded capacity (MW)</b>	<b>Average weighted reference tariff (€/MWh)</b>
<b>Category</b>	<b>PV plants &lt; 20 MW</b>		
July 2019	300	142.88	62.77
<b>Category</b>	<b>Wind 3-50 MW</b>		
July 2019	300	186.96	67.31
<b>All technologies</b>	<b>600</b>	<b>329.84</b>	

Subsequently, RAE also announced the first common tender, which was completed in April 2019, leading to the selection of new projects with a total capacity of almost 438 MW. The results of the 2019 common tender are shown in the next table:

**Table 3.iii: Results of common tender for RES projects, 2019.**

	<b>Bidding capacity (MW)</b>	<b>Awarded capacity (MW)</b>	<b>Average weighted reference tariff (€/MWh)</b>
<b>Category</b>	<b>Common bidding process</b>		
July 2019	600	455.56	57.03

A committee has been established as a monitoring mechanism in order to monitor the support provided for RES generation, to assess the levelised cost of electricity (LCOE) of the new RES plants according to L. 4414/2016). Moreover, an online database and platform for the RES support scheme was established in 2017. This platform is a necessary instrument in order to be complied with the transparency requirements under the EC State Aid Guidelines for Environmental Protection and Energy (EEAG), and will help to gather all the appropriate information in order to

complete the Transparency Award Module for State aid. The main objective of this electronic platform and tool is to validate and monitor the approvals and disbursements of state aid under the new RES support scheme and to publicize the relevant required minimum information per beneficiary.

Reference tariffs (or “strike prices”) reflect the overall average remuneration which is required by RES generators. The same reference tariff is applied throughout the entire duration of the period during which a given RES project is entitled for support (e.g. 20 years). The reference tariffs are determined by capacity categories for the different RES technologies. RES projects are entitled to the reference tariff that is active at the time of commissioning of the project. For RES projects that fall under the FIT scheme, the reference tariff is equal to the FIT. For RES projects under the FIP, an average monthly market reference price is deducted from the reference tariff in order to arrive at the FIP that is being paid to RES generators. The reference tariff levels under the new RES support scheme in Greece are defined per plant category and technology and are illustrated in the Table 3.iv.

**Table 3.iv: Reference tariffs for RES projects that enter in operation in Greece (2019).**

	<b>RES technology / capacity category</b>	<b>Reference tariff (€/MWh)</b>
1a	Wind power exploited in land-based installations with installed capacity $P > 3\text{MW}$ , which are not placed under support scheme through competitive bidding process, in accordance with legislation	98
1b	Wind power exploited in land-based installations with installed capacity $60\text{kW} < P \leq 3\text{MW}$	98
1c	Wind power exploited in land-based installations falling within the scope of the provisions of the RAE Decision 904/2011, as amended by RAE Decisions 155/2012 (Government Gazette B '908) and 452/2015 (Government Gazette B' 2859) and is in force, as defined by the provisions of paragraph 3 of article 15 of Law 3175/2003 (A '207), as well as the owners of RES power plant licenses that have generation permits which provides in its Special Conditions that the owner of such permit shall be included in Table 3 of the new users of the above RAE Decisions.	98
2	Wind power exploited in land-based installations with installed capacity $60\text{kW} < P \leq 6\text{MW}$ , which belong to Energy Communities according to L.4513/2018	98
3	Small Hydro $\leq 3\text{ MW}$	100
4	$3\text{ MW} < \text{Small Hydro} \leq 15\text{ MW}$	97
5	Solid Biomass (or bio-liquids) exploited through thermal processes except gasification, from stations with installed capacity $\leq 1\text{MW}$ (excluding the biodegradable fraction of municipal waste)	184
6	Solid Biomass (or bio-liquids) exploited via gasification process from stations with installed capacity $\leq 1\text{MW}$ (excluding the biodegradable fraction of municipal waste)	193
7	Solid Biomass (or bio-liquids) exploited through thermal processes from stations with installed capacity $1\text{MW} < P \leq 5\text{MW}$ (excluding the biodegradable fraction of municipal waste)	162
8	Solid Biomass (or bio-liquids) exploited through thermal processes from stations with installed capacity $P > 5\text{MW}$ (excluding the biodegradable fraction of municipal waste)	140
9	Gas from landfills and biological sewage treatment plants and biogas from anaerobic digestion of biodegradable material of wastewater and sewage sludge $\leq 2\text{ MW}$	129
10	Gas from landfills and biological sewage treatment plants and biogas from anaerobic digestion of biodegradable material of wastewater and sewage sludge $> 2\text{ MW}$	106
11	Biogas from anaerobic digestion of biomass $\leq 3\text{ MW}$	225
12	Biogas from anaerobic digestion of biomass $> 3\text{ MW}$	204
13	Solar thermal stations without storage	257
14	Solar thermal stations with storage (min 2 hours)	278

	<b>RES technology / capacity category</b>	<b>Reference tariff (€/MWh)</b>
15	Geothermal stations $\leq 5$ MW	139
16	Geothermal stations $> 5$ MW	108
17	Other RES (including energy recovery plants utilizing the fraction of the biodegradable municipal waste falling outside another category of the table that meet the requirements of the current European legislation)	90
29	Solar power exploited by photovoltaic power plants with installed capacity $P < 500$ kW	average RT resulting from the (3) most recent competitive bidding process for the respective category of plants to which they belong increased by 5%
30	Solar power exploited by photovoltaic power plants belonging to Energy Communities of L.4513/2018 with installed capacity $P \leq 1$ MW or belonging to farmers with installed capacity $< 500$ kW	Average RT resulting from the three (3) prior to the last competitive bidding process for the respective category of plants or, if no tenders in this category, to the same technology increased by 10%.

*Note: Categories 18-28 of the above table refer to several technologies HECHP*

The reference tariffs of the above table will be revised regularly, according to the LCOE of the several categories or the results of the tenders. With MD YIEN/ΔΑΠΙΕΕΚ/25511/882/20.03.2019 the reference tariffs for the categories 1a, 1b, 1c, 1d and 2, have already been revised and will apply from 1.1.2021, as shown on the table below.

**Table 3.v: Reference tariffs for RES projects that enter in operation in Greece from 1.1.2021**

	<b>RES technology / capacity category</b>	<b>Reference tariff (€/MWh)</b>
	Wind power exploited in land-based installations with installed capacity $P > 3$ MW, which are not placed under support scheme through competitive bidding process, in accordance with legislation	70
	Wind power exploited in land-based installations with installed capacity $60 \text{ kW} < P \leq 3 \text{ MW}$	79
	Wind power exploited in land-based installations falling within the scope of the provisions of the RAE Decision 904/2011, as amended by RAE Decisions 155/2012 (Government Gazette B '908) and 452/2015 (Government Gazette B' 2859) and is in force, as defined by the provisions of paragraph 3 of article 15 of Law 3175/2003 (A '207), as well as the owners of RES power plant licenses that have generation permits which provides in its Special Conditions that the owner of such permit shall be included in Table 3 of the new users of the above RAE Decisions.	65
	Wind power exploited in land-based installations with installed capacity $60 \text{ kW} < P \leq 6 \text{ MW}$ , which belong to Energy Communities according to L.4513/2018	82

Under the new RES support scheme, the remuneration levels for all photovoltaic projects above 500 kW will be defined in the context of tenders. Photovoltaic installations with a capacity below 10 kWp that are included in the Special Roof-top Photovoltaic Program will continue to be remunerated in line with the provisions of this program, until the expiration of the program on 31.12.2019.

Finally, with L. 4643/2019 all power stations > 400kW are responsible for the imbalances (“balance responsibility”).

### **RES generators with PPAs near expiration**

As provided by L.4414/2016, RES generators with PPAs conducted under previous support schemes that expire, that choose to continue operating their stations after expiration for a period without repowering, will be compensated only through their mandatory participation in the market and not under a support scheme. The relevant MD ΑΠΕΕΚ/Α/Φ1/οικ. 172857 was issued in March 2018.

### **Financing mechanism of the RES support scheme**

The operating aid under the RES support scheme is reimbursed to RES producers through the RES Special Account which is managed by the Operator of the Electricity Market (LAGIE). The revenues of this account are currently consisted of the following:

- The day-ahead scheduling (DAS) revenues, derived from the participation of the RES plants to the day-ahead market, with the amount of electricity (MWh/h) being forecasted by the Independent Power Transmission Operator (ADMIE) and being cleared by the Operator of the Electricity Market (LAGIE) by using the relevant system marginal price.
- The wholesale market revenues of LAGIE derived from the sale of RES electricity at the system marginal price (after May 2013 and under the L. 4152/2013, RES electricity sales are realized on either the electricity wholesale market clearing price (SMP) or the average variable cost of thermal power plants, whichever the highest). This measure resulted to almost 22M€ in 2017 and about 55M€ in 2018.
- Revenues (or costs) of the settlement of imbalances resulting from RES production.
- Payments from the electricity suppliers on the non-interconnected islands (NII) to HEDNO for the production of RES based on the average variable costs of conventional units on the NII.

In total in the period 2017- 2018 the revenues from the RES electricity sales have amounted to about 1,430 M€, whereas the estimation for the period 2019 - 2020 exceeds the 2,001 M€.

- The Special Levy for GHG emissions reduction (ETMEAR), which constitutes a significant revenue of the RES Special Account, is being reassessed annually according to Art. 32 of L. 4111/2013, which amended Art.143 of L.4001/2011. The ETMEAR has been calculated with a weighted average of 16.44 €/MWh for 2018, down from 19.73 €/MWh in 2014 (9-month period) and 2015, 18.13 €/MWh in 2016 and 17.91 €/MWh in 2017 (RAE decisions 175/2014, 465/2015, 621/2016 and 1.101/2017), and is differentiated by types of electricity consumers and voltage levels with current levels at the beginning of 2018 ranging from 2.47 €/MWh for HV and large MV consumers to 22.67 €/MWh for households and 26.08 €/MWh for other LV consumers, as shown in the following table which presents its breakdown by end consumer category. In total the revenues of the Special Levy have amounted to 888.92 M€ for the year 2017 and about 631.09 M€ for the year 2018.

**Table 3.vi. Readjustment of the Special Levy for GHG emissions reduction per end consumer category**

End consumer category	Special Levy for GHG emissions reduction (€/MWh)			
	01.04.2014 – 31.12.2015	2016	2017	2018
High voltage consumers	2.23	2.41	2.51	2.47
Medium voltage consumers with consumption >13MWh	2.31	2.48	2.51	2.47
Medium voltage consumers – agricultural	10.83	10.12	9.71	8.60
Medium voltage consumers with consumption <13MWh	12.77	10.12	9.76	8.78
Low voltage consumers – agricultural	11.39	10.69	10.47	9.39
Low voltage consumers – residential	26.30	24.87	24.77	22.67
Low voltage consumers – other	30.89	28.21	27.79	26.08

In addition, apart from the additional measures that were taken since 2012, mentioned in the Fourth Progress Report, aiming either at increasing the revenues or decreasing the outflows of the RES Special Account to eliminate its deficit and ensure its financial sustainability, a new charge for electricity suppliers on the basis of their market shares has introduced by L. 4414/2016, which substantially restructured the RES Special Account and its financing. The new levy, was expected to significantly contribute to the permanent elimination of the deficit in the RES Special Account (at the end of 2017 and beyond), in line with the provisions of L. 4414/2016 and L. 4425/2016, but also to stabilize and even reduce the level of ETMEAR charges. This additional variable charge is levied on electricity suppliers based on avoided average cost for electricity purchased through the wholesale electricity market, had there not been any renewable electricity available. Since 01.01.2019 the above suppliers charge was repealed with L.4585/2018.

The additional measures that ensure the revenues of the RES Special Account are presented in Table 3.vii:

**Table 3.vii: Cumulative revenues of additional measures to ensure the financial sustainability of the RES Special Account**

Measure	Beginning/amendment of measure	Cumulative revenues (M€)		
		2015-2016	2017-2018	2019-2020 (est.)
GHG rights auctioning	March 2012	264.28	480.19	680.8
Lignite special levy	February 2012	68.64	62.58	-
Suppliers' Charge	August 2016	31.92	649.39	-

Further, the laws provide also the framework for the establishment of a secondary special market for certificates of origin in Greece for renewable electricity. The specific methodology for the integration of this wholesale market mechanism into the Reference Market Price for the RES projects under the FiP scheme (which is analyzed below) is still pending and has to be integrated in the relevant Power Market Exchange Code.

With L. 4414/2016, which amended L.4001/2011, the Special Account for RES is separated on the grounds of accounting and management into two sub-accounts:

- The Market Sub-account (Market part) incorporates as inflows the market revenues for RES energy that is compensated with Feed-in-tariff (FiT) and as outflows part of the RES compensation for plants under the feed-in-tariff (FiT),
- The Aid Sub-account (Aid part) incorporates as inflows the revenues from ETMEAR, Lignite levy, CO2 allowances, etc. and as outflows the remaining part of the RES and CHP compensation for plants under the feed-in-tariff (FiT) as well as the remaining part of the RES and CHP compensation for the plants under the feed-in-premium (FiP). Namely, it completes,

in addition to the market revenue, the final compensation (guaranteed price or Reference Value respectively) for the beneficiaries of the two (2) support schemes.

As referred to the Fourth Progress Report, the deficit of the RES Special Account was reduced to almost -84 M€ at the end of 2015, due to the reform of the previous support scheme for RES by virtue of L. 4254/2014 and all the relevant additional measures. However, the increasing participation of RES electricity in the market leads to the calculation of a proportionally lower SMP and, subsequently, to lower day-ahead scheduling (DAS) revenues by the suppliers to the RES Special Account. As a result, at the end of 2016 the deficit increased to more than -241 M€. With the imposition of the new charge for electricity suppliers since the issuing of L. 4414/2016, that presented above, this trend has already been reversed: at the end of 2017 there was a surplus of more than +42 M€, contributing to the establishment of a secure investment environment in view of the achievement of the 2020 targets. At the end of 2018 the surplus of the RES Special Account increased to more than +121 M€. The prediction for years 2019 and 2020 is a surplus of about +46 M€ and a small deficit of about -3.5 M€ respectively. It is worth mentioning that, since 2018, an amount of 70 M€ is deducted annually as a reserve of the RES Special Account.

The table below, presents the total financial support offered in 2018 to RES plants, through the RES support schemes. It is worth mentioning that RES power plants on the non-interconnected islands continued to act beneficially to the total power generation cost, due to the high operation cost of diesel units, although the total RES support considering balance from electricity sales has turned positive since 2015.

**Table 3.viii: Support schemes for renewable energy.**

<b>RES support schemes year 2018</b>	<b>Total support from support schemes (M€)</b>	<b>Total RES support considering balance from electricity sales (M€)<sup>22</sup></b>
<b>Interconnected system</b>		
Wind	511.30	
Small hydro plants	62.70	
Biogas/Biomass	41.20	
PV (incl. PV in buildings roofs for the whole country)	1067.00	
<b>Total interconnected system</b>	<b>1682.20</b>	<b>1035.70</b>
<b>Non-interconnected islands</b>		
Wind	70.15	
Small hydro plants	0.02	
Biogas/Biomass	0.81	
PV	81.38	
<b>Total non-interconnected islands</b>	<b>152.36</b>	<b>5.63</b>
<b>Total RES-E annual support</b>		<b>1041.33</b>

### **Subsidies on investment**

In accordance to the Programming Period 2014-2020, a new investment law (4399/2016) has been put into force in the summer of 2016. As far as RES investments are concerned, the new investment law provides subsidies only to small hydro stations (up to 15MW), pumped hydro-hybrid stations up to 5 MW in NIIs, HECHP stations that use RES, heating and cooling stations, and district heating and cooling stations.

<sup>22</sup> The electricity sales are adjusted after having estimated the part of the electricity sales attributed to high efficiency cogeneration

## Net-metering scheme

Moreover, an additional set of specific policy measures, such as the Net-Metering Scheme, including Virtual Net-Metering and Energy Communities, have been developed. As referred to the fourth Progress Report, a national net-metering scheme for self-produced electricity from photovoltaic energy has been adopted by MD ΑΠΕΗΛ/Α/Φ1/οικ. 24461/31.12.2014. HEDNO commenced accepting net-metering applications for photovoltaic systems to connect to the low voltage grid in May 2015 and a second round of applications for PV systems to connect directly to the medium voltage grid started in October 2015. Although these schemes have not yet gained momentum at the consumer level, they are important institutional interventions aimed at strengthening the role of the consumer and developing cooperative schemes to promote decentralized power production.

The scheme of net-Metering refers to the offsetting of electricity produced by a RES or HECHP power station with the consumed electricity in a self-producing plant located in the same or adjacent space as the RES or HECHP and considering that station connects to the Network through the provision of the consumption facility. This measure provides in short the energy offsetting of the final electricity consumed by the one injected into the grid by the consumer's power plant, as well as the exemption of charges and regulatory charges for the use of grid and system for the energy absorbed by the grid, which is self-consumed at the same time for the same consumption needs of the production facility.

The Virtual Net-Metering scheme provides for the offsetting of electricity produced by RES or CHP plants with the total electricity consumed at self-production facilities, at least one of which is either not located in or adjacent to the RES or CHP either, if available, are supplied by a different supply.

The number of the projects and the installed capacity of the Net-Metering and Virtual Net-Metering systems in operation are presented in the Tables 3.ix and 3.x respectively.

**Table 3.ix: Number and installed capacity of Net-Metering systems in operation.**

PV plants net-metering	Interconnected system				Non-interconnected islands				Total				
	Number		Capacity (MW)		Number		Capacity (MW)		Number		Capacity (MW)		
	LV	MV	LV	MV	LV	MV	LV	MV	LV	MV	LV	MV	
In operation	2015	111	0	1.79	0	2	0	0.014	0	113	0	1.804	0
	2016	374	4	4.69	0.21	59	0	0.723	0	433	4	5.413	0.21
	2017	226	15	3.1	1.83	135	2	1.635	0.1	361	17	4.735	1.93
	2018	304	16	4.288	3.222	87	4	0.94	0.199	391	20	5.228	3.421
	2019	201	11	2.67	3.8	72	3	1.053	0.149	273	14	3.723	3.949
	<b>Total</b>	<b>1,216</b>	<b>46</b>	<b>16.538</b>	<b>9.062</b>	<b>355</b>	<b>9</b>	<b>4.365</b>	<b>0.448</b>	<b>1,571</b>	<b>55</b>	<b>20.903</b>	<b>9.51</b>
<b>Total</b>	<b>1,262</b>		<b>25.600</b>		<b>364</b>		<b>4.813</b>		<b>1,626</b>		<b>30.413</b>		

**Table 3.x: Number and installed capacity of Virtual Net-Metering systems in operation.**

PV plants virtual net-metering	Interconnected system				Non-interconnected islands				Total				
	Number		Capacity (MW)		Number		Capacity (MW)		Number		Capacity (MW)		
	LV	MV	LV	MV	LV	MV	LV	MV	LV	MV	LV	MV	
In operation	2017	4	0	109.98	0	0	0	0	0	4	0	109.98	0
	2018	5	1	116	499	0	0	0	0	5	1	116	499
	2019	6	0	205	0	0	0	0	0	6	0	205	0
	<b>Total</b>	<b>15</b>	<b>1</b>	<b>430.98</b>	<b>499</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>1</b>	<b>430.98</b>	<b>499</b>
	<b>Total</b>	<b>16</b>		<b>929.98</b>		<b>0</b>		<b>0</b>		<b>16</b>		<b>929.98</b>	

The MD YTIEN/ΔΑΠΙΕΕΚ/15084/382/10.02.2019 was issued in February in order to extend the scope of net-metering and virtual net-metering to other RES technologies other than photovoltaic systems (small wind turbines, biogas, biomass / biomass, HECHP, small hydropower) and the possibility for Energy Communities to join. This decision provides for specific arrangements for individual technologies, the ability to install a self-contained storage system for internal use, the offsetting methodologies per category of self-production, as well as clearing issues for offset electricity.

### **Energy Communities**

L. 4513/2018 introduces the institutional framework for the establishment and operation of the Energy Communities with a view to promoting social and solidarity-based economy and innovation in the energy sector, tackling energy poverty, promoting energy sustainability and innovation, production, storage, self-consumption, distribution and supply of energy as well as improving local acceptance of RES and energy efficiency in end-use at local and regional level. The law takes into account the proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast) and the proposal for a Directive of the European Parliament and of the Council concerning common rules for the internal market in electricity (recast).

The Energy Communities are active in the fields of Renewable Energy Sources (RES), Combined Heat and Power (CHP), Rational Energy Use, Energy Efficiency, Sustainable Transport, Management of demand and production, Distribution and Supply of energy at local and regional level. Not aiming at profit generally, they have as their basic principle the diffusion of the benefits to the members of the energy community as well as to the local community. The element of locality is central to their design, as the basic aim of the law is to generate added value for local communities as well as combating serious issues, such as energy poverty. The central aim of the law is to strengthen the role of citizens and local actors in the energy sector, which is a provision that the European Commission also outlines.

### **Biofuels**

According to the provisions of L. 3054/2002 biodiesel quantities are allocated every year, after a relevant call for tenders and an evaluation and allocation procedure, to stakeholders, producers or importers, who are interested in participating in this quota system. Through the evaluation procedure which is based on specific criteria and a specified formula according to the respective legislation, raw materials, i.e energy crops, agro-industrial by-products (cottonseed) and wastes (animal fats and used vegetable oils), are approved for biodiesel production. Moreover, motives are provided for financing research in the field of advanced biofuels and special provisions are set to prevent fraud in the used cooking oil and animal fat trade.

According to the relevant Ministerial Decision of the Ministry of Finance, the Ministry of Environment, Energy and Climate Change and the Ministry of Rural Development and Food, a specific quantity of pure biodiesel is allocated to beneficiaries in order to achieve the mandatory percentage of biodiesel blended in diesel of 7%. The allocated quantity corresponds to 85% of the biodiesel that is anticipated to be consumed throughout the year. The remaining 15% is free marketed among refineries, wholesalers and biodiesel producers or importers.

Moreover, an amendment of L. 3054/2002 was published in June 2018 setting a blending obligation of bioethanol or bioethers in petrol starting in 2019 (article 29 of L. 4546/2018, OG A 101/2018).



**3.1. Please provide the information on how supported electricity is allocated to final customers for purposes of Article 3 (6) of Directive 2003/54/EC (Article 22(1)b) of Directive 2009/28/EC).**

The provisions of Article 3(6) of Directive 2003/54/EC are met by virtue of L. 3426/2005 and L. 4001/2011, as it was described in the first progress report for RES.

**4. Please provide information on how, where applicable, the support schemes have been structured to take into account RES applications that give additional benefits, but may also have higher costs, including biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material (Article 22 (1)c of Directive 2009/28/EC).**

The new support scheme, which was introduced by L. 4414/2016, has been set up considering the higher cost of those RES technologies that may have additional benefits, as it was described in detail in the first progress report for RES.

Regarding biodiesel allocation, biodiesel quantities are allocated every year through an evaluation procedure which is based on specific criteria and a specified formula, according to the provisions of the JMD Δ1/A/2497.

One of the criteria is the participation of biodiesel producers or importers in research programs relevant to the production of biofuels, bioliquids or biogas from waste and residues. This criterion allocates 4.75% of the total quantity of biodiesel to the beneficiaries.

Another criterion is based on the quantities of used cooking oil and animal fat that the beneficiaries use for the production of biodiesel. This criterion allocates 12.5% of the total quantity of biodiesel to the beneficiaries.

**5. Please provide information on the functioning of the system of guarantees of origin for electricity and heating and cooling from RES, and the measures taken to ensure reliability and protection against fraud of the system (Article 22(1)d of Directive 2009/28/EC).**

The functioning of the system of guaranteed of origin for electricity and heating and cooling from RES was described in the first progress report for RES.

The following tables present statistical data regarding the information that is kept in the electronic registry information system and refer to the period 2017-2018 (source: RES and Guarantee of Origin Administrator).

**Table 5.i: Statistical data of the GoO system for the period 01/01/2017-31/12/2018.**

Issued GoO (MWh)	PV	Wind	Hydro	Total
Q1/2017	23,608	552,624	1,088,376	1,664,608
Q2/2017	11,745	184,155	323,421	519,321
Q3/2017	17,917	189,087	627,132	834,136
Q4/2017	15,994	321,730	488,405	826,129
Q1/2018	19,559	941,019	548,928	1,509,506
Q2/2018	10,717	257,526	1,707,459	1,975,702
Q3/2018	8,988	79,377	500,849	589,214
Q4/2018	58,192	353,138	776,006	1,187,336
<b>Total</b>	<b>166,720</b>	<b>2,878,656</b>	<b>6,060,576</b>	<b>9,105,952</b>

Cancelled GoO (MWh)	PV	Wind	Hydro	Total
Q1/2017	23,608	552,624	1,088,376	1,664,608
Q2/2017	11,745	184,155	323,421	519,321
Q3/2017	17,917	189,087	627,132	834,136
Q4/2017	15,994	321,730	488,405	826,129
Q1/2018	19,559	941,019	548,928	1,509,506
Q2/2018	10,717	257,526	1,707,459	1,975,702
Q3/2018	8,988	79,377	500,849	589,214
Q4/2018	58,192	353,138	776,006	1,187,336
<b>Total</b>	<b>166,720</b>	<b>2,878,656</b>	<b>6,060,576</b>	<b>9,105,952</b>
Transferred GoO (MWh)	PV	Wind	Hydro	Total
Q1/2017			757,737	757,737
Q2/2017		19,401	3,761	23,162
Q3/2017	202	14,896	65,273	80,371
Q4/2017	7,700	82,150	113,767	203,617
Q1/2018	7,266	120,839	834,491	962,596
Q2/2018	2,392	15,446	3,521	21,359
Q3/2018	649	80,260	449	81,358
Q4/2018	6,286	58,288	128,151	192,725
<b>Total</b>	<b>24,495</b>	<b>391,280</b>	<b>1,907,150</b>	<b>2,322,925</b>

**Table 5.ii: New entrants of plants at the GO register for the period 01/01/2017-31/12/2018.**

	PV		Wind		Hydro		Total	
	number	MW	number	MW	number	MW	number	MW
Q1/2017	1	5.99	4	74			5	79.99
Q2/2017	1	0.15	1	23.1			2	23.25
Q3/2017	6	3.78					6	3.78
Q4/2017	4	1.85	6	112.85			10	114.70
Q1/2018	2	0.99	1	12			3	12.99
Q2/2018								
Q3/2018	7	34.85	2	82			9	116.85
Q4/2018	8	21.845	3	53			11	74.85
<b>Total</b>	<b>29</b>	<b>69.47</b>	<b>17</b>	<b>356.95</b>			<b>46</b>	<b>426.42</b>

**6. Please describe the developments in the preceding 2 years in the availability and use of biomass resources for energy purposes (*Article 22(1)g* of *Directive 2009/28/EC*).**

Information about the availability and use of the biomass for energy purposes is presented in Tables 6.i and 6.ii.

**Table 6.i: Biomass supply for energy use.**

	Amount of domestic raw material		Primary energy in domestic raw material (ktoe)		Amount of imported raw material from EU		Primary energy in amount of imported raw material from EU (ktoe)		Amount of imported raw material from non EU		Primary energy in amount of imported raw material from non EU (ktoe)	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
<i>Biomass supply for heating and electricity:</i>												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)*	558,425 m3	550,842 m3	179.54 ktoe	175.62 ktoe	117,182 m3	116,221 m3	40.38 ktoe	40.1 ktoe	5,635 m3	2,612 m3	1.9 ktoe	0.9 ktoe
Indirect supply of wood biomass (residues and co-products from wood industry etc.)*	48,834.4 tn	54,032.6 tn	15.98 ktoe	17.06 ktoe	34,980 tn	28,936 tn	17.57 ktoe	12.96 ktoe	8,147 tn	17,240 tn	10.58 ktoe	7.74 ktoe
Agricultural by-products / processed residues and fishery by-products *	1,747,480 tn	1,726,738 tn	603.87 ktoe	577.12 ktoe								
Biomass from waste (municipal, industrial etc.) *	0.01 ktn UCOs	0.07 ktn UCOs	0.01 ktoe from UCOs	0.06 ktoe from UCOs								
Energy crops (grasses, etc.) and short rotation trees (please specify)												
Others (please specify)	0.34 ktn sunflower seed 0.02 ktn rapeseed	23 ktn sunflower seed	0.11 ktoe from sunflower < 0,01 ktoe from rapeseed 0.01 ktoe from soyabeen	7.56 ktoe from sunflower							0.01 ktoe from soyabeen	0.79 ktoe from palmoil
<i>Biomass supply for transport:</i>												
Common arable crops for biofuels (please specify)	213 ktn sunflower seed 25 ktn rapeseed	153 ktn sunflower seed 26 ktn rapeseed	72.57 ktoe from sunflower 8.60 ktoe from	51.51 ktoe from sunflower 8.69 ktoe from			5.16 ktoe from sunflower	12.07 ktoe from sunflower 5.09 ktoe from			2.86 ktoe from rapeseed	0.48 ktoe from sunflower

main types)	109 ktn soyabeen	113 ktn soyabeen	rapeseed 18.59 ktoe from soyabeen	rapeseed 18.99 ktoe from soyabeen			21.18 ktoe from rapeseed 0.71 ktoe from soyabeen	rapeseed 0.23 ktoe from soyabeen			1.77 ktoe from soyabeen 2 ktoe from palmoil	0.76 ktoe from rapeseed 5.48 ktoe from soyabeen 11.95 ktoe from palmoil
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)												
Others (please specify)	69 ktn cotton seed 19 ktn UCOs 9 ktn animal fats	85 ktn cotton seed 27 ktn UCOs 15 ktn animal fats	7.44 ktoe from cottonseed 15.38 ktoe from UCOs 7.79 ktoe from animal fats	9.08 ktoe from cottonseed 22.30 ktoe from UCOs 11.94 ktoe from animal fats			0.11 ktoe from UCOs	0.11 ktoe from UCOs				0.10 ktoe from UCOs

\* The definition of this biomass category should be understood in line with table 7 of part 4.6.1 of Commission Decision C (2009) 5174 final establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC

**Table 6.ii: Current domestic agricultural land use for production of crops dedicated to energy production (ha).**

Land use	Surface (ha)	
	2017	2018
1. Land used for common arable crops (wheat, sugar beet etc.) and oil seeds (rapeseed, sunflower etc.) (Please specify main types)	86,009	86,059
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	-	-
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	-	-

In the above table, biomass and the respective biofuel quantities used in the transport sector are reported as follows:

In Table 4, the total quantities of biodiesels have been certified as sustainable biofuels and bioliquids according to the provisions of the JMD “Biofuels and bioliquids sustainability system according to Article 32H of Law 3468/2006” (JMD ΥΠΕΝ/ΔΑΠΠΕΕΚ/32218/1051/03.05.2019, OG B 1473/2019), which sets the requirements and the procedures for the certification and verification of compliance with the sustainability criteria and replaced the JMD “Biofuels and bioliquids sustainability system” (JMD οικ.175700/14.04.2016, OG B 1212/2016).

**7. Please provide information on any changes in commodity prices and land use within your Member State in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources? Please provide where available references to relevant documentation on these impacts in your country (Article 22(1) h) of Directive 2009/28/EC).**

The main commodities used for energy production during the years 2017 and 2018 are saw dust and chips, fire wood, rice husks, exhausted olive cakes, fruit kernels, pellets for heating and sunflower/rapeseed seeds for biodiesel production.

Table 7.i presents an estimation of the weighted average price of the aforementioned commodities from 2009 to 2018. However, it only serves as a rough indication of the development of market prices.

**Table 7.i: Commodity prices (in €/t).**

fuel (€/ton)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Forest residues (Saw dust, chips etc.) <sup>23</sup>	36.52	41.79	29.77	20.43	22.96	11.88	7.80	13.56	0.4	3.31
Fire wood – imports <sup>24</sup>	50.69	44.65	56.55	76.86	65.90	68.71	71.54	72.63	65.65	72.84
Fire wood – primary production <sup>25</sup>	18.07	18.07	18.07	19.37	20.34	21.35	21.81	21.81	22.06	22.06
Rice – cotton husks <sup>23</sup>	6.83	1.56	0.17	4.12	14.63	13.33	13.76	11.37	2.44	27.61
Exhausted olive cakes <sup>23</sup>	43.66	57.04	60.75	63.31	77.13	82.66	73.12	66.12	64.96	59.85
Fruit kernels <sup>23</sup>	50.00	75.00	75.00	75.00	75.00	80.00	70.00	70.00	70.00	70.00
Pellets - imports <sup>24</sup>	112.46	147.22	149.80	178.54	168.63	167.35	157.04	173.82	160.05	183.62
Pellets - primary production <sup>23</sup>	195.00	180.00	186.42	179.86	196.09	231.58	237.66	233.89	232.80	200.25

The prices of forest residues, as recorded in questionnaires sent by CRES to several biomass users have exhibited a slight decrease until 2015. Nevertheless, a considerable increase was occurred in 2016 temporarily before the considerable reduction in the period 2017-2018.

Firewood recorded a relative increase of prices in the period 2011-2016, while the prices seem to be stabilised in the period 2017-2018. The prices for the exhausted olive cakes decreased continuously

<sup>23</sup> Primary research based on questionnaires conducted by CRES

<sup>24</sup> National Statistical Services (ELSTAT)

<sup>25</sup> General Secretariat of Forests, Ministry of Environment, Energy and Climate Change

in the period 2015-2018 after the continuous increase until 2014. The firewood imports prices increased the period 2015-2016 after the temporary decrease in 2013 and 2014 obviously depending on the countries of origin, while they remain in the same level until 2018.

When biomass exploitation investments start, as a consequence of the favourable legal framework for bioenergy production, imports of firewood are expected to rise, while exhausted olive cakes may be exploited locally rather than exported.

The prices of imported pellets have also recorded a relative increase in the years 2009 to 2012, while a decline has been observed the following three years in relation with 2012. Nevertheless, an increase was recorded after 2016 resulting into the highest figure in 2018. Finally, it should be noted that sunflower seed prices ranged from 40-45 €/t.

**8. Please describe the development and share of biofuels made from wastes, residues, non-food cellulosic material, and ligno cellulosic material (Article 22(1) i) of Directive 2009/28/EC).**

The development and share of biofuels made from wastes, residues, non-food cellulosic material, and ligno cellulosic materials is presented in Table 8.i.

**Table 8.i: Development in Biofuels.**

<i>Feedstock as listed in Annex IX Part A of Directive 2009/28/EC</i>	<b>2017</b>	<b>2018</b>
<i>(a) Algae if cultivated on land in ponds or photobioreactors</i>		
<i>(b) Biomass fraction of mixed municipal waste, but not separated household waste subject to recycling targets under point (a) of Article 11(2) of Directive 2008/98/EC</i>		
<i>(c) Bio-waste as defined in Article 3(4) of Directive 2008/98/EC from private households subject to separate collection as defined in Article 3(11) of that Directive</i>		
<i>(d) Biomass fraction of industrial waste not fit for use in the food or feed chain, including material from retail and wholesale and the agro-food and fish and aquaculture industry, and excluding feedstocks listed in part B of this Annex</i>		
<i>(e) Straw</i>		
<i>(f) Animal manure and sewage sludge</i>		
<i>(g) Palm oil mill effluent and empty palm fruit bunches</i>		
<i>(h) Tall oil pitch</i>		
<i>(i) Crude glycerine</i>		
<i>(j) Bagasse</i>		
<i>(k) Grapemarcs and wine lees</i>		
<i>(l) Nut shells</i>		
<i>(m) Husks</i>		
<i>(n) Cobs cleaned of kernels of corn</i>		
<i>(o) Biomass fraction of wastes and residues from forestry and forest-based industries, i.e. bark, branches, pre-commercial thinnings, leaves, needles, tree tops, saw dust, cutter shavings, black liquor, brown liquor, fibre sludge, lignin and tall oil</i>		
<i>(p) Other non-food cellulosic material as defined in point (s) of the second paragraph of Article 2</i>		
<i>(q) Other ligno-cellulosic material as defined in point (r) of the second paragraph of Article 2 except saw logs and veneer logs</i>		
<i>Feedstock as listed in Annex IX Part B of Directive 2009/28/EC</i>	<b>2017</b>	<b>2018</b>
<i>(a) Used cooking oil</i>	15.50	22.51
<i>(b) Animal fats classified as categories 1 and 2 in accordance with Regulation (EC) No 1069/2009 of the European Parliament and of the Council</i>	7.79	11.94

In the above table, the total quantities of biodiesels have been certified as sustainable biofuels according to the provisions of the JMD “Biofuels and bioliquids sustainability system according to

Article 32H of L.3468/2006” (JMD YTIEN/ΔΑΠΠΕΕΚ/32218/1051/03.05.2019, OG B 1473/2019), which sets the requirements and the procedures for the certification and verification of compliance with the sustainability criteria and replaced the JMD “Biofuels and bioliquids sustainability system” (JMD οικ.175700/14.04.2016, OG B 1212/2016).

**9. Please provide information on the estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality within your country in the preceding 2 years. Please provide information on how these impacts were assessed, with references to relevant documentation on these impacts within your country (Article 22 (1) j) of Directive 2009/28/EC).**

No specific study has been performed to gauge the impact of the production of biofuels and bioliquids on biodiversity, water resources, water and soil quality within Greece so far. Nevertheless, no significant impact is expected due to the small-scale energy crops cultivated in the country and the appropriate legislation issued and applied.

**10. Please estimate the net greenhouse gas emission savings due to the use of energy from renewable sources (Article 22 (1) k) of Directive 2009/28/EC).**

For the calculation of net greenhouse gas emission savings from the use of renewable energy other than solid and gaseous biomass and biofuels (i.e. hydro, wind, PV, solar thermal, geothermal and heat pumps), the methodology used was based on the emission factors that were presented in the national Annual Inventory Report, submitted in 2019 under the Convention and the Kyoto Protocol for greenhouse and other gases for the years 1990-2017 (Table 10.i).

**Table 10.i: Utilised emissions factors.**

	CO2	CH4	N2O
	t/TJ	kg/TJ	kg/TJ
<b>Public Electricity and Heat Production</b>			
Liquid Fuels	76.73	3.00	0.60
Solid Fuels	120.78	1.00	1.50
Gaseous Fuels	55.84	1.00	0.10
<b>Manufacturing Industries and Construction</b>			
Liquid Fuels	83.70	1.85	3.91
Solid Fuels	95.34	1.00	1.50
Gaseous Fuels	55.73	1.00	0.10
<b>Other Sectors</b>			
Liquid Fuels	72.50	1.96	2.16
Solid Fuels	99.18	252.74	1.50
Gaseous Fuels	55.73	1.00	0.10

The estimation of GHG emissions presented in the aforementioned report was based on the methods described in the IPCC Guidelines, the IPCC Good Practice Guidance, the LULUCF Good Practice Guidance and the CORINAIR methodology. The emission factors used derived from the above-mentioned methodological sources with special attention paid in selecting the emission factors so as to better reflect practices in Greece. Furthermore, emission factors were also obtained from installation specific information contained in EU ETS annual verified submissions.

The methodology used to calculate the net greenhouse gas emission savings from the use of renewable energy, other than solid and gaseous biomass and biofuels, in the current report is as follows.

For the calculation of net GHG saving from the use of renewable electricity (other than solid and gaseous biomass) the shares of coal, oil and gas in electricity in the total consumption of fossil fuels are firstly estimated. The amount of fossil fuels used in the national electricity mix that would produce the same amount of electricity is actually produced by RES is calculated next. The estimated primary energy saved is, then, allocated to each fuel (liquid, solid and gaseous fuels), according to the predefined shares, and is finally multiplied with the aforementioned emission factors.

A similar approach is followed for the estimation of net greenhouse gas emission savings due to the use of renewable energy sources, other than solid and gaseous biomass and biofuels, in heating and transport.

For the calculation of net greenhouse gas emission savings from the use of solid and gaseous biomass and biofuels, the methodology used is as follows.

- For biofuels: In accordance with Article 22(2) of Directive 2009/28/EC.
- For electricity and heat the weighted fossil fuel emission factors are again estimated on the basis of the emission factors for liquid, solid and gaseous fossil fuels (as presented in the national Annual Inventory Report, submitted in 2019 under the Convention and the Kyoto Protocol for greenhouse and other gases for the years 1990-2017).

Table 10.ii presents the estimates for GHG emission savings from the use of renewable energy in 1000t CO<sub>2</sub>eq, as estimated according to the approach described above.

**Table 10.ii: Estimated GHG emission savings from the use of renewable energy (1000 t CO<sub>2</sub>eq).**

Environmental aspects	2017	2018
<i>Total estimated net GHG emission saving from using renewable energy<sup>26</sup></i>	15,315	18,495
- Estimated net GHG saving from the use of renewable electricity	11,415	14,514
- Estimated net GHG saving from the use of renewable energy in heating and cooling	3,570	3,645
- Estimated net GHG saving from the use of renewable energy in transport	331	336

It should be noted that the estimated net GHG savings from the use of renewable electricity are higher in 2018 compared with 2017 due to the increased penetration of RES and the reduced utilization of lignite.

The higher penetration of RES (mainly solar thermal systems and heat pumps) lead to higher GHG emission reduction for heating and cooling in conjunction with the lower energy consumption.

Finally, the increase of the GHG savings in transport sector in 2018 compared to 2017 can be justified by the increased penetration of biodiesels with lower emission factors.

**11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2020) the excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/imported from other Member States and/or third countries, as well as estimated potential for joint projects until 2020. (Article 22 (1) l, m) of Directive 2009/28/EC).**

The estimated excess production, which could be used for transfer to other MS, was submitted in the Greek NREAP (Table 9 of the Greek NREAP) and it is presented in Table 11.i. Moreover, Table 11.i presents the calculation of the actual RES excess/deficit for the period 2010-2018

<sup>26</sup> The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.



compared to the RES indicative trajectory prepared in 2009. According to the presented results a deficit, which is amounted to 377 ktoe, has been calculated for the period 2010-2018.

**Table 11.i: Actual and estimated excess and/or deficit (-) production of renewable energy compared to the indicative trajectory which could be transferred to/from other Member States and/or third countries in Greece (ktoe).<sup>27 28</sup>**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual excess or deficit production	196	260	380	306	266	211	-81	-189	-377		
Estimated excess or deficit production	257	408	513	686	812	856	842	737	743	683	529

### **11.1. Please provide details of statistical transfers, joint projects and joint support scheme decision rules.**

No developments have been made so far on statistical transfers, joint projects and joint support scheme decision rules.

### **12. Please provide information on how the share for biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates (Article 22 (1) n of Directive 2009/28/EC).**

The energy produced from waste (municipal, industrial etc.) corresponds exclusively to biogas primary production deriving from landfill and sewage sludge biogas plants. Until now, no RDF/SRF are exploited for electricity production in Greece and thus no requirement has arisen to estimate the share for biodegradable waste in the reported figures.

Finally, it should be noted that a small quantity of used cooking oils is utilized for electricity production since 2017.

### **13. Please provide the amounts of biofuels and bioliquids in energy units (ktoe) corresponding to each category of feedstock group listed in part A of Annex VIII taken into account by that Member State for the purpose of complying with the targets set out in Article 3(1) and (2), and in the first subparagraph of Article 3(4).**

The JMD “Biofuels and bioliquids sustainability system according to Article 32H of Law 3468/2006” (JMD ΥΠΕΝ/ΔΑΠΕΕΚ/32218/1051/03.05.2019, OG B 1473/2019), sets the requirements and the procedures for the certification and verification of compliance with the sustainability criteria replacing the JMD “Biofuels and bioliquids sustainability system” (JMD οικ.175700/14.04.2016, OG B 1212/2016), which was put into force in October 2016.

Thus, the quantities reported in the Table 13.i correspond to certified sustainable biofuels and bioliquids, which are distributed in the Greek market in 2017 and 2018.

<sup>27</sup> Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up 2020. In each report Member State may correct the data of the previous reports.

<sup>28</sup> When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).

**Table 13.i: Amounts of biofuels and bioliquids in energy units (ktoe) corresponding to each category of feedstock group listed in part A of Annex VIII.**

<b>Feedstock group</b>	<b>2017</b>	<b>2018</b>
Cereals and other starch-rich crops		
Sugars		
Oil crops	133.6	123.6