Cooperation under the RES Directive

Case study: Joint Projects between the Netherlands and Portugal

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Task 4 report

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Executive Summary

The European Directive 2009/28/EC establishes national renewable energy (RES) targets for the European Member States. Moreover, it introduces the possibility for Member States to cooperate in order to jointly achieve their targets. In this case study we analyse the possibility of Joint Projects between Portugal and the Netherlands. Please note that this study serves as an example for the potential set-up, issues and solutions of joint projects between Member States. This is a hypothetical case, which has however greatly benefited from feedback from representatives of the Netherlands and of Portugal.

As the starting point, we assume that Dutch support scheme SDE+ (an auction scheme) would introduce new categories for projects from Portugal, including country and technology specific upper support levels. Thus, projects in Portugal would apply in the SDE+ for support. If projects from Portugal are selected in the SDE+ process (thus, if they are competitive with projects located in the Netherlands), these projects would receive a sliding feed-in premium. In contrast to projects located in the Netherlands, the reference price to calculate the premium payment would be the Portuguese instead of the Dutch electricity price.

Whereas for the Netherlands the physical import of RES-E is not a preference, for Portugal the export of electricity from renewable energy sources (RES-E) is a political requirement for this cooperation to be feasible. This is justified with the high share of RES in both Spain and Portugal, combined with overcapacities in Portugal. Moreover, possibilities to balance intermittent RES through interconnectors are limited to connections to Morocco and France (via Spain). In this study we argue that acquiring and nominating Physical Transmission Rights (PTRs) related to cross-border capacities might be one option to "prove" the export of the RES-E. The price of the PTRs could be included into the SDE+ application (the "bid") and would thereby be included into the direct support costs of the Netherlands. However, making PTRs a requirement for support has a disadvantage: so far only year-ahead products exist and predicting the price for PTRs beyond this time frame (not to speak of the entire support period) is very difficult. This insecurity would have to be added as a risk premium on top of the financing costs, ultimately making this cooperation economically less attractive than without this requirement. We briefly discuss alternative options, such as making the cooperation conditional on additional interconnector capacity, which might equally address Portugal's main infrastructural concern.

Regarding costs and benefits, the main costs of this cooperation include the direct support costs which the Netherlands have to bear. In case the Portuguese market price is used to calculate the premium payment, these costs slightly increase due to lower electricity prices in Portugal than in the Netherlands, requiring higher premium payments. If the physical transfer of electricity is required, presumably the Dutch electricity price would be used to calculate the premium payment. In this case, additional occurring support costs would comprise of the cost of electricity transfer, which might be included into the bid of the Portuguese project developer who seeks to participate in the SDE+. While the Netherlands pay the direct support costs, their main benefit is to avoid support costs by using low-cost sites in Portugal. Portugal mainly benefits from local job creation and market as well as industry development. The main costs that Portugal has to bear comprise the usage of its good sites

and system integration costs. In this case study we argue that several other hardly quantifiable effects should be discarded and that the main costs and benefits might balance each other out, thus creating a win-win situation. In order to keep the complexity of this cooperation as low as possible (which makes such an agreement more likely), we suggest to even refrain from additional compensation payments apart from those made through the direct support costs. The issue of additional payments is, of course, to be decided by Portugal and the Netherlands and might be perceived very differently by them.

One of the potential barriers to this cooperation is ensuring public acceptance: to explain for the Dutch public to pay support for RES-E from abroad and for Portugal to use its good sites might be a challenge. However, the set-up of keeping the SDE+ logic (thus, ensuring efficiency gains in target achievement and avoiding price risks) and the job-related benefits in Portugal might ease the challenge of increasing political acceptance of this cooperation. Moreover, the main concern of Portugal is addressed by the infrastructural requirements of exporting the electricity. However, the requirement of the physical transfer of electricity from Portugal to the Netherlands – which can be interpreted as simply reflecting the difficult infrastructural situation of Portugal regarding its integration into the European electricity market – might be a critical technical barrier. By fully incorporating the cooperation into the SDE+, the Netherlands effectively eliminate any price risks related to this cooperation, thereby eliminating a potentially critical barrier. Legal barriers are seemingly relatively minor, meaning that adaptions to existing legislation should technically be feasible and not overly complex.

Among the practical issues to be solved is to ensure the proper monitoring and supervision of projects in Portugal concerning their implementation as well as the adequate proof of RES-E production. Regarding the former, the Portuguese Directorate General for Energy and Geology of the Ministry of Environment, Spatial Planning and Energy could officially confirm the existence of all required permits to apply for the SDE+. Moreover, it could equally check upon the progress of projects after one year, as done by the Netherlands Enterprise Agency (RVO). To prove the RES-E production, the same Directorate would receive this information from the Portuguese TSO and provide the required information to the Dutch RVO.

We suggest in detail several legal changes which might be made to the Dutch legislation, whereas we argue that almost no (or only minor) changes would have to be implemented in the Portuguese legislation. Moreover, a draft cooperation agreement is provided in the study, which might serve as a starting point for the actual agreement between the Netherlands and Portugal (or any other Member State, who is interested in a similar cooperation setup).

Despite several complex issues this cooperation might significantly benefit both the Netherlands and Portugal. If the complexity of the cost-benefit allocation is kept to a possible minimum, all other issues seem to be manageable, with the physical transfer of electricity being the most challenging one.

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1 Introduction

The European Directive 2009/28/EC establishes national RES targets for the European Member States. Moreover, it introduces the possibility for Member States to cooperate in order to jointly achieve their targets. The types of inter-European cooperation available to the Member States include Statistical Transfer (Art. 6), Joint Projects between Member States (Art. 7), and Joint Support Schemes (Art. 11); they imply that two or more Member States combine (part of) their RES target to achieve this target more efficiently. In the case of Joint Projects, two or more Member States decide to jointly finance new RES installations. The additional power production then counts towards the participating Member States' target achievement. The distribution of support costs as well as of the target achievement depends on the specific agreement.

In this case study, we explore possible Joint Projects between the Netherlands and Portugal. We analyse and discuss in detail several design options, assumptions, and context factors with the aim of showing how such a cooperation agreement could be realised between both countries. While this study is hypothetical, it has greatly benefited from feedback from representatives of the Netherlands and of Portugal, making it as realistic as possible.

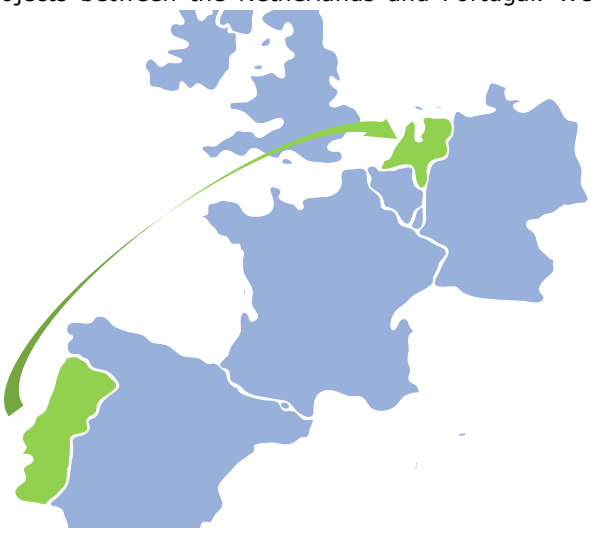

Figure 1 Host and off-taking countries Portugal and Netherlands

In Fall 2013, in the Netherlands a wide range of stakeholders elaborated and approved the Energy Agreement, which sets an ambitious target of 16% RES share by 2023. However, currently the Netherlands are slightly lagging behind their envisaged RES deployment: the share rose from 4.3% in 2011 to 4.5% in 2012, compared to its indicative target of 4.7% for 2012 in their NREAP. For the year 2020, in the European "Keep-on track" project, the Vienna University of Technology estimates that the Netherlands will probably reach a RES share of 10,7% by 2020, even if non-cost barriers are effectively mitigated and existing RES policies are fine-tuned (more efficient and effective) (Resch et al. 2014). Thus, this research implies that the Netherlands would still fall short of its 14% target for 2020. Among other factors, this is due to a steep cost potential curve, which lacks sufficient low-cost potential and which makes RES target achievement particularly costly for the Netherlands. Against this specific background, the Cooperation Mechanisms would not directly replace domestic deployment, but would rather complement cost-effective domestic deployment (which falls short of the target achievement) with reliable and efficient target achievement through the Cooperation Mechanisms.

In contrast, Portugal has abundant excellent sites for RES (foremost wind and solar) which it will not need to fully exploit to meet its own RES target of 31% RES in final energy consumption. Moreover, in the Keep-on track project, EEG from Vienna University of Technology estimates that Portugal, with mitigated non-cost barriers and improved RES policies, might reach a RES share of 32,7%, exceeding its 31% target by 1,7%-age points (Resch et al. 2014).

Given these circumstances, the Netherlands could use part of Portugal's excellent RES sites to reach its target at a lower cost than by solely reaching it through domestically deploying RES. In turn, Portugal could engage in the Cooperation Mechanism to strengthen its industrial/energy sector. Thus, Portugal is the "host-country" (where additional RES-installations are built) and the Netherlands is the "off-taking" country. Indeed, the expressed interest of both Member States to engage in cooperation with each other is to reduce support costs on the Dutch part and to foster private sector development on the Portuguese part, thereby effectively creating a win-win situation.

In October 2013, the Dutch Ministry of Economic Affairs announced that it will investigate the possibilities to open up the domestic support scheme SDE+ for foreign projects (Ministry of Economic Affairs, 2013). On 18 November 2013 the parliament took a vote, clearly rejecting an initiative to stop the exploration of the Cooperation Mechanisms, i.e. the opening of the SDE+ for foreign RES installations. The Ministry plans to inform the parliament in the course of 2014 about further details of its proposal. In contrast, Portugal has not yet taken official legislative steps, but actively explores cooperation possibilities with other Member States.

The case study, first, describes the general set-up and design characteristics of the cooperation. In this section we also address how to adapt existing support schemes, how to potentially make use of lower country risks to reduce the levelised cost of electricity (LCOE) and how to integrate the installations into the electricity market within this cooperation. Moreover, this section discusses in detail the option of physically transferring electricity from Portugal to the Netherlands, which in contrast to the Netherlands is a prerequisite for Portugal. Section 3 discusses costs and benefits for both countries and how they could be dealt with in order to create a win-win situation for both countries. Moreover, we discuss remaining obstacles which this cooperation might face and how they could be addressed. In section 5, we address practical arrangements to be taken, including issues such as permits required by Portuguese projects and the supervision of their timely implementation. Moreover, we suggest concrete legal amendments to national legislation in order to legally accommodate this cooperation. We conclude the case study by summarising the main findings and by assessing the overall setup of the proposed cooperation. In the annex we provide a proposal for a draft agreement for this cooperation, which might serve as an actual starting point for this agreement as well as for other Member States interested in a similar type of cooperation.

2 Set-up and design characteristics of the Cooperation Mechanism

2.1 General set-up: Projects in Portugal receive support from the SDE+

Portugal and the Netherlands need to decide whether to set-up a separate support scheme for Joint Projects and, if not, which of the existing support schemes they will use to support the RES-installations. For both countries, setting up a separate support scheme does not seem to be a realistic option for reasons of public acceptance. Thus, one option is to use the Portuguese support scheme to support additional deployment of RES installations in Portugal, which are financed via the public budget of the Netherlands. However, again this option is not suitable for reasons of political and public acceptance in the Netherlands.

For the Netherlands a political requirement, if RES produced abroad Is paid for, is that support flows need to be organised via the existing Dutch support scheme. Thus, we assume that the Dutch support scheme for RES, the SDE+, is opened up for RES power plants from Portugal, resulting in a bi-lateral multiple projects framework contract. The general logic of the SDE+ is kept in place and Portuguese project developers "bid" into the SDE+ in order to receive support payments. Support would be paid over the time period as defined in the SDE+ (5, 12 or 15 years, depending on the technology). In return, all energy produced by those plants located in Portugal and receiving support from the SDE+ would count towards the RES target achievement of the Netherlands.

2.1.1 Adapting the Dutch support scheme for cooperation

The Dutch support scheme is organised as an auction and determines in a competitive process which power plants are granted access to the support scheme. At the same time it defines the support level for each plant (including electricity, gas and heat). Thus, the SDE+ scheme aims to incentivise the deployment of RES at the lowest possible cost, which is important to bear in mind when assessing this potential cooperation.

The SDE+ opens in a number of sequential rounds each year (see Figure 2). While the SDE+ does not reserve parts of the support budget for specific technologies, in each round of the auction increasing support levels are defined for specific technologies. These support levels are based on LCOE calculations. They increase from one round to the next and developers can apply for support in each round according to their technology. If they wait until later rounds, they can benefit from a higher subsidy (e.g. if the upper support level is raised from 8 to 9 €ct/kWh). However, the annually available budget is capped and as soon as the entire budget has been awarded to projects the auction is closed for that year; project developers might not receive support at all. Thus, the scheme introduces competition through this first-come first-serve basis.

While the SDE+ differentiates between technology categories (maximum support levels per technology), it also includes a "free category" in each round. This category is open for all technologies that are able to produce at lower costs than the (maximum) support level that has been calculated

for the specific technology (Netherlands Enterprise Agency 2014, also see Figure 2). This way, the free category gives entrepreneurs the opportunity to access the SDE+ sooner (as thus increase their chance to receive support). All projects, independent of the technology, can apply for subsidy in this free category.

I	II	III	IV	V/VI
7	8	9	11	13/15
Technology A (6.5)	Technology A (6.5)	Technology A (6.5)	Technology A (6.5)	Etc.
Free (7)	Technology B (7.5)	Technology B (7.5)	Technology B (7.5)	Etc.
	Free (8)	Technology C (8.5)	Technology C (8.5)	Etc.
		Free (9)	Technology D (9.5)	Etc.
			Free (11)	Etc.

Figure 2 Illustration of SDE+ (source: Dutch Ministry of Economy)

Project developers whose bid gets selected in the SDE+ receive a sliding premium payment ("SDE+ contribution"), which is calculated as the difference of the nominal "base amount" (strike price that is announced in the respective round) and the average annual electricity value, the so called "correction amount" (see Figure 3 and section 2.1.3).

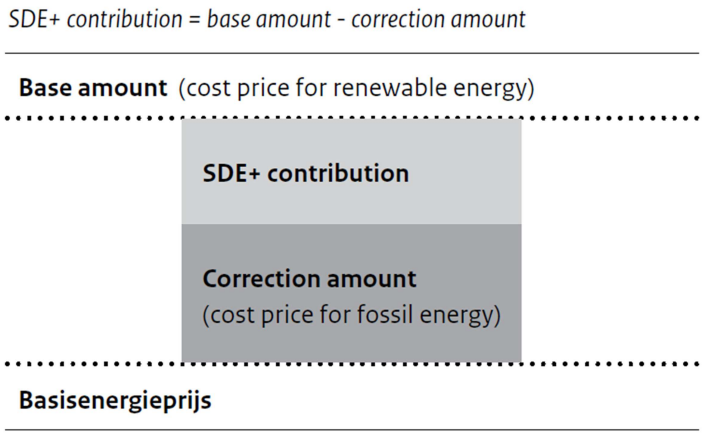

Figure 3 Illustration of SDE+ feed-in premium (Source: Netherlands Enterprise Agency 2014)

In order to accommodate the cooperation, the SDE+, which is currently restricted to installations on Dutch territory, would have to be opened for installations from abroad. It could introduce a new category in its support scheme that defines the 'ceiling price' (maximum support level) for the projects which are subject to the Cooperation Mechanism. The first option is a 'national category'

(and thus ceiling price), which defines an upper limit of the support level that the Netherlands perceive as justifiable and "efficient" in comparison to their domestic RES costs (thus, a category "Portuguese projects"). This option would fully discard the logic of the LCOE, underlying the current technology-specific support levels in the SDE+. Moreover, it would imply the risk of providing excessive support for installations abroad (which could be interpreted as "windfall profits"). Also the EC recommends in its guidance for RES support schemes to base administrative definitions of support levels on LCOE rather than other factors (EC 2013a). As a consequence, the Netherlands prefer to maintain the existing LCOE logic for the additionally introduced categories for installations from abroad.

This option introduces maximum support levels for each technology in the SDE+ specifically for PV projects in Portugal and thus keeps the LCOE-logic of the SDE+[1] (see for State Aid implications on restricting the opening of the SDE+ to Portugal instead of Europe section 4.3.1). However, at first sight this option implies significant transaction costs: the established process to define the technology-specific support levels in the SDE+ would have to be replicated for the respective technologies in Portugal. In addition, if this type of cooperation was scaled up and implemented with other countries, the same procedure would have to be applied for all participating Member States. A pragmatic approach to this challenge is to keep the existing LCOE formula and to replace only specific resource-related factors.[2]

In the current approach to determine the LCOE in the Netherlands, ECN and DNV GL draft recommendations for the technology-specific ceiling prices. In a consultation process with market parties, these recommendations are discussed and potentially corrected (ECN 2013a; 2013b). Based on this consultation, ECN submits a final recommendation to the Ministry of Economics, which usually adopts them. For Portugal, this process would most likely have to be limited in a way which excludes extensive consultation with market parties in order to keep transaction costs manageable. Moreover, the correction for the LCOE specific to Portugal would be limited to the factor "available resources" for the envisaged technologies, that is, to solar irradiation and wind speeds at different categories of benchmark sites (e.g. see the row 'full load hours' in the calculation tool). Other technologies and other cost factors, such as project development costs would be excluded from this calculation in order to simplify the process to an extent that additional transactions costs are kept to a possible minimum. Moreover, excluding project development costs from the LCOE which are specific to the Portuguese context might introduce an incentive for Portugal to reduce those costs wherever possible (e.g. related to licencing procedures). Ultimately, as part of fulfilling the cooperation agreement, Portugal would officially submit the required resource data to the relevant Dutch institutions (the Ministry of Economy and ECN), which include this data into its cost calculation.

[1] These categories could be extended to projects from other countries as well. However, due to the differing LCOE in each country, country and technology-specific categories would have to be introduced.
[2] See for the calculation tool to define the LCOE:
https://www.ecn.nl/fileadmin/ecn/units/bs/SDE/SDE_2014/SDE2014.xlsx

2.1.2 Lowering the cost of capital for Portuguese projects

A central element of the LCOE is the cost of capital (Held et al. 2014, p.4). For this cooperation one could make use of the lower country risk of the Netherlands instead of the higher Portuguese country risk. This might lower the cost of capital and thus the LCOE for projects in Portugal which receive support within this cooperation. The cost of capital is determined by the interest rate for debt, the required return on equity, the debt-equity ratio, the period for which debt and equity need to be committed, and fees paid for acquiring the required capital (structuring finance) and depreciation (Klessmann et al. 2013). Calculating the LCOE under different policy regimes shows that the cost of capital can represent 20 to >50% of LCOE in an average wind or PV project, i.e. in projects without fuel costs (Rathmann et al. 2011). The weighted average cost of capital (WACC) strongly depends on the investment risk, which is expressed as a risk premium on top of the risk-free reference rate (e.g. Euribor or the country-specific interest rate). The investment risk subsumes all kinds of project risks, i.e. technology, country, policy, bank- and investor-specific risks. Thus, country risks and policy related risks increase the LCOE, whereas using lower country risks and low-risk policies reduce the LCOE. So far, it is not possible to exactly determine the impact which the use of the SDE+ for Portuguese projects would have on their LCOE, since it is not entirely clear to which extent the country risks account for the overall investment risks. However, using the SDE+ as the source of remuneration should, as a tendency, reduce the LCOE and in turn might reduce the required support level.

As stated above, we suggest to reduce the adaptation of the ceiling prices in the SDE+ for Portuguese projects to resource-specific aspects. Thus, we also recommend to ignore any difference in cost of capital when adapting the LCOE for Portuguese projects. Instead, we propose to make use of the lower country risk of the Netherlands, which should in turn increase the competitiveness of Portuguese projects in the SDE+ and thus the likeliness of Portuguese projects to effectively receive support under the cooperation agreement. Moreover, reducing the costs of capital for these projects would ultimately reduce support costs under the SDE+ and increase the overall efficiency gains under this cooperation.

In order to have access to the lower country risk of the Netherlands, Portuguese project developers would have to either seek financing from a Portuguese Bank. Other options would be for Portuguese project developers to seek finance from a Dutch financial institution. The advantage would be in this case that the financial institution would potentially have detailed knowledge of and experience with financing projects whose remuneration is secured through the SDE+. Another option, which is beyond the scope of this study, is to include the EBRD into the financing of the Joint Projects. This could either happen through direct financing of such projects or through supporting financing from the private sector through guarantees in a type of public private partnership (PPP).

2.1.3 Integrating RES-E into the market

In the SDE+, support for RES is granted as a sliding feed-in premium: the project developer has to sell the electricity directly to the market, either at the power exchange or in over-the-counter contracts (OTC). The producer receives as support the difference between the yearly average electricity price and the support level he or she applied for in the SDE+ rounds (the so called "base

amount"). The yearly average electricity price used for the SDE+ depends on the supported technologies:

- for PV <15kWP: electricity tariff for small end-users (for an electricity consumption of 3500 kWh, average values published by the Central Bureau of Statistics),
- for PV 15-100 kWp: (unweighted) average hourly day-ahead peak load (defined as 8:00-23:00 hrs.) price at the Amsterdam Power Exchange (APX),
- other electricity options: (unweighted) average hourly day-ahead electricity price at the APX.

Moreover, an "unbalance factor" is included into the premium payment, taking into account the reduced market value of RES (as it usually feeds in when other RES also feed in, thereby structurally lowering its market value). Thus, the unweighted average market price is reduced by a factor, for instance, of 0.89 for onshore wind, resulting in higher premium payments compared to the actual average annual electricity price.

In this cooperation, the project located in Portugal would receive the difference between the respective base amount of the Dutch SDE+ and the Portuguese average electricity price.[3] Having the Portuguese average electricity price as the point of reference to determine the premium payment would follow the logic of market integration of RES. However, a lower average wholesale market price in Portugal than in the Netherlands would result in a higher overall amount of required support for an installation under the cooperation agreement. Of course, this aspect has to be taken into account in the cost-benefit calculation and allocation (see chapter 3).

2.2 Requirement of physical transfer of electricity

For the Netherlands the physical transfer of electricity into the Dutch electricity system is not of interest. In contrast, exporting the electricity which is produced under a Cooperation Mechanism is a political prerequisite for Portugal. This motivation stems from a high RES share (and potential overcapacities) in the Portuguese electricity system in combination with a high RES share in Spain. The Iberian Peninsula is connected to the European electricity market only through France. Thus, the possibilities to balance intermittent sources such as wind and solar PV through electricity exchange with neighbouring electricity systems is limited to the

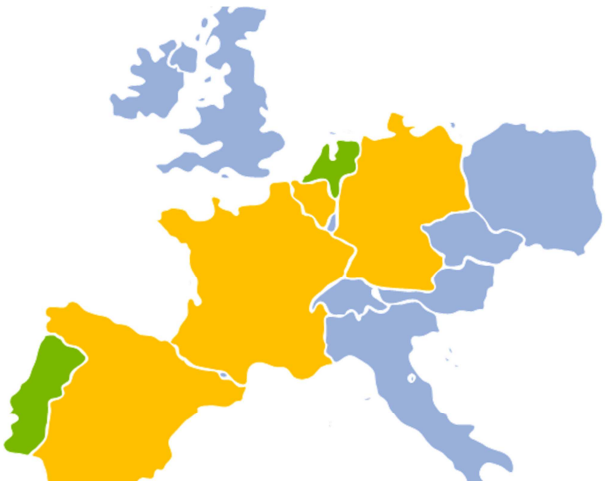

Figure 4 Countries affected by physical transfer of electricity

[3] If electricity import to the Netherlands is a requirement, also the Dutch electricity price could be chosen as the reference price (the "correction amount"). However, in terms of reacting to electricity demand in the most relevant price zone, the Portuguese electricity price might still be the preferable option.

interconnectors to France and to Morocco. This situation is reflected in Portugal's call for an additional target for 2030 "of at least 25% for all the Member States of interconnection capacity for the total production capacity by 2030. This assumes that we should reach a target of 12% by 2020 and 10% for all Member States in the very short term" (Government of Portugal 2014). Such a target (and its fulfilment) would, in the medium term, significantly improve the integration of the Iberian Peninsula into the European electricity market.

In order to export electricity, RES producers and market participants would have to sell the produced electricity from Portugal to either the exchange or via an over-the-counter contract (OTC) to a market participant in the Netherlands. However, a general framework condition for the export of electricity is how much interconnector capacity between the affected countries is available, thus, between Portugal and Spain, Spain and France, France and Belgium and Belgium and the Netherlands. As an alternative route, the connections from France to the Netherlands via Germany could be used.

A potential bottleneck for the physical export of electricity from Portugal to the Netherlands might the interconnector between France and Spain, which is so far insufficient. However, the cross-border transmission capacity between the two countries will be upgraded from 1.4GW to 3.4GW presumably by the mid of 2015 (state of 18 November 2013) (Mavroleon 2013). Moreover, ENTSO-E's Ten Year Network Development Plan (TYNDP) of 2012[4] states in its "Regional Investment Plan: Continental South West" that significant additional cross-border capacities will be added between 2017 and 2022 through the Biscay/Gascogne Bay from the Basque Country in Spain to the Aquitaine area in France (ENTSO-E 2012b: 57), thus falling into the relevant timeframe for this case study. Also the Projects of Common Interest (PCIs) list this project as "consisting of a twin link of 2x1000 MW" (EC 2014a; 2014b). Already in 2010 the EC called for such projects, when it recommended that "[a]n interconnection capacity of at least 4,000 MW between the Iberian Peninsula and France will be needed by 2020" (EC 2010). Table 1 provides an overview of current cross-border capacities as well as how these capacities are operated (also see section 2.2.1).

[4] The second official TYNDP it is expected to be released for stakeholder consultation at the end of June/beginning of July 2014, with the final version being published in December 2014.

Table 1 Overview of cross-border capacity and capacity allocation regimes (sources: ENTSO-E 2014; ACER/CEER 2012; Red Eléctrica de España 2012; OMIE 2014a)

Capacity allocation regime					
	Available Capacity (year ahead NTC values, Jan – Dec. 2014) (MW.h)	**Year ahead**	**Month ahead**	**Day-ahead**	**Intraday**
PT->ES:	2000-2400	Implicit (only financial product to hedge price differences?)	Implicit (only financial product to hedge price differences?)	Implicit	implicit
ES->FR:	0-900 (very variable)	n.a.	explicit	implicit	explicit
FR->BE	1850	explicit	explicit	Implicit	explicit
BE->NL	946	explicit	explicit	Implicit	implicit
Alternative route					
FR->DE:	1300 MW - 2500MW	explicit	explicit	Implicit	explicit and implicit
DE->NL:	2x 416 (according to CASC)	explicit	explicit	Implicit	explicit

2.2.1 Background: Explicit booking of interconnector capacity in coupled markets

A current development that heavily influences access to cross-border capacities is the coupling of European electricity markets. Market coupling is developing via so called "Regional Initiatives", such as "Central West Europe" and is expanding throughout Europe. One of the main principles of market coupling is that market participants who want to trade across borders do not directly access cross-border capacity (explicit auctioning). Instead they offer energy bids in their areas for production or consumption and the available cross-border transmission capacity is allocated in the most efficient way by the power exchange (so called implicit auctioning).[5] The EU Target Model for electricity market integration (which has evolved out of the third energy package) envisages the implementation of implicit auctions for the entire European electricity market for the day-ahead and intraday market.

In contrast to implicit auctioning, capacity can also be allocated in "explicit auctions". In this case, the interconnector capacity is auctioned to the market separately and independently from the marketplaces where electricity is auctioned. The capacity is normally auctioned in portions through annual, monthly and daily auctions. In case physical export of electricity is a requirement for the Cooperation Mechanism, a market participant would have to acquire Physical Transmission Rights (PTRs), allowing him or her to use part of the interconnector capacity. To receive support, the market

[5] For further insights into cross-border electricity trade also see Bahar, H. and Sauvage, J. (2013) and ENTSO-E (2012a).

participant would have to nominate (thus, use) the PTRs across all relevant borders to receive support for the respective amount of electricity produced.

The currently negotiated Network Code on Capacity Allocation & Congestion Management (CACM) (ENTSO-E 2012c) seeks to harmonise the way that intra-day and day-ahead trade of cross-border capacity allocation takes place: Table 1 clearly shows that the option to explicitly access cross-border capacity differs between borders and between the different products (e.g. regarding forward-products). All capacity allocation between Spain and Portugal is implicit. From Spain to France it is explicit for the forward market and implicit for the day-ahead allocation (as of May 2014). From France to Belgium, long-term capacities are explicit and implicit for the day-ahead market. The same applies to the border of Belgium and the Netherlands.

In the CWE (including France, Belgium, Germany, Netherlands) the explicit allocation of the available cross-border capacity is carried out by the joint auction office CASC (Capacity Allocating Service Company). The CASC deals with long-term capacities as well as day-ahead and intraday cross-border capacities, if they are available at a specific border. As of 24 March 2014 the interconnector between France and Spain has been included into the CASC platform, which was ”a necessary step before implementing day-ahead market coupling in the South-West region” (RTE 2014). Moreover, the explicit auctioning of day-ahead capacity allocation has been removed from this border, “subject to the actual implementation of day-ahead market coupling in the South-West region” (CRE 2014). Thus, the proposed option of nominating PTRs would be feasible for the long-term markets (up to day-ahead) for all relevant borders, apart from Spain and Portugal, where explicit access to capacity is allocated through implicit auctions. This does not mean that there is no congestion at those borders, but those are dealt with in the most efficient way. One might argue that the the actual infrastructural challenge lies in the border of Spain and France, where the explicit booking of capacity is possible.

Long-term physical transmission rights (monthly and yearly capacities) are subject to the “use-it-or-sell-it” rule. This means that traders are free to use their long-term capacity rights for nomination (year-ahead and month-ahead). In this case they actually have to deliver the nominated amount of electricity or they can compensate this in the day-ahead market or the intraday market. If they fail to do so, they are charged the respective balancing costs. If they do not nominate the capacity within the relevant time-frame (year-ahead/month-ahead), the PTRs are automatically resold at the day-ahead auction and the traders receive the market spread at the day-ahead market.

Currently, explicit access to intraday cross-border capacities is handled differently on most borders (regarding whether it is available and regarding the offered products). In any case, in contrast to long-term access to PTRs, the access to PTRs on the intraday market will most certainly be replaced by a harmonised approach of implicit auctioning, which is the next major step in the European market coupling process. However, this does not necessarily mean that electricity cannot be traded cross-border anymore. It simply implies that deviations from the forecast for the day-ahead cross-border trading have to be corrected intraday separately in each of the bidding zones.

Since the allocation of cross-border capacities is subject to fundamental changes, the question arises whether this is a feasible option for cooperation under the RES Directive. Currently, it seems like

long-term PTRs might continue to exist, as the CACM calls for adequate products to hedge long-term cross-border trading. However, an early draft of the CACM ENTSO-E stated that explicit auctioning should be abandoned "when adequate energy products will be offered by the power exchanges on the Pan-European platform that will be able to replace current OTC trading; in any case, this shall not extend beyond the end of 2016" (ENTSO-E 2012d). This aspect has been removed from later versions of the draft CACM, meaning that the future of PTRs is somewhat uncertain. If long-term PTRs continue to exist and are even developed further to provide more than year-ahead products, this option is still feasible and might even be improved. If PTRs cease to exist, it is obviously not feasible anymore.

Apart from the developments related to market coupling (and the aim of generally moving from explicit cross-border capacity auctioning to implicit auctioning), the physical effects of cross-border trade including PTRs are somewhat ambiguous. PTRs allow market participants to access cross-border capacity, thus they give preference to a PTR-holder over a non-PTR holder. However, ultimately the actual physical electricity flows (thus, the export of electricity) depends on physical laws rather than on economic trades and is dealt with by the TSOs separately to ensure grid stability.

However, the PTR-solution would have an effect which comes as close as possible to the physical export of electricity. The additional RES-production in Portugal under the Cooperation Mechanism would generally lower prices in Portugal. As a tendency, this would make electricity flows from Portugal to Spain more likely. As currently most of the time electricity flows from Spain to Portugal, the additional RES-plant would lower the electricity imports to Portugal and could thus be assessed as an export of electricity. The lowered price in Spain would in turn result in trades from Spain to France, and so on. PTRs are the closest proxy for reflecting constraints in physical interconnection in the offers of RES producers (by adding the scarcity price of interconnection on top of their bids). Thus, while the PTR does not represent a direct link to physical flows, the indirect effects of using PTRs for cross-border trade, and thus for this Cooperation Mechanism tend towards the same direction. Requiring PTRs for support under the cooperation would ensure that specifically those plants have access to cross-border capacities.

On the other hand, explicit cross-border capacity booking usually results is less efficient allocation of those capacities. This is mainly due to the lack of full information on OTC prices in the respective markets. Whereas ideally the price difference between two price zones should determine the value of the cross-border capacity, this information is not available as transparently as in implicit electricity trade between two price zones via the power exchanges. Moreover, explicit cross-border trading implies additional costs for the entire system (e.g. for re-dispatch), which do not show up in the explicit cross border trade, but which are burdened as part of the general ancillary services provided by the respective TSO (and thus ultimately transferred to consumers).

2.2.2 Additional costs through physical transfer of electricity

Whenever PTRs represent a scarcity of available capacity they come with a price. Thus, they have an economic impact on the costs of the cooperation. Table 2 provides an overview of annual and monthly (unweighted average) prices of interconnector capacities for the year 2013.

There is a significant price uncertainty regarding the actual cost of the required PTRs over the lifetime of a plant, first, because there are no PTR-options beyond the year-ahead market. Hence, prices can only be hedged until one year before the last possible nomination. This creates a substantial risk for the RES project that needs to buy PTRs in order to receive support in the Netherlands. One theoretical alternative would be the implementation of longer-term (15 years) PTRs specifically for electricity from RES. However, long-term PTRs do not seem to be a priority issue in current efforts to implement the target model. Second, the PTR prices are quite volatile. Future prices of PTRs depend on various aspects: in general, the lower the demand for PTRs in comparison to the available amount, the lower the cost of PTRs will be. The demand for PTRs between two (or more) markets depends on the electricity market prices in those markets, which depend on the respective generation fleet, fuel cost, etc and on the available interconnector capacity between both countries. Any RES-E producer required to buy PTRs for proving export would generally be confronted with these uncertainties.

Looking at the year-ahead and month-ahead prices, we observe that the additional cost for PTRs in 2013 would have been between 5.43€ and 16.04 € per MW per hour, if all acquired PTRs were nominated. However, these numbers do not reflect the uncertainty of future PTR prices. Year ahead PTRs have to be bought for all hours of the year (thus, the cost is multiplied by 8760). All PTRs that are not nominated are included into the implicit auctions of cross-border capacities and the PTR holder receives the price spread between two price zone, if there is any. If not, the PTR value equals 0. From this process, significant price risks emerge for the RES producer because he cannot predict what the value of PTRs will be at times when he does not produce RES-E. Thus, the estimate of 5.43€ to 16.04 € per MW per hour is very optimistic, because it exclude any losses the RES-E producer makes if PTRs that he does not use (but had to acquire) have no value.

Table 2 Prices of cross-border capacity (€/MW per hour) (01.01.2013-31.12.2013, source: ENTSO-E 2014)

Interconnector	Year ahead (€/MW)	Month ahead (unweighted average) (€/MW)
PT->ES:	n.a.	n.a.
ES->FR:	2.88	7.52
FR->BE	0.72	4.06
BE->NL	1.83	4.46
Sum	5.43	16.04

One question is who bears these additional costs. Theoretically, the Netherlands could pay this cost directly, as it is in their interest to access low-cost sites in Portugal. However, this would create additional administrative burden and contradict the clear preference of the Netherlands to keep the

logic of the existing SDE+ to the largest possible extent. Thus, the more likely and practical option is that project developers will bear this cost and include it into their individual business case. From a project developer's perspective, these costs per kWh have to be added on top of all other costs and will be reflected in the bid for the SDE+. On top of the estimated price for the PTRs, a significant risk premium is likely to be added for the uncertain future price of the PTRs over the lifetime of the plant. However, project developers might consider cooperation with established traders, who are experienced in cross-border trade throughout Europe and who might even take up a role in hedging part of the risks related to this specific trading agreement.

Burdening the PTR costs on the RES producer ensures that under the SDE+ the Netherlands will not pay more for RES from other countries than for domestic RES production. However, including the PTR costs into the bids also has the disadvantage of lowering the economic attractiveness of the cooperation. In any case, the cooperation agreement should include a fall-back option, in case PTRs cease to exist over the next 15 years in course of the rapidly extending market coupling and changing regulations regarding the allocation of cross-border capacities described above.

2.2.3 Alternative solutions to address Portugal's infrastructural challenge

The PTR requirement to reflect "physical export" from Portugal to the Netherlands imposes additional and potentially prohibitive costs and risks on this cooperation. One alternative is to only export the electricity to France. Ultimately, the export of electricity out of the Iberian Peninsula seems to be the main concern, rather than an import into the Dutch electricity market. If the costs and price risks are reduced to one border, they might be somewhat less prohibitive than if all cross-border capacities have to be accessed explicitly. However, the interconnector between Spain and France is the most congested of the respective interconnectors, which is reflected in its high PTR prices. Furthermore, also this option depends on the further development of (forward) PTRs.

Moreover, the main reason for Portugal to require physical transfer of electricity is to avoid additional challenges to integrate RES due to the Cooperation Mechanisms. The underlying problem however is the bottleneck of lacking interconnector capacities between Spain and France, which can only be removed at root through interconnector expansion. As such, the PTR solution is an (imperfect) attempt to reflect system constraints, which does however not directly overcome the root cause of Portugal's reserve against additional RES-E capacities.

A second alternative could be to take a different approach than explicit electricity export. Reflecting the main concern of lacking infrastructure, issues related to curtailment might be addressed. One option might be to fully compensate RES-E installations under the cooperation in case of curtailment. Thus, the cooperation would have to include an option for additional and automatic Statistical Transfer from Portugal to the Netherlands for the equivalent amount of electricity which would have been produced if no curtailment had taken place. If Portugal exceeds its RES-target, as argued in the introduction, combining SDE+ payments in case of curtailment with the automatic Statistical Transfer of RES-target achievement might be realistic option for Portugal: it would allow for financial compensation for RES-E producers in case of curtailment, it would address Portugal's infrastructural concern related to system stability due to a higher RES share and it would ensure security regarding target achievement for the Netherlands.

Another alternative is to limit the additional capacity which shall be deployed under the Cooperation Mechanism based on the available interconnector capacity. For this approach, ENTSO-E's "interconnection ratio indicator" could be used: ENTSO-E's Ten Year Network Development Plan (TYNDP) mentions in its "Regional Investment Plan: Continental South West" the "interconnection ratio indicator", which is the "sum of import capacities with all the neighbors divided by the total installed generation capacity" (ENTSO-E 2012b: 47). For 2011, it states a value of 9% for Portugal, just falling short of the defined reference value of 10%, meaning that Portugal itself is more or less sufficiently interconnected to Spain.

However, for Spain this figure is 4%, clearly reflecting the lack of interconnectors (obviously not yet taking into account the upcoming reinforcements between Spain and France). This indicator could be used to limit the overall additional capacity which is deployed under the Cooperation Mechanism, as it indicates one significant aspect of the "European Market readiness" of a country. In this case the relevant figure is that of Spain. One option might be to use the 4% as the limitation of additional RES deployment in Portugal meant for export to other countries: 4% of Portugal's renewables trajectory (either of the NREAP or the RES-Directive) could be additionally added under the cooperation with other countries. Alternatively, 10% of interconnection ratio might be defined as the default value. Spain's 4% could then be understood as 40% of that ideal interconnector capacity. How exactly this indicator might be used to adequately define the maximum amount of additional RES installations in Portugal needs to be further explored.

All three solutions certainly need to be further elaborated in detail. However, they provide first insights into how the requirement of import or export RES-E in the case of cooperation could be met, as this requirement is seemingly expressed by several Member States.

2.2.4 Infrastructural conditions under which this cooperation might take place

Portugal's basic infrastructural challenge can be addressed through various options as discussed above. However, the feasibility of these options (and thus the attractiveness of this cooperation for Portugal) depends on further developments in the context of European electricity market coupling. To sum these options up, one of the following conditions has to be met:

- If long-term PTRs were established to cover the 15 years support period of the SDE+, the related additional costs and risk could be low enough to still provide sufficient competitiveness for Portuguese projects to be selected in the SDE+, more so if the export of electricity were only required into France.

- If the planned interconnector capacities between France and Spain are built soon and additional capacities are realised as laid out in the TYNDP of 2012 and in the Projects of Common Interest, the requirement of proven physical export of electricity might be eased or even eliminated towards 2020.

- Otherwise, an effective limitation of the additional RES capacity through the Cooperation Mechanisms could be applied, as described with regards to ENTSO-E's "interconnection ratio

indicator". This could at least limit the additional stress that the cooperation would put on the infrastructural situation of the Iberian Peninsula.

Seemingly, for Portugal either of these conditions have to become effectively applicable before entering in such a cooperation. It is important to note that the initial issue of concern, the lack of physical integration into the European electricity market, ultimately depend on the development of physical cross-border infrastructure, mainly on the borders of Spain and France. All other options are rather means to limit the cooperation according to the existing infrastructure or to put a price on the scarcity of infrastructure.

3 Costs and benefits

3.1 Identifying the different cost and benefit elements

Naturally, this cooperation comes with direct and indirect costs and benefits for both the Netherlands and Portugal, which have to be taken into account. Table 3 provides an overview of the most important cost and benefits that might arise.

Table 3 Overview of main costs and benefits for the Netherlands and Portugal

	Netherlands	Portugal
Support costs	- **Direct support costs** - **+Lower average electricity prices = higher premium payments (optional, if PT-market price is used as reference)** - **+costs for physical transfer included into SDE+ bid (optional, if physical transfer is required)**	
Use of good sites	- **Avoided support costs by using cheaper sites in PT**	- Loosing cheap potential (for fulfilment of potential targets beyond 2020)
Employment effects, market and industry development, innovation effects		- **Positive effect, due to increased deployment**
System integration (Grid reinforcement costs, ancillary services)	- Lower integration costs	- Increased integration costs
Avoided local air pollution	- Lowered	- Increased
GHG savings	- Lowered	- Increased
Environmental impact, landscape	- Lowered	- Increased
Transaction costs	- Increased	- Increased

	Netherlands	Portugal
Avoided potential costs for lack of target fulfilment	- (potential) Positive effect	- No effect

However, for this study we consider several costs to be discarded for the moment. This is the case because they are either not quantifiable or because certain costs in the host country might be netted with costs in the off-taking country. We suggest to exclude the following costs from the quantitative cost-benefit analysis:

- Regarding the costs implied for Portugal are costs for system integration (grid reinforcement costs, ancillary services) for additional installations under the cooperation scheme. However, we consider these to be marginal, which depends however on the amount of capacities installed under the Cooperation Mechanism. In contrast, Portugal might consider these costs to be important, as the challenge of system integration is the country's main concern regarding the Cooperation Mechanisms.

- We also consider avoided local air pollution and GHG savings to be side effects that can be excluded from the cost-benefit calculation, since they are most likely netted between both participating countries with other effects (such as lower grid integration costs).

- Moreover, we suggest to exclude from the cost-benefit considerations environmental impacts (such as impacts on the landscape by additional wind power) mainly because they will be netted with the positive local employment effects. However, assessing the importance of this cost-benefit element will of course depend on the Member States (here Portugal).

- We also exclude transaction costs for public authorities in Portugal as well as in the Netherlands. First, these are hard to quantify and, second, both parties have these costs, which are then largely netted.

- Also the potential costs of not fulfilling the Dutch RES-target might be considered. However, also these costs can hardly be quantified, especially against the background that it is entirely unclear which other Member States might enter into a cooperation with the Netherlands and offer their preferable sites in exchange for additional RES deployment.

Therefore, among the main costs that have to be taken into account are the direct support costs for the Netherlands. The main benefit, of course, are the avoided support costs due to access to low-cost potential in Portugal. Moreover, as we will see further below, the SDE+ contribution (thus, the premium payment) will be slightly higher if the Portuguese average electricity price is referred to instead of the Dutch electricity price because it is on average lower than that of the Netherlands. One alternative source of additional costs is the potentially required physical transfer of electricity from Portugal to the Netherlands. In this case the Dutch electricity price would serve as the reference for calculating the premium payment because we assume that in this case RES should be integrated into

the Dutch rather than into the Portuguese market. Thus, in the case of electricity transfer to the Netherlands, no additional costs due to the lower electricity price in Portugal would occur. As described above, we assume that costs for the transfer of electricity will be borne by the project developers and will be included into the bids of the SDE+ and will thus appear as part of the direct support costs. Whether those projects will receive support under the SDE+ ultimately depends on their competitiveness in comparison to installations placed in the Netherlands.

On the part of Portugal, the use of its low-cost sites might be considered a relevant cost aspect, which will have an impact on the availability of Portugal's cost potential curve for reaching potential post-2020 RES-targets. Against the background of a current lack of such targets also these costs cannot be adequately quantified. The development of the local RES industry and related effects, such as job creation and technology innovation, are seemingly the main interest of Portugal to potentially agree with building additional RES capacities with support from the SDE+. Effectively, these benefits – avoided support costs for the Netherlands and local job creation - are the main reasons why Portugal and the Netherlands would enter into a cooperation in the first place. In the following two sections we will focus on the (avoided) direct support costs for the Netherlands.

3.1.1 (Avoided) direct support costs

The avoided direct support cost are one basis to determine a potential range for a transfer price between the Netherlands and Portugal. In order to estimate the avoided direct support costs we pragmatically refer to the difference in support costs for the marginal technology in the Netherlands to reach its 2020 target and support costs for projects in Portugal. According to the Dutch NREAP the energy demand of the Netherlands in 2020 would require 50.3 TWh of RES to reach its RES target. The marginal technology for this amount is offshore wind, which is estimated at LCOE of 125-140 €/MWh (see Figure 5) (Frontier Economics 2011).[6] Ecofys estimates the LCOE for offshore wind to be slightly higher because the assumed depreciation time is too long (20 instead of 15 years) (Ecofys 2012). Also, offshore wind will be excluded from the SDE+ from 2015 onwards and will be supported by separate tenders. However, it will be necessarily part of the target achievement in the Netherlands, if the country were to achieve its target merely domestically. Thus, taking the estimated LCOE of the marginal technology provides a good starting point to estimate the avoided direct support costs of the Netherlands in case of cooperation.

[6] However, we need to mention that the study does not include heat into its calculation, whereas the comparably cheap renewables option heat is now included into the support scheme SDE+ (thus, potentially taking up a bigger part in the Dutch target achievement).

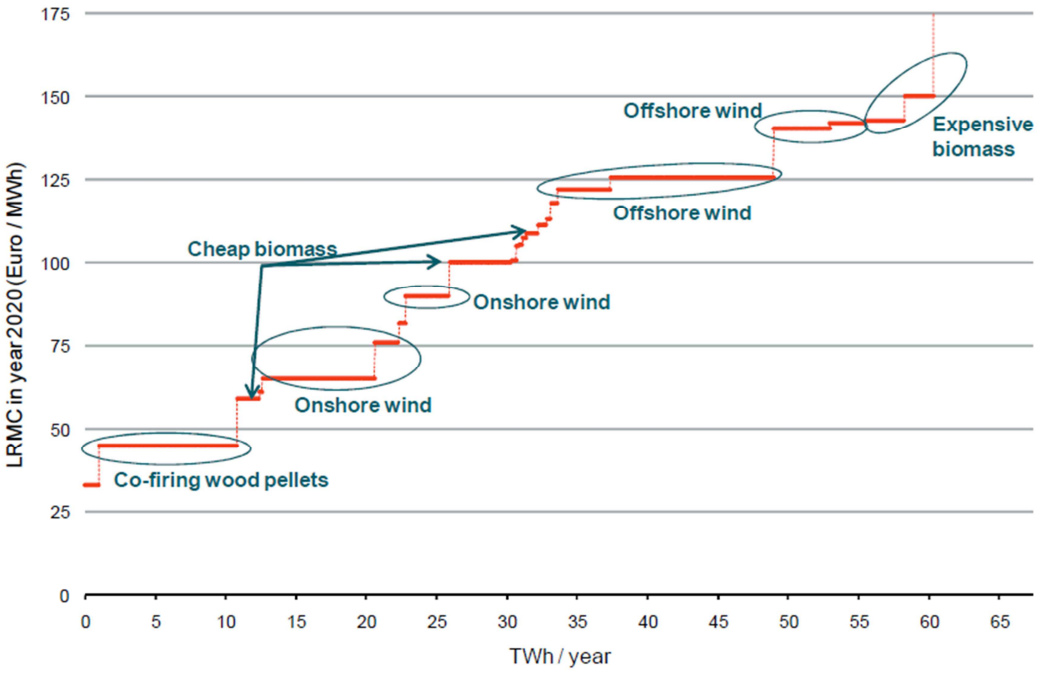

Figure 5 RES-E supply curve for the Netherlands in 2020 (Source: Frontier Economics 2011: 6)

To estimate the direct support costs for projects in the Netherlands we use the difference between the assumed "base amount" for offshore wind and electricity prices (here we assume that LCOE serve as an indication for the base amount, since the SDE+ support levels are based on LCOE calculations).[7] As we cannot predict electricity price development over the next 15 years, we pragmatically refer to the 2013 average day ahead electricity price in the Netherlands, which was 51.99€/MWh. Thus, under (the uncertain) assumption that electricity prices remained constant, support costs for offshore wind might be around 88€/MWh (or 8.8 €ct./kWh).

To estimate the direct support costs for projects in Portugal, we use the difference between the support level and deduct the average day ahead electricity price of 2013. RES-E producers in Portugal receive a payment that is calculated by a special formula on a monthly basis. The elements of the formula represent avoided costs due to the electricity generation from RES-E. Thus, they do not reflect LCOE. Notwithstanding, the indicative support level for onshore wind in Portugal is currently between 7.4 and 7.5 €ct/kWh (indexed by the mentioned formula) over 15 years, which is close to what the Ragwitz et al. (2012) estimate as the long-term marginal generation costs in Portugal. The average day-ahead price in Portugal was at around 43.58€/MWh (OMIE 2014b). Under (the uncertain) assumption that electricity prices remained constant, support costs for onshore wind in Portugal might be around 31.5 €/MWh (or 3.2 €ct./kWh).

[7] This approach of using LCOE and support levels the same way is not feasible, of course, if support levels are not based on LCOE calculations.

The resulting difference between support costs for wind offshore in the Netherlands and RES-projects in Portugal is 5.6 €ct./kWh. This is the amount of support costs the Netherlands might save based on the cooperation and at the same time the figure represents the potential price range for transfer payments from the Netherlands to Portugal.

In case of required physical transfer of electricity to the Netherlands, the Dutch market price would count as the basis to calculate support costs. However, since the Portuguese average day-ahead electricity price in 2013 has been roughly 0.8 €ct/kWh lower than the Dutch electricity price, the difference in direct support costs (and thus the range for potential payments from the Netherlands to Portugal) would be lowered by this amount in case of physical transfer of electricity. Thus a maximum additional payment would be reduced to 4.8 €ct./kWh.

Regarding the options of requiring physical transfer of electricity and which market price to use as a reference to calculate the premium payment the following options appear feasible:

1. Physical transfer of electricity is not required: the Portuguese market price is used as reference price. Thus the range of a potential transfer price is potentially lowered by 0.8€ct./kWh as the Portuguese electricity price is lower than in the Netherlands.
2. Physical transfer of electricity is required
    2.1. To the Netherlands: the Dutch market price is used as reference. In this case the cost of physical transfer of electricity is presumably included into the SDE+ bid of the Portuguese project.
    2.2. Only into France (to merely ensure "export" out of Iberian Peninsula): the French market price is used to calculate the premium payment. Additional costs occur for both the physical transfer of electricity (albeit lower than if the transfer has to be realised all the way to the Netherlands). These costs are included into the SDE+ bid and thus paid indirectly by Dutch consumers. Moreover, differences in electricity prices between France and the Netherlands have to be taken into account. However, those are not directly visible in the SDE+ bid, but relevant for the actually used support budget.[8]

We suggest that potential costs for the electricity transfer should be included into the SDE+ bids, thereby affecting the competitiveness of Portuguese projects in the SDE+. Alternatively, this cost element could be covered in a compensation agreement. However, this option increases the complexity of the cooperation, which is what this case study seeks to avoid as much as possible, as we will see in the next section.

One important aspect is, whether projects from Portugal would be competitive in the SDE+, thus, whether this is a realistic option. To estimate this, we pragmatically refer to current support levels for onshore wind in Portugal, which are seemingly sufficient to trigger deployment, as a benchmark for the LCOE. Wind onshore receives an indexed support level of around 7.5€ct./kWh. Most likely these

[8] We show the effects of differences in electricity prices only with regards to Portuguese electricity prices, as exploring all possible options would go beyond the scope of the case study.

rates will further decrease, as Portugal will introduce auctions to organise access to RES support (the legislative process is still ongoing). In addition, using in part the lower country risk factor related to the SDE+, financing of these projects might be significantly cheaper (as discussed in section 2.1.2). In this framework contract for Joint Projects the support levels for cooperation projects are defined by the Portuguese projects which are selected under the SDE+ and which are likely to include wind onshore and solar PV projects. In 2014, wind onshore has a "base amount" in the 1st SDE+ round of 8.75 €ct/kWh, of 10 €ct/kWh in the 2nd round and of 11.25 €ct/kWh in the third round. Solar PV (>15kwp) has a defined "base amount" in the 1st SDE+ round of 7 €ct/kWh, in the 2nd round of 8 €ct/kWh and of 9 €ct/kWh in the third round (Netherlands Enterprise Agency 2014).[9] A prerequisite for projects to be realised under this cooperation is that Portuguese projects would have to be competitive with these support levels. Comparing the Dutch base amounts and Portuguese support levels clearly shows that in the short term, wind onshore in Portugal could be competitive (and thus complementary) to domestic deployment of RES in the Netherlands.

3.2 Transfers and compensation: creating a win-win situation

One perceived barrier of the Cooperation Mechanisms is the complexity of estimating the full range of direct and indirect costs and benefits and of finding an adequate approach to distributing these costs and benefits adequately between the participating Member States (Ragwitz 2012; EC 2013b; Klessmann et al 2014). Thus, one approach to address this barrier is to reduce the complexity of the cost-benefit distribution as much as possible. In case the participating countries consider additional compensation payments from the Netherlands to Portugal (e.g. for using its low-cost sites), these payments would range between 0 and the difference in support costs for the marginal technology in the Netherlands and support costs for RES projects in Portugal (thus the avoided support costs). As seen above, this difference can very broadly determined to be around 5.6€ct./kWh.

However, as mentioned in the previous section, the main interest of Portugal to participate in this cooperation would be to foster local job creation and the development of its RES industry. The main interest of the Netherlands to participate in this cooperation is to use cheaper sites in Portugal due to its limited domestic low-cost potential for RES, reflecting the focus of its support scheme on cost efficiency. By providing these benefits to both parties, a win-win situation emerges which does not necessarily require additional compensation payments (and thus an increased level of complexity). We suggest to consider additional payments between the NL and Portugal (apart from the regular support costs through the SDE+) to be obsolete.

Of course the cost-benefit balance depends on the viewpoints of the participating Member States and whether they consider additional cost-benefit elements, such as environmental impacts or costs for additional grid development as highly relevant or not. Moreover, it is up to the Member States to decide whether they prefer to quantify the above mentioned effects, such as job creation benefits in Portugal, or whether for reasons of simplicity and practicability they refrain from doing so.

[9] Here we only mention the first three rounds of the SDE+ because the budget is likely to be reserved within those three bidding rounds.

4 Potential obstacles and how to overcome them

In the task 1 report of this project (Klessmann et al 2014) we have identified several barriers for the implementation of the Cooperation Mechanisms. Those barriers will be briefly discussed in this section regarding this specific case of cooperation between the Netherlands and Portugal.

4.1 Political barriers

Political barriers include public acceptance for Cooperation Mechanisms, the political determination of governments to engage in cooperation on RES target achievement and uncertainty on the continuity of the RES framework beyond 2020. These factors go beyond mere technical considerations on how to jointly match excess and surplus of RES production.

Regarding public opinion/public acceptance, a potential barrier might be that the Dutch public might be reluctant to accept supporting the deployment of RES abroad. However, saving support costs is at the core of the Dutch support scheme and the increased efficiency provided by the cooperation improves this aspect even further. A major advantage in this respect is the design of this cooperation, which largely keeps the existing logic of the SDE+ and which inherently ensures that only competitive projects, thus projects increasing the cost-effectiveness of the Dutch support scheme, get selected. At the same time, the largest part of RES deployment remains in the Netherlands. Thus, in the public debate it might be important to highlight both, the increased cost effectiveness of target achievement through the Cooperation Mechanism and the remaining domestic deployment.

Moreover, this basic setup of the cooperation also addresses one concern discussed in the Netherlands regarding the price risks which are related to target achievement through Statistical Transfers[10]. However, in the setup discussed in this case study, the price risk is effectively mitigated, since concrete projects compete in the SDE+ and are not included, if they are not cheaper than the domestic deployment options in the Netherlands. Thus, in this case, target fulfilment through the cooperation would certainly be cheaper than purely domestic production.

In addition, engaging in the Cooperation Mechanisms seems to be a likely step for the Netherlands. However, if this happens at a very late stage, the available options are potentially reduced to Statistical Transfer, as Joint Projects take much longer to be implemented. Against the background of the gap in target achievement in the Netherlands, which is likely even if domestic deployment significantly takes up in the next years, a timely engagement in Joint Projects will mitigate the price risks of Statistical Transfers.

[10] See e.g. Klessmann et al. who argue that "the use of statistical transfers […] is linked to high uncertainties. The market price of statistical transfers depends on different variables such as the supply curves, support schemes and political interests of the involved Member States, the timing of the agreement, the overall European deficit/surplus, etc." (Klessmann et al 2012: 23).

On part of Portugal, naturally the RES sector is likely to welcome this cooperation, as the main benefit is additional RES deployment and related job creation. However, if additional grid costs related to this cooperation are perceived to be significant, such costs could lower public and political acceptance. Also the issue of the physical transmission of electricity out of Portugal might be critical. We have outlined a possible solution via PTRs. However, whether this option is perceived as sufficient and feasible remains an open question. One positive side effect of this option would be that the cost of the PTRs and the related risk premiums (due to a lack of information of future prices of PTRs and thus future availability of cross border capacities) serve as an indicator of the infrastructure situation. In short, the lack of sufficient infrastructure is factored-in through this Cooperation Mechanism and through the inclusion of those costs into the SDE+ bid.

4.2 Technical barriers

As discussed in the task 1 report, technical barriers include barriers that prevent countries with political will to engage in cooperation from doing so. There is still a high perceived degree of uncertainty on quantifiable costs and benefits, design options of Cooperation Mechanisms and difficulties for Member States to forecast their own RES target fulfilments. Lacking transmission infrastructure and market integration are also evident barriers for cooperation.

Regarding uncertainty on the design options of Cooperation Mechanisms, this case study shows that quite pragmatic solutions might be feasible, despite their level of complexity. Also in this cooperation the availability of quantitative data on costs and benefits as a key indicator to determine the transfer price or support level is limited. However, as long as both Portugal and the Netherlands estimate their main benefits to outweigh the related costs, the main cost-benefit issues are inherently solved by the auctions in the SDE+.

Another issue might be uncertainty on meeting the domestic RES targets as a key barrier preventing cooperation. As Member States find long-term forecasting towards 2020 difficult, they seem to be more interested in cooperation in the years running up to 2020 when they can forecast their surplus or gap with greater certainty. However, in this case, this uncertainty should largely be irrelevant: Portugal would not harm its own target achievement, since projects under this cooperation would be additional projects, fully financed by the Netherlands. This does not mean that Portugal's target achievement is secured as such, but it would not be specifically endangered due to these additional projects. On the Dutch part, the country's likeliness to reach its target cost-efficiently significantly increases. The budget for the support scheme is capped and defined annually, thus an over-fulfilment of its RES target should neither be a problem.

Among the main barriers for cooperation transmission and electricity market barriers have been identified, specifically the limited physical integration of Portugal into the European electricity market. The proposed PTR-related solution could address this problem, as discussed above, by first giving priority to the RES-installations at those interconnectors that provide year-ahead PTRs and, second, by reflecting the availability of interconnector capacity through the price of the PTRs and ultimately through the support levels in the SDE+. However, as we have seen, this issue remains challenging, since no long-term PTRs are available and the future of using PTRs as such in the European electricity market is somewhat insecure.

One potential barrier for the implementation of this cooperation might indeed be the additional cost of the PTRs and the higher cost of capital in Portugal which negatively influence the competitiveness of Portuguese projects in the SDE+. However, as the cost curve for RES gets steeper towards 2020 in the Netherlands, Portuguese projects should become competitive in the SDE+ to an increasing extend.

4.3 Legal barriers

Legal barriers could include potential incompatibility of Cooperation Mechanisms with national and EU legislation or the level of complexity of required changes to national legislation. However, in general, legal barriers seem to be quite limited in this case. In section 5.2 under "practical arrangements" we propose concrete changes to national law to provide the legal preconditions for this cooperation.

4.3.1 State aid issues

The Netherlands maintain a support scheme that has been notified and authorised as State aid under the State aid Guidelines 2008. As in principle opening up the support scheme to installations in other Member States would neither take away nor change the qualification as State aid but would only extend it to a wider range of beneficiaries one might consider this unproblematic from a State aid perspective, and one may as regards the compatibility assessment refer to the respective decisions of the European Commission.

Still, it would – as State aid can only be authorised when necessary and proportionate – need to be ensured that the RES installation in another Member State / the joint projects will not receive financing from two Member States at the same time to such extent that it results in overcompensation. Thus it may be advisable to integrate a provision into the national renewable laws that no aid will be paid to a producer who for the same amount of energy already receives financial support from another Member State, as is suggested for the Netherlands in section 5.2.1).

As all changes, the changes would need to be notified to the European Commission. Further, one may note that according to the Guidelines for Environmental and Energy Aid 2014-2020, as they have entered into force in July 2014, a change to an existing support scheme may trigger the need for its adaption to the provisions of the Guidelines (EC 2014c). For the Netherlands, it can be said that, a priori, their scheme largely meets the conditions mentioned in the Guidelines.

One question is whether the Netherlands can open their support scheme solely for renewable energy produced in Portugal under the cooperation agreement or whether the State aid (or free movement) rules of EU law would require opening the support scheme up to renewable energy from all Member States. The Guidelines state that while in principle support schemes shall be open, Member States may want to have a cooperation agreement in place before opening their support scheme. Consequently, no general opening up of support schemes seems to be required and the State aid Guidelines seem not to stand in the way of opening the support scheme only to renewable energy produced under a cooperation agreement (thus, only for Portugal in this case). Moreover, the Directive 2009/28/EC distinguishes between renewable energy produced under a national support scheme or Cooperation Mechanism which can be counted towards the national renewable energy

target according to Art. 3 Directive 2009/28/EC and other (renewable) energy which cannot be used to meet the target. Accordingly, also against this background, there seems to be a distinction in the characteristics between the renewable energy under the cooperation agreement and renewable energy from other Member States where no cooperation agreement exists. For the time being and based on the Directive 2009/28/EC opening the Dutch RES support scheme only for production under cooperation agreements (thus, for Portugal only in this case) seems justifiable. Moreover, according to the recent ruling of the Court of Justice of the European Union in the case "Ålands Vindkraft AB v Energimyndigheten" principally "Member States which grant benefits to producers are not required to support the use of green energy produced in another Member State", meaning that the Directive 2009/28/EC allows them to design their support schemes so as to support only nationally produced renewable energy. As the Court held, while such national support schemes may constitute measures having equivalent effect as barriers to free movement of goods, they can be justified if they are necessary and proportionate to their environmental objectives, which the Court considered to be the case for the national support scheme it assessed.

For Portugal, principally, one should also insert a provision that no right to feed-in support exists where the plant already receives support in another country. As the Portuguese support scheme is currently not considered State aid, one could implement such a change rather easily. It would not (not granting any support or the like) result in a qualification of the Portuguese system as State aid, so that no adaptions according to the Guidelines seem necessary.

One concern mentioned in the case study itself concerned Art. 4(2) of the Dutch Act of 2007 which provides that projects above 250 MW can only be subsidised under condition that the European Commission gives approval under the State aid rules. This however is standard and both the General Block Exemption Regulation and the Guidelines for Environmental and Energy Aid (compare par. 20) foresee that projects above a certain size need individual State aid authorisation. This is thus not a case study specific but a general concern. Overall, the State aid concerns relating to this case study are thus rather limited.

4.3.2 Other legal barriers

So far, no other legal barriers have been identified in the case study. The problem of the (potential) need to adapt the support schemes to the requirements set out in the Guidelines for Environmental and Energy Aid 2014-2020 when changing them has been mentioned above.

In addition, there may be problems with the availability of interconnector capacity and with the proof required to ensure this. Currently, one may – and in the suggested approach above it is – still refer to physical transfer rights. However, there is the chance that in the future this system will no longer be available as a consequence of market liberalisation. Should that be the case, a different solution would need to be found, as Portugal seems to insist on the physical transfer of the electricity. Considering though that it is not yet clear what a solution this could be and that this would probably have to be agreed between Portugal and the Netherlands anyways it does not seem practical to already include a provision in the laws on such future changes. This seems to be even truer as in the Netherlands the system's lower legislation is regularly revisited and the conditions for support are

regularly revised. Thus, the proof required for the physical transfer could be established in the tender specifications (by the Responsible Body) it seems (as suggested in section 5.2).

5 Practical arrangements

5.1 Permits and supervision

The SDE+ is the applied scheme to support RES installations in Portugal. In order to apply for the SDE+, project developers in the Netherlands have to present several elements, including a

- completed application form,
- general description of the project and expected annual production,
- realisation and a financial plan (a technical and financial feasibility study) and
- written permission of the owner of the land (if the applicant is not the land owner).

The question arises which permits and forms would have to be submitted by Portuguese project developers who seek access to the SDE+. The Dutch Ministry would have to provide the application form in English and all other documents would have to be accepted in English (an aspect to be included into the cooperation agreement).

The application procedure in the SDE+ assumes that the applicant has knowledge about which licences have to be in place; those are defined in the Environmental Protection Act (environmental licence) and/or in section 6, paragraph 6 of the Water Order (water permit) or in the Dutch Mining Act. In case of this cooperation, the applicant from Portugal would equally have to provide all licences that are required to build the respective installation in Portugal. Whereas applicants in the Netherlands themselves submit the statement that all licences are in place, the Portuguese authorities (the Directorate General for Energy and Geology of the Ministry of Environment, Spatial Planning and Energy, which is responsible for most related licencing procedures in Portugal) might issue an official confirmation for each applicant from Portugal, stating that all required permits are in place. This might increase trust on part of the Dutch authorities towards the bids submitted from Portugal, since they might not have full knowledge of and experience with the licencing procedures in Portugal.

One issue that is particularly important in the SDE+ is the supervision of how the implementation of selected projects is progressing. One year after being awarded support in the SDE+, the "Netherlands Enterprise Agency" (Rijksdienst voor Ondernemend Nederland / Netherlands Enterprise Agency, RVO), which is is an independent administrative authority but part of the Ministry of Economic Affairs, checks upon the progress of the respective projects. Project developers have to prove that they have at least commissioned a firm to effectively build the installation, or at least the main part of the project. If he or she cannot provide such a proof, RVO speaks out an ultimatum after which penalties are applied. This process, too, might have to be replicated for projects in Portugal. Again, an official Portuguese authority (Portuguese DG Energy) could provide a confirmation of the project progress in Portugal.

The effective support payments in the SDE+ are related to the provision of Guarantees of Origin (GO). In the Netherlands, CertiQ issues the GO certificates for electricity and heat. CertiQ is part of the electricity transmission company, TenneT TSO B.V. and provides RVO with information on the GO's provided by a specific project. Thus, the payment of the subsidy is based on these GOs. However, in Portugal the TSOs provide this information for the Directorate General for Energy and Geology of the Ministry of Environment, Spatial Planning and Energy. Since it is not entirely clear whether the Issuing Body (EEGO) in Portugal is functional yet and seemingly the implementation of GoOs has not been completed (PLMJ 2014), the information once more could be provided by the Portuguese Ministry and be directly sent to the Dutch responsible institution, RVO.

In sum, as part of this cooperation the Portuguese Directorate General for Energy and Geology of the Ministry of Environment, Spatial Planning and Energy would have to provide several administrative services, potentially including

- a confirmation for each applicant from Portugal, stating that all required permits are in place,
- a confirmation of the project progress after one year after project selection for the Dutch RVO,
- exact production data for each installation for RVO,
- a confirmation that no other support has been granted in order to comply with European state aid rules.

However, all processes that are newly implemented in Portugal to replicate procedural requirements of the SDE+ (or even to exceed those through additional official documentation) put an additional burden on the public administration in Portugal and raise transaction costs. Thus, a balanced approach needs to be taken, ensuring high compliance rates of projects awarded support from the SDE+ while keeping transaction costs to the minimum extent possible.

5.2 Suggested amendments to national renewable energy laws

5.2.1 The Netherlands

In this case study, the Netherlands want to open up their national support scheme which consists of a competitive bidding process with different stages and different maximum prices (i.e. support levels) for which producers may bid. However, the joint projects shall participate in the bidding process under different conditions and to different prices than the projects in the Netherlands, in particular to make use of the cheaper production costs in Portugal.

The parameters for the cost calculation are not set yet, but reference may be made to the conditions in Portugal both as regards production costs and as regards market value.

Since the concrete support conditions in the Netherlands are anyways determined by Ministerial Act on a regular basis it does not – provided that the support scheme is once opened up in principle and the Minister can thus set such conditions for projects abroad – principally seem problematic to determine such conditions for support to joint projects. In the following paragraphs we provide several suggestions as to which legal changes might be considered to accommodate this cooperation.

Provision: Renewable Energy Act of 2007

Dutch law distinguishes between support to electricity fed into the Dutch grid and electricity not fed into the Dutch grid. Principally, with that, it would be already possible to get support for electricity not fed into the grid. However, this would be under different conditions.

Thus it would be easiest to extend the definition of "grid" into which the electricity needs to be fed into in order to be supported. Two options are possible: Either opening to all electricity from all Member States (by deleting the definition) or including a reference to an international agreement in the definition, to limit it to the specified projects.

As, according to the Portuguese preferences, here physical import shall be required and such import shall be proven based on physical transfer rights (PTR), this can be added in the definition. As there are several issues around the PTR which still have to be solved, it seems (i.e. with what regularity and what if PTR in the future no longer available), it makes sense to have a specific article in the act to which one may make reference. As the case study requires the set-up of a separate regime for the Joint Projects from Portugal anyways, it appears to make most sense to have a separate provision on such projects. The part on the PTR can be included there. For the case that in the future PTR may be abolished, the law should best be changed in this respect. For the time being it would be confusing, it seems, to already include a reference to a future solution which at the time being cannot be defined.

Art. 1 „j. elektriciteitsnet: een net als bedoeld in artikel 1, eerste lid, onderdeel i, van de Elektriciteitswet 1998 en een elektriciteitsnet dat is gelegen binnen de Nederlandse exclusieve economische zone dat is verbonden met een net als bedoeld in artikel 1, eerste lid, onderdeel i, van de Elektriciteitswet 1998;"

Option 1: opening to production everywhere in the EU Delete the definition of electricity grid in Art. 1 j (if no link to the Electricity Law and thus the grid being on Dutch territory, then support principally open to all installations)
Option 2: opening to production only from Portugal subject to the joint project agreement (and if physical import is defined as a requirement) Change Art. 1: "j. electricity grid: a grid as referred to in Art. 1, par. 1, sub I, of the Electricity Law 1998, a grid within the Dutch exclusive economic zone connected with a grid as referred to in Art. 1, par. 1, sub I, of the Electricity Law 1998, or a grid equivalent to the former based on a valid international agreement between the Netherlands and the Member State in which such grid is located, provided that the producer can show, based on physical transfer rights, that the electricity can be transferred to a grid as referred to in Art. 1, par. 1, sub I, of the Electricity Law 1998, or a grid within the Dutch exclusive economic zone connected with a grid as referred to in Art. 1, par. 1, sub I, of the Elec-

tricity Law 1998”

Insertion into the Act of 2007

Art. 3
“8. For installations producing electricity fed into the grid of another Member State but equivalent to a grid as referred to in Art. 1., par. 1, sub I of the Electricity Law 1998 based on a valid international agreement between the Netherlands and the Member State in which such grid is located, no subsidy as referred to in Art. 2 par. 1 shall be granted to installations which already receive any kind of subsidies by any other Member State.”

Art. 11
“4. For electricity fed into the grid of another Member State but equivalent to a grid as referred to in Art. 1., par. 1, sub I of the Electricity Law 1998, the average costs shall be considered based on available resources.”

Art. 12
“6. For electricity fed into the grid of another Member State but equivalent to a grid as referred to in Art. 1., par. 1, sub I of the Electricity Law 1998, the basic electricity price shall be determined based on the market data from the Member State either in which the electricity is first fed into the grid, based on available resources or on the existing data in case the physical transfer of electricity to the Netherlands is a requirement of the cooperation.

Insertion into the Act of 2013

“§3.8bis
Art. 20bis
“For electricity fed into the grid of another Member State but equivalent to a grid as referred to in Art. 1., par. 1, sub I of the Electricity Law 1998, the

- Maximum number of production hours; and
- the basic electricity price as defined in Art. 12 of the Act of 2007

Are defined in the following column:
…
Art. 20ter
“For electricity fed into the grid of an-other Member State but equivalent to a grid as referred to in Art. 1., par. 1, sub I of the Electricity Law 1998, the

- the basic amount as referred to in Art. 11 of the Act of 2007; and
- the period for the application for such basic amount

are defined in the following column:
…”
Art.20 quarter
“For electricity fed into the grid of an-other Member State but equivalent to a grid as referred to in Art. 1., par. 1, sub I of the Electricity Law 1998, the request is done by the producer using the form

in Annex 8 to this Act.
The application shall be accompanied by the following documents:

- confirmation of the local authorities of the Member State in which the electricity is first fed into the grid that the installation complies with all locally applicable legislation in that Member State;
- proof of physical transfer rights for the entire period of time for which support is requested which allow for the electricity produced to be physically transported to a grid as referred to in Art. 1., par. 1, sub I of the Electricity Law 1998 or a grid within the Dutch exclusive economic zone connected with a grid as referred to in Art. 1, par. 1, sub I, of the Electricity Law 1998.

The subsidy is granted for 15 years.

The beneficiary of the subsidy has to take the installation into operation within … years after the decision to grant a subsidy has entered into force. The beneficiary shall to that end annually provide an official statement by the local authorities of the Member State in which the electricity is first fed into the grid."

Changes to other legislative acts, and in particular implementing acts may be necessary as well, due to the additions and amendments suggested above to allow them to take full force.

5.2.2 Portugal

Portugal does not intend to open up its support scheme and it seems that in fact no changes are necessary to the scheme as such. However, some of the conditions mentioned in the cooperation agreement (e.g. the provision of information to the Dutch authorities to enable them to calculate the conditions for support to joint projects, mechanisms to allow a monitoring of the joint projects as the Dutch authorities require, rules and mechanisms around the statistical transfer as may be the case etc.) will have to be implemented and thus may bring about changes to existing legislation. Such changes will depend mainly on what the Dutch and the Portuguese agree in the course of the cooperation agreement and how they concretely want to proceed.

6 Conclusion

We conclude that the overall effects of this potential cooperation mainly comprise the use of good sites in Portugal through the SDE+ (making the SDE+ more efficient) and local job creation in Portugal, which most likely will already lead to a win-win situation for both participating countries. The economic benefits are seemingly larger than the associated legal, financial and political costs. Specifically keeping the allocation of costs and benefits of this cooperation as simple as possible should increase its actual feasibility.

The design includes several complex issues, such as adapting the SDE+ ceiling prices for projects from Portugal and monitoring the progress of Portuguese projects and their RES-E production. Moreover, the requirement for physical transfer of electricity is complex and challenging, but it might put a price on the actual infrastructural situation by including the costs of PTRs into the direct support costs of the Netherlands. Other options to address the infrastructural challenge of integrating Portugal into the European electricity market have been briefly discussed. Overall, the complexity of the cooperation seems to be manageable, since the basic logic of the Dutch existing support scheme is largely kept.

This setup, in which the Netherlands open their support scheme for installations from abroad might also serve as a starting point for the Netherlands to scale this approach up and to include other Member States into this cooperation. Also other Member States with good RES resources might equally adopt Portugal's approach to such a cooperation. In this sense, this specific setup of cooperation would equally meet the broader development (and requirement) in Europe towards more coordinated and increasingly open support schemes while respecting the specific circumstances and needs of the participating Member States.

On a political level, the way forward for the involved Member States is to elaborate, propose and implement the general concept of opening up the SDE+ in the Netherlands. If done so, both countries might enter into concrete negotiations of such a cooperation agreement. This would include a clear definition of which direct and indirect costs and benefits should be taken into account to ensure a win-win situation for both countries. Subsequently, these costs and benefits would have to be thoroughly quantified. Another crucial step forward is related to Portugal's requirement of physical export of electricity, which is a concern it shares with several other Member States. Further exploring the options could help to adequately address infrastructural constraints while at the same time enabling the implementation of the Cooperation Mechanisms.

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8 Annex: Template for Agreement for Joint Projects between Portugal and the Netherlands

Agreement between
the Netherlands, in the following referred to as "the off-taking Member State"
and
Portugal, in the following referred to as "the host Member State"
on
THE ESTABLISHMENT OF A FRAMEWORK FOR JOINT PROJECTS FOR THE GENERATION OF ENERGY
FROM RENEWABLE SOURCES

Preamble

[...]

Part I OBJECTIVE AND DEFINITIONS

Article 1 Objective

(1) The objective of this Agreement is to provide a legal framework for the implementation of joint projects under Articles 7 and 8 of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (hereafter: Directive 2009/28/EC) which provide the basis for Member States of the European Union to cooperate to realise joint projects relating to the production of electricity, heating or cooling from renewable energy sources. The aim of the implementation of joint projects between Member States is to share the produced energy for the purpose of accounting towards their respective targets.

(2) The Parties enter into this Agreement with the purpose to

a) contribute to the cost-efficient achievement of the EU Member States' mandatory national targets by allowing them to count the Joint Projects' renewable electricity production towards their national renewable energy target;

b) enable the construction of additional renewable energy generation capacity;

c) [… additional points]

Article 2 Definitions

Pursuant to this Agreement the following terms are defined as

a) Joint Project: the installations generating energy from renewable sources and which are operated under this agreement;

b) Directive 2009/28/EC: Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC;

c) National support scheme: according to Art. 2 lit. k) of the Directive 2009/28/EC any instrument, scheme or mechanism applied by a Member State or a group of Member States, that promotes the use of energy from renewable sources by reducing the cost of that energy, increasing the price at which it can be sold, or increasing, by means of a renewable energy obligation or otherwise, the volume of such energy purchased;

d) Renewable energy target amounts: the statistical value of energy from renewable sources for the purpose of compliance with the mandatory national targets for the share of energy from renewable sources in final energy consumption as set out in the third column in part A of Annex I to the Directive 2009/28/EC;

f) Joint Project operator: legal entity implementing and operating a Joint Project;

g) Physical transmission: Physical flow of electricity from the installation to the off-taking country's grid, which is deemed to have happened, where the capacity, which corresponds with regard to volume and time period […/1 week/one month/…] to the installation's production, has been booked on the relevant interconnector, and the equivalent volume of electricity has in the same time period entered the schedule of balance of the off-taking Member State's transmission system operator.

Part II RIGHTS AND OBLIGATIONS OF THE PARTIES

Article 3 Cooperation

The Parties shall co-operate in order to establish and maintain necessary and favourable conditions for the implementation of the Joint Projects.

Article 4 Obligations of the host Member State

(1) The host Member State ensures that construction permits and all other necessary permits and licenses for the construction and operation of a Joint Project shall be obtainable in a nondiscriminatory manner and shall be issued without delay.

(2) The host Member State shall ensure that the Joint Project Operator is able to comply with all obligations with regard to the monitoring of production and the tracking of cross-border transmission of the electricity, and create the necessary conditions to enable him to provide the required proof.

(3) The host Member State shall ensure that the domestic grid operator grants guaranteed access to the grid at the applicable voltage level to feed the electricity generated by the Joint Project installation into the distribution or transmission grid.

Article 5 Obligations of the off-taking Member State

(1) The off-taking Member State guarantees the financial support to the renewable energy production of the Joint Projects during the entire support period in accordance with its national support scheme.

[(2) The off-taking Member State pays to the host Member State a compensation of --- MW installed capacity in a Joint Project, in order to make good for direct and indirect costs related to the Joint Projects.]

Article 6 Other obligations of the Parties

(1) The Parties shall designate a Contact Point each, and shall agree on the distribution and performance of the following tasks:

a) Identification of the Joint Projects and definition of the details;

b) Definition of the tendering procedure including specification of the evaluation criteria and determination of their weighting;

c) Selection of the bidder;

d) If necessary, negotiations to find agreement on the conditions to be applied in the permitting and licensing procedures;

e) Definition of the appropriate evidence of physical transfer and procedures how to obtain such evidence;

f) Supervision of the implementation of the Joint Projects, including the permitting and licensing procedures, as well as the creation of a system allowing monitoring, tracking and issuing of proof and verifications;

g) Reporting back to the Parties on a regular basis, including advice on which procedures may be improved in the future.

Part III SPECIFICATIONS OF THE JOINT PROJECT

Article 7 Specifications of Joint Projects

(1) This Agreement covers [XX] projects with a maximum capacity of [Amount of MW installed] with a view to produce a volume of electricity from renewable energy sources between [XX] MWh and [XX] MWh.

(2) The Joint Projects may use [XX technologies] to be eligible under the tender procedure according to Art. 8.

Article 8 Selection of Joint Projects and Tender Procedure

(1) The Joint Projects supported in the framework of this agreement are identified according to the existing procedure in the SDE+.

(2) However, the electricity produced by the Joint Projects shall be physically transmitted to and consumed in the off-taking Member State, and it is the obligation of the Joint Project Operator to sufficiently prove such transfer in accordance with the requirements to be defined by the Responsible Body in accordance with Art. 6 of this Agreement.

(4) The contracts will be awarded to the Joint Projects requiring least production support per unit of energy produced.

Part IV RENEWABLE ENERGY TARGET ACCOUNTING

Article 9 Distribution of production for target compliance purposes

The renewable energy target amounts corresponding to the energy produced in the course of the Joints Projects during the production period according to Article 12 of this Agreement and fed into the host Member State's electricity grid will in its entirety be statistically transferred to the off-taking Member State for target compliance purposes under Directive 2009/28/EC and under any European legislation succeeding Directive 2009/28/EC.

Article 10 Notification to the European Commission

(1) After a Joint Project has been selected through the tendering procedure and agreed upon between the host Member State and the off-taking Member State, the host Member States shall notify the European Commission of their intentions and shall submit the following documents according to Art. 7 (3) of the Directive 2009/28/EC:

a) A description of the proposed installation;

b) The identification of the Member State in whose favour the notification is being made and written consent with the content of the notification by the off-taking Member State;

c) The proportion or amount of energy generated by the plant that shall be counted towards the national target of each respective EU Member State;

d) The time period for which the electricity generated by the joint project shall be counted towards the Member States' respective targets in full years.

(2) Once the plant is in operation, the host Member State shall, within three months of the end of each year falling into the period notified according Art. 11 (1)d), notify to the European Commission and the off-taking Member State the total amount of energy generated in the Joint Project as well as the amount of that energy which is to count towards the off-taking Member State's national target.

(3) Members of the Responsible Body shall receive a copy of this notification.

Part V FINANCING ARRANGEMENTS

Article 11 Financial Commitments

(1) The financial support for the Joint Projects consists only in operational support and will be provided by the off-taking Member State in accordance with its national renewable energy support scheme. In making the necessary legal arrangements, the application of the national scheme to Joint Projects may be adjusted to take into account the specificities of Joint Projects as regards support levels, technologies supported, geographic limitations etc. in accordance with this agreement. The final level of operational support paid by the off-taking Member State over the support period will be determined through the tender procedure applicable in the off-taking Member State. The host Member State is responsible for ensuring State aid compatibility of the financial support it provides.

(2) After expiry of the support period determined by the off-taking Member State's national support scheme, the production from the Joint Project which received support from the host Member State's

support scheme shall no longer be eligible for support from the host Member State in the course of its national support scheme and vice versa.

(3) In case the physical transfer of the electricity subject to this Agreement necessitates additional infrastructure investment with cross-border effects the allocation of investment costs for such infrastructure will be attributed according to the ex-ante cross-border cost allocation mechanism as laid down in the Regulation of the European Parliament and of the Council on guidelines for trans-European energy infrastructure.

(4) Compensation for cross-border electricity flows will be dealt with according to the mechanisms established under Commission regulation No 838/2010 of 23 September 2010.

Article 12 Network integration

The costs for grid connection and transmission necessitated by the Joint Projects will be borne by the Joint Project Operators and have to be included in the bid in the course of the tendering procedure for support. The rules of the respectively responsible Member State apply as regards the determination of those costs.

Article 13 Payment Procedure

The payments of operational support shall be made directly to the Joint Project Operator after the submission of the required proof as laid down in Art. 17 of this Agreement.

Part VI RESPONSIBILITIES OF THE JOINT PROJECT PARTIES (RISK SHARING)

Article 14 General Commitment

(1) In case of non-compliance with any obligation under this Agreement a party is obliged to compensate the injured party fully for any damages incurred.

(2) The payment of such damages shall not limit the right to seek further compensation under the Agreement or otherwise.

(3) Sanctions towards the Joint Project Operators will be laid down and further specified in the tender specifications in case he fails to construct the Joint Projects by the date determined in the tender specifications or in case yearly production of the Joint Projects falls beneath [xx MWh].

Article 15 Responsibilities of the host Member State

The host Member State guarantees the transfer to the off-taking Member State for target compliance purposes under the Directive of the entire actual yearly production of the Joint Projects.

Article 16 Responsibilities of the off-taking Member State

(1) The off-taking Member State will be responsible for the provision of the financial support over the agreed time period and for the payment of a compensation to the host Member State in accordance with Art. 5 of this Agreement.

(2) In case it fails to comply with this obligation leading to a shortfall in support payments to the project operator, it loses all rights under this Agreement. Failure to provide the compensation to the

host Member State shall result in a claim for damages, with contractual damages being determined at…

Part VII MONITORING, PROOF AND VERIFICATION

Article 17 Eligibility Criteria and required proof

(1) In accordance with Art. 7 (2) of Directive 2009/28/EC the Joint Projects need to comply with the following requirements in order to receive the support payments:

a) The energy is produced exclusively from renewable energy sources;

b) The energy is produced by a newly constructed installation that became operational after 25 June 2009 or by the increased capacity of an installation that was refurbished after that date;

c) Proof of nominated interconnector capacity at an interconnector between host Member State and off-taking Member State as required by the tendering specifications established in accordance with Art. 8 of this Agreement, referring to the same period of time as the proof of electricity production from renewable energy sources.

(2) In accordance with Art. 13 of this Agreement, the Joint Project Operators shall be granted production support after presenting proof of electricity production from renewable energy sources, stating the amount, time period and renewable origin of the electricity produced by the Joint Projects.

Article 18 Verification

Power meter and energy production shall be verified annually by an independent verifier. The verification needs to confirm that:

a) The electricity comes from an eligible renewable energy plant;

b) The electricity is produced from renewable sources;

c) The meter operates correctly and is properly accounted for.

Part VIII GENERAL PROVISIONS

Article 19 Relationship between this Agreement and other International Obligations

Nothing in this Agreement shall derogate from the rights or obligations of any State under any relevant international treaty or rule of international law.

Article 20 Force Majeure

(1) Responsibility for non-performance or delay in performance on the part of any Party to this Agreement with respect to any obligations or any part thereof under this Agreement, other than an obligation to contribute financially, shall be suspended to the extent that such non-performance or delay in performance is caused or occasioned by Force Majeure, as defined in this Agreement.

(2) Force Majeure shall be limited to:

a) Natural disasters (earthquakes, landslides, cyclones, floods, fires, lightning, tidal waves, volcanic eruptions and other similar natural events or occurrences);

b) War between sovereign States where the relevant State has not initiated the war under the principles of international law, acts of terrorism, sabotage, rebellion or insurrection;

c) International embargoes against States other than the relevant State, provided, in every case, that the specified event or cause of the above mentioned types and any resulting effects preventing the performance by the relevant State of its obligations, or any part thereof, are beyond the relevant State's control.

(3) If a Party to this Agreement is prevented from carrying out its obligations or any part thereof under this Agreement (other than an obligation to pay money) as a result of Force Majeure, it shall notify in writing the other affected Parties to which performance is owed. The notice must:

a) Specify the obligations or part thereof that cannot be performed;

b) Fully describe the event of Force Majeure;

c) Estimate the time during which the Force Majeure will continue; and

d) Specify the measures proposed to be adopted to remedy or abate the Force Majeure.

Following this notice, and for so long as the Force Majeure continues, any obligations or parts thereof which cannot be performed because of the Force Majeure, other than the obligation to pay money, shall be suspended.

Article 21 Dispute Settlement

(1) Any dispute, controversy or claim arising out of or relating exclusively to this Agreement, or the breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the UNCITRAL Arbitration Rules.

(2) The following conditions will apply:

a) The appointing authority shall be … [name of institution or person];

b) The number of arbitrators shall be ... [one or three];

c) The place of arbitration shall be ... [town and country];

d) The language to be used in the arbitral proceedings shall be [...].

Article 22 Confidentiality

(1) The Parties to this Agreement are committed to confidentiality against third parties for all information and objects that are not to be notified to the European Commission according to Art. 11 of thid Agreement or have not been otherwise published and are conveyed in confidence by any other Party. The receiving Party shall not use any such information or objects for any purpose other than in accordance with the terms of this Agreement. The disclosure of confidential information or objects requires the express written consent by the conveying Party.

(2) The confidentiality clause excludes objects or types of information that

a) have been developed or are being developed by the receiving Party independently of the information;

b) are part of the generally accessible state of technology or that reach this status without the fault of the receiving Party or

c) were already in the possession of the receiving Party at the time of the announcement.

Article 23 Written Form

All additions and modifications to this Agreement, which will be numbered consecutively, shall be duly signed by both parties prior to affecting any of the changes therein contained. No addition or modification of this Agreement shall be effective or binding on either of the parties hereto unless agreed in writing and duly signed by the parties.

Article 24 Severability Clause

If any part of this Agreement shall be or become invalid, then it shall be replaced by that valid regulation which comes closest to its meaning and intention. All other parts of this disclaimer shall remain valid in that case.

Article 25 Entry into Force

This Agreement shall enter into force on […date…].

Article 26 Period of Agreement/Termination/Modification/Review

(1) This Agreement shall terminate on…

(2) By way of exception, this Agreement can be terminated […]

(3) The agreement can be amended at any time by mutual consent of the parties. The parties will review this agreement at least once every three years to determine whether it should be revised, renewed [or canceled].

Article 27 Depositary

(1) […Member State…] shall act as the Depositary of the Agreement.

(2) The original of the Agreement, in the […] languages, each version being equally authentic, shall be deposited with the Depositary. The Depositary shall transmit certified copies of each of these versions to the Parties which have signed the Agreement.

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