

## Interactions between Cooperation Mechanisms and support schemes with a focus on auctions



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### Task 3 report

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## Summary

Currently support schemes for renewable energy (RES) are designed for national contexts and they aim at reaching national RES targets for 2020. However, the RES Directive introduces the option for Member States to jointly achieve their targets. By means of the Cooperation Mechanisms, support schemes are opened, thereby extending their geographic scope beyond national borders. This report discusses how existing support schemes are affected by the introduction of the Cooperation Mechanisms and how they can be adapted to adequately accommodate the Cooperation Mechanisms. It puts a focus on auction schemes, as those are implied as the default support scheme by the recently published "Guidelines on State aid for environmental protection and energy 2014-2020" (EEAG). Moreover, they are specifically suited to define the limits of cooperation.

Principle effects of the distinct Cooperation Mechanisms on national support schemes can be identified: they lead, for instance, to an increase in cost efficiency of the off-taking Member State's support scheme because it can replace expensive domestic RES potentials by cheaper potentials in the host country. This in turn might lead to a decrease in cost efficiency of the host country's support scheme in the medium-term because its good sites are used for the cooperation and are not available for future domestic RES deployment. This effect is less significant in the case of Statistical Transfer because this cooperation uses previously deployed RES. In contrast, Joint Projects and Joint Support Schemes effectively influence the availability of RES potentials. This effect has to be assessed against the overall efficiency gains of the cooperation and will most likely be addressed in the cost-benefit allocation of the cooperation agreement. Moreover, this effect is more significant if cheaper technologies are subject to the cooperation (as compared to more expensive technologies) because those low-cost potentials will not be available for the host country's 2020 target achievement.

The Cooperation Mechanisms have different effects on different support schemes (here: administratively defined FIT/FIP, quota schemes and existing auction schemes combined with FIT/FIP), which need to be addressed. Because of the above described effects, in existing FITs and FIPs higher-cost technologies might have to be deployed. In case an existing quota scheme of a host country is used for the cooperation, its RES quota needs to be increased in order to increase the demand for certificates accordingly. If the off-taking country also has a quota scheme in place, it can decrease its quota according to the amount agreed in the cooperation.

If an already existing auction scheme of the host-country is used for cooperation, the cooperation will have an effect on the level of competition induced by the auction: the relation of the market size to the auctioned RES volume changes. If the off-taking country's auction is used, changes regarding prequalification and MRV might be necessary to accommodate projects from abroad. Alternatively, the host country's public authorities might provide official confirmations as an equivalent to the administrative requirements of the off-taking country.

If a new auction is used in parallel to existing support schemes to limit the scope of cooperation, it will interact and compete with the already existing support scheme of the host country, also depending on whether the existing support scheme is capped. This might be addressed, for instance,

by targeting technologies that are not covered by the host country's principal support scheme or by choosing a specific region for the cooperation.

If auctions are newly set up as the principal support scheme of a Member State (which is likely to occur because of the new EEAG) the concrete auction design might take several precautions to accommodate international cooperation more easily later on. This might include, for instance, an inherent limitation regarding how much of the total auctioned capacity will be opened internationally. Moreover, if the auction defines ceiling prices and if those are related to LCoE calculations, these calculations might be adapted to the circumstances in other Member States. In general, already including international cooperation into the legislation related to the newly introduced auction scheme might help to avoid implementation barriers later on.

Once a Cooperation Mechanism is implemented and functioning well, Member States might decide to scale up the cooperation. This might happen, for instance, by moving from single-item to multiple-item auctions and from single auctions to a multiple auction framework agreement. Including additional technologies and Member States into the cooperation are other suitable means to scale up the cooperation.

The Cooperation Mechanisms do not only increase the efficiency of RES support, thereby creating win-win situations. They also potentially lead to greater convergence of national support schemes, especially if Member States scale up and intensify cooperation (e.g. move from joint projects to partially joint support schemes).

While the report discusses manifold and complex interactions between support schemes and the Cooperation Mechanisms, it also shows that these interactions can adequately addressed to effectively mitigate un-intended effects.

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# 1 Introduction

Currently support schemes for renewable energy (RES) are organised nationally<sup>1</sup> and they aim at reaching national RES targets for 2020 as laid out in the Renewable Energy Directive 2009/28/EC (hereinafter: "RES Directive"). However, the RES Directive introduces the option for Member States to bi- or multilaterally achieve (parts of) their targets, through Statistical Transfers (Art. 6), Joint Projects (Art. 7 and 9) and/or Joint Support Schemes (Art. 11). By jointly reaching their targets, Member States can save significant amounts of support expenditures because the Cooperation Mechanisms allow for using RES sites more efficiently. Klessmann et al. estimate that even under a "moderate cooperation" scenario, [...] reductions in support expenditures of -5.8% (€ 17 billion) over the whole period up to 2020 at EU level" are possible (Klessmann et al. 2014, p. 52; for similar arguments also see Rathmann et al. 2011, p. 85 Klessmann et al. 2013, pp. 398-399).

However, the Cooperation Mechanisms extend the geographic scope of support schemes as they imply support for RES beyond national borders. Through this basic characteristic, they affect the functioning of the existing support schemes, which are likely to remain in place to reach those parts of the national RES targets which are not covered by the cooperation (Klessmann 2010; EC 2013b). Knowing about the interactions between the Cooperation Mechanisms and national support schemes is critical to ensure that cooperation serves its purpose of reaching the RES targets more efficiently while at the same time maintaining the proper – effective and efficient – functioning of the domestic support schemes. Thus, the guiding questions of this report are:

- How are existing support schemes affected by the introduction of one of the Cooperation Mechanisms?
- How can support schemes be adapted to best accommodate the Cooperation Mechanisms and to fully benefit from them?

In dealing with these questions the report puts a focus on auctions, for two reasons. First, the "Guidelines on State aid for environmental protection and energy 2014-2020" recently published by the EC define that support for RES should generally be granted in a "competitive bidding process", the latest by 2017 and onwards (EC 2014, pp. 34-35). Thus, the use of auctions as a means to allocate support for RES will increase in Europe. Second, auctions are specifically suited to be implemented in the context of the Cooperation Mechanisms: Member States will most likely not directly switch from national to Joint Support Schemes and might want to define the scope of cooperation. Auctions enable a precise definition of the volume or capacity auctioned under the cooperation agreement and thus of the scope of cooperation.

The present report deals with the guiding questions along the following lines: First, in section 2 it briefly discusses on a general level principle effects of the distinct Cooperation Mechanisms on national support schemes, for both the host country and for the off-taking country. Subsequently, in

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<sup>1</sup> An exemption is Norway and Sweden, who implemented a Joint Support Scheme as of 1 January 2012.

section 3 it analyses effects of the Cooperation Mechanisms on different support schemes, such as administratively defined FIT/FIP, quota schemes and existing auction schemes (combined with FITs or FIPs). From this discussion it derives how each of the existing support schemes has to be adapted to accommodate the Cooperation Mechanisms. The chapter represents the focus of the paper and is organised according to the starting point from which Member States might enter into cooperation: First (in section 3.1), we discuss how *already existing support schemes* have to be adapted, when they are used for cooperation. Second (in section 3.3), Member States might seek to *add to their existing support scheme an additional auction* which is explicitly designated for the cooperation. We discuss how this additionally set up auction might affect the already existing support schemes and how it might be designed in this context to mitigate unintended effects. Third, in light of the recently published EEAG, some Member States might seek to *set up entirely new auction schemes*. Thus, in section 3.4 we explore how these auctions might be designed to easily accommodate cooperation with other Member States. In the last part of this chapter (in section 3.5), we look at how Joint Projects can be scaled up to (partial) Joint Support Schemes, thereby increasing the benefits for Member States, improving coordination of RES policies among them and leading to increased policy convergence in Europe.

The report is based on qualitative analysis and builds on previous research conducted in several EC-funded projects (foremost "Re-Shaping", "beyond2020" and "RES4LESS"). Moreover, it builds on interviews conducted in the broader context of this project, on the task 1 and 2 reports elaborated in this project (on the design of Cooperation Mechanisms and of Support Schemes, Klessmann et al. 2014, Held et al. 2014) and on several case studies on the Cooperation Mechanisms (task 4 and 5), which have provided valuable insights into how specific schemes might have to be adapted.

## 2 Principle interactions between Cooperation Mechanisms and support schemes

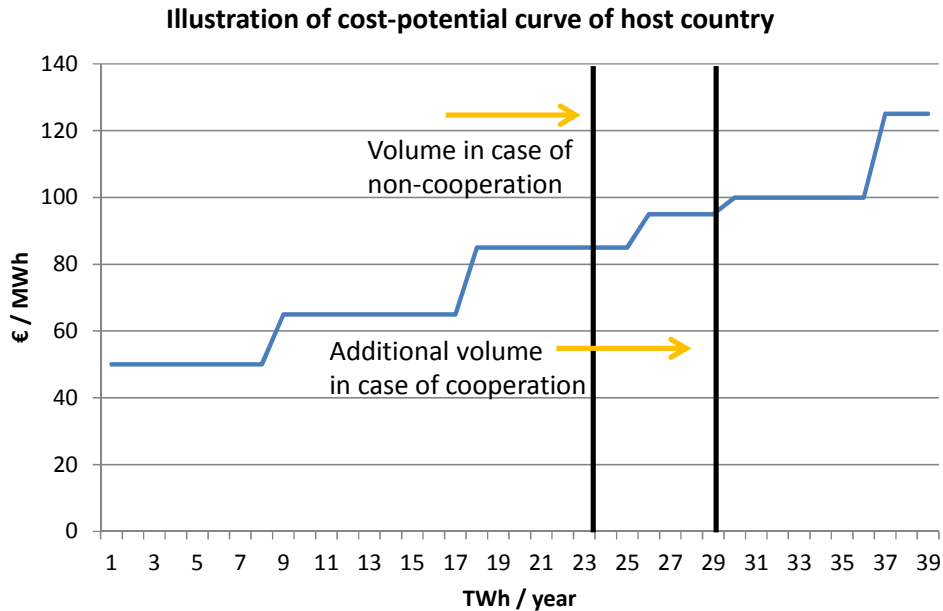
### 2.1 Effects of the Cooperation Mechanisms on cost-effectiveness

In this section we briefly discuss generic effects of specific Cooperation Mechanisms, with a focus on their effects of the cost-effectiveness of the already existing support schemes. From this section we exclude a support scheme-specific perspective, which is dealt with in chapter 3.

Statistical Transfers imply an ex-post transfer mechanism between Member States. This means that Member States transfer statistical amounts of RES-target achievement based on RES which has already been produced under the framework of an existing national support scheme. Thus, Statistical Transfers do not directly affect the basic functioning of the support scheme, neither of the selling country ("host country") nor of the buying country ("off-taking country"). However, Statistical Transfer indirectly affects the support schemes' cost-effectiveness of the participating Member States.

On part of the off-taking country, Statistical Transfers reduce the RES amount it needs to produce domestically for meeting its national RES targets. Thus, such transfers increase the cost-effectiveness of the buyer's support scheme because expensive domestic RES potentials are replaced by cheaper imports. The remaining amount of RES which is deployed domestically thus relates to a "flatter" cost-potential curve. On part of the host country, the Statistical Transfer may decrease the cost-effectiveness of its support scheme: the transfer reduces the low-cost RES potential available for domestic target achievement in the host country (until 2020 and beyond). Figure 1 illustrates the effect on the availability of the cost-potential curve for domestic deployment (as described above, the effect is the opposite for the off-taking country). In general, this effect fully depends on the transferred amounts of RES-target achievement, on the excess of RES in comparison to the host country's target and on the shape of its cost-potential curve. When defining the transfer price, Member States might want to take the use-up of the host country's RES potential into account and put a price on it.





**Figure 1 Illustration of cost-potential curve of host country (source: own elaboration)**

Joint projects generally have the same effects as Statistical Transfer, i.e. increased cost-effectiveness in the off-taking Member State and decreased cost-effectiveness regarding the host country's support scheme. In addition to these effects, Joint Projects directly interact with the host country's support scheme: in the course of cooperation a support mechanism for the Joint Projects might be implemented, which is separate from the principle domestic support scheme. In this case the two mechanisms compete with each other (Klessmann et al. 2010). This effect occurs because in this specific situation, project developers might be able to choose between two support mechanisms. Thereby, the support schemes available in one territory are competing with each other because the more attractive of both schemes will in principle attract investments. However, if domestic support schemes are capped, this effect will be less severe than in uncapped support schemes. Furthermore, this effect can be mitigated. As discussed in section 3.3, the most evident solution is to exclude those technologies and/or plant sizes from eligibility for the national support scheme that are subject of cooperation.

Joint Support Schemes generally produce the same effects as Joint Projects, since they use part of the potential of the host country and as a result leave parts of the cost-potential curve of the off-taking country untouched. However, depending on the extent of merging two support schemes (e.g. regarding the technologies addressed) these effects become much more significant. The significance of these effects increases because the share of RES that are supported under a Joint Support Scheme in comparison to the purely national support scheme (and thus, RES deployment) becomes larger.

Moreover, due to the increased RES-share in the host country, the merit order effect in this country might increase. This means that additional RES installations lower the average wholesale electricity price in the host country (Sensfuß et al. 2008; Hansen 2012). This has effects on its support schemes as these effects might increase the required support payments. In turn, this would result in increased overall support expenditures (because of increased gap between electricity price and support level). However, recent developments of market coupling result in a reduction of price differentials between different price zones, thereby reducing the above described effect.

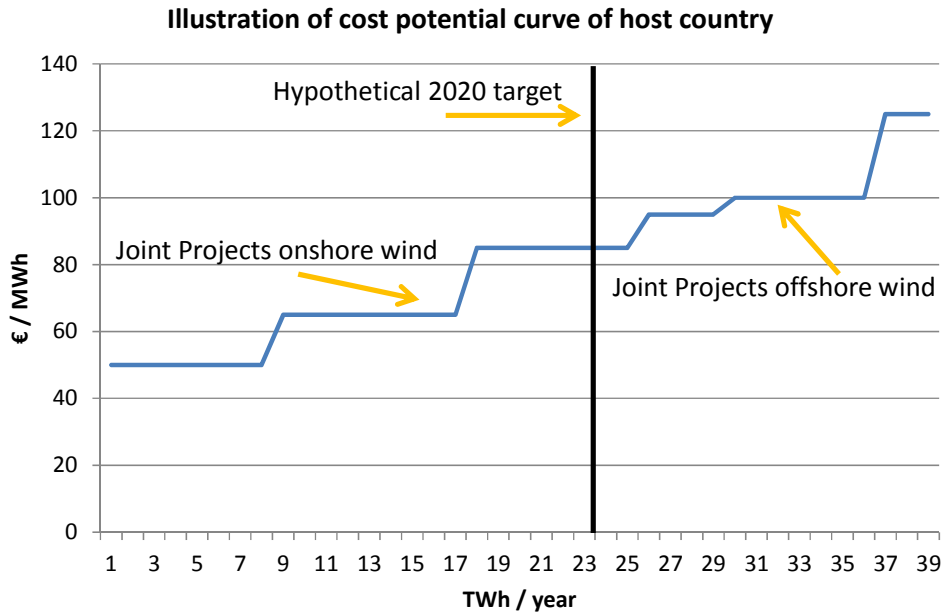
The previous paragraphs seemingly imply that the host country, simply loses by decreasing the cost-effectiveness of its domestic support scheme. However, this effect has to be assessed against the increase of efficiency in the support scheme of the off-taking Member State. From a holistic perspective, partially joining both countries' cost-potential curve leads to overall efficiency gains because together both countries can make use of cheaper potentials. In order to create a win-win situation for both countries, these effects have to be balanced between the cooperating countries (as dealt with in depth in the task 1 report of this project: Klessmann et al. 2014, p. 34-41). In general, the use-up of cheap potential in the host country is offset by the transfer price, so that benefits for both participating parties ultimately outweigh the initially negative effects on the cost-effectiveness of the support scheme of the host country.

## 2.2 Different economic effects of using low-cost or high-cost technologies for cooperation

The above described effects do not only differ according to the applied Cooperation Mechanism but also according to the technologies that are subject to the cooperation. Generally speaking, if high-cost technologies are targeted by a Cooperation Mechanism, effects on the part of the cost-potential curve available for short-term target achievement are likely to be minimal. If, for instance, offshore wind is not crucial for meeting the 2020 target of the host country, offshore wind deployment triggered by cooperation will not have a significant effect on the efficiency of the host country's support scheme.

Notwithstanding, after 2020 this might change as other parts of the cost-potential curve of a Member State might become more relevant for further RES deployment (at least if national RES targets are continued). Also, if these less mature and thus more expensive technologies are part of the envisaged energy mix until 2020 the availability of relevant parts of the cost-potential curve will be directly affected. For instance, in the Energy Agreement for Sustainable Growth of 2013, the Netherlands have agreed to deploy domestic offshore wind to reach its 2020 target. In this case, using offshore sites for cooperation with other countries becomes less attractive.

In contrast, if low-cost technologies are subject to the cooperation agreement, the low-cost potential available for the host country's target achievement is reduced. Thus, in this case the economic effect is more significant than in the case of using high-cost technologies for cooperation. Figure 2 illustrates these effects with a hypothetical cost-potential curve.



**Figure 2 Illustration of cost-potential curve (source: own elaboration)**

Obviously, any country that gets involved in a cooperation mechanism needs to thoroughly assess these effects and include them into negotiations on adequate cost-benefit sharing and thus of transfer prices (Klessmann et al. 2010). However, these effects might be netted with other positive effects in the host country, such as local job creation, tax income, etc. (Klessmann et al. 2014). Moreover, such economic effects largely depend on the scale of cooperation: if the cooperation is very limited, it will not have significant effects (however, it will also only provide limited efficiency gains in the off-taking country). If the scale of cooperation is increased, the effect on the support schemes in both countries increases.

## 3 Effects of cooperation on support schemes and ways to address them

The Cooperation Mechanisms are extremely flexible and they can be adapted to the specific preferences of the respective Member State. The design of the Cooperation Mechanisms depend on the starting point from which a Member State seeks to implement a cooperation. Here we differentiate between two different situations:

- existing support schemes might be used for cooperation;
- two (or more) countries might implement a separate support scheme specifically for Joint Projects they seek to realise, which exists in parallel to their principal support schemes.

### 3.1 Using existing support schemes for cooperation

As mentioned in the introduction, support schemes are organised nationally. Thus a likely case for one of the Cooperation Mechanisms is that Member States use already existing support schemes. This approach has several advantages. First, the support scheme is known to the public and public acceptance is potentially established. Second, the support scheme has potentially worked well in terms of efficiency and effectiveness. Third, fundamental changes in investment conditions, such as the support scheme, can be delicate regarding investor confidence (Klessmann 2013, p. 398-399). Thus, keeping a well-established and functioning support scheme in place, while allowing for gradual changes through implementing one of the Cooperation Mechanisms might guard existing trust in a support scheme (and thus in the investment context). In the following sections we discuss the opening of an existing support scheme with regards to an uncapped FIT, a quota scheme and an existing auction scheme.

#### 3.1.1 FIT/FIP

In this section, we presuppose that the off-taking country has an administratively set FIT/FIP in place to allocate support and no fixed cap; however, it seeks to open its support scheme to increase the efficiency of its target achievement. On the contrary, the host country will have to cope with the reduced availability of parts of its cost-potential curve. In case it also uses a FIT/FIP scheme for domestic support, the tariffs are not affected, but the supported technology mix might change and the average support costs increase. In case of higher volumes, the host country may consider to adjust its domestic tariff structure to reflect the change in available potential. In case the host country uses a quota or auction scheme to define support levels, the domestic support level would increase.

For the off-taking country the opposite effects take place: efficiency of its support scheme increases due to using part of the better RES potential in the host country. Thus, it could cap or abandon its FIT/FIP for more expensive technologies/sites (in case it has such tariffs and is on track to meet its

target) or –respectively – would not need to introduce such high tariffs (at least not for target achievement).

Effects on the effectiveness depend on the scale of cooperation. In this case, they can be significant, if the cooperation is not limited. An evident challenge is that Member States might want to limit the opening of their support scheme, for several reasons: first, they might seek to limit the above-described effects; second, they might want to find and define an adequate balance between domestic and foreign RES deployment. Limiting the cooperation might be addressed by introducing volume caps or auctions into the existing FIT/FIP for the amount of cooperation (see section 3.3).

### **3.1.2 Quota scheme**

Of course, existing quota schemes can be used to enable joined target achievement. We distinguish to cases here: first, the host country's quota scheme is used and, second, the quota scheme of the off-taking country is used for the cooperation.

If the host country's quota scheme is used for cooperation, its quota (volume cap) needs to be increased to reach parts of the RES target of the off-taking country. In this case, the most likely Cooperation Mechanism is a Statistical Transfer, combined with an explicit transfer price. If the off-taking country also has a quota scheme in place, also Joint Projects or (partial) Joint Support Schemes could be implemented because certificates issued in the host country might be used to fulfil the renewables obligation in the off-taking country.

In case the off-taking country also has a quota scheme in place, its national quota can to be reduced by the amount of the cooperation. However, the required adaptations to the quotas and any other additional required changes (e.g. regarding technology-banding, etc.) should be communicated timely and in a transparent manner, in order to preserve investor confidence.

In the second case, the off-taking country's quota scheme is used for cooperation, thus installations located outside the national territory can receive certificates for target fulfilment. In this case the quota does not have to be adapted as the targeted volume for the off-taking country remains the same. However, certificate prices are likely to decrease in the off-taking country: the host country's cheaper potentials are used and the most costly RES options are likely to be avoided. If the host country has a quota scheme in place, its certificate prices are likely to increase because more expensive technologies will set the price for the certificates. Thus, the difference between the certificate prices in both countries would diminish.

### **3.1.3 Auction scheme**

Several countries are using auctions (combined with FITs or FIPs) as their main support scheme. In this section we presuppose that two (or more) cooperating Member States use an auction scheme which is already in place. Again, this can either be the scheme of the host country or of the off-taking country.

In case the host country's auction scheme is used, it has to be adapted in several ways (on auction design details also see Held et al. 2014, pp. 44-74). First, the auctioned volume has to be increased

by the amount agreed in the Cooperation Mechanism. Moreover, the auction might have to be specified according to technology preferences of the off-taking Member State.

In addition, other design details of the auction might have to be adapted, such as prequalification criteria. Of course, such requirements depend on the willingness of the host country to include them into its auction scheme. Moreover, the host country might have its own preference regarding the additional RES installations (e.g. in order to address effects on its local grid), which it might include into the prequalification requirements for joint project installations. In principle, these additional requirements should be kept to a minimum to keep the auction as simple as possible.

Increasing the amount of auctioned RES has immediate effects on the host country's existing auction scheme, foremost concerning the level of competition induced by the auction. As a general precondition of well-functioning auctions, it needs to induce competition among bidders, i.e. demand for RES support needs to be higher than the auction volume. For instance, if a potential wind market of annually 1 GW can participate in auctions of (hypothetical) 600 MW, the auction is likely to create competition. If the cooperation agreement adds another 400 MW, the level of competition induced by the auction becomes too low, as the annual wind potential does not exceed the auction volume. In order to keep an adequate balance between demand and offer (and to ensure that competition is created in an auction), the market needs to be assessed to broadly estimate the potential level of competition. The amount auctioned in the Cooperation Mechanism should take these results into account.

In case the auction scheme of the off-taking country is used for the cooperation (as discussed, for instance, in Gephart et al. 2014), the auction, first, has to be changed in terms of accepting bids from projects that are located outside the country's territory. In addition, potential ceiling prices could be adapted (lowered) to avoid high producer rents for installations from abroad.

Moreover, when using the auction scheme of the off-taking Member State for cooperation a crucial issue is how to deal with prequalification requirements (e.g. permits that need to be in place to participate in the auction). In this case, they might have to be adjusted to suit installations from abroad. For instance, if the off-taking country's auction requires permits that do not exist in the host country, bids from this country could not qualify for this auction. Thus, one option is to simplify the pre-qualification requirements of the off-taking country. Alternatively, the host country could provide official confirmations of all required permits being in place and the off-taking country could accept these confirmations as a replacement for the domestically required permits. In any case, the host and the off-taking country need to agree on which public entity controls the requirements and how bids from abroad can be accepted in a legally solid manner (i.e. avoiding legal uncertainty for bidders from abroad). Moreover, in principle the existing legal, regulatory and procedural background of the host country continue to exist and existing planning procedures of the host country for RES installations continue to be valid. In some cases, the Cooperation Mechanism might trigger either special arrangements for the Joint Projects or the host country's regulations and administrative requirements might be generally adapted to better accommodate the cooperation.

If an existing auction scheme of the off-taking country is chosen for the cooperation, one general question is whether foreign bids enter into direct competition with bids from domestic projects.

Alternatively, separate lots might be established in the auction for bids from abroad. In general, not separating domestic bids from “foreign” bids is the preferable option because this way competition in the auction is increased, potentially resulting in lower prices. However, for reasons of public acceptance in the off-taking country (e.g. because of local job creation), it might choose to separate foreign from domestic bids to ensure that a part of its deployment takes place domestically.

One additional aspect is that administrative and grid-related procedures will most likely differ between the participating countries. For instance, the regime for grid connection costs might be different (shallow or deep), thereby potentially adding certain cost elements for projects in one country, while projects do not have to pay these costs in the other country. Equally, licencing procedures are a cost element that project developers have to take into account. As licencing procedures differ between countries, for instance, regarding requirements and lead times, also the related costs differ. Moreover, regulations regarding balancing costs and compensation rules in case of curtailment often differ between Member States.

As a consequence, project developers will have to deal with different cost elements to calculate their bids. These differences could be interpreted as „distorting“ effects, which undermine the envisaged level playing field among bidders from different countries. On the other hand, one might argue that in international auctions not only sites and project developers compete, but also different regulations that induce project and electricity production costs. If a country has less advantageous regulations and higher non-cost barriers (which equally translate into costs and as a result into higher bids), an international auction creates an incentive for the country to lower these costs in order to make bids from its territory more competitive.

## 3.2 Requiring physical transfer of electricity

Another crucial issue that might emerge in the context of the Cooperation Mechanism and which might be reflected in the auction design is the requirement of physical export/import of electricity. While for some Member States this issue does not seem to be relevant at all, others might want to import the electricity which is support outside of the country’s territory. Equally, some host countries might want to export the electricity which is additionally produced due to the Cooperation Mechanisms (EC 2013b, pp.18-19; Gephart et al. 2014). This requirement may induce additional costs, for instance, for explicitly booking cross-border capacities or for additional infrastructure investments that might be required to facilitate the electricity import/export (e.g. in the case of an off-shore wind park, as analysed in Kitzing et al. 2014).<sup>2</sup> The question is how these costs should be dealt with, who bears them and what the effects of such additional cost are on existing auctions. Regarding this issue, the EC (2013b, p. 20) states in its guidance that

“In case of a large-scale project also necessitating substantial reinforcement of domestic transmission lines, these should be defined as part of the tendered project with costs shared according to these principles as well. Depending on the volume of the cooperation, a pure shallow cost approach might not be fair to consumers in the host country and costs should

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<sup>2</sup> On the functioning of cross border electricity trade also see Bahar and Sauvage, 2013; ENTSO-E, 2012.

therefore be shared according to the benefits they hold to each of the networks involved rather than simply their geographic location.”

In a strict sense, these costs do not necessarily concern the design of the auctions directly; they could be dealt with in the Cooperation Agreement and could be excluded from the auction design. Moreover, the EC’s statement leaves open, whether these costs should be directly included into the auction design or whether they should be dealt with separately from the bids in the cooperation agreement.

The first option is that additional cost for physical transfer of electricity are dealt with separately from the auction and are included into possible explicit transfer agreements in the Cooperation Mechanism. Thus, both countries would bear the cost of physical transport of electricity and of additional infrastructure investments according to who seeks to effectively establish the import or export of electricity. The advantage of dealing with these costs in the Cooperation Mechanism is that it is aligned with established best practices of shallow cost approaches for grid connection. Moreover, it improves and/or maintains transparency of the cost for infrastructure. However, its downside is that this approach would increase the complexity of the cooperation agreement, making its implementation less likely. This option is available with all support schemes (e.g. FIT/FIP, quota scheme or auction scheme).

A second option specifically relates to auction schemes: additional costs for physical transfer of electricity (either through using interconnector capacity or through additional infrastructure investments) might be included into the bids of the auction. In this case, the bidding party bears these additional costs and simply adds it into its calculation of the bid (implying a deep grid connection cost regime in which the project developer carries most of the infrastructural costs). Thus, the additional costs become part of the LCoE. The advantage is that in this way, cost of physical transfer and infrastructure investments are integrated into the existing logic of an auction: these projects will only get selected in the auction, if they are still competitive with domestic bids, thus, it makes sense from an infrastructural perspective. Ultimately, this logic puts a price on infrastructure needs. However, this approach obviously decreases the competitiveness of foreign projects and will most likely reduce the scope of cooperation and thus the expected efficiency gains for the participating Member States. Moreover, one might argue that this approach contradicts the EC’s guidance on support schemes (EC 2013 a, p. 16), which states that shallow network connection regimes should be applied, which implies not to “hide” additional infrastructural costs in the LCoE. On the other hand, advising shallow grid connection costs does not prejudice whether network constraints should not be priced into “competition” for support between domestic and non-domestic RES, as long as this happens in a cost-reflective way.

Ultimately, whether to include or exclude potential additional costs related to the physical transfer of electricity depends on the preferences of the participating Member States. If the host country requires physical export of electricity, but the off-taking country has no preference for this, the costs might be included into the bids. If the off-taking country requires the physical import of the RES electricity, it might as well pay for this requirement via in the transfer price agreed in the cooperation agreement, rather than having RES-E producers including these costs into the bid in the auction.



### 3.3 Implementing a separate auction to existing support schemes

As mentioned above, Member States are likely to seek a limitation of the cooperation, i.e. of the degree to which their support scheme is opened. In terms of the support scheme design, this is unproblematic if auctions are already in place. In this case, the amount of RES support for the Cooperation Mechanisms can be defined straight forward. Also quota schemes have a volume cap as an inherent design feature. However, if the RES share to be supported outside the off-taking country is not clearly defined, in an extreme scenario almost all additional RES deployment could take place outside the off-taking country, thereby most likely harming public acceptance of this cooperation. Equally, if the main support scheme of the off-taking country is a FIT or a FIP, an unlimited opening of that support scheme results in a largely unpredictable distribution between domestic and foreign RES deployment, thereby equally deteriorating public acceptance for this cooperation in the off-taking country.<sup>3</sup>

Thus, some type of limitation of the cooperation may be required to define which share of the RES deployment can happen under the cooperation agreement and which share should take place domestically. One option to address this issue is to introduce a fixed cap for installations from abroad, i.e. only a certain amount of RES capacities could enter the support scheme of the off-taking country within a specific time period. However, this option brings about the same disadvantages as any capped support scheme: a first-come first-served principle, creating stop-and-go cycles without selecting which projects would have been most competitive.

Another option to precisely define the scope of cooperation is to introduce auctions to existing support schemes, which has three main advantages. First, this auction might potentially help to increase the efficiency of support under the cooperation (in comparison to a simple cap). Second, it meets the requirements of the EEAG of granting support through auctions, thereby more easily justifying support for RES under the cooperation. Third, introducing auctions as part of the cooperation scheme might be a way to gain experience with auctions, without touching the domestic support scheme.

Despite the advantages of introducing auctions specifically for Cooperation Mechanisms, there is also a challenge related to this solution: the auction is likely to be in competition with the existing support scheme. For instance, if a host country has a successful and uncapped FIT, project developers from that country would only enter the auction if it promises higher revenues than the FIT. The domestic support scheme would thus set the minimum price for the auction. On the one hand, this likely increase of tariffs in comparison to the existing FIT might be interpreted as a decrease in cost-effectiveness, whereas the introduction of an auction aims to produce the opposite outcome. On the other hand, a slightly increased tariff (in comparison to the existing FIT) might simply reflect the additional risk premium, which usually required by project developers as a result of an auction. However, this risk premium and potential increase in support level might be acceptable from the viewpoint of the off-taking country, since it might still realise efficiency gains through these projects

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<sup>3</sup> Moreover, such an uncontrolled opening of a support scheme would put the support scheme of the off-taking country into direct and unlimited competition with the support scheme of the host country. In case the FIP of the off-taking country is more attractive than the one of the host country, no additional installations would be built under the host country's support scheme.

in comparison to domestic deployment. Moreover, the case of a perfectly functioning, uncapped and efficient FIP/FIT is rather uncommon, thus in many cases there is either an explicit cap, or tariffs are too low to incentivise substantial RES deployment. In these cases, implementing an auction in parallel to an existing support scheme should not be problematic, despite the tendency that the main domestic support scheme of the host country will set the lower limit of the bids submitted to the auction.

There are several options to effectively address the challenge of competition between the principal support scheme and the Joint Project auction (Klessmann et al. 2010): First, Member States may limit the Joint Project auction to certain RES technologies that are not included in the existing support scheme in the host country. Moreover, sometimes existing support schemes do not support specific types of technology or sites of (average) quality which might be targeted in the Cooperation Mechanism. The advantage of this approach is that interaction with the existing support scheme in the host country is limited.

Another option to avoid competition with the support scheme of the host country is to limit the auction to a specific region in the host country. The main disadvantage is that such an approach would only mitigate the competition between the domestic support scheme and the newly introduced auction to a limited extent: the FIT/FIP would still serve as minimum price of the auction.

A third option is to choose ex-ante identified technology-specific sites which are not covered by the principal support scheme of the host country, such as pre-selected sites for offshore wind or CSP. On the one hand, this option effectively avoids unintended interactions with the existing support scheme (such as decreased cost-effectiveness). On the other hand, this option is rather limited to a specific type of cooperation, potentially excluding multiple-project framework agreements and/or multiple-item auctions. Moreover, it might also be less attractive for the off-taking country, in case it seeks to significantly lower its cost of target achievement. Thus, a preference for technology development is a prerequisite for implementing an auction for ex-ante identified technology-specific sites.

Despite the challenges discussed above, an auction which is specifically set up for the cooperation between two or more Member States can precisely reflect the main motivations behind the cooperation. It might focus on cost effectiveness, potentially resulting in an auction for a low-cost technology like onshore wind or in a technology-neutral auction. In contrast, it might seek to foster the development of less mature technologies, resulting in a technology and site-specific auction (e.g. to develop offshore wind or CSP).

However, the option of choosing ex-ante identified projects faces a fundamental challenge, which relates to the role private investors in Joint Projects. The EC recalls in its guidance on the Cooperation Mechanisms that "Article 7.1 of the Directive explicitly mentions the possibility for Member States to involve private operators in joint projects. Joint projects exclusively driven by Member States will be a rare exception. Discussions so far have demonstrated that industry actors play a decisive role in identifying potential cooperation projects" (EC 2013b: 20). It rightly adds that a "private company can be expected to have more detailed first-hand knowledge of the renewable energy sources at its disposal, their relative costs, the nature of the market – both in its home country but conceivably also elsewhere in the EU" (EC 2013b: 20).

However, we have argued that auction schemes are the most suitable approach to organise the access of project developers to support under a cooperation agreement. In this context, the question arises how specific project developers should engage in the Cooperation Mechanisms, while auctions seek to induce competition among bidders, thus, to avoid preferential treatment of specific project developers. There are several ways to understand and to address this challenge:

Promoting the Cooperation Mechanisms as a private sector company (or consortium) implies a significant risk of sunk costs for the project developer, in case he was involved in the pre-development of a Joint Project and of the tender specifications without getting selected in the auction in the end. This might be understood as a regular risk of engaging in the pre-development of large-scale infrastructural and energy projects.

Second, this challenge might pose a risk on the public entity that implements the auction: if only the previously involved private sector company is capable of seriously participating in the auction, competition has been undermined, potentially resulting in higher support levels than actually required. Moreover, an auction is discriminatory, if tender specifications have been developed in collaboration with a private sector company, which is the only one able to fulfil the specifications and thus to win the auction. This would clearly contradict the EEAG, which states that tender procedure ought to be non-discriminatory.

Third, one might have to acknowledge this fundamental tension between the requirement of inducing actual competition in auctions on the one hand and to allow (or even support) private sector involvement in the pre-development of, for instance, Joint Projects on the other hand. This tension cannot be fully dissolved: private sector companies have a risk of sunk costs (i.e. the risk of not winning the auction) and at the same time they will evidently intend to increase their chances to win a tender of a Joint Project. In this case one option is to add additional evaluation criteria to an otherwise purely price-based auction. For instance, references proving technical capacities of a company to implement a large-scale project could be included into the objective and technical evaluation of the bids. Thus, on the one hand, companies that significantly invested in the pre-development of a Joint Project could improve their chances of winning bid, while at the same time, other companies could compensate for that advantage with other technical capabilities and/or lower prices. Moreover, this tension softens, if there are several project developers that pre-develop specific projects. The tender implemented tender could then choose among these projects.

### 3.4 Ensuring preparedness for cooperation when setting up auctions as the principal support scheme

As discussed in the previous section, Member States can choose to set-up an auction that is specifically designed for cooperation with one or more other Member States and that is implemented in parallel to existing support schemes. In contrast, new auction schemes are likely to be introduced as the principal support scheme in several Member States as a consequence of the recently published EEAG. Specific precautions can be taken and design options might be integrated in such new auction schemes from the beginning to accommodate cross-border cooperation, even if no cooperation agreement has been defined at this stage.

The design elements partially overlap with those discussed in section 3.1.3 and 3.3. However, they might be given different weight than in the previously discussed cases. The first and most obvious feature is that the legal act introducing the auctions needs to include a clause that allows for the option of cooperation. The main advantage of including legal provisions for cooperation already at this stage (and the main difference to the discussion in section 3.1.3) relates to political and public acceptance. If barriers on national level (e.g. regarding legislation processes) are addressed already at the stage of implementing the auction on national level, legal complications and public acceptance issues can be avoided at a later stage and Member States can fully concentrate on defining the cooperation agreement. Thus, a step-wise approach serves to avoid having to deal with too many barriers at the time of negotiating the cooperation agreement.

Moreover, the implemented auction might include a limitation regarding which amount is auctioned internationally (similar to the decision taken under 3.3). This might be a fixed amount (e.g. 400 MW annually) or a percentage of the envisaged RES deployment (e.g. 10% of national RES deployment).

Third, already at the stage of implementing an auction, the Member State might want to decide whether it seeks to implement specific criteria for the auctions from abroad or whether one single auction scheme is applied for domestic projects as well as for projects which are located outside of the country's territory. As discussed in 3.1.3, the latter option increases competition, but might be problematic for reasons of public acceptance. Introducing separate lots in the auction for international and for domestic projects might result in different auction designs, for instance, in a technology-specific auction for domestic deployment. The part of the auction that is opened for international bids might in turn be technology-neutral if cost-effectiveness is the main interest in providing access to the auction for international projects.

The auction design might include prequalification criteria, which have an influence on the suitability of an auction for international cooperation (as discussed in section 3.1.3). As discussed above, prequalification criteria can either be specified for projects from abroad. Alternatively, the requirement of having a public authority in potential host countries confirming certain prequalification criteria is an option. However, in general prequalification criteria can be very country-specific and they introduce transaction costs, especially in the realm of international cooperation. Therefore, for an auction to be specifically suited for international cooperation, a design which rather relies on penalties to ensure project realisation than on prequalification requirements might be chosen. This improves flexibility for bids from abroad and reduces transaction costs. However, the right balance between prequalification criteria and penalties to ensure project realisation is a delicate task, which should be adequately analysed (also see Held et al. 2014, pp. 44-74).

A special design element that might be adapted for international cooperation refers to ceiling prices of the auction (as discussed regarding the Dutch support scheme in Gephart et al. 2014)<sup>4</sup>. If such ceiling prices are based on an LCoE calculation (in order to set them as precisely as possible), the question arises from the beginning how to deal with these LCoE calculations for projects from abroad.

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<sup>4</sup> In the mentioned case study, the question of adapting LCoE calculation has been analysed in an existing auction scheme. However, in this report we discuss this aspect under "newly introduced auction schemes" because it is a design element which seems specific to the Dutch support scheme but which is recommendable for newly introduced auction schemes.

There are several options to address this issue. First, the LCoE calculation might be replaced by a “political” category which simply refers to “projects from abroad” and which defines a ceiling price which is perceived as efficient by the off-taking country. However, this option would discard the established LCoE logic for defining the ceiling prices. Another option is to fully adapt the technology-specific LCoE calculations to all technologies from all countries that might enter into such a cooperation. However, this would significantly increase transaction costs as the LCoE calculation (and potentially related expert consultations) are resource intensive. Moreover, information on specific elements of the LCoE in other countries might simply not be available. A third (and potentially the most feasible) way to prepare such calculations for international cooperation is to reduce the adaptation of LCoE to specific elements, such as the resource availability. This reduces the transaction costs and in addition provides an incentive for potential host countries to reduce cost drivers (such as costs for licencing procedures) to make projects on its territory more competitive.

Auctions usually provide access either to FIT or FIP. The EC considers FIP best practice for market integration (as stated in the EC’s guidance on support schemes and the EEAG), thus, they should also be given preference in an auction design. However, if other countries do not have FIPs, they would have to introduce FIPs in order for project operators to participate in the auction of the off-taking country.<sup>5</sup> Even if both countries have a FIP in place, both FIPs might have to be aligned (e.g. monthly or yearly average prices, etc.). On the one hand, this might pose a barrier, which becomes more complex if more than two parties join the cooperation. On the other hand, this is exactly the effect that the Cooperation Mechanisms can have regarding increased convergence of national support schemes.

### 3.5 Scaling up of Joint Projects to Joint Support Mechanisms

First and foremost, the Cooperation Mechanisms are a means to improve the efficiency of Member States’ target achievement. If they are scaled up, efficiency gains as well as all other effects will increase as well. While the easiest-to-implement type of cooperation is Statistical Transfer, Member States opting for Joint Projects seek to establish longer term cooperation. Once the cooperation through Joint Projects has successfully been established, Member States might want to scale up the cooperation to gain more benefits from it.

Cooperation between Member States can be scaled up in several ways. First and on the most general level, cooperation can start with smaller volumes and Member States simply increase the volumes of RES-deployment under the cooperation agreement or expand the cooperation to more technologies (e.g. moving from off-shore wind to technologies that are likely to have a larger share in RES-deployment, such as PV or onshore wind).

Second, Member States can move from single-item to multi-item auctions (granting support to several RES projects at the same time). In a first step, Member States may have implemented a single-item auction, which is probably related to pre-selected sites and which might refer to a “show-case project” (as discussed in Kitzing et al. 2014). Once the cooperation is established, the required

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<sup>5</sup> This is equally applies to the case of capacity payments, which are auctioned in some countries.

administrative procedures are in place and functioning well and the public has been convinced of the benefits of this cooperation, multi-item auctions might be implemented in which a capacity/volume is auctioned and multiple projects are selected to meet the auctioned demand.

Third and closely related to the second option, Member States could move from cooperation agreements that focus on a single-item auction or a single multi-item auction to a framework contract which defines an envisaged volume to be tendered annually (e.g. two auctions per year of at least 300 MW). This step would stabilise the cooperation and increase investment security under the cooperation agreement. Fourth, Member States that already have a functioning Cooperation Mechanisms in place might include additional Member States into this cooperation, e.g. thereby moving from bi-lateral to multilateral cooperation contracts.

In case of scaling up the cooperation along these lines, the effects discussed in section 2 would increase as well. The efficiency of the off-taking country's support scheme would increase and the efficiency of the national support scheme in the host country would decrease. This would have to be taken into account for the adequate cost-benefit sharing between the Member States, potentially resulting in adjustments in case of scaling up the cooperation. Moreover, existing support schemes would have to be increasingly adapted regarding all issues outlined in chapter 3.

However, apart from providing efficiency gains, the Cooperation Mechanisms can also serve as a means to increasingly coordinate Member States' support schemes. Thereby they can contribute to facilitating the creation of the internal electricity market without having to rely on enforced top-down harmonisation of support schemes (also see Gephart et. al. 2012, Ragwitz et al. 2012). From this brief study, several specific elements have become evident that might be increasingly coordinated under a Cooperation Mechanisms and thus might converge to a greater extent in the case of scaling up international cooperation. Convergence might be increased, for instance, if two countries that have a FIP might have to align design details of the FIP in the course of implementing the Cooperation Mechanism (e.g. regarding monthly or yearly average prices). On a more general level, implementing the Cooperation Mechanisms will result in participating Member States discussing the design of their support schemes in detail, potentially resulting in the identification and adaptation of best practices. Moreover, general preferences of Member States regarding their envisaged energy mix might occur in the course of implementing and scaling up the cooperation.

## 4 Conclusion

In this report we have discussed general and specific aspects that the Cooperation Mechanisms have on support schemes. Moreover, we have discussed how RES support schemes can be adapted to accommodate international cooperation. For instance, Cooperation Mechanisms have effects on the availability of RES potentials for the participating Member States. Such effects initially lead to an increased cost-effectiveness in the off-taking country but to a decreased cost-effectiveness of the domestic support scheme in the host country. However, they have to be interpreted as part of the overall efficiency gains through the Cooperation Mechanisms and will equally be addressed in the cost-benefit sharing of the Cooperation Mechanism.

Moreover, Cooperation Mechanisms have effects on the proper functioning of nationally organised support schemes, which are different according to each scheme. To accommodate international cooperation, national support schemes may need to be adapted. The report has discussed several options on which adjustments might be required and has shown that the interactions between the Cooperation Mechanisms and national support schemes can be successfully addressed.

The report discusses different starting points for entering into cooperation, which influence how the support schemes should be adapted to the cooperation. Either a Member State uses its existing support scheme for the cooperation and thus “opens” it for installations from abroad or separate auctions can be established to complement existing support schemes. In this case interactions between the newly implemented auctions and the existing support schemes have to be taken into account and addressed.

Against the background of the recently published EEAG, several Member States are likely to implement new auction schemes. In this case these auctions can be prepared to accommodate one of the cooperation mechanisms more easily. If certain issues related to international cooperation are dealt with already at the stage of implementation of a national auction scheme, the following negotiations with other Member States might be less flexible but also less complex (thus more likely to be implemented).

In principle, the Cooperation Mechanisms serve to achieve national RES targets more efficiently. Once they are in place and functioning well they might be scaled up, thereby increasing efficiency gains as well as other benefits that Member States seek to realise through them. Moreover, they also potentially facilitate greater convergence of RES policies among Member States, ranging from very specific aspects of support schemes to broader national preferences regarding RES support. This aspect is, from a European perspective, the most interesting one because scaling up the cooperation would equally increase the convergence of national support schemes. This would ultimately result in a more suitable context for the creation and deepening of the internal energy market.

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