Cooperation under the RES Directive

Case studies: Joint Support Schemes

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- Joint Quota System in Scandinavia (Sweden, Norway, Denmark and Finland)
- Joint Feed-in Premium System in Central and Eastern Europe (Austria, Czech Republic, Hungary and Slovakia)
- Technology-specific Joint Support Scheme for offshore wind energy (Belgium, Denmark, France, Germany, Ireland, Luxembourg, the Netherlands, Norway, Sweden and the United Kingdom)

Task 5 report

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A report compiled within the European project "Cooperation between EU MS under the Renewable Energy Directive and interaction with support schemes"

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Executive Summary

This report discusses the implementation of Joint Support Schemes along three different case studies. The case studies that have been selected are a Joint Quota System in Scandinavia, a Joint Feed-in Premium System in Central and Eastern Europe and a technology-specific Joint Support Scheme for offshore wind energy. All three case studies indicate that the implementation of a Joint Support Scheme would create benefits relative to the case of maintaining national support. Savings in support cost are to be found in the range of 1.5 % to 25 %, depending on the case considered.

In case of the Joint Quota System in Scandinavia unsurprisingly additional generation in Norway and in particular Sweden would take place, which would lead to cost savings of € 60 Million. This number is relatively small as a larger part of the cost savings would be passed on to the producer rent due to the assumed technology-neutral Quota System.

In case of the Feed-in Premium System in Central and Eastern Europe, Austria would deploy additional renewable generation of about 7500 GWh, which would cover up reduced generation of the other Member States involved in this Joint Support Scheme. Overall this could generate cumulative support cost savings of € 400 Million.

The technology-specific Joint Support Scheme for offshore wind energy would generate the largest cost savings in absolute terms of all three cases amounting to about € 2.3 Billion. These split up into improved resource conditions and an avoidance of over-support compared to what has been assumed in the reference case.[1] This would be achieved mainly by deploying more offshore wind energy in Germany which would otherwise have been installed in Belgium.

In order to realise the possible savings in support costs a cost allocation rule needs to be in place that leads to outcomes that are acceptable for all involved parties (i.e. which creates a win-win situation). By comparing the performance of different proposed allocation rules in the different case studies this report finds that the rule that shares the cost savings equally among all involved parties performs best in this respect.

Besides analysing the economic implications of Joint Support Schemes this report also discusses legal and institutional arrangements that would need to be implemented. On the legal side this regards the amendments to national renewable energy laws and compliance with state aid law. While the legal implementation seems to be most straightforward in the case of the already existing Joint Support Scheme our analysis also suggests that the legal implementation should be feasible for all three cases. With respect to the institutional settings that are discussed in this report we recommend the creation of a joint fund for support schemes that are funded from a source of "state budget"; moreover the analysis has shown that grid charging rules should be harmonised within the Member States taking part in a Joint Support Scheme and the Joint Support Schemes may lead to synergies when in interaction with coupled markets when it comes to efficiency concerns.

[1] Fur a further discussion of what constitutes the cost savings see main paragraph below.

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1 Introduction

Directive 2009/28/EC on the promotion of the use of energy from renewable sources, subsequently called "RES directive", has introduced a stable legislative framework, laying down individual mandatory targets for the share of renewable energy in final energy consumption for each Member State. It allows Member States to decide on technology path and support scheme to achieve those targets that suits the relevant market situation and its national preferences best. At the time the directive was negotiated, harmonizing support schemes for electricity from renewable energy sources had been considered as an alternative design option, given the potential for enhanced efficiency of support and reduced costs of renewables deployment such an option could bring.

However, the RES directive acknowledges the importance of the stability of support schemes, the need for differentiated approaches corresponding to the resources, market development and national preferences. Therefore it provides three mechanisms, allowing for cross-border support of energy from renewable sources amongst two or more countries. The mechanisms available are, Statistical Transfers, Joint Projects and Joint Support Schemes. These mechanisms differ in their scope for cooperation in terms of commitment and complexity of institutional set-up, thus giving the member states the flexibility to pick a model for cooperation corresponding to their specific needs and priorities.

The possibility for Joint Support Scheme is created by Articles 10 and 11. Under these articles member states may agree to join or coordinate their national support schemes. That said, the Article on Joint Support Schemes reflects the Member States' recognition that a common approach can have significant benefits in terms of efficiency of support. So far several initiatives have explored the concrete implementation of Article 11, but only Sweden and Norway have implemented a Joint Support Scheme. However, despite contributions by different stakeholders, it seems many issues related to the implementation of Joint Support Schemes remain unclear. This is one of the reasons why little use has been made of the mechanisms so far, despite their potential benefits.

Several studies have identified barriers to the implementation of the mechanisms, compare e.g. Ragwitz et al. (2012), Pade et al. (2012). In its own analyses, the EU Commission highlights the following barriers (EC, 2012 and EC, 2013): the need of local benefits as additional justification of RES support, the legal risks for first movers, the question how to set a 'fair' transfer price, a lack of cross-border grid capacity, the complexity of the institutional design of the mechanism and joint projects, requiring clear definitions of the support scheme for the projects, impact on and of the domestic support scheme, as well as mechanisms to share costs and benefits. In the task 1 report of this project various of these barriers have been addressed and a framework has been developed for the implementation of the different mechanisms. It is the objective of this report to apply this framework to three different case studies of Joint Support Schemes that do not refer to any concrete opportunities explored by Member States, but are purely hypothetical in nature.

In the first chapter the report briefly outlines the cases and the rationale for choosing them. The three case studies selected are a Joint Quota System in Scandinavia (Countries involved: NO, DK, FI,

SE), a Joint Feed-in Premium System in Central and Eastern Europe (AT, CZ, HU, SK) and a technology-specific Joint Support Scheme for offshore wind energy (BE, DK, FR, DE, IE, LU, NE, NO, SE and UK). After the case studies have been defined different conditions (legal, institutional and economic) that need to be assessed and implemented are discussed in the remainder of the report, whereby a focus will be put on the economic analysis. Chapter 2 addresses the legal and institutional framework conditions of Joint Support Schemes. Chapter 3 describes the methodology applied for the economic assessment of the three cases studies, followed by chapter 4 which presents the corresponding results. The economic assessment comprises both the model-based assessment of cooperation benefits and distributional effects as well as different rule for allocating the costs for the Joint Support Scheme. Finally chapter 5 summarises and concludes.

1.1 Joint Quota System in Scandinavia (Sweden, Norway, Denmark and Finland)

Since 1 January 2012, Sweden and Norway operate a joint certificate scheme. Sweden's participation in the scheme means extending the electricity certificate scheme it has been operating since 2003. In Norway, the revenues from certificates replace the former investment support for wind farms provided by the government-owned enterprise Enova. A Joint Support Scheme provides a politically stable system that can only be substantially changed with the agreement of both countries, which is expected to improve long term predictability to investors. Ultimately, the cooperation gives mutual benefits to both countries. For Sweden the benefits include lower support costs, Norway can join an existing support scheme and have more installed RES capacity developed in their country.

Several framework conditions have helped to implement this cooperation, which may also be of relevance when assessing the likeliness of other Joint Support Schemes: One argument often put forward is the fact that Norway and Sweden have RES potentials at similarly low costs that has contributed to the success of the Joint Support Scheme. Expectations have been that first the potentials in Norway would be exploited and then in later years the potentials in Sweden. However additional incentives in Sweden such as tax breaks have led to a much more homogeneous deployment. Moreover, the already existing interconnection between the two countries and operation in a common electricity market seemingly contributed to the successful implementation and operation of the Joint Support Scheme.

Some stakeholders argue that the joint electricity certificate scheme could be opened up to other Member States in the future. In the past, several options in this regard have been explored (e.g. with the Netherlands), but have never been brought to an advanced stage. For this case study an extension of the Joint Support Scheme to Denmark and Finland is explored. In Denmark RES-E technologies are mainly supported via a feed-in premium scheme. Feed-in premium levels are technology specific and mostly set administratively. An exception is offshore wind power, for which support levels are determined in a tendering procedure. Finland applies a feed-in premium as its main instrument to promote RES-E from wind, solid biomass, and biogas. The Finnish NREAP foresees the largest part of RES-E production in 2020 to stem from hydropower, followed by solid biomass, wind, and some biogas. A particular barrier for such a joint instrument might be that this might not correspond full with national energy technology strategies; in particular Denmark has the long-term

goal of building a carbon-free society and Finland is interested in particular technology options such as electricity from liquid biofuels according to its NREAP. On the other hand a Joint Support Scheme could facilitate the market integration of maturing RES-E technologies and the Scandinavian States have traditionally had a cooperative and trustful relationship and they already operate a joint electricity market.

1.2 Joint Feed-in Premium System in Central and Eastern Europe (Austria, Czech Republic, Hungary and Slovakia)

Austria has implemented a feed-in tariff system and is considering a feed-in premium system in the future. In the Czech Republic, electricity from RES is in principle supported through either a guaranteed feed-in tariff or a premium paid on top of the market price. In the more recent past however there have been some disruptions in the support scheme, due to concerns of the government about increasing costs and the Czech Republic has seized support to all new installations with the exception of small hydro as of the beginning of 2014.

In Hungary, electricity generated from renewable energy sources is promoted through feed-in tariffs. Currently, the main renewable energy source used in Hungary is biomass, followed by wind and hydro power. Solar power has a low share in Hungary summing up to 0.7 ktoe. Even though Hungary has a significant geothermal potential, there is no geothermal power plant for electricity generation installed so far. The Hungarian Government stresses its intention to diversify energy supply technologies and does not focus on renewable energy, rather a clear preference is given to nuclear power in official energy planning. In the Slovak Republic, electricity from renewable sources is promoted through a feed-in tariff. The use of renewable energy sources is further incentivised through an exemption from excise tax and several subsidies. In the past years, renewable electricity has been supplied mainly by hydro power and to a small extent by biomass technologies. Other renewable energies did not play any role until mid-2011, when the PV sector increased sharply after several large scale installations have been connected to the grid. A new fund is planned for decentralised RES power.

Austria, Czech Republic, Hungary and Slovakia already cooperate now in the context of energy market integration. They have all been part the Central-East European (CEE) region that was set up to facilitate bottom-up electricity market integration. The role of lead regulator in the CEE region has been entrusted to the Austrian regulator e-Control. Given that all Member States already operate similar support instruments, a transition to a joint feed-in premium scheme seems most feasible for this combination. Furthermore, a Joint Support Scheme for RES-E might be perceived by investors to be more stable and thus could deliver RES-E expansion at lower overall costs, which might increase the acceptance of RES-E support. Figure 1 displays the risk multipliers based on country risk analysis and market data[2] that are currently applied in the Green-X modelling. One can observe that in

[2] The country risks are calculated based on a formula that takes into account credit rating conditions. This does not reflect differences in policy risk. Policy risk in Green-X is based on the type and design of the applied support instrument, this does not include the policy risk "in a broader sense" such as the one caused by disruptions of support schemes, as this cannot be derived in a transparent and consistent manner. Thus in case overall policy

particular Hungary could benefits from the low risk profile of Austria. In addition it can be expected that a Joint Support Scheme would provide some sort of portfolio effect for investors, i.e. the risk of not being rewarded decreases by the number and diversity of Member States financing the Joint Support Scheme, as country risks are at least to some extend negatively correlated.

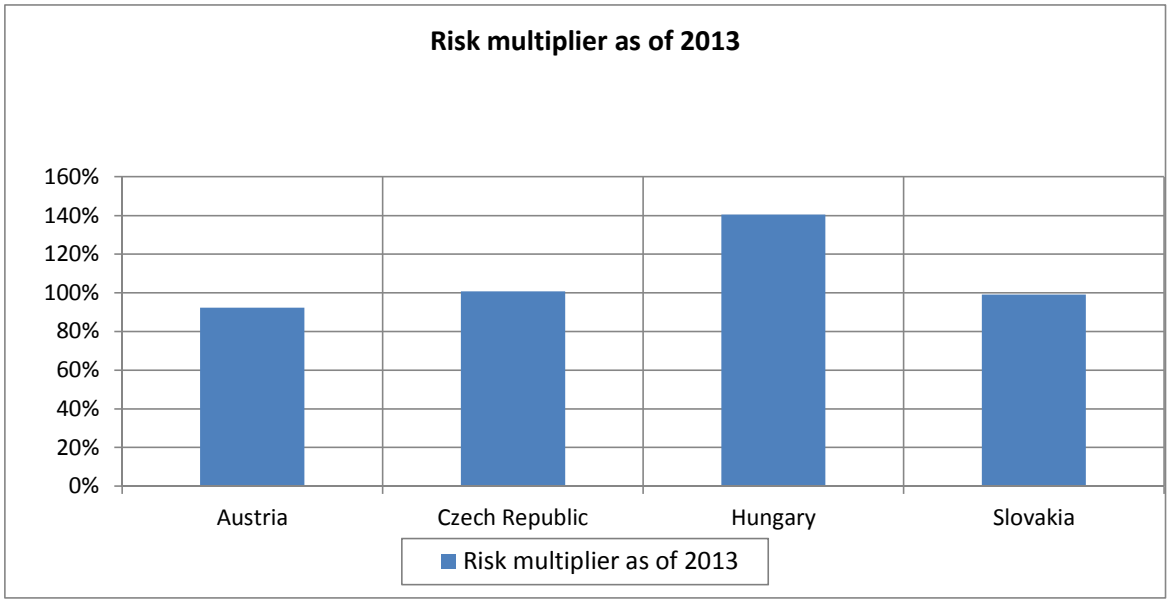

Figure 1: Risk multiplier applied in Green-X model for case study countries.

1.3 Technology-specific Joint Support Scheme for offshore wind energy (Belgium, Denmark, France, Germany, Ireland, Finland, the Netherlands, Sweden and the United Kingdom)

There are specific aspects for offshore support schemes to be considered, most of them stipulate international cooperation by its characteristic. While Joint Support Schemes are most prominent for lowering resource (and thus support) costs, in this particular case the potential key driver for cooperation could be cost savings for the offshore grid transmission infrastructure, which has to be built from the scratch. Here, a joint solution offers the potential for significant economies of scale. Moreover, offshore wind energy projects are particularly capital intensive and therefore typically developed by large (international) players. In addition, compared to onshore projects they imply a significantly higher technical and resource specific risk. Both the capital intensiveness and specific risks lead to electricity generation costs, which currently are more expensive than well-established RES technologies as hydro power, onshore wind, and PV technologies. Thus developing new offshore infrastructure jointly can also be seen as a way of burden sharing for bringing a strategic technology into the market.

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risk is high financing costs might be underestimated in the model., though it can be expected to be reflected partly in the country specific risk.

Grid connection of offshore projects with more than one country is possible, actually in some cases preferable, as electricity produced in offshore projects can flow where it is most valuable. Moreover, the site of an offshore wind project can in some cases be located on the territory of more than one country, e.g. Kriegers Flak. In such cases, cooperation between different Member States authorities for maritime spatial planning, environmental permits, and on grid integration is already a requirement. Consequently, the use of Joint Support Schemes appears obvious. Moreover, offshore could be the "marginal" technology for several exporting MS and therefore be the "natural" technology for cooperation.

In this case study the nine Member States are included, which previously had implemented a variety of different support schemes for offshore wind projects. In the meantime however floating premium systems have emerged as "best practice" standard for supporting offshore wind power; this type of instrument is or is going to be employed in all of the involved countries except for Sweden and Norway that continue to support offshore wind power through the joint quota scheme. The observed convergence of support instruments for offshore wind towards market based approaches in combination with attractive support level offers promising conditions for the implementation of a Joint Support Scheme for offshore wind power.

The North Seas Countries' Offshore Grid Initiative (NSCOGI)[3] has enabled a forum for discussion and information exchange. It was formed in 2009 as the responsible body to first investigate market barriers and propose solutions. Of the Member States included in this case study Finland is not a member of NSCOGI and Norway and Luxemburg have not been included in the case study.

[3] It has not been the objective to directly model the NSCOGI countries, as with NSCOGI the focus is on grid expansion, while in this case study the focus is on support costs for renewable targets.

2 Legal and institutional framework conditions

In order to implement a Joint Support Scheme, a comprehensive legal and institutional framework has to be established. Legal, institutional and economic criteria for the implementation of Joint Support Schemes are connected both top-down and bottom-up (see Figure 2). On the one hand, legal criteria limit the space for economic operations and institutional settings and to some extend predetermine economic incentive structures and allocations. For instance, certain institutional settings may involve State aid as defined under Art. 107 Treaty on the Functioning of the European Union (TFEU), so that compliance with the respective State aid rules and in particular compatibility with the internal market needs to be ensured. This may rule out certain design options for systems involving State aid.[4]

On the other hand Joint Support Schemes will be implemented with the objective to create economic cooperation gains and the resource allocations that create these gains need to be implemented by institutional structures. Changes in institutional structures will also likely necessitate changes to existing legal structures and will need to be carefully assessed and prepared. While the focus of this report is on the economic criteria of Joint Support Schemes, in the following this chapter discusses the most important legal and economic framework conditions that must be in place for the implementation of Joint Support Schemes and that are consistent with the subsequent techno-economic analysis of support schemes.

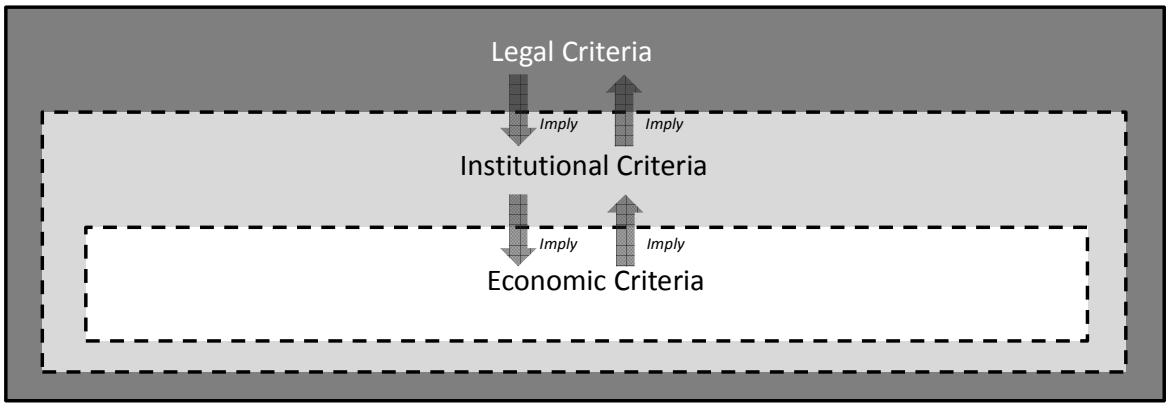

Figure 2: Relationship of legal, institutional and economic criteria for the implementation of Joint Support Schemes.

[4] Within the Member States, different mechanisms to support renewable energy have been developed, some of which have been considered State aid, others have not. Systems making use of a "fund", such as existed in France, have in this context normally been qualified as State aid. Compare ECJ, Case C-262/12 Vent de Colere.

2.1 Legal framework conditions

2.1.1 Joint Quota System in Scandinavia

2.1.1.1 Amendments to national renewable energy laws

In this case study, Finland and Denmark want to join in the existing Joint Support Scheme between Sweden and Norway. Sweden and Norway since 2013 maintain a Joint Support Schemes according to which the exact same rules apply to renewable energy producers in both countries. The system is designed as a quota obligation and the certificates used to meet the quota obligation can be traded freely between the two countries.

It becomes apparent from the case study that Denmark and Finland at least for the time being have slightly different preferences when it comes to the support of specific renewable energy sources and technologies. Thus the Joint Support Scheme as it currently exists between Sweden and Norway may not be entirely acceptable to them. However, renegotiating the terms of the support scheme and changing the existing system may not be an option either, as Sweden and Norway may not agree. For Denmark and Finland, according to the case study, this is a "take it or leave it" decision.

For Finland and Denmark to join this existing system, the most obvious option would be to accede to the existing Agreement between Sweden and Norway. Only some very few provisions of that Agreement would need to be adapted (i.e. the targets). Parties can join after both Sweden and Norway have given their consent, as in accordance with Art. 13 of the currently already existing Agreement. In a second step they would need to adapt their national renewable energy laws respectively to reflect the provisions of the Draft Agreement (compare Annex 6.1).

2.1.1.2 State aid issues

The Joint Support Scheme between Sweden and Norway is not considered State aid. Thus, Denmark and Finland would not need to notify and wait the Commission's approval under the State aid rules before being able to implement the Draft Agreement which could in itself be a significant incentive for those countries.

However, as the Draft Agreement itself provides, the parties have to inform each other about their existing State aid measures (compare Art. 5 of the Draft Agreement). All in all, though, there are little State aid concerns.

2.1.1.3 Other legal barriers

If Finland and Denmark join into the system, this may cause the need for further adaptions in other energy related legal provisions in their respective general energy and environmental laws (e.g. rules relating to balancing obligations, energy and environmental taxes or the like), or may make it necessary to allocate certain competences differently (e.g. to allow participation in the institutional set-up as in accordance with the Draft Agreement).

2.1.2 Joint Feed-in Premium System in Central and Eastern Europe

2.1.2.1 Amendments to national renewable energy laws

In this case study, Austria, the Czech Republic, Hungary and Slovakia want to set up a Joint Support Scheme. The scheme will take the form of a feed-in premium, in addition to the electricity prices achieved in the respective markets. As the countries already cooperate in the integration of the electricity markets, this model was deemed most appropriate. The beneficiaries will be identified based on a tendering procedure, in line with the State aid rules. For the institutional set-up, a Council and a Committee would be installed, the first to monitor, the latter to manage the system.

Using the Joint Support Scheme between Sweden and Norway as an example, the four Member States should best enter into an agreement which sets out the characteristics of the Joint Support Scheme and defines their obligations towards each other, such as the Draft Agreement proposed in Annex 6.2.

In a second step they would need to adapt their national renewable energy laws respectively to reflect the provisions of the Draft Agreement. This would in particular imply the implementation of rules allowing for the Joint Support Scheme as described in the Draft Agreement, possibly also changes to the rules on balancing, to energy and environmental tax laws or administrative laws (compare Art. 4 of the Draft Agreement). Further, and maybe most importantly, a way needs to be found to provide financing to the fund for the Joint Support Scheme, which will most likely involve the need for new legislation to be adopted (compare Art. 13 of the Draft Agreement). The Member States will also have to make provisions to allow for participation in the institutional set-up as it is described under the Draft Agreement, necessitating changes in the allocation of competences between the respective national authorities (compare Art. 11 and 12, as well as Art. 7 and 8 of the Draft Agreement). Possibly, this could all be done in one single law, where necessary providing for exceptions to otherwise applicable rules. Alternatively, it could be done by changing the respective existing legal rules – as may be the case - spread over different laws.

2.1.2.2 State aid issues

Depending on the implementation, a feed-in premium may constitute State aid according to the definition of Art. 107 TFEU. This would mean that the measure would need to be notified and approved by the European Commission. Approval, it seems, would be granted if the scheme corresponds with the conditions set out in the Guidelines for Environmental and Energy Aid 2014-2020 as they have entered into force in July 2014. Thus – and in particular as it is unclear how the scheme shall be financed so far – for this case study we assume a setting in which the measure would be State aid but would accord to the Guidelines so that there should be relatively little State aid concerns. That is why we designed the support scheme as it is set out in the Draft Agreement in accordance with the Guidelines.

2.1.2.3 Other legal barriers

It has not been decided yet, whether the premium shall be a fixed or a floating premium (i.e. a lump sum in addition to the electricity price or a contribution up to a certain fixed amount). Given that there might be differences in the electricity prices in the four Member States, possibly, a fixed premium might be the better option, as it is easier to implement and to calculate the costs in advance, since those are more or less known. For a floating premium they would depend on the electricity prices and their development on the market. However, a fixed premium would need to be adapted over time more often to avoid overcompensation, in particular in case of rising prices. Moreover, experience shows that most Member States prefer floating premium system as they limit risk exposure for renewable energy investors and as such allow for lower capital costs. As no decision has been taken, yet, this is left open in the following.

Many other issues have not been clearly decided yet. In particular the burden sharing as well as the benefit sharing and the financing of the entire system, however, some suggestions can already be made. For the financing, it is assumed that the Member States all contribute a certain sum to a specific "fund" from which the payments to the respective renewable energy producers will be made. This could be a rather simple tool to allow for a burden sharing.

2.1.3 Technology-specific Joint Support Scheme for offshore wind energy

2.1.3.1 Suggested amendments to national renewable energy laws

In this case study, Belgium, Denmark, France, Germany, Ireland, Luxembourg, Netherlands, Norway, Sweden and the United Kingdom want to set up a framework for exploiting renewable energy in the North Sea. However, none of the Member States wants to fully open their national support schemes. Rather a separate scheme shall be set up, only for the project(s) falling into the scope of the cooperation.

Accordingly, at first sight, no changes to the national renewable energy laws seem necessary but an agreement shall be concluded under which the Member States party to this agreement shall implement its provisions somehow in national legislation. A proposal for a Draft Agreement for such cooperation can be found in Annex 6.3. In particular, provisions may need to be made relating to network integration and the institutional set-up as suggested under the Draft Agreement would need to be introduced (compare Art. 10 and Art. 4 of the Draft Agreement), Further, the Member States would need to make sure that their contribution to the financing of the Joint Support Scheme is guaranteed (compare Art. 9 of the Draft Agreement). This may include implementation within the national (renewable) energy laws but may similarly be done by introducing a separate instrument, e.g. a regulation. As it is assumed that the national renewable energy support schemes of the cooperating Member States will be maintained alongside the cooperation, though, a separate legal instrument may be the instrument of choice, as it is likely to be easier to adopt than several changes to the existing legislation.

2.1.3.2 State aid issues

It is not clear yet what exact form the support is going to take and which Member State is going to take on which responsibilities. Accordingly, for the time being there are no State aid concerns. However, later on it seems likely that the scheme, in particular if the financing is going to happen through a fund as suggested below, will have to be notified and approved by the European Commission under the State aid rules. Thus, it would make sense to design the support scheme in accordance with the Guidelines for Environmental and Energy Aid 2014-2020 as they are applicable from July 2014. That is why the Draft Agreement was roughly designed along the lines of the Guidelines.

2.1.3.3 Other legal barriers

At this stage no concrete "other legal barriers" can be defined, as there is so little information on how the system is supposed to function.

2.2 Institutional framework conditions

As mentioned above, pre-existing institutional frameworks of the Member States predetermine how allocations can be implemented. On the other hand, institutions need to be reshaped or created in order to reap the economic benefits from cooperation. This involves for instance the setting up of a Joint Support Scheme, the creation of a decision making forum and the establishment of decision making procedures, the administration of the financial flows of the support scheme, the definition of reference prices / support tariffs, grid connection rules or the introduction of a compensation mechanism.

The types of support schemes have already been established by definition of the case studies. Regarding the other institutional decisions that need to be made there are in general various degrees of freedom regarding the implementation of the cooperation scheme. Ultimately, this is something that finally will have to be decided by the Member States entering into a cooperation agreement and will not be in the focus of these case studies. However, in the Draft Agreements in the annexes, we suggested a certain institutional set-up, based on the experience from the cooperation between Sweden and Norway and the European Commission's "Guidance on the use of renewable energy cooperation mechanisms", and adapted to the individual characteristics of the case-studies. The system needs to be able to guarantee on the one hand that there are institutional bodies in place allowing for coordination and cooperation between the Member States, i.e. intergovernmental bodies in charge of policy- and decision-making relating to the Joint Support Scheme. On the other hand, there should be monitoring bodies, in the respective participating Member States (compare e.g. Art. 7 of the Draft Agreement in annex 6.2), allowing them to keep track of the developments and to adapt the scheme where necessary.

Details with respect to the support schemes such as duration or the exact type of instrument will have to be decided. We will however point out several general issues that can be taken into consideration by the Member States when deciding the exact design elements of the Joint Support Scheme: These concern the definition of the support level / reference price and possible deviations

thereof across countries, practices of grid connection charging, the interaction of Joint Support Schemes with integrated electricity markets and the establishment of a joint fund. A general requirement for the selection of an instrument is that it should be capable to reap the economic benefits of cooperation, thus to provide a cost efficient allocation of newly installed capacities. In this report the decision on the instruments is part of the definition of the case studies. However, to ensure compliance with the State aid rules, we proposed setting along the lines of the Guidelines for Environmental and Energy Aid 2014-2020, as applied as of 1 July 2014.

Interaction of Joint Support Scheme and electricity market integration

In general the integration of support schemes and the integration of electricity markets both lead to a higher degree of flexibility: In the former case investments can be made where they are more cost efficient in terms of levelised costs of electricity generation and / or where they are more valuable (for instance, because of a better correlation of output and demand). In the latter case electricity can flow where it is most valuable. To better understand the interaction of both types of market integration it is best to look at both integration effects one after another. The effect that can be expected from the Joint Support Scheme is that more renewable generation will be placed in the country that offers the better resource potential, which will lead to lower levelised costs of electricity generation. However, such a concentration of new renewable generation capacity will lower the market value of additional renewable generation, which in turn increases the net support costs. Thus there exists a trade-off between lowering the generation costs and reductions in the market value such that beyond a certain threshold the decrease in generation costs might not compensate anymore for the decrease in the market value, which is particularly the case for variable renewables.

If both countries were isolated electricity markets the electricity price-level in the host country could be expected to be significantly lower than in the off-taking country. Additional RES-E generation in the host country would only be of low value, but could displace much more expensive generation in the off-taking country at the same time. Here market coupling comes into play: In coupled electricity markets the involved exchanges (i.e. the applied algorithm) will try to equalise electricity prices in each hour, respecting available transmission capacities between price zones. This will assure that the system-wide most cost efficient dispatch is achieved with respect to short run costs. This also means that RES-E generation with very low short run costs is optimally allocated to where it achieves the highest market value. It can thus be concluded that the integration of support schemes and the integration of electricity markets are related: The coupling of electricity markets leads to the efficient allocation RES-E generation that has been generated at sites with low generation costs. This will lower the support costs both “from the bottom and from the top” as shown in Figure 3.

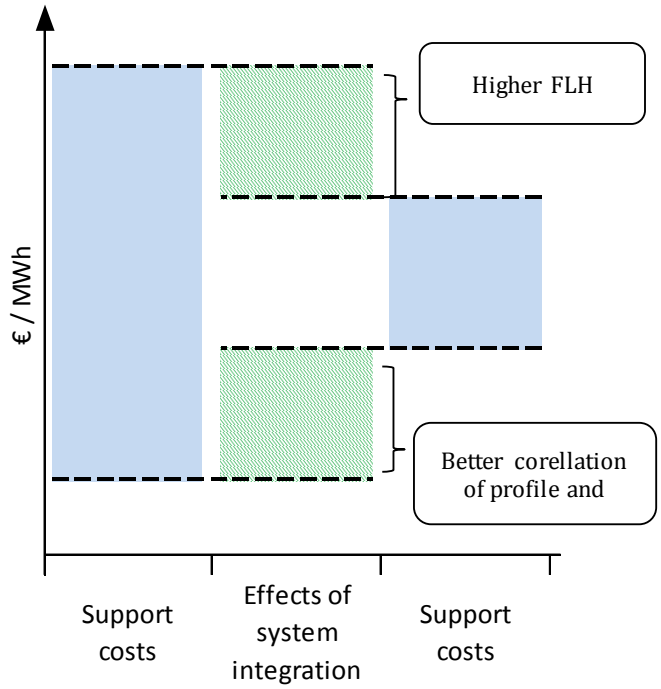

Figure 3: Effects of system integration.

The definition of the support level / reference price

As stated above, we assume that newly created support schemes will comply with the State aid Guidelines. Possible support instruments in that case include a quota scheme with tradable green certificates or a feed-in premium scheme where the support level is determined by a competitive auction process. Thus in both cases the determination of the support level would be left to the market and would not need to be decided by the policy maker / regulator.

Practices of grid connection charging

The question which party is paying for the grid related costs depends to a large degree on the existing regulation and market design. As regards the cost for the connection of new RE-E plants the regime can either be shallow or deep. In case the regime is shallow a large extent of the costs is socialized and recovered through the grid tariff of the country where the investment takes place. In case the regime is deep, the plant investor bears a high fraction of the connection costs, which ultimately need to be recovered through the support payments. Thus the existing regime has implications on the allocation of the costs: In a case of a shallow regime mainly the host country would pay for the grid connection, whereas in a deep regime the costs would be shared according to the rule that allocates the support costs. While the latter would offer the potential for transparency and explicit accounting for indirect costs, it is also often perceived a barrier for RES-E expansion. In any case it seems necessary that grid connection charging should be harmonised between countries participating in a Joint Support Scheme.

Establishment of a joint fund

One further institutional arrangement that can already be anticipated for support instruments that are financed from some form of budget (e.g. taxes, levy) is the creation of a joint fund, where all support costs are pooled and then allocated according to a certain allocation rule. We suggest such a setting to be included in particular in the context of the Joint Feed-in Premium System in Central and Eastern Europe, as well as in the Technology-specific Joint Support Scheme for offshore wind energy (see Annex 6.2 and 6.3.).

As a rule of thumb, this allocation will have to be defined in a way that leaves all involved Member States better-off than in the default case (of national support schemes). A joint fund as it is conceptually illustrated in Figure 4 would have the advantage that it could simultaneously be used for the administration of the financial flows and for the compensation between the Member States. In the former case it would provide the institutional entity to collect financial contributions by all countries and pass them on to RES investors. At the same time the joint costs are pooled so that some allocation rule can be applied to share the costs between the involved countries and thus determine the contribution of each country to the joint fund. A joint fund will be assumed for the application of the allocation rules in chapters 3 and 4 in cases where a budget financed support scheme is implemented.

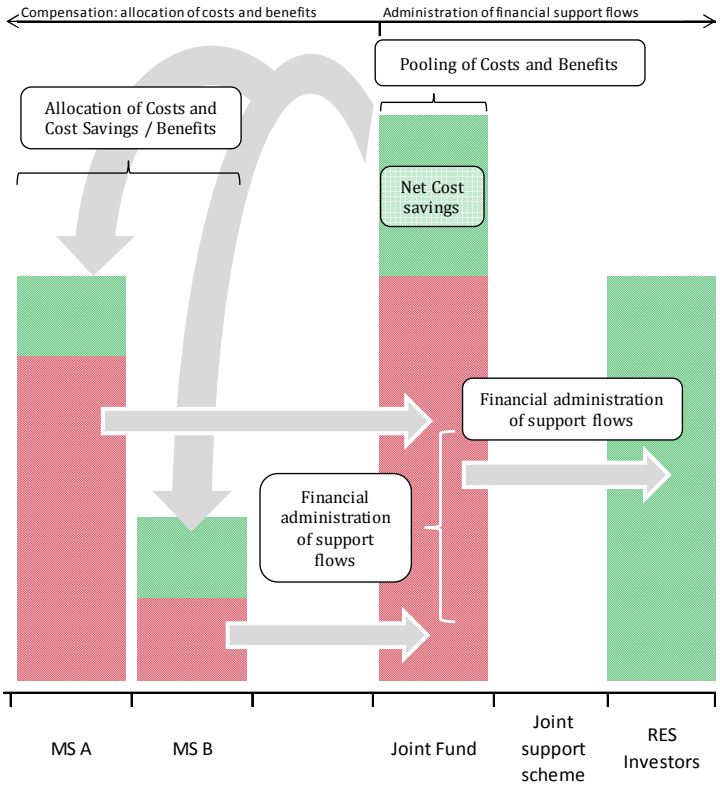

Figure 4: Conceptual illustration of Joint fund for one variant of cost allocation.

3 Assessment of the case studies

The objective of this chapter is to apply the evaluation framework for RES-E cooperation that has been developed in the task 1 report of this project to the case studies that are investigated in this report. Table 3-1 shows the elements that are usually contained in a cost-benefit allocation scheme and corresponding tasks. Though not fully consecutive in practice the first steps are to identify a cooperation project and then determine all costs and benefits that might be relevant. Those effects that are kept on the list would then need to be quantified to determine the costs and benefits of cooperation. Finally, an allocation rule would need to be implemented to share the joint costs of cooperation. In the remainder of this chapter and in the following chapter the different tasks will be specified and implemented in the context of the three case studies. Step 1 has already been conducted through the definition of the case studies in chapter 1.

Table 3-1: Elements of a cost-benefit allocation scheme for RES-E.

Steps	**Step 1: Identify project opportunities**	→	**Step 2: Identify side effects**	→	**Step 3: Select impact assessment method**	→	**Step 4: Implement allocation rule**
Main tasks	• Define objective / scope • Conduct CBA for support costs		• Draw list of possible side effects • Reduce list to most relevant effects		• Quantify all effects to the extent possible • Handle uncertainty		• Decide institutional set up • Select allocation rule

3.1 List of effects

The task 1 report has emphasized that the list of indirect effects to be included in the analysis should be reduced as much as possible in order to reduce complexity (which in turn increases the likeliness for success of negotiating such schemes). The following criteria can be applied to evaluate each effect to be excluded from the extensive list of effects:

- **Distributional impact**: Effects of a reallocation of renewable electricity generation that result in low distributional impact can be excluded from the reduced list.
- **Relative weight**: Effects that receive a low relative weight can be excluded from the list. Each effect's relative weight will be derived from its absolute value in terms of costs and benefits compared to all other effects. Support costs will most likely define the benchmark in monetary terms and all other effects will have to be evaluated against them. Which of the effects listed above have a high or low relative weight will mostly depend on the specific project characteristics. A qualitative pre-assessment can already provide useful guidance in this respect.
- **Quantification / Monetization**: Effects that cannot be quantified have little value for allocation schemes that apply monetary compensation. However in a specific context Member States may still wish to include "hard to quantify" effects taking into account local specifics (e.g. with regards to security of supply).

- **Costs vs. Benefits:** For practical reasons, costs need to be borne by some party whereas benefits are sometimes more uncertain (e.g. employment effects) or subjective (e.g. green value of RES). Therefore – all other criteria having equal characteristics – costs should be given preference over benefits.

In the context of this report only indirect effects will be included in the analysis that can also be quantified, which is in turn determined by the dataset and modelling tool available for this analysis (see next section). Thus in this report the following effects will be assessed quantitatively:

- Support Expenditures are described in more detail below.
- Avoided fossil fuel imports express the monetary value of fossil fuels that are displaced by renewable generation and would otherwise have to be imported.
- Avoided CO2 Emissions express the emissions from fossil fuelled generation that can be avoided by displacement through renewable generation and that are monetized by the corresponding value of EU ETS emissions allowances derived from the PRIMES reference scenario as of 2013 (NTUA, 2013).

3.2 Impact Assessment Methodology

3.2.1 Short model description

The Green-X model has been applied to perform a detailed quantitative assessment of the future deployment of RES on country-, sector- as well as technology level. Green-X models support expenditures - i.e. the transfer costs for consumers (society). These are defined as the financial transfer payments from the consumer to the RES producer compared to the reference case of consumers purchasing conventional electricity on the power market. Thus the metric used in the model is closest to the determination of "real life support costs". This metric does not consider any indirect costs or externalities (environmental benefits, change of employment, etc.). Green-X also does not explicitly account for integration costs. However integration costs of variable renewable generation are (at least partly) implicitly reflected through a reduced market value of a RES-technology option in case it is massively deployed / highly concentrated.[5]

Simulated support expenditures are assessed based on a detailed bottom-up RES resource and technology representation (that yields the technology-class specific LCOE) in combination with a thorough energy policy description that acts as driver of additional RES deployment. For an extended description of the model we refer to www.green-x.at.

The following constraints apply to the model based assessment:

- Time horizon: 2006 to 2020 – Results are derived on a yearly base;
- Geographical coverage: all Member States of the European Union as of 2013 (EU-28);

[5] For a discussion of the relation between market value and integration costs compare e.g. Hirth (2013).

- Technology coverage: limited to RES technologies for power and heat generation as well biofuel production. The (conventional) reference energy system is based on PRIMES modelling – in particular the PRIMES reference scenario (as of 2013) was taken as reference;
- RES imports to the EU: limited to biofuels and forestry biomass – besides no alternative possibilities such as physical imports of RES-Electricity are considered for national RES target fulfilment;
- Flexibility options for national RES target fulfilment as defined in the RES directive: limited to "statistical transfer between Member States" and the option of (EU-wide) "Joint Support Schemes" (by means of harmonised RES support). Although from a practical viewpoint important, the third principle intra-European flexibility option of "joint projects" as defined in the RES directive was neglected since its incorporation into the modelling approach was not feasible due to the highly case-specific nature of related decision making processes.

3.2.2 Definition of policy cases

In order to assess the value of cooperation two distinct policy cases are defined: a reference case and a cooperation case (Figure 5). The reference case defines the ambition level in terms of additional RES-E generation that must be met equally (±1%) by the cooperation case at cluster level to be compared against each other with respect to the resulting support expenditures. By default, the reference case is defined as a Business-as-usual scenario with respect to the implemented support policies. That means currently implemented support policies for RES-E at national level are used. However, if these policies in the modelling exercise turn out to be insufficient to deliver at least a level of additional RES-E generation that is compatible with the Member States 2020 target, the support conditions will be adjusted accordingly ("strengthened national policy").

In contrast, in the cooperation case we assume that the support instrument will be optimised across borders (of the participating cluster Member States) in order to achieve an equal level of RES-E generation as in the reference case at lower overall costs. The policy change is expected to take place at the beginning of the year 2015. As a result, cumulative support expenditures in the period 2015-2020 are compared for the case studies. Support expenditures related to generation before 2015 or to sectors / technologies not considered in the case studies are excluded from the analysis.

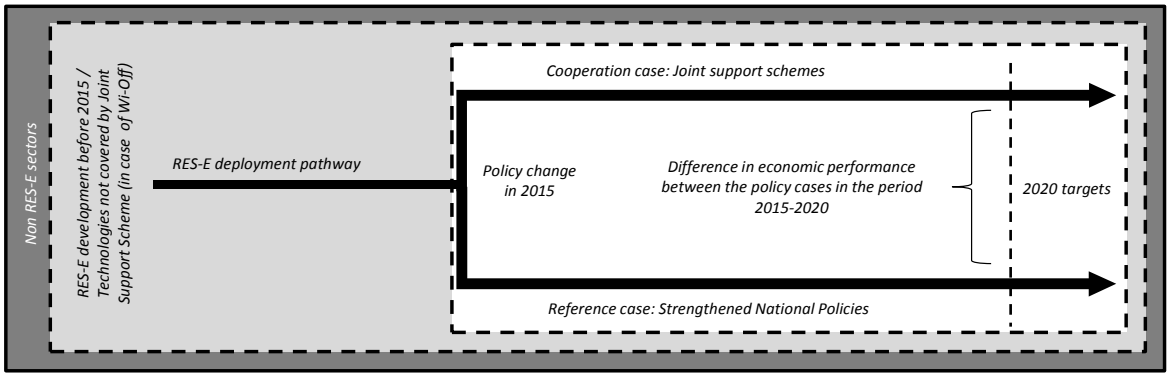

Figure 5: Definition of policy cases

3.2.3 Key input parameters for case studies

In order to ensure maximum consistency with existing EU scenarios and projections, the key input parameters of the scenarios presented in this report are derived from PRIMES modelling and from the Green-X database with respect to the potentials and cost of RES technologies. Table 2 shows which parameters are based on PRIMES and which have been defined for this study. The PRIMES scenario used for the subsequent assessment related to RES cooperation is the *PRIMES reference scenario* as of 2013 (NTUA, 2013).

Table 2: Main input sources for scenario parameters

Based on PRIMES	Defined for this study
Energy demand by sector	RES policy framework
Primary energy prices	Reference electricity prices
Conventional supply portfolio and conversion efficiencies	RES cost (Green-X database, incl. biomass)
CO_2 intensity of sectors	RES potential (Green-X database)
	Biomass trade specification
	Technology diffusion
	Learning rates

In particular, RES policy framework parameters that have been defined for each of the case studies comprise the targeted share of new RES-E production in gross final electricity consumption in 2020 and the policy instrument applied to reach this share for the reference and cooperation case respectively.

3.3 Implementation of allocation rules

This section describes the allocation rules that have been introduced in the task 1 report. In order to make the calculations in the next chapter reproducible, also the corresponding formulas are presented in this section. Two types of allocation rules have been introduced for use with the cooperation mechanisms: They are either based on full cost sharing or on transfer pricing. The former naturally relates to cost sharing through a joint fund, which is assumed for the institutional set-up of the case studies. The latter can also be applied with a joint fund with some adjustments as will be explained below. From the allocation rules introduced in the task 1 report the Shapley Value (due to computational complexity) and the variant based on negotiated premiums (due to lack of uniqueness) will not be considered in the case studies. Table 3 lists the parameters and variables that are used to describe the allocation rules formally.

Table 3: Parameters and variables of the cost allocation rules.

Abbreviation	Paramter / Variable
Parameters for full cost sharing rules	
SE_ref_n	Cumulative support expenditures for reference case in MS n in millions of euros
SE_coop	Cumulative support expenditures for joint target achievement at cluster level in millions of euros
$Cost\_sav$	Cumulative cost savings compared to reference case in millions of euros
NIE_n	Cumulative net indirect effect of cooperation in MS n in millions of euros
NIE_pos_n	$NIE\_pos_n = \{x \in NIE_n \mid x \in \mathbb{R}^+\}$
$Cost_n$	Costs that are allocated to MS n as ist contribution to the joint fund
$elegen_{a,n}$	New electricity generation in year a in MS n in GWh
Additional parameters for transfer pricing approach	
SD_elegen_n	Cumulative surplus / deficit in new electricity generation compared to reference case in GWh
TP_ap	Transfer price in case of weighted avergae premium in euros per MWh_{RES}
TP_mp	Transfer price in case of marginal premium in euros per MWh_{RES}

3.3.1 Approaches based on full cost-benefit sharing

Variant I: Harmonised sharing of costs

For this variant a "full harmonisation" with regards to the resulting (support) costs for RES expansion takes place. The arising expenditures are equally distributed among all participating Member States in accordance with their national RES targets – independent from where the actual RES deployment takes place. For establishing the financial transfer a joint fund may be a suitable option. This fund would be fed by individual countries in accordance with their RES targets (or more precisely the corresponding required new RES deployment). The redistribution would then be completed in accordance with the realised new RES expansion. The local benefits of RES are neglected in this approach, because only (support) costs are taken into consideration.

Equation 1: Harmonised sharing of costs

$$Cost_n = SE\_coop \times \frac{elegen_{2020,n}}{\sum_{n \in N} elegen_{2020,n}}$$

In this formula the costs that are allocated to each Member State are derived by sharing the joint costs by each Member State share in the new electricity generation in the year 2020 for the reference case, which is a form of an implicit target.

Variant II: Harmonised sharing of costs and benefits

This approach can be described as a full harmonisation of both the resulting costs as well as the benefits of RES support. In contrast to variant I, only an agreed share of the total support costs occurring at cluster level is equally distributed among all cluster countries in accordance with national RES targets. The remaining part of the costs, representing the local benefits, has to be borne by the Host Member State – i.e. where RES deployment actually takes place. Again, in order to establish the financial transfer, a common fund may be a suitable option.

Equation 2: Harmonised sharing of costs and benefits

$$Cost_n = NIE\_pos_n + \left(SE\_coop - \sum_{n \in N} NIE\_pos_n \right) \times \frac{elegen_{2020,n}}{\sum_{n \in N} elegen_{2020,n}}$$

In this case a positive cumulative net indirect effect represents a net benefit. Only if a cumulative net indirect effect is positive it is accounted for in this variant. In this case the monetary expression of the net indirect effect is added to the cost allocation of the Member State, which enjoys the benefit and equivalently subtracted from the support expenditures to be shared by all Member States in the cluster. The remaining costs are shared in the same way as in variant I.

Variant III: Harmonised sharing of cost savings

Also in this approach the total (support) costs are shared between all participating countries. The guiding idea is that each country will increase its net benefit by receiving a share in the total cost-savings that can only be realised by cooperation. The cost savings are determined by comparing the sum of the stand-alone (non-cooperation case) costs for all cluster countries to the joint costs of target achievement, the delta represents the realised cost-savings. In this variant those savings are allocated equally among the cluster countries, reflecting the view that those gains can only be achieved by cooperation. Deducting the allocated benefit from the "stand-alone" costs of non-cooperation defines the absolute value in costs each country has to pay. However, another option is that the cost-savings are allocating according to a different criterion than equal shares, e.g. in proportion to the benefits received, targets, etc.

Equation 3: Harmonised sharing of cost savings

$$Cost_n = SE\_ref_n - \frac{Cost\_sav}{n}$$

In this formula the costs allocated to each Member State are determined by subtracting an equal share in the cost savings through cooperation from the costs that would arise for each Member State in the reference case.

3.3.2 Approaches based on transfer pricing

Approaches based on transfer pricing are naturally closer related to cooperation cases where national support instruments and thus national funds persist. This is the case because the transfer price is only applied to the volume of RES-E generation that is "exchanged" (i.e. the surplus / deficit compared to the reference case) and the remaining costs need to be recovered. Therefore, an additional element needs to be included to provide for full cost allocation.

Variant V: Average premiums for RES surplus

This approach describes a methodology to share the cost for RES support between the involved Member States solely for the surplus/deficit (that is the volume of RES-E production that is reallocated compared to the non-cooperation case) of RES-E production. Cross-border exchange takes place only for the country-specific deployment of new RES installations which is not needed for target compliance in host Member State. Therefore, average premiums arising for the support of new RES installations in the exporting country are used for pricing. These can also be considered as the minimum value of a transfer price the host Member State would expect to achieve.

Equation 4: Average premiums for RES surplus

$$Cost_n = SE\_ref_n - SD_{elegen_n} \times TP_{ap} + \frac{SE\_coop - \sum_{n \in N} SE\_ref_n - SD_{elegen_n} \times TP_{ap}}{n}$$

In this formula the surplus / deficit multiplied by the transfer price is subtracted from / added to (if $SDelegen_n$ takes a negative value) the cumulative support expenditures in the reference case (as the surplus / deficit is defined against this one). Then the sum of the later over all Member States is subtracted from the support expenditures in the cooperation case. This yields the residual support expenditures (positive or negative) that are shared equally between all member States and added to the first term of the formula.

Variant VI: Marginal premiums for RES surplus

Similar to variant V, the cost sharing methodology is applied solely for the surplus/deficit of RES-E production. In contrast to variant V, however, the price (per unit of RES-E generation) used for cross-border exchange is determined by the residual RES-E generation that is not required for the domestic target fulfilment in the host Member State (which would be the economic ideal). Thus, as an indication for the marginal option either the support level for the marginal technology option at cluster level is taken or the average premium of the residual basket of RES technologies is applied for price setting. Casually speaking, this represents a sort of marginal pricing.

Equation 5: Marginal premiums for RES surplus

$$Cost_n = SE\_ref_n - SD_{elegen_n} \times TP_{mp} + \frac{\sum_{n \in N} SE\_coop_n - \sum_{n \in N} SE\_ref_n - SD_{elegen_n} \times TP_{mp}}{n}$$

This formula works in the same ways as the one above; only a different transfer price parameter is assumed.

4 Results: cooperation gains, distributional effects and cost allocations of the assessed case studies

4.1 Joint Quota System in Scandinavia

4.1.1 Effect of cooperation on new electricity generation, costs and benefits

Figure 6 displays the new electricity generation and the corresponding share in consumption in 2020. It can be observed that cooperation leads to a reallocation of new electricity generation from Denmark and Finland to Norway and Sweden. In Sweden the generation would increase in the magnitude of 2000 GWh, about the same amount of generation that would be reduced in Finland. Moreover, new electricity generation that takes place in Norway would increase by about 600 GWh: roughly one and a half times the amount of generation that would be reduced in Denmark.

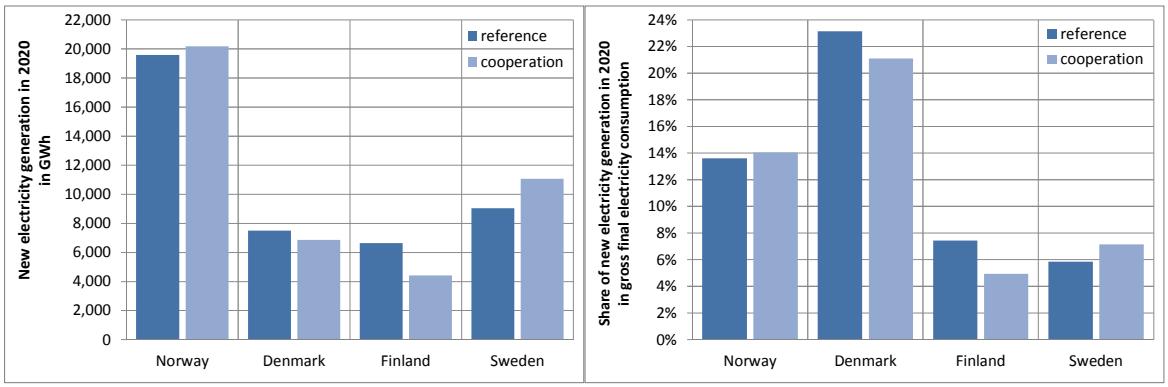

Figure 6: New electricity generation in 2020 (left) and share of new electricity generation in 2020 in gross final electricity consumption (right) for reference and cooperation policy cases.

Figure 7 shows at cluster level the support expenditures for the two policy cases and at Member State level the monetary change in the indirect effects that would correspond to the change from the reference case to a joint support system. Support expenditure is displayed on the primary vertical axis. The results show that cooperation would lead to savings of support costs at cluster level of € 60 Million. These however only account for less that 2% of the total support costs that would occur in the reference case. However, the installation of a Joint Support Scheme would reduce capital expenditure by about € 680 Million. Thus the relative small savings in support costs can to some extend be explained by the introduction of a technology neutral support instrument which will not pass on all the cost savings to the consumers.

On the secondary vertical axis the value of the change in indirect effects, i.e. the sum of avoided fossil fuel import and avoided GHG emissions in monetary terms, is displayed. This change is quite substantial compared to the change in support costs in particular in the case of Finland and Sweden. Also the order of magnitude of the changes in the effects differs relative to the changes in

generation. This is because different power mixes are assumed for the different countries. For instance, in the case of Norway, which generates almost all of its electricity through hydro sources, the impact on avoided expenditures for fossil fuels is very low.

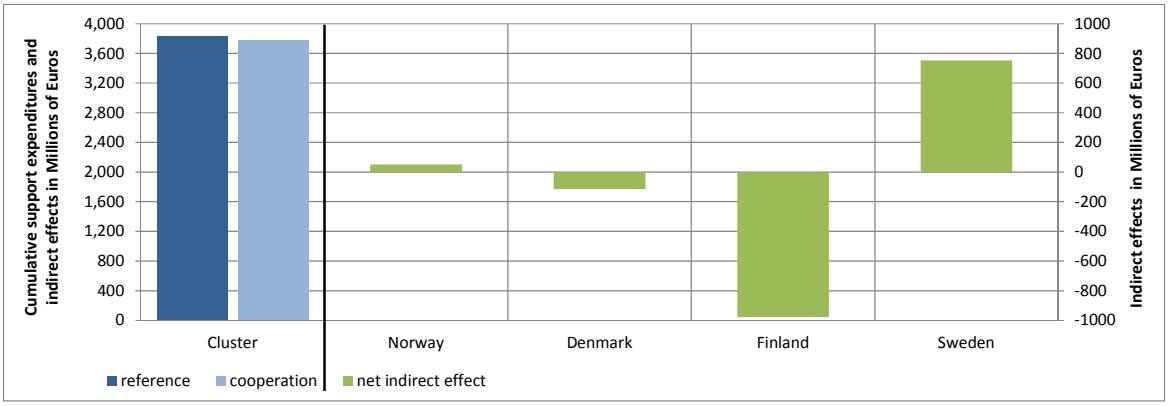

Figure 7: Cumulative support expenditures shown for reference and cooperation policy cases for the sum of all included countries (left) and change in net indirect effect in Millions of Euros per country (sum of avoided fossil fuels and avoided CO2 emissions) displayed on the secondary vertical axis (right).

Figure 8 provides more details on the composition of the indirect benefits. Avoided fossil fuels clearly account for the larger share in this case in the order of magnitude of about factor 5.

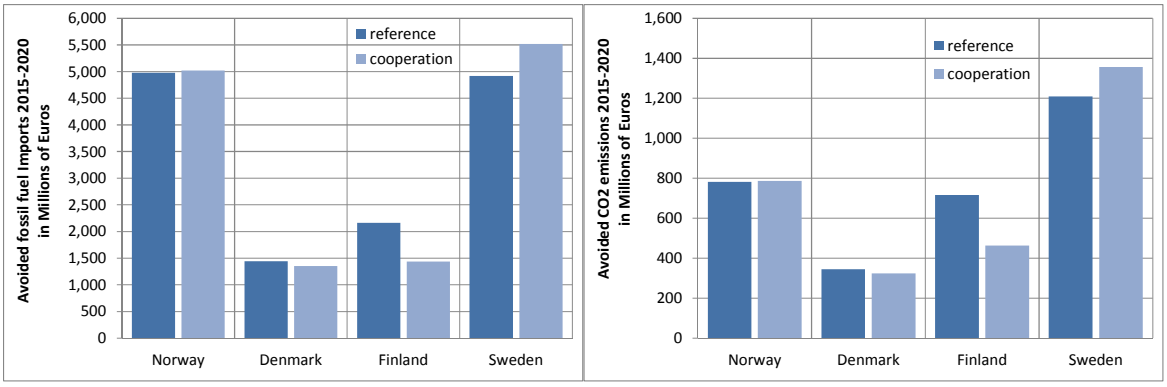

Figure 8: Cumulative avoided fossil fuel imports (left) and cumulative avoided CO2 emissions (right) expressed in monetary terms for the two policy cases.

4.1.2 Allocation of costs and benefits

A Quota Scheme as assumed in this case study is a special case of cost allocation. The support expenditures are not financed by some state run budget, but by the certificate payments of some obliged party that are usually passed on to the consumers. The amount of certificated the have to be presented by the obliged party depends on the defined quota (target and trajectory). Thus in the cooperation case the definition of the quota in itself already defines an allocation of support expenditures. The possibility to trade certificates then provides the possibility to comply with the

quota with generation that takes place in another country. Thus in the quota case there is only one direct allocation of cost. The resulting cost allocation for this case study is shown in Figure 9.

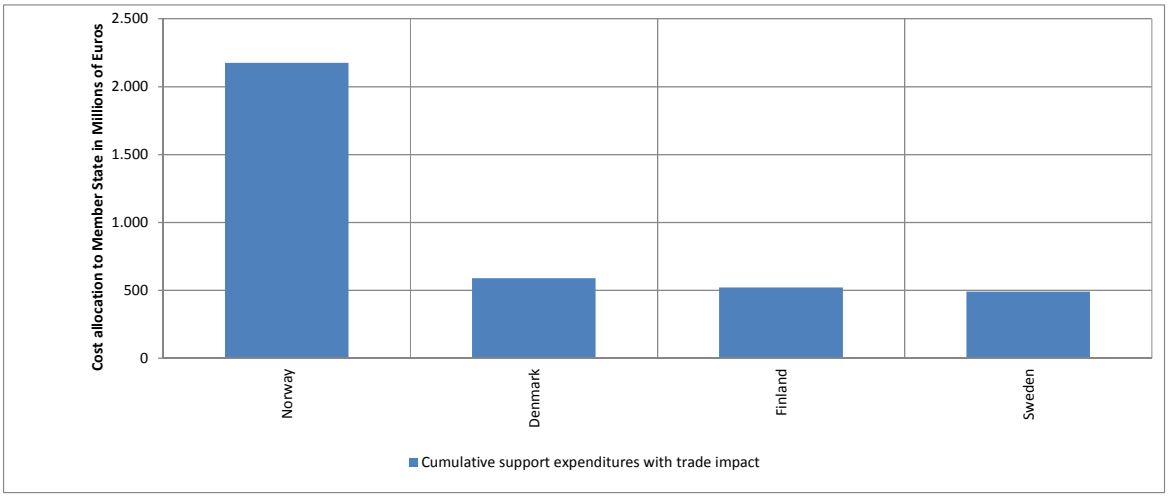

Figure 9: Cost allocation to Member States

While for the quota scheme only the costs allocation implemented by the different target is straightforward, the allocation rule developed for the sharing of the joint costs can at least be considered as a hypothetical benchmark case or as an even though unrealistic case, where countries would conduct additional compensation through a joint fund. In this case the compensation would regard the imbalance between the costs allocated by an allocation rule and the costs allocated by the quotas set.

Figure 10 shows the resulting benchmark allocations for the joint Quota system cooperation case. The grey bar that is situated on the right in each case indicates the support expenditures in the reference case (national support schemes) against which the cost allocation can be compared. Several observations can be made from this figure. In general, countries that have a higher deployment of RES-E generation also bear a higher share in the support costs. The allocation rules differ in the amount of costs allocated up to four orders of magnitude. Only one rule (variant III: Harmonised sharing of cost savings) implements a cost allocation where all Member States have to contribute less to the joint fund in terms of support expenditures than in the reference case. The reason is on the one hand based in the design of the allocation rules (only variant III preconditions that all countries are better off than in the reference case) and on the other hand in the fact that support expenditure savings at cluster level amounting to € 60 Million are rather low, which makes it more difficult to find a cost allocation for the other variants where all are better off. In particular Sweden would have to bear a higher share in most of the variants. Moreover, a comparison of Figure 9 and Figure 10 reveals that in the cost allocation implemented by the quotas the countries that would have higher generation in the cooperation case, i.e. would also bear higher costs than in the reference case. These would either have to be covered by high indirect benefits or by compensatory payments from Denmark and Finland.

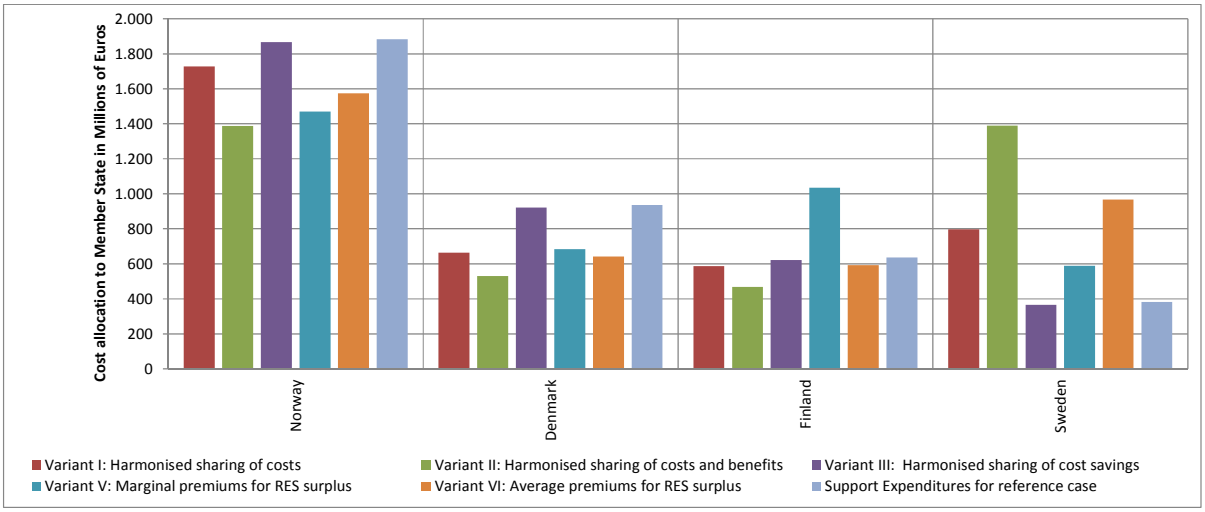

Figure 10: Cost allocation to Member States for benchmark cases.

To sum up, the support cost savings of € 60 Million in this case study are comparatively small. This is because a large share of the savings in capital expenditures is not transferred to the consumers due to the technology neutrality of the support instrument. Norway and Sweden both experience a higher costs allocation than in the reference case thus some additional compensation might be appropriate (potentially based on one of the allocation rules). It has furthermore to be taken into consideration that the time period under consideration is rather short and that cost savings (compared to the reference case) could potentially be much steeper in the long term, when Finland and Denmark acting as importers would have to tap more expensive potentials.

4.2 Joint Feed-in Premium System in Central and Eastern Europe

4.2.1 Effect of cooperation on costs and benefits

Figure 11 displays the new electricity generation and the corresponding share in consumption in 2020. The results show that cooperation leads to a reallocation of new electricity generation from Czech Republic, Hungary and Slovakia to Austria. In sum over the entire period, Austria would increase its new electricity generation by about 7500 GWh. Of this amount Czech Republic would reduce its generation by about two thirds, Hungary by about 15% and Slovakia by about 8%.

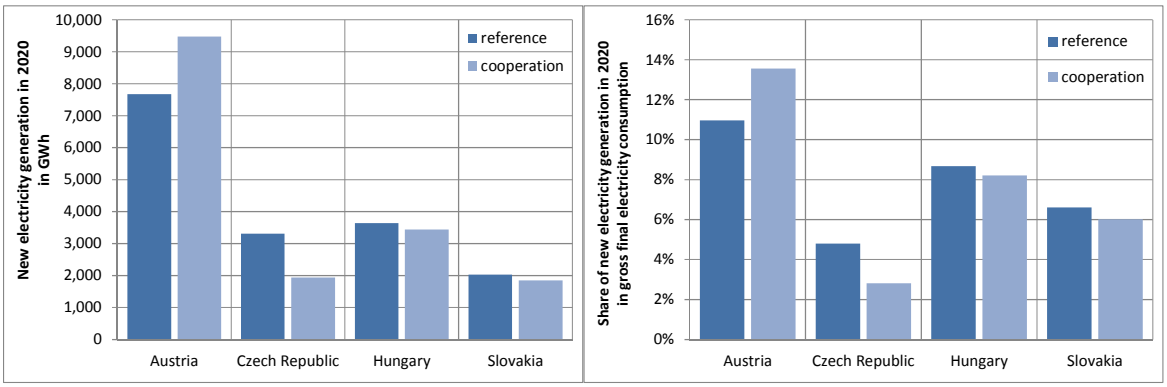

Figure 11: New electricity generation in 2020 (left) and share of new electricity generation in 2020 in gross final electricity consumption (right) for reference and cooperation policy cases.

Figure 12 shows at cluster level the support expenditures for the two policy cases and at Member State level the monetary change in the indirect effects that would correspond to the change from national support policies to a joint support system. Support expenditures are displayed on the primary vertical axis. As we can see, cooperation would lead to savings of support costs at cluster level of more than € 400 Million, which accounts for about 25% of total support costs that would occur in the reference case. Moreover, the implementation of a Joint Support Scheme would reduce capital expenditure by about € 325 Million. Thus, support costs savings can to a larger extent be explained by an optimisation of the resource allocation.

On the secondary vertical axis the value of the change in the indirect effects is displayed. We can observe that this change is quite substantial compared to the change in support. In the case of Austria alone the net indirect benefit enjoyed of more than € 600 million would be larger than the total cumulative support cost savings. It can be expected that his would somehow need to be reflected in the allocation scheme.

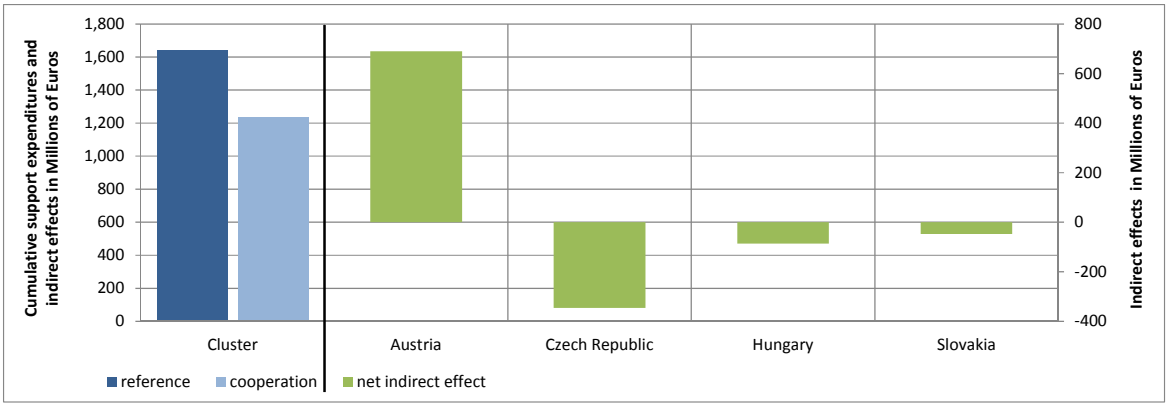

Figure 12: Cumulative support expenditures shown for reference and cooperation policy cases for the sum of all included countries (left) and change in net indirect effect in Millions of Euros per country (sum of avoided fossil fuels and avoided CO2 emissions) displayed on the secondary vertical axis (right).

Figure 13 provides more details on the composition of the indirect benefits. Avoided fossil fuels clearly account for the larger share in this case in the order of magnitude of about factor 5.

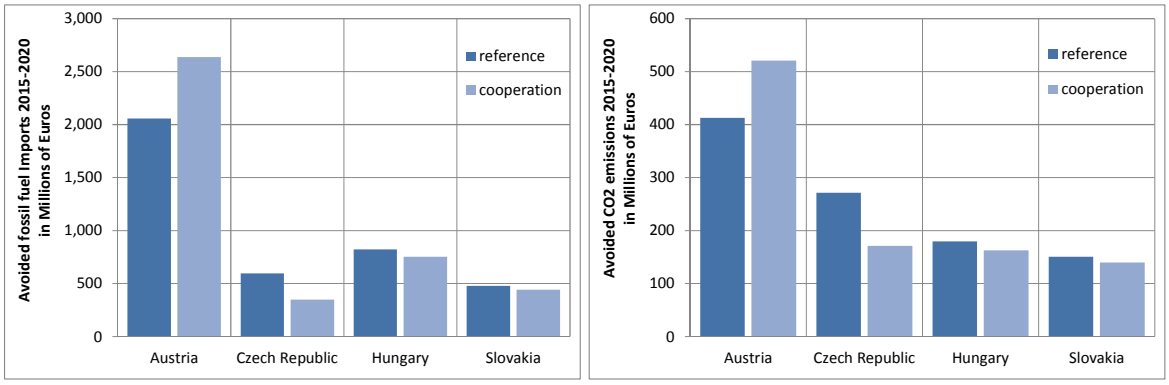

Figure 13: Cumulative avoided fossil fuel imports (left) and cumulative avoided CO2 emissions (right) expressed in monetary terms for the two policy cases.

4.2.2 Allocation of costs and benefits

Figure 14 shows the resulting cost allocations for the joint support system cooperation case. The grey bar that is situated on the right in each case indicates the support expenditures in the reference case (national policies) against which the cost allocation can be compared. In this example the differences in costs allocated differ to more than a factor of five. The reason for that is twofold: First, the average and marginal transfer prices differ quite substantially (28 €/MWhRES for the average transfer price and 83 €/MWhRES for the marginal transfer price), which indicated that at the margin some comparatively expensive technology options are used but they factor in only very little in the whole portfolio.

Second, (as already described above) the net indirect effect is quite substantial compared to support costs savings which leads to quite high variations between allocation rules that take this effect into account and rules that do not. Generally, under most allocation variants the countries are better off than in the reference case with respect to the resulting support expenditures. An exception from this general trend occurs for Austria, acting as exporter in the cooperation case and for Slovakia under variant V. In particular in the case of variant II Austria would face higher support expenditures in the case of cooperation, which may however be acceptable given the high indirect benefits that arise for Austria and that come along with the stronger RES take up.

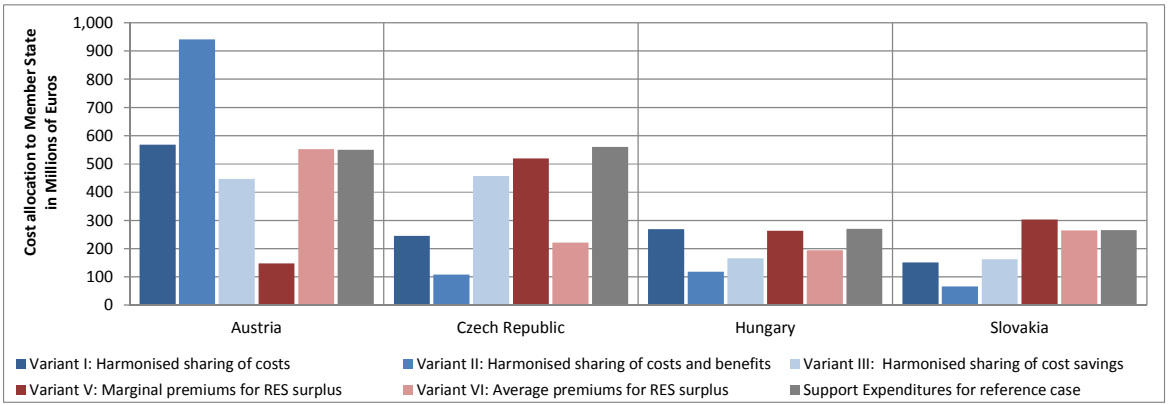

Figure 14: Cost allocation to Member States.

To sum up in this case study cost savings of about € 400 Million can be realized, largely due to the improved resource base. Several allocation rules appear as sensible in this case study, such as variants I, III and VI.

4.3 Technology-specific Joint Support Scheme for offshore wind energy

4.3.1 Effect of cooperation on costs and benefits

Figure 15 displays the new electricity generation and the corresponding share in consumption in 2020. It shows that cooperation would exclusively decrease electricity generation in Belgium (by about 5000 GWh), which would be covered up by additional generation in Germany (about 4000 GWh) and Ireland (about 700 GWh). For all other countries the generation basically would not differ between the two cases. Some countries would not contribute with generation at all (Finland) or only very little (Denmark, Sweden). The reasons for the relatively low redistribution of offshore generation are the largely untapped potentials in many countries and the low ambition level of some countries in the reference case.

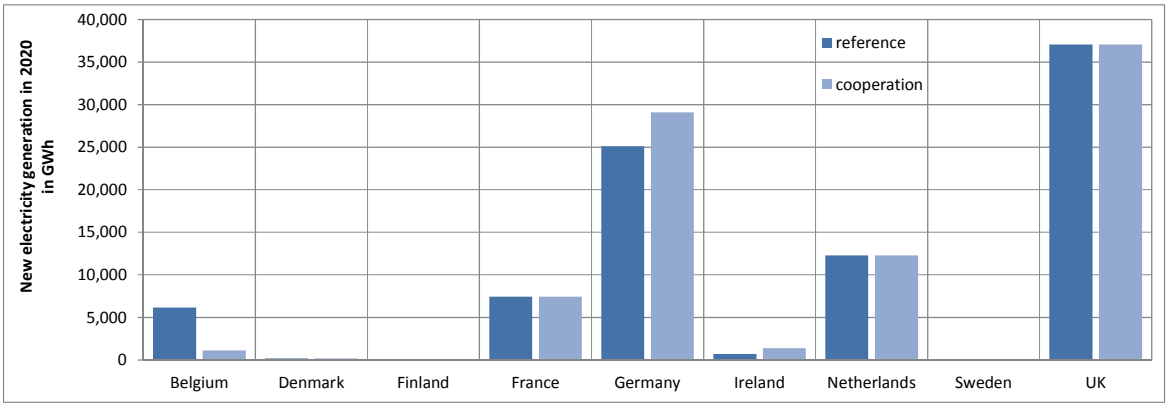

Figure 15: New electricity generation in 2020 for reference and cooperation policy cases.

Figure 16 shows at cluster level the support expenditures for the two policy cases and at Member State level the monetary change in the indirect effects that would correspond to the change from the reference case to a Joint Support System. Support expenditure is displayed on the primary vertical axis. We can observe that cooperation would lead to savings of support costs at cluster level of more than € 2.3 Billion[6], which accounts for about 18% of total support costs that would occur in the reference case. These quite substantial savings in support costs are composed of different effects. .At cluster level capital expenditures can be decreased by about € 620 Million, which originates from the shifting of generation from Belgium to Germany and Ireland and basically represents improvements in resource conditions and thus the true benefit of cooperation. Another reason for the support cost savings is that new generation is slightly lower in the cooperation case than in the reference case[7]. The most important factor for the support cost savings is however that under the joint support scheme over-support is minimized compared to the reference case. This is particularly the case for the example of UK. The same level of additional generation of about 37 TWh leads to support expenditures of about € 4.2 Billion in the cooperation case and € 5.3 Billion in the reference case. This indicates that support expenditures might be saved compared to the reference case by introducing changes to the support instrument – as this is taking place in the UK by the replacement of the Renewables Obligation through Contracts for Difference for the support of wind offshore.[8]

These numbers do not yet include potential savings from installing and operating a joint grid infrastructure as alternative to point-to-point connections, as these costs have not been modelled explicitly.

On the secondary vertical axis the value of the change in the indirect effect is displayed. Of course, a redistribution only takes place in countries where the electricity generation has been increased or decreased. It is noteworthy that the net indirect cost in Belgium factors in more strongly, than the combined net indirect benefit of Germany and Ireland, albeit the switch in generation almost nets out. The reason therefore is that in Belgium mainly gas would have been displaced while in Germany mainly coal is displaced and gas and coal differ significantly in their near term fuel price projections.[9]

[6] This number should be interpreted with caution, The direct benefit of cooperation lies around one third of this value. Further cost savings can be explained by changes in policy design that in principle also could be realised without cooperation.

[7] It lies in the nature of support instruments based on price control that a targeted share of generation cannot be exactly met, however the deviation is within the predefined "error range" of 1 percent.

[8] In the reference case the RO obligation is still valid until 2017, whereas in the cooperation case it is fully replaced by a FIP from 2015 onwards. The reason why the UK does not see a stronger expansion of offshore wind for the higher support conditions is that in both policy cases the diffusion barriers in the model are preventing a stronger diffusion of offshore wind power as the planned diffusion already is quite ambitious in the UK.

[9] It may at first sight appear controversial that the effect for avoided CO2 emissions is not diametrical. The reason lies in the modelling approach, which has been constrained to matching RES-E generation in 2020, but not necessarily cumulative generation. In Belgium new offshore wind generation would have come much earlier in the model, while Germany deploys additional offshore wind closer to 2020. Thus the cumulative generation displaced in Belgium is higher than the cumulative generation of offshore wind in Germany and Ireland.

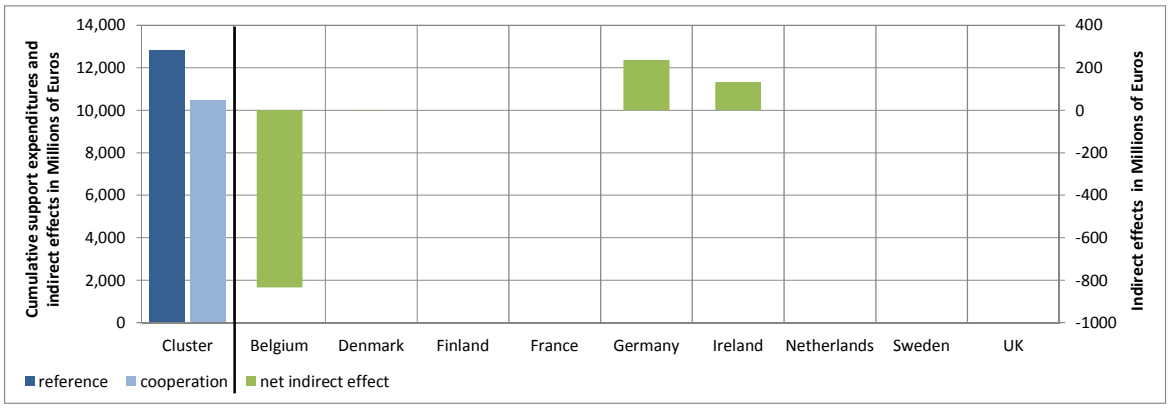

Figure 16: Cumulative support expenditures shown for reference and cooperation policy cases for the sum of all included countries (left) and change in net indirect effect in Millions of Euros per country (sum of avoided fossil fuels and avoided CO2 emissions) displayed on the secondary vertical axis (right).

Figure 17 provides more details on the composition of the indirect benefits.

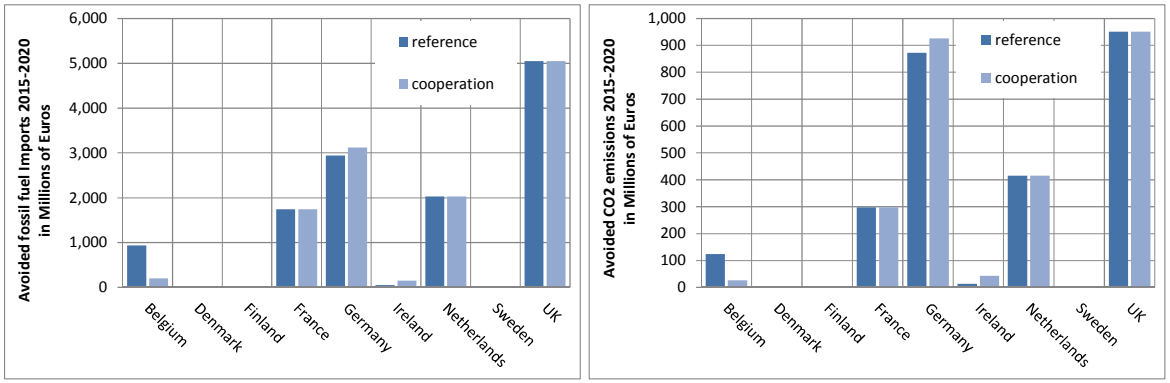

Figure 17: Cumulative avoided fossil fuel imports (left) and cumulative avoided CO2 emissions (right) expressed in monetary terms for the two policy cases.

4.3.2 Allocation of costs and benefits

Figure 18 shows the resulting cost allocations for the joint Quota system cooperation case. Again, the grey bar that is situated on the right in each case indicates the support expenditures in the reference case (national support schemes) against which the cost allocation can be compared. In this example the costs are rather allocated homogeneously in relative terms compared to the other examples. The reason for that is that the generation does not differ between the two cases for most of the countries and that support expenditures are comparatively high, which lets every change in cost allocation appear relatively smaller compared to the reference case. Another observation that can be made is that in some countries for variant III the costs allocated would even be negative, meaning that they would receive a monetary transfer by the other cluster countries. This is obviously a defect of the allocation rules applied here. They all consider the costs that need to be allocated, but none of them

considers the (marginal) contribution made by each country joining the cooperation.[10] In this example Belgium and Germany might have an incentive to "opt out" in order to share the full gains of cooperation among them. However, a different perspective on this case is possible: if all involved countries consider offshore wind as a technology option that they are interested in for the future, the focus should be to deploy additional offshore generation in the near term at lowest possible joint costs and at the same time make sure that the expected cost decreases in the technology fully spill over, thus making offshore wind a more affordable technology option for all countries in the future. Moreover, in this example the allocations of the average and marginal transfer price approach coincide as only one technology is considered.

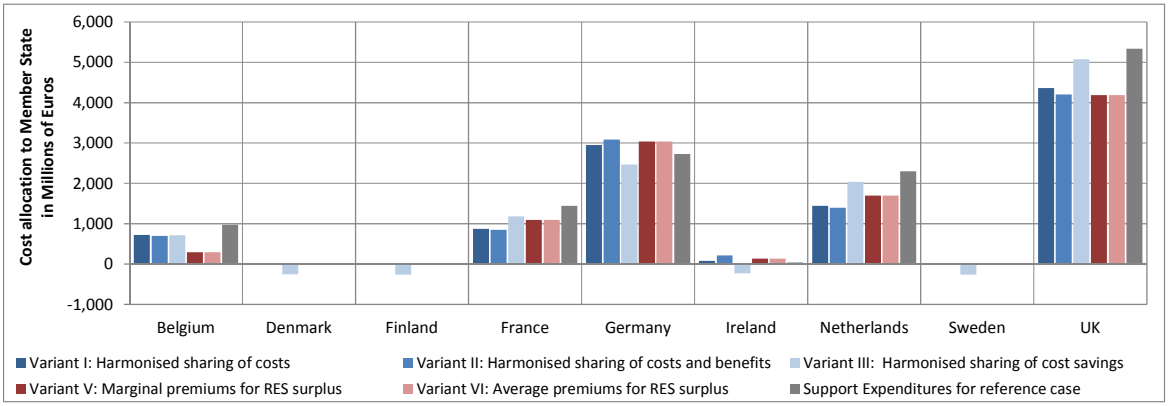

Figure 18: Cost allocation to Member States.

To sum up, of all the cases assessed the cost savings that can be realized in the offshore cooperation case study are most substantial amounting to € 2.3 Billion. At first sight most allocation rules except for variant III would fail for Germany, unless Germany would value the indirect benefits and the advantage of the additional deployment of offshore wind higher than the increase in support costs. Belgium could decrease its costs under all variants, it is however questionable if it would be acceptable for Belgium to "trade "a large share of its offshore wind generation against the savings in support costs. A different perspective would be to consider offshore wind as a strategic technology option and cooperation would have the goal to facilitate "learning" at the lowest possible costs.

[10] Shapley value does not have this defect

5 Summary and Conclusions

This report has discussed the implementation of Joint Support Schemes along three different case studies. The focus has been on applying the framework developed in task 1 report of this project to concrete examples. We have argued regarding the legal and economic framework conditions of Joint Support Schemes that the single most important institutional framework condition is the creation of a joint fund. Such a fund can both be used for the administration of the financial support flows and for the cost allocation. Moreover, the analysis has shown that grid charging rules should be harmonised within the Member States taking part in a Joint Support Scheme and the Joint Support Schemes may lead to synergies when in interaction with coupled markets when it comes to efficiency concerns.

The outcomes on costs and benefits and on the performance of the different allocation rules have provided several interesting insights. With respect to cost and benefits the key observations are the following: we have shown that all Joint Support Schemes hold (significant) economic potential for the Member States. Cost savings differ substantially in order of magnitude depending on the case study considered, ranging from 1.5 % to 25 % of the total support expenditures. In some cases the cost savings effect can partially be ascribed to the optimisation of the design criteria in the case of the joint support instrument rather than to resource cost advantages, which lead to lower windfall profits, but resource optimisation is the main effect responsible for the realised cost savings. However, the time horizon for these case studies has been rather limited and different effects with respect to resource availability might come into play beyond 2020. Moreover, indirect effects take place in a comparatively high order of magnitude as support expenditures generally continue to decline due to maturing technologies. This effect is mostly evident in the case of fully joining support schemes where only the cheapest technology options are deployed that often hardly require additional support. There is a general tendency for the benefits to increase over time (e.g. due to increasing fossil fuel price projections), while support expenditures continue to decline due to further maturing technologies in the period 2015-2020.

With respect to the allocation of cost and benefits the key observations are the following: We have shown that the direct costs and benefits can be distributed in a variety of ways, and there are always distribution rules that should in principle be attractive for the MS. Generally variant III performed best except for the case where some countries did hardly contribute to the cooperation. Furthermore, we have observed that the performance in terms of making each country better off for all rules improved proportionally to increases in the gains of cooperation. However, variants based on transfer prices have the advantage that they do not require information on the reference cost cases (only on the reference generation that should be known from the targets), which gives them an advantage for practical implementation. Among the transfer pricing approaches the average premiums performed better, because they seem to be more balanced. In allocation rules that take into account the indirect effects these factor in quite strongly. Given the higher level of uncertainty of the indirect effect it might also make sense to consider them only partially, for instance, at a fixed percentage in these cases.

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7 Annex

7.1 Proposed Draft Agreement for a Joint Support Scheme between Sweden, Norway, Denmark and Finland

AGREEMENT

BETWEEN THE GOVERNMENT OF THE KINGDOM OF NORWAY

AND

THE GOVERNMENT OF THE KINGDOM OF SWEDEN

AND THE REPUBLIC OF FINLAND

AND THE KINGDOM OF DENMARK

Together referred to as "the Parties"

ON

A COMMON MARKET FOR ELECTRICITY CERTIFICATES

PREAMBLE

PART I: INTRODUCTORY PROVISIONS

Article 1 Definitions

1. In this agreement, the following terms shall have the following meanings:

a) electricity certificate: a proof issued by a party confirming that one megawatt hour of electricity has been produced pursuant to national provisions in accordance with this agreement;

b) Renewables Directive: Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, as follows from the decision of the EEA Joint Committee regarding incorporation into the EEA Agreement;

c) progress review: the conduct of joint reviews and discussions between the parties concerning matters such as the need for amendment or adjustment of the regulations governing electricity certificates;

d) annulment: the cancellation of electricity certificates to comply with the electricity certificate obligation pursuant to Article 6 of this agreement.

Article 2 Target and obligation

1. The overall target for new renewable electricity production in the common electricity certificate market is … by the year 2020.

2. The parties shall endeavour to annul electricity certificates corresponding to …each by the year 2020. For the period from 1 January 2012 to 31 December 2035, each party shall endeavour to ensure the annulment of electricity certificates issued to plants approved pursuant to Article 4 following the entry into force of this agreement corresponding to ….

3. If either party wishes to amend the target and obligation pursuant to paragraphs 1 and 2, this shall be done by agreement between the parties, and preferably in connection with a progress review pursuant to Article 8(1).

4. If either party wishes to introduce a new target specifying an increase in renewable electricity production after 2020 within the scope of the common electricity certificate market, the party shall consult the other party, and consideration shall be given to matters such as the effect on market participants and quota-setting. The party may then decide to introduce a new target, provided that the change does not have unreasonable consequences for the other party.

Article 3 Common electricity certificate market

1. The parties shall establish a common electricity certificate market as of the entry into force of this agreement. The common market shall require each party to ensure that electricity certificates issued in one country can be used to comply with the electricity certificate obligation in the other country.

2. Electricity certificates issued in Sweden prior to the entry into force of this agreement may be used to comply with the electricity certificate obligation in both countries after the entry into force of this agreement. The same shall apply to plants included in the Norwegian transitional system that are issued with electricity certificates after the entry into force of this agreement. Electricity certificates for plants approved after 2020 shall be tradeable in the common market, and may be used to comply with the electricity certificate obligation in both countries until 31 December 2035.

3. Pursuant to this agreement, each party shall adopt national provisions, including on the following:

a) the issue of electricity certificates for production eligible for electricity certificates taking place after the entry into force of this agreement and up to and including 31 December 2035;

b) the electricity certificate obligation that is complied with through the annulment of electricity certificates, with the final annulment taking place on the set annulment date in 2036.

PART II: FACILITATING A COMMON ELECTRICITY CERTIFICATE MARKET

Article 4 Entitlement to electricity certificates

1. The criteria for entitlement to electricity certificates shall be based on the principle of technology neutrality. Electricity certificates shall be issued for the production of electricity based on energy from renewable sources, and the starting point for defining energy from renewable sources shall be the definition used in the Renewables Directive. The owner of an approved plant shall be issued with one electricity certificate per megawatt hour of produced electricity.

2. A party may nevertheless decide that electricity certificates may be issued for the production of electricity from peat at plants located within the territory of that party, and such certificates shall be tradeable in the common electricity certificate market.

3. A plant must be approved by the country in which it is located before electricity certificates may be issued to the owner. Each party shall be free to decide that plants may be approved after 31 December 2020.

4. The owner of a plant that produces electricity based on energy from renewable sources and that starts production after the launch of the common electricity certificate market shall be entitled to the issue of electricity certificates for 15 years, but not beyond for the year 2035.

5. The owner of a plant that produces electricity based on energy from renewable sources shall be entitled to the issue of electricity certificates for 15 years, but not beyond for the year 2035, corresponding to the increased production following upgrades and expansions of the plant.

6. The owner of a plant which is included in Sweden's electricity certificate market upon the entry into force of this agreement shall be entitled to the issue of electricity certificates for up to 15 years after the start of the issue period in accordance with the rules applicable upon the entry into force of this agreement. Plants that are participating in Norway's transitional system shall be entitled to the issue of electricity certificates for up to 15 years after the start of the issue period.

7. Electricity certificates shall not be issued to plants other than those mentioned in paragraphs 4 to 6. However, rules on the approval of plants for the issue of electricity certificates that apply within the territory of a party upon the entry into force of this agreement, or that are adopted in connection with the entry into force of this agreement, may be retained, but shall be applied strictly.

8. Following the entry into force of this agreement, each party shall only be permitted to adopt new or amended criteria in the areas mentioned in paragraphs 5 and 7 after informing the contact point specified in Article 10 about the proposal. After receiving information, the other party shall be entitled, within three months, to give notice that the case is to be discussed by the council with the aim of agreeing a solution that is mutually acceptable to the parties. In such cases, the amendment shall not be implemented until the discussions have been completed and the parties have found an acceptable solution.

9. If a party is of the opinion that the application of the rules set out in paragraphs 5 and 7 is developing in an undesirable manner, the question shall be discussed by the committee pursuant to Article 12.

Article 5 Additional support

1. The basic principle shall be that electricity certificates shall constitute sufficient support for the promotion of investment in plants that produce renewable electricity. Accordingly, plants should not receive support in addition to electricity certificates. Nevertheless, electricity certificates may be combined with support from EU institutions.

2. Existing schemes that provide plants issued with electricity certificates with investment or operational support for electricity production, and that apply within the territory of a party upon the entry into force of this agreement, may be retained. Within six months of the entry into force of this agreement, the parties shall inform the contact point of the other party of any support systems that will be retained and that have been notified or reported pursuant to the state aid provisions of the EEA Agreement or EU law.

3. Following consultation, each party shall be permitted to decide to provide investment or operational support for electricity production at plants issued with electricity certificates. The consultation shall cover matters such as the consequences of the support, and its aim shall be to facilitate agreement between the parties on a mutually acceptable solution. If either party wishes to support a specific technology on an independent basis, this technology should not also be covered by the electricity certificate system.

4. However, the provisions in this article shall not be applied to existing or potential future investment or operational support that the parties provide through the tax system. If a party requests information on such support through the tax system, the other party shall provide this information. Each party should give due consideration to the other party's interests and should not, with regard to potential future investment or operational support, depart from the basic principle in paragraph 1 in a manner that materially alters the competition conditions for production eligible for electricity certificates in the two countries.

Article 6 Electricity certificate obligation and setting of quotas

1. Each party shall decide independently to whom the electricity certificate obligation shall apply, and what electricity consumption is to be included in the setting of quotas. Quotas for individual years shall be based on a linear escalation in the period to 2020.

2. The electricity certificate obligation shall generally be complied with by annulling electricity certificates on 1 April of each year. An issued electricity certificate shall remain valid until it is annulled. If electricity certificates are not annulled, the parties shall attach a fee to the electricity certificate obligation. Each party shall seek to set fees based on a fee structure that is identical in both countries.

3. Each party shall establish the electricity certificate obligation and electricity certificate quotas by law to achieve the target and obligation in Article 2. Adjustments or amendments of a party's legislation relating to the electricity certificate obligation and electricity certificate quotas shall preferably be made in connection with a progress review. Each party shall set its quotas with the aim of achieving the target and obligation in Article 2, and shall be both entitled and obliged to make the quota adjustments in the period to 2035 that are necessary to achieve this, following consultation with the other party.

Article 7 Registration and monitoring

1. Each party shall establish a system for issuing, transferring and annulling electricity certificates. The parties shall coordinate information registered about electricity certificates.

2. Each party shall appoint a registrar to maintain an electronic register of electricity certificates. The registers shall enable electricity certificates to be issued, transferred and annulled under the same conditions in the territories of the two parties.

3. Each party shall introduce requirements specifying the precise measurement data needed to issue electricity certificates.

4. Each party shall appoint authorities to approve plants, monitor the issue of electricity certificates and market participants subject to the electricity certificate obligation, and track the development of the market.

5. If the registrar is not a public authority, the parties shall appoint an authority to monitor the activities of the registrar.

6. The parties shall coordinate the publication of information in the common electricity certificate market.

7. The energy authorities of the parties shall prepare at least one joint report per year that collates statistics and analysis data on the development of the common electricity certificate market. The report shall be presented to the council described in Article 11.

Article 8 Progress reviews

1. The council established pursuant to Article 11 shall set dates for progress reviews. The first progress review shall take place by the end of 2015 at the latest. Unless the council decides otherwise, progress reviews shall thereafter take place every four years.

2. Decisions by the parties on matters affecting the material framework conditions for the electricity certificate market shall preferably be made in connection with progress reviews.

Article 9 Exchange of information and communication with the electricity certificate market

1. The parties shall inform the council of changes to general framework conditions that may materially affect competition conditions in the common electricity certificate market. This applies particularly to:

a) changes to the permit policy applicable to plants that produce electricity from renewable sources;

b) the principles for distributing the costs of connecting power stations to the grid between the producer and the grid owner;

c) legislative amendments that may affect the electricity certificate market.

2. The parties shall otherwise ensure the exchange of relevant information concerning the electricity certificate cooperation.

3. The parties shall establish a common communications strategy for measures affecting market participants, to create transparency in the market and ensure equal treatment in connection with the publication of market-relevant information.

4. The parties shall ensure that market-sensitive information is published as specified in paragraph 3.

PART III: INSTITUTIONS

Article 10 Contact point

The contact point for the purposes of Article 4(8), Article 5(2) and Article 13(2) shall be the government ministry responsible for electricity certificates within the territory of each party.

Article 11 Council

1. The parties shall establish a council to ensure that the common electricity certificate system functions and is developed in accordance with this agreement. The council shall comprise representatives at ministry level. Each party have at least one representative on the council. Each party shall have one vote on the council, and the council shall make decisions unanimously.

2. The council shall be responsible for matters such as facilitating the planning and implementation of progress reviews, conducting ongoing monitoring of the development of the electricity certificate market, analysing any needs for further development of the regulatory framework for the common electricity certificate system, exchanging information and preparing a common communications strategy pursuant to Article 9, and facilitating discussion of issues without triggering the dispute resolution mechanism described in Article 16.

3. The council shall meet at least once per year, unless the council itself decides otherwise. If special circumstances indicate that it is necessary, a party may call for a meeting of the council within 30 days. The council shall be subject to any additional provisions agreed by the two parties at any time. In the council, the parties may raise any matter related to the implementation and application of this agreement.

Article 12 Committee

1. The parties shall establish a committee comprising the representatives of the authorities of each country that are appointed pursuant to this agreement. In the committee, the energy authorities of the parties shall brief one another and discuss the design and application of the regulatory framework pursuant to Article 4(9).

2. The council shall formulate the committee's statutes.

3. The representatives on the committee shall provide the background materials the committee requires to perform its tasks.

4. Disagreements in the committee shall be submitted to the council.

5. Each party shall be granted full access to committee documents.

PART IV: FINAL PROVISIONS

Article 13 Third parties

1. The parties shall jointly consider requests by third-party countries to participate in the electricity certificate market. The inclusion of third-party countries in the electricity certificate market and the setting of conditions for inclusion shall require the agreement of both parties.

2. If a party wishes to utilise opportunities in the electricity sector pursuant to Articles 7 or 9 of the Renewables Directive on joint projects with other states, it shall inform the contact point of the other party pursuant to Article 10 of the plans. Such joint projects shall be permitted provided that the other party does not give notice within three months of receiving the information that the matter is to be discussed by the council with the aim of finding a solution that is mutually acceptable to the

parties. In such cases, the plans shall not be implemented before discussions have taken place and the parties have found an acceptable solution.

Article 14 Notification pursuant to the Renewables Directive

1. The parties shall develop a common notification for the electricity certificate market pursuant to the Renewables Directive.

2. Reporting pursuant to the Renewables Directive shall be based on the principle that the electricity produced by plants included in the common electricity certificate market shall be divided equally between the two parties. Target achievement reporting pursuant to the Renewables Directive shall utilise data on the electricity certificates issued in each state to plants that start production after the entry into force of this agreement, but exclude data on peat-based electricity production.

3. If new peat-based production of electricity is initiated, or if electricity certificates are issued to the owners of plants not mentioned in Articles 4(4) and 4(5), such production or electricity certificates shall be excluded from the results of the host country in reports to the EU Commission or the EFTA Surveillance Authority. Accordingly, production eligible for electricity certificates from such plants may amount to a maximum of 13.2 TWh in each country.

Article 15 Cessation and amendment

1. This agreement shall cease to apply on 1 April 2036.

2. Either party may give written notice to the other party of its intention to terminate this agreement before 1 April 2036. Such notification shall include an explanation of the intention to terminate the agreement, and be followed by negotiations between the parties concerning settlement of the obligations outstanding between the parties, with the aim of agreeing a solution that is mutually acceptable to the parties as quickly as possible. This agreement shall not cease to apply until the parties have reached agreement on such a solution.

3. Any amendment of this agreement, including changes pursuant to Article 2(3), Article 13(1) and Article 15(2), shall require the approval of each party and enter into force once the parties have notified one another by an exchange of notes that their domestic constitutional requirements are met.

Article 16 Dispute resolution

1. If a dispute arises about the interpretation or application of this agreement, the parties shall seek to resolve the dispute through negotiations. If the dispute cannot be resolved through negotiations, it shall in the first instance be resolved by an arbitration tribunal if the other party requests this.

2. The arbitration tribunal shall have three members, unless the parties agree a higher number. Each state shall appoint one member. The remaining member or members shall be appointed jointly by the parties, and shall not be Norwegian or Swedish citizens or resident in Norway or Sweden. The parties shall jointly appoint the chairman of the arbitration tribunal. If the arbitration tribunal is split in its opinion, the opinion of the majority of the members shall apply. Each state shall cover half of the costs of the arbitration tribunal. Each state shall otherwise cover its own costs connected to the arbitration proceedings. If the parties do not agree on the appointment of the arbitration tribunal

members, either party may request that these members be appointed by the president of the Permanent Court of Arbitration in The Hague.

3. Alternatively, if one of the parties so requests, the dispute shall be settled in accordance with the rules of the Permanent Court of Arbitration in The Hague of 20 October 1992 for arbitrating disputes between two states.

Article 17 Entry into force, etc.

1. This agreement shall enter into force on 1 January 2012, provided that both parties have notified one another by an exchange of notes, on 31 December 2011 at the latest, that their domestic constitutional requirements are met, and provided that the decision of the EEA Joint Committee regarding incorporation of the Renewables Directive into the EEA Agreement has entered into force.

2. If this agreement does not enter into force on 1 January 2012, it shall enter into force on the first day of the second month after both parties have notified one another by an exchange of notes that their domestic constitutional requirements are met, provided that the decision of the EEA Joint Committee regarding incorporation of the Renewables Directive into the EEA Agreement has entered into force by 1 June 2012 at the latest.

3. If this agreement enters into force after 1 January 2012, electricity certificates issued prior to its entry into force shall be included in the Norwegian transitional system for approving plants eligible for electricity certificate and the existing Swedish electricity certificate market, respectively. Production eligible for electricity certificates at plants approved after 1 January 2012 but prior to the entry into force of this agreement shall be excluded from each party's target and obligation pursuant to Articles 2(1) and 2(2).

4. This agreement shall have the geographical scope which the EEA Agreement has in respect of each of the parties.

7.2 Proposed Draft Agreement for a Joint Support Scheme between Austria, the Czech Republic, Hungary and Slovakia

AGREEMENT

BETWEEN THE GOVERNMENT OF AUSTRIA

AND THE GOVERNMENT OF THE CZECH REPUBLIC

AND GOVERNMENT OF HUNGARY

AND THE GOVERNMENT OF SLOVAKIA

Together referred to as "the parties"

ON

A COMMON SUPPORT SCHEME FOR RENEWABLE ENERGY

PREAMBLE

PART I: INTRODUCTORY PROVISIONS

Article 1 Definitions

1. In this Agreement, the following terms shall have the following meanings:

a) feed-in premium: …;

b) Renewables Directive: Directive 2009/28/EC of the European Parliament and of the Council 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) progress review: the conduct of joint reviews and discussions between the parties concerning matters such as the need for amendment or adjustment of the regulations governing electricity certificates;

d) ….

Article 2 Target

1. The overall target for new renewable electricity production within the territory of the parties is … by the year 2020.

2. If any party wishes to amend the target and obligation pursuant to paragraphs 1, this shall be done by Agreement between the parties, and preferably in connection with a progress review pursuant to Article 8(1).

3. If any party wishes to introduce a new target specifying an increase in renewable electricity production after 2020 within the territory of the parties, the party shall consult the other parties. The parties may then agree to introduce such a new target, paying due account to all the relevant circumstances such as the interests of market participants and price developments.

Article 3 Joint Support Scheme

1. The parties establish a Joint Support Scheme for renewable electricity as in accordance with Art. 11 of the Renewables Directive.

2. Under this scheme, renewable electricity shall be supported by a feed-in premium paid in addition to the market price whereby the generators sell their electricity directly on the market within the territories of the parties. No feed-in premium shall be paid for electricity not fed into the grid and sold on the market within the territories of the parties. No feed-in premium shall be paid for electricity fed into the grid at times when the electricity prices on the market where the electricity shall be sold are below zero (i.e. "negative prices")

3. The feed-in premium is granted in the course of a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria in which all installations producing renewable electricity located within the territories of the parties may participate on equal terms. The criteria will be determined on an annual basis by the Committee as in accordance with Art. of this Agreement. The projects to be supported shall be chosen based on their ability to meet the criteria and on the price they offer.

4. Installations producing renewable electricity located within the territories of the parties with an installed capacity of less than 1 MW need not participate in the competitive bidding process described in Art. 3 (3) of this Agreement but may directly receive the feed-in premium according to Art. 3 (2) of this Agreement when they feed their production into the grid and sell it on the market within the territories of the parties. For wind power installations, the threshold below which no participation in the competitive bidding process shall be necessary is set at 6 MW or 6 generation units.

5. All installations shall in order to be eligible for receiving the feed-in premium under this Agreement bear standard balancing responsibilities, unless no liquid intra-day market exists. Those responsibilities may be outsourced. The parties may coordinate national legislation relating to standard balancing responsibilities.

PART II: PAYMENT OF SUPPORT

Article 4 Feed-in premium payments

1. The amount of the feed-in premium shall be determined based on the bid submitted in the course of the competitive bidding procedure, but shall in no event exceed … . The overall budget for the tender procedure shall be set at …

2. The feed-in premium shall be paid for … years.

3. The feed-in premium shall be paid by the energy supplier buying the electricity on the market within the territory of the parties. Each year, electricity suppliers may make a cost declaration to the Committee, setting out how much renewable electricity they have purchased on the market and the amount of money they have paid as feed-in premium in addition to the market prices. Based on such declaration, and after due verification of the data presented, the Committee will compensate the energy suppliers for the extra costs for the feed-in premium paid in addition to the market prices.

4. An installation must be approved by the country in which it is located according to the national legislation in place before it can feed electricity into the grid and sell it on the market in order to receive a feed-in premium. The parties may coordinate national legislation relating to the permitting, authorization and licensing procedures for installations producing renewable electricity.

5. The bid submitted in the course of the competitive bidding procedure shall include grid connection and grid use costs where applicable as determined by the national legislation in place where the installation feeds into the grid and sells to the market. The parties may coordinate national legislation relating to grid connection and use tariffs.

Article 5 Additional support

1. The basic principle shall be that the feed-in premium shall constitute sufficient support for the promotion of investment in installations producing renewable electricity. Accordingly, plants should not receive support in addition to the feed-in premium. Nevertheless, electricity certificates may be combined with support from EU institutions.

2. Existing schemes that provide installations producing renewable electricity receiving feed-in premiums under this Agreement with investment or operational support for electricity production, and that apply within the territory of a party upon the entry into force of this Agreement, may be retained. Within six months of the entry into force of this Agreement, the parties shall inform the contact point of the other party of any support systems that will be retained and that have been notified or reported pursuant to the state aid provisions of EU law.

3. Following consultation, each party shall be permitted to decide to provide investment or operational support for electricity production at receiving feed-in premiums under this Agreement. The consultation shall cover matters such as the consequences of the support, and its aim shall be to facilitate Agreement between the parties on a mutually acceptable solution. If either party wishes to support a specific technology on an independent basis, this technology should not also be covered by the feed-in premium system.

4. However, the provisions in this article shall not be applied to existing or potential future investment or operational support that the parties provide through the tax system. If a party requests information on such support through the tax system, the other party shall provide this information. Each party should give due consideration to the other party's interests and should not, with regard to potential future investment or operational support, depart from the basic principle in paragraph 1 in a manner that materially alters the competition conditions for production eligible for electricity certificates in the two countries.

Article 6 Existing support schemes and to existing installations

1. Support schemes which have provided prior to and still provide installations producing renewable electricity at the time this Agreement enters into force ach party shall continue until the last support payment under such scheme has been made. However, the schemes shall not apply to any new installations starting to feed electricity into the grid and sell it on the market after entry into force of this Agreement.

2. A significant change to or an expansion in installed capacity of an installation shall make the installation be considered a "new" installation for the purpose of this provision. Thus, such installation shall stop being supported by the existing support scheme but shall be subject to the Joint Support Scheme installed in accordance with Art. 3 of this Agreement.

Article 7 Registration and monitoring

1. Each party shall appoint a registrar to maintain an electronic register of the installations producing renewable electricity within their respective territory. The register shall contain information on how much electricity from renewable energy sources has been produced and thereby specify whether or not the electricity produced was fed into the grid and sold on the market or not.

2. Each party shall introduce requirements specifying the precise measurement data based on which the entries in the register are made. The parties shall coordinate and exchange best practices in this regard within the framework of this Agreement.

3. If the registrar is not a public authority, the parties shall appoint an authority to monitor the activities of the registrar.

4. The registrar shall inform the Committee of the amounts of renewable electricity produced on a … basis and thereby specify whether or not the electricity produced was fed into the grid and sold on the market or not.

5. The parties shall coordinate the publication of information on the Joint Support Scheme.

Article 8 Progress reviews

1. The council established pursuant to Art. 11 of this Agreement shall set dates for progress reviews. The first progress review shall take place by the end of 2015 at the latest. Unless the council decides otherwise, progress reviews shall thereafter take place every four years.

2. Decisions by the parties on matters affecting the material framework conditions for the Joint Support Scheme shall preferably be made in connection with progress reviews.

Article 9 Exchange of information and communication

1. The parties shall inform the council of changes to general framework conditions that may materially affect competition conditions and price developments in the market. This applies particularly to:

a) changes to the permit policy applicable to plants that produce electricity from renewable sources;

b) the principles for distributing the costs of connecting power stations to the grid between the producer and the grid owner;

c) legislative amendments that may affect the market;

d) any other market developments that may impact the electricity prices.

2. The parties shall otherwise ensure the exchange of relevant information.

3. The parties shall establish a common communications strategy for measures affecting market participants, to create transparency in the market and ensure equal treatment in connection with the publication of market-relevant information.

4. The parties shall ensure that market-sensitive information is published as specified in paragraph 3.

PART III: INSTITUTIONS

Article 10 Contact point

The contact point for the purposes of this Agreement shall be the government ministry responsible for electricity certificates within the territory of each party.

Article 11 Council

1. The parties shall establish a council to ensure that the Joint Support Scheme functions and is developed in accordance with this Agreement. The council shall comprise representatives at ministry level. Each party have at least one representative on the council. Each party shall have one vote on the council, and the council shall make decisions unanimously.

2. The council shall be responsible for matters such as facilitating the planning and implementation of progress reviews, conducting ongoing monitoring of the development of the electricity certificate market, analysing any needs for further development of the regulatory framework for the Joint Support Scheme, exchanging information and preparing a common communications strategy pursuant to Art. 9, and facilitating discussion of issues without triggering the dispute resolution mechanism described in Art. 16 of this Agreement. The council shall in this context consider and discuss proposals by the committee for coordination of national legislation, developed pursuant to Art. 12 of this Agreement.

3. The council shall meet at least once per year, unless the council itself decides otherwise. If special circumstances indicate that it is necessary, a party may call for a meeting of the council within 30 days. The council shall be subject to any additional provisions agreed by the parties at any time. In the council, the parties may raise any matter related to the implementation and application of this Agreement.

Article 12 Committee

1. The parties shall establish a committee comprising the representatives of the authorities of each country that are appointed pursuant to this Agreement. In the committee, the energy authorities of the parties shall brief one another and discuss the design and application of the Joint Support Scheme according to Art. 4 of this Agreement. In particular, the committee shall:

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

b) Selection of the bidder;

c) If necessary, negotiation and development of proposals for coordination of the national legislation relating to standard balancing conditions;

d) If necessary, negotiation and development of proposals for coordination of the national legislation relating to the conditions to be applied in the permitting and licensing procedures;

d) If necessary, negotiation and development of proposals for coordination of national legislation relating to grid connection and use;

f) Solution of any other implementation issues that may arise from this Agreement relating to the functioning of the Joint Support Scheme.

2. As regards the payment of the feed-in premium, the committee shall in particular receive and consider the applications for compensation by energy suppliers as in accordance with Art. 4 of this Agreement. The committee shall pay the compensation rightfully claimed. To that end, the committee shall use the funds made available to it through dedication of the parties in accordance with Art. 13 of this Agreement.

3. The council shall formulate the committee's statutes.

4. The representatives on the committee shall provide the background materials the committee requires to perform its tasks.

5. Disagreements in the committee shall be submitted to the council.

6. Each party shall be granted full access to committee documents.

PART IV: FINAL PROVISIONS

Article 13 Implementation

1. Each party is obliged to implement the provisions of this Agreement into national legislation. Implementation shall occur in good faith and close coordination with the other parties in order to ensure coherence and thus ultimately the functioning of the system.

2. For the successful implementation of this Agreement and in order for the Joint Support Scheme to function, each party shall contribute to the financing of the feed-in premium according to the following scheme:

The parties agree to conduct a cost benefit analysis in order to assess the effects of cooperation ex-ante. In particular the cost benefits analysis will be used to compare the support costs that arise for financing the feed in tariff for both the cooperation case and the non-cooperation baseline. If cooperation leads to cost savings it is decided to share this savings equally by deducting them from the support costs that arise for each party in the non-cooperation case. The residual determines the contribution to be made by each party to the joint fund. As the results of the costs benefit analysis are uncertain it is decided to fix the relative contribution of each party to the joint fund that corresponds to the absolute values derived from the cost benefits analysis in order to assure financing of the support scheme if costs develop other than expected.

Formally the following formula applies:

Equation 6: Formula to determine the relative contribution of each party o the joint fund.

$$contribution_n = \frac{SE_{ref}{}_n - \frac{Cost_{sav}}{n}}{\sum_{n \in N} SE_{ref}{}_n - \frac{Cost_{sav}}{n}}$$

Where $contribution_n$ denotes the relative share in costs to be contributed by each party n, $SE_{ref}{}_n$ the support expenditures that would arise for each party in the non-cooperation baseline case and $Cost_{sav}$ the total cost savings that arise in the case of joint target achievement.

Contributions shall be paid to… and shall be administered by the committee.

3. Implementation shall be completed by … The first competitive bidding process according to this Agreement shall be held…

3. Failure to meet this obligation may result in a claim for damages…

Article 14Third parties

1. The parties shall jointly consider requests by third-party countries to participate in the electricity certificate market. The inclusion of third-party countries in the electricity certificate market and the setting of conditions for inclusion shall require the Agreement of both parties.

2. If a party wishes to utilise opportunities in the electricity sector pursuant to Art. 7 or 9 of the Renewables Directive on joint projects with other states, it shall inform the contact point of the other party pursuant to Art. 10 of the plans. Such joint projects shall be permitted provided that the other party does not give notice within three months of receiving the information that the matter is to be discussed by the council with the aim of finding a solution that is mutually acceptable to the parties. In such cases, the plans shall not be implemented before discussions have taken place and the parties have found an acceptable solution.

Article 15 Notification pursuant to the Renewables Directive

1. The parties shall develop a common notification for the Joint Support Scheme pursuant to the Renewables Directive.

2. Reporting pursuant to the Renewables Directive shall be based on the principle that the electricity produced by installations supported by the Joint Support Scheme shall be divided equally between the two parties. Target achievement reporting pursuant to the Renewables Directive shall utilise data on electricity supported in each state to plants that start production after the entry into force of this Agreement.

Article 16 Cessation and amendment

1. This Agreement shall cease to apply

2. Either party may give written notice to the other party of its intention to terminate this Agreement before …. Such notification shall include an explanation of the intention to terminate the Agreement, and be followed by negotiations between the parties concerning settlement of the obligations outstanding between the parties, with the aim of agreeing a solution that is mutually acceptable to the parties as quickly as possible. This Agreement shall not cease to apply until the parties have reached Agreement on such a solution.

3. Any amendment of this Agreement shall require the approval of each party and enter into force once the parties have notified one another by an exchange of notes that their domestic constitutional requirements are met.

Article 17 Dispute resolution

1. If a dispute arises about the interpretation or application of this Agreement, the parties shall seek to resolve the dispute through negotiations. If the dispute cannot be resolved through negotiations, it shall in the first instance be resolved by an arbitration tribunal if the other party requests this.

2. The arbitration tribunal shall have three members, unless the parties agree a higher number. Each state shall appoint one member. The remaining member or members shall be appointed jointly by the parties, and shall not be Norwegian or Swedish citizens or resident in Norway or Sweden. The parties shall jointly appoint the chairman of the arbitration tribunal. If the arbitration tribunal is split in its opinion, the opinion of the majority of the members shall apply. Each state shall cover half of the costs of the arbitration tribunal. Each state shall otherwise cover its own costs connected to the arbitration proceedings. If the parties do not agree on the appointment of the arbitration tribunal members, either party may request that these members be appointed by the president of the Permanent Court of Arbitration in The Hague.

3. Alternatively, if one of the parties so requests, the dispute shall be settled in accordance with the rules of the Permanent Court of Arbitration in The Hague of 20 October 1992 for arbitrating disputes between two states.

Article 17 Entry into force, etc.

1. This Agreement shall enter into force on …

4. This Agreement shall apply within the territories of the parties.

7.3 Proposed Draft Agreement for a Joint Support Scheme in the North Sea

Agreement between

Belgium, Denmark, France, Germany, Ireland, Luxembourg, the Netherlands, Norway, Sweden and the United Kingdom

in the following referred to as "the Parties"

on

THE ESTABLISHMENT OF A JOINT SUPPORT SCHEME FOR THE GENERATION OF ENERGY FROM RENEWABLE SOURCES

IN THE NORTH SEA

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 a Joint Support Scheme under Articles 11 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 in the North Sea;

c) [… additional points]

Article 2 Definitions

Pursuant to the 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 the Joint Project;

g) Host Member State: the Member State in the territory of which the Joint Project is located.

Part II COOPERATION AND ORGANIZATIONAL STRUCTURE

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 Responsible Body

(1) A Responsible Body consisting of at least one representative of each party to this agreement shall be established. Each party shall have one vote with the Responsible Body deciding by consensus.

(2) The Responsible Body shall have 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) Supervision of the implementation of the Joint Projects, including the permitting and licensing procedures, as well as the regulations regarding monitoring, tracking and issuing of proof and verifications;

e) Paying out the Joint Project Operators in accordance with Art. 11 of this Agreement;

f) Reporting back to the Parties on a regular basis.

Part III SPECIFICATIONS OF THE JOINT PROJECTS

Article 5 Specifications of the Joint Projects

(1) This Agreement covers one or more projects with a maximum capacity of … installed.

(2) The Joint Projects shall use …in order to be eligible under the tender procedure according to Art. 8 of this Agreement.

Article 6 Selection of Joint Projects and Tender Procedure

(1) The Joint Projects supported in the framework of this agreement is identified according to a tender procedure, based on transparent, non-discriminatory criteria, set and published in advance.

(2) The tender specifications shall be agreed upon by the Responsible Body according to the terms laid down in this Agreement and will inter alia include:

a) Local environmental aspects for the construction and operation of the project, both positive and negative;

b) Economic and financial, as well as technical and professional capacity of the tenderers;

c) […]

(3) The contracts will be awarded to the project best meeting the criteria determined by the Responsible Body and based on the best price offered.

Part IV RENEWABLE ENERGY TARGET ACCOUNTING

Article 7 Distribution of production for target compliance purposes

The renewable energy target amounts corresponding to the energy produced in the course of the Joint Projects during the production period according to this Agreement will be distributed among the Parties for target compliance purposes under Directive 2009/28/EC and under any European legislation succeeding Directive 2009/28/EC in accordance with the following formula:

…

Article 8 Notification to the European Commission

(1) After a Joint Project has been agreed upon between the Parties, the host Member State 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 a 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 9 Financial Commitments

(1) The financial support for the Joint Projects will be provided by the Parties. The support from a fund, into which the Parties contribute according to the share of renewable energy target amounts they will be allocated in accordance with Art. 7 of this Agreement. Thus, the following formula applies

The parties agree to conduct a cost benefit analysis in order to assess the effects of cooperation ex-ante. In particular the cost benefits analysis will be used to compare the support costs that arise for financing the feed in tariff for both the cooperation case and the non-cooperation baseline. If cooperation leads to cost savings it is decided to share this savings equally by deducting them from the support costs that arise for each party in the non-cooperation case. The residual determines the contribution to be made by each party to the joint fund. As the results of the costs benefit analysis are uncertain it is decided to fix the relative contribution of each party to the joint fund that corresponds to the absolute values derived from the cost benefits analysis in order to assure financing of the support scheme if costs develop other than expected.

Formally the following formula applies

Equation 7: Fomula to determine the relative contribution of each party o the joint fund.

$$contribution_n = \frac{SE_{ref}{}_n - \frac{Cost_{sav}}{n}}{\sum_{n \in N} SE_{ref}{}_n - \frac{Cost_{sav}}{n}}$$

Where $contribution_n$ denotes the relative share in costs to be contributed by each party n, $SE_{ref}{}_n$ the support expenditures that would arise for each party in the non-cooperation baseline case and $Cost_{sav}$ the total cost savings that arise in the case of joint target achievement.

In case, in the course of the implementation and life-time of the Joint Projects the contributions by the Parties occur to be insufficient, the Responsible Body shall issue a request for additional payments in accordance with the original distribution of the costs. Thus, the following formula applies…

(2) The Parties shall make their contribution to the account of…

(3) After expiry of the support under this Agreement, the production from the Joint Project shall no longer be eligible for support any Party to this Agreement in the course of its national support scheme.

(4) The Member States are jointly responsible for notifying the European Commission for state-aid compatibility, if applicable.

Article 10 Network integration

The costs for grid connection and potential grid reinforcements necessitated by the Joint Projects will be borne by the Joint Project Operators. These costs will be defined by the Responsible Body according to the relevant legislation in the host Member State.

Article 11 Payment Procedure

(1) The payments of operational support shall be made directly to the Joint Project Operators after the submission of the required proof as laid down in Art. 20 of this Agreement.

(2) The Responsible Body shall make the payments from the funds dedicated by the Parties in accordance with Art. 9 (1) and 9(2) of this Agreement.

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

Article 12 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 Project by the date determined in the tender specifications or in case yearly production of the Joint Project falls beneath [xx MWh].

Article 13 Responsibilities of the Parties

(1) The host Member State guarantees the transfer of the renewable energy target amounts to the respective Parties as in accordance with the formula defined in Art. 7 of this Agreement.

(2) The Parties guarantee to contribute their share to the financing of the Joint Projects in accordance with Art. 9 of this Agreement.

(3) In case the host Member State fails to meet any of its obligations arising from this Agreement, a penalty shall apply. The amount of the penalty shall allow all Parties not reaching their renewable energy target under the Directive 2009/28/EC to make good for the missing renewable energy target amounts by purchasing them from other Member States in a Statistical Transfer arrangement.

(4) In case one or more of the Parties fail to meet their obligations to contribute their share to the financing of the Joint Projects in accordance with Art. 9 of this Agreement, such party shall have no entitlement to the renewable energy target amounts allocated under Art. 7 of this Agreement. Such party shall be liable in damages.

Part VII MONITORING, PROOF AND VERIFICATION

Article 14 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.

(2) In accordance with Article 16 of this Agreement, the Joint Project Operator 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 Project.

Article 15 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 16 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 17 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 occa-sioned 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 in-surrection;

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 perfor-mance 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 18 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 arbi-tration 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 19 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 this 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 20 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 21 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 22 Entry into Force

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

Article 23 Termination/Modification/Review

(1) The agreement will terminate on […date…].

(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 documented in writing. Any such amendment shall be deposited according to Art. 16 of this Agreement and enter into force one month after the date of the deposit. The parties will review this agreement at least once every three years to determine whether it should be revised, renewed [or canceled].

Article 24 Depositary

(1) [Member State X] 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.

7.4 Background data on costs and benefits

Table 4: Calculation parameters for the allocation rules for Joint Quota System in Scandinavia.

Member State	Cluster	Norway	Denmark	Finland	Sweden
Parameters for full cost sharing rules					
Support Expenditures for reference case in Millions of Euros	3837	1356	935	637	909
Support Expenditures joint for target achievement in Millions of Euros	3776	1621	624	394	1137
Cost savings compared to reference case in Millions of Euros	60	-265	311	243	-229
Net indirect effect of cooperation in Millions of Euros	-331	6	-113	-976	752
New electricity generation in reference case in 2020 in GWh	42762	19571	7514	6648	9029
Share in new electricity generation in reference case in 2020 in %	100%	46%	18%	16%	21%
Additional parameters for transfer pricing approach					
Surplus / Deficit in generation compared to reference case in GWh	-3857	579	-1574	-7505	4642
Weighted average premium in the reference case in Euros per MWhRES	30	26	30	28	34
Marginal premium in the reference case in Euros per MWhRES	65	26	169	30	34
Transfer Price in case of weighted avergae premium in Euros per MWhRES	30	N/A	N/A	N/A	N/A
Transfer Price in case of marginal premium in Euros per MWhRES	98	N/A	N/A	N/A	N/A
Residual support expenditures for Member States in case of weighted average premiums in Millions of Euros	-117	1603	672	621	997
Residual support expenditures in case of marginal premiums for Member States (reference case) and Cluster (cooperation case) in Millions of Euros	-378	1564	778	1128	683

Table 5: Calculation parameters for the allocation rules for Joint Feed-in Premium System in Central and Eastern Europe.

Member State	Cluster	Austria	Czech Republic	Hungary	Slovakia
Parameters for full cost sharing rules					
Support Expenditures for reference case in Millions of Euros	1645	550	560	270	266
Support Expenditures joint for target achievement in Millions of Euros	1233	761	68	159	245
Cost savings compared to reference case in Millions of Euros	412	-211	492	110	21
Net indirect effect of cooperation in Millions of Euros	210	691	-346	-87	-48
New electricity generation in reference case in 2020 in GWh	16650	7671	3308	3636	2034
Share in new electricity generation in reference case in 2020 in %	100%	46%	20%	22%	12%
Additional parameters for transfer pricing approach					
Surplus / Deficit in generation compared to reference case in GWh	522	7511	-5294	-1124	-571
Weighted average premium in the reference case in Euros per MWhRES	28	22	36	21	33
Marginal premium in the reference case in Euros per MWhRES	86	82	69	97	96
Transfer Price in case of weighted avergae premium in Euros per MWhRES	28	N/A	N/A	N/A	N/A
Transfer Price in case of marginal premium in Euros per MWhRES	83	N/A	N/A	N/A	N/A
Residual support expenditures for Member States in case of weighted average premiums in Millions of Euros	15	548	218	191	261
Residual support expenditures in case of marginal premiums for Member States (reference case) and Cluster (cooperation case) in Millions of Euros	43	137	508	252	292

Table 6: Calculation parameters for the allocation rules for technology-specific joint support scheme for offshore wind energy.

Member State	Cluster	Belgium	Denmark	Finland	France	Germany	Ireland	Netherlands	Sweden	United Kingdom
Parameters for full cost sharing rules										
Support Expenditures for reference case in Millions of Euros	12827	973	9	0	1443	2729	35	2297	2	5339
Support Expenditures joint for target achievement in Millions of Euros	10461	152	11	0	1097	3154	154	1698	3	4193
Cost savings compared to reference case in Millions of Euros	2366	821	-2	0	346	-425	-119	599	0	1146
Net indirect effect of cooperation in Millions of Euros	-462	-834	0	0	0	238	134	0	0	0
New electricity generation in reference case in 2020 in GWh	88922	6147	169	0	7437	25083	689	12276	51	37070
Share in new electricity generation in reference case in 2020 in %	100%	7%	0%	0%	8%	28%	1%	14%	0%	42%
Additional parameters for transfer pricing approach										
Surplus / Deficit in generation compared to reference case in GWh	-359	-5029	1	0	0	3999	671	0	0	0
Weighted average premium in the reference case in Euros per MWhRES	39	56	32	0	53	36	32	56	33	51
Marginal premium in the reference case in Euros per MWhRES	39	56	32	0	53	36	32	56	33	51
Transfer Price in case of weighted avergae premium in Euros per MWhRES	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transfer Price in case of marginal premium in Euros per MWhRES	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Residual support expenditures for Member States in case of weighted average premiums in Millions of Euros	-10	292	11	0	1097	3043	135	1698	3	4193
Residual support expenditures in case of marginal premiums for Member States (reference case) and Cluster (cooperation case) in Millions of Euros	-10	292	11	0	1097	3043	135	1698	3	4193

Table 7: Support cost allocation for different rules for Joint Quota System in Scandinavia.

Allocation Methods	Variant I: Harmonised sharing of costs	Variant II: Harmonised sharing of costs and benefits	Variant III: Harmonised sharing of cost savings	Variant V: Marginal premiums for RES surplus	Variant VI: Average premiums for RES surplus	Support Expenditures for reference case
Member State						
Norway	1728	1387	1341	1470	1574	1356
Denmark	664	530	920	684	643	935
Finland	587	469	622	1034	592	637
Sweden	797	1390	893	589	968	909
Cluster	3776	3776	3776	3776	3776	3837

Table 8: Support cost allocation for different rules for Joint Feed-in Premium System in Central and Eastern Europe.

Allocation Methods	Variant I: Harmonised sharing of costs	Variant II: Harmonised sharing of costs and benefits	Variant III: Harmonised sharing of cost savings	Variant V: Marginal premiums for RES surplus	Variant VI: Average premiums for RES surplus	Support Expenditures for reference case
Member State						
Austria	568	940	447	148	552	550
Czech Republic	245	108	457	519	222	560
Hungary	269	118	167	263	195	270
Slovakia	151	66	163	303	265	266
Cluster	1233	1233	1233	1233	1233	1645

Table 9: Support cost allocation for different rules for technology-specific joint support scheme for offshore wind energy.

Allocation Methods	Variant I: Harmonised sharing of costs	Variant II: Harmonised sharing of costs and benefits	Variant III: Harmonised sharing of cost savings	Variant V: Marginal premiums for RES surplus	Variant VI: Average premiums for RES surplus	Support Expenditures for reference case
Member State						
Belgium	723	697	710	291	291	973
Denmark	20	19	-254	10	10	9
Finland	0	0	-263	-1	-1	0
France	875	844	1180	1096	1096	1443
Germany	2951	3084	2466	3042	3042	2729
Ireland	81	212	-228	134	134	35
Netherlands	1444	1393	2034	1697	1697	2297
Sweden	6	6	-260	2	2	2
United Kingdom	4361	4206	5076	4192	4192	5339
Cluster	10461	10461	10461	10461	10461	12827

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