North Seas Energy Cooperation

Support Group 3

Recommendations to NSEC Ministers and the Energy Commissioner

Support Group 3 discussed challenges and solutions for support models and financing in the context of joint[1] and hybrid[2] projects, in particular: support models, EU funding, cost-benefit sharing approaches and the impact of hydrogen production.

Support models

- We recognise that substantial coordination efforts are necessary to set up joint and hybrid project. Various complex topics require discussions – *inter alia* – the project selection methodology, support scheme design, the allocation of support expenditures and additional costs and benefits, target accounting, and the type of support cost recovery models.
- We agree that there is variety of options to set up support models for joint and hybrid projects. Four main elements and respective design choices were identified: bidder selection and auction design, grid access scheme, enumeration model as well as payment and cost recovery.
- We agree that EU guidance for the support of joint and hybrid projects should be developed, which may also serve to define support-related elements of a "blueprint" for Intergovernmental Agreements (IGAs) for offshore cooperation.
- We agree that the use of EU funds, such as the new funding line under CEF for Cross-Border Renewables projects and the EU Renewables Financing Mechanism, should be further strengthened in order to facilitate the realisation of joint and hybrid offshore projects.

Cost-benefit sharing methods

- We recognise that an unbalanced allocation of costs and benefits across Member States and stakeholders is as a major barrier for implementing joint and hybrid projects. Therefore, we acknowledge that establishing a "win-win situation" for the cooperating Member States is a prerequisite for a successful implementation of joint and hybrid projects.
- We agree that cost-benefit sharing methodologies should build on those provisions of the RED II regulation that focus on generation assets (including investment costs, operational costs and costs related to grid connection) and existing cost benefit allocation methodologies for infrastructure assets under the TEN-E regulation.
- We call for the development of guidance on combining CBAs and CBCAs for generation assets with those for infrastructure assets as a basis for corresponding IGAs for joint and hybrid projects. Such

[1] Joint Projects distribute costs and benefits between Member States by the means of an Intergovernmental Agreement. This includes, but is not limited to, joint projects as defined in RED II.

[2] Hybrid projects combine offshore wind power generation with transmission of electricity via interconnector (two components).

guidance may also serve to define cost-benefit related elements of a “blueprint” for IGAs on offshore cooperation.

Impact of hydrogen production

- We acknowledge that hydrogen technologies may have the potential to support the integration of large volumes of offshore wind power in the long term (by 2050).
- We recognise that there are multiple options for combining offshore wind with hydrogen production; electrolysers may be located onshore or offshore, and may have either a direct connection to the offshore wind project or a direct connection to the onshore grid.
- We also recognise substantial additional investment costs related to electrolysers and hydrogen infrastructure assets. Therefore, combining offshore wind with hydrogen production is likely to require additional financial support apart from the support needed for the offshore wind park.
- We acknowledge that different models may be applied to ensure (additional) financial support. We identified three main funding models as examples: (1) creating a market obligation based on a quota for (green) hydrogen, (2) dedicated support for hydrogen through up-front investments for electrolysers and hydrogen infrastructure assets and / or specific operating support for hydrogen production, and (3) providing combined operating support by financing hydrogen production and the offshore-wind electricity generation through the RES support schemes..
- We agree that the suitability of financing models depends on location (onshore versus offshore) and the grid connection of the electrolyser (to OWP or to onshore grid).
- We suggest that EU financing instruments may foster the possibility of combining hydrogen production with joint and hybrid projects.
- SG3 acknowledges that in particular the RED II requirements for the accounting of “green” hydrogen to the renewable energy transport target, which will be further specified by the European Commission in a delegated act by 2021, may affect considerations on the different options of combining offshore wind with hydrogen production, e.g. with regard to location and possible grid connection.

Annex

Conclusions on support models for Joint Projects

1. **SG 3 recognises that there is a shared view on the available options to set up support models for joint offshore projects.**

   Support models for joint offshore projects entail the following **elements** and respective design choices as examples:

   (1) Bidder selection / auction design: Site-specific or decentral, qualification requirements, penalties, etc.
   (2) Grid access scheme: TSO-led or developer led grid development, connection point, deep or shallow charging
   (3) Remuneration model: Fixed premium, sliding premium, symmetric CfD, reference price determination, etc.
   (4) Payment and cost recovery: State budget, renewables levy, network tariffs (in case grid connection is paid for)

Support model element	Design choices (examples)
Auction / bidder selection	Site-specific or decentral, qualification requirements, penalties, etc.
Grid access scheme	TSO-led or developer led grid development, connection point, deep or shallow charging
Remuneration / support model	Fixed premium, sliding premium, symmetric CfD, reference price determination, etc.
Payment and cost recovery	State budget, RES levy, network tariffs (in case grid connection is paid for)

Figure 2: Overview of support model elements and respective design choices

Elements 1.-3.: two basic suitable options have been identified:

a. Using existing schemes: this can be either the scheme of the hosting or the contributing country
b. Establishing a joint scheme: the participating countries jointly decide on the design and set-up. This includes identifying national or regional institutions that operate the scheme.

In choosing a suitable option, cooperating countries may also take the host (or contributing) country's schemes as a starting point and define deviating design choices for individual aspects.

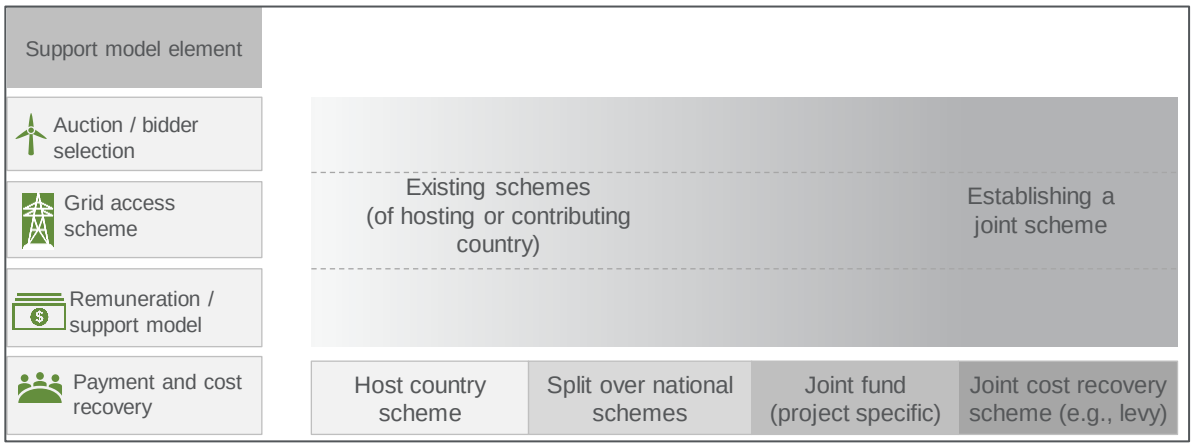


Figure 1: Approaches to support model cooperation

Element 4 (payment and cost recovery model for joint project): Member States may choose different mechanisms to recover direct or indirect support costs, such as the costs resulting from support payments to successful bidders, if any. SG 3 acknowledged that the **available options** for cost recovery are the following:

a. The host country's support scheme may be used to recover the support costs of the joint project; in this case financial contributions from the cooperating Member States may be collected separately.

b. The cost of the joint project may be split among the participating countries' support schemes, i.e., each country covers a share of the support costs through its national support scheme.

c. A joint fund may be established for a specific joint project. Support funds by all participating Member States are pooled in the fund.

d. A joint support scheme may be established, recovering the support costs across all participating Member States.

As an additional option, **the use of EU funds** for project with EU added value **should be further analysed**, such as the new funding line under CEF for Cross-Border Renewables projects and the EU Renewables Financing Mechanism.

2. The identified options could be included in a guidance document for joint and hybrid offshore projects and may serve to develop elements of a blueprint for offshore cooperation.

Conclusions on Cost-benefit sharing approaches in Joint Projects

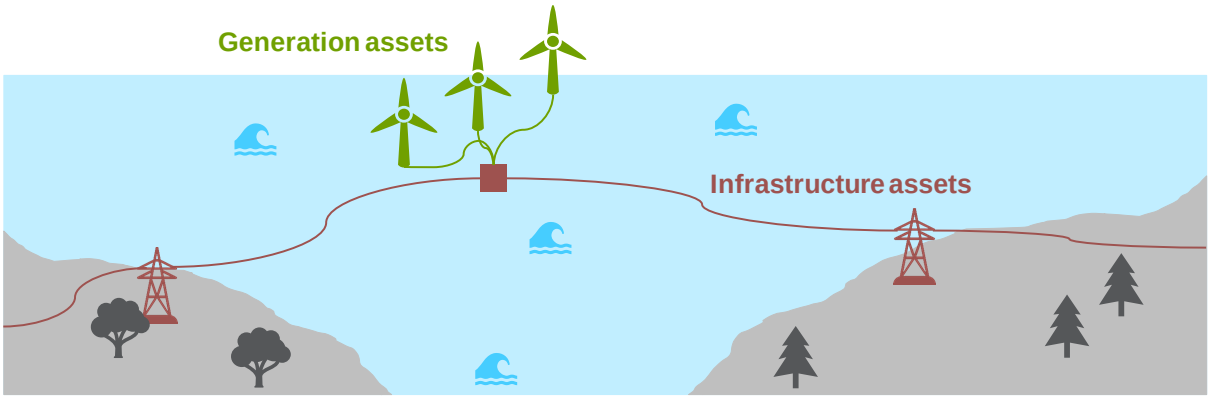
1. The unbalanced allocation of costs and benefits across countries and stakeholders has been identified as a **major barrier** for implementing joint and hybrid projects.

   Therefore, the SG 3 acknowledge that establishing a win-win situation for all cooperating Member States compared to a purely national approach is a prerequisite for the implementation of a cross-border offshore project.

2. While actual support costs for offshore wind projects are decreasing, the importance of **infrastructure and system integration costs** is increasing.

3. **Mechanisms for reallocating costs and benefits** among the cooperation partners need to be further developed to support the discussion and the agreement among the cooperating countries.

   Such mechanisms should build on the provisions for cooperation mechanisms under REDII that focus on generation assets (including investment costs, operational costs and costs related to grid connection) and existing cost benefit allocation methodologies that focus on infrastructure assets (transmission/interconnection), such as those developed under TEN-E and CEF.



   - Generation assets: SG 3 agreed that there are **three basic options** to redistribute costs and benefits:

     a) **Indirect compensation** between the cooperation Member States via the distribution of RES statistics only
     b) **Direct compensation** between the cooperation Member States via compensation payments
     c) **A mix of direct and indirect compensation**, i.e. via RES statistics and compensation payments.

   - Infrastructure assets: SG 3 agreed that the applicability and complementarity of established processes of cost-compensation for transmission assets and interconnectors between TSOs, for example the CBCA methodology developed under the TEN-E regulation should be further investigated.

4. The representatives agree that further guidance should be developed with regard to developing standardised approaches combining existing methodologies of cost-benefit sharing for generation and transmission assets as complementary elements of the CBA exercise. This could be the basis for corresponding IGAs. Such guidance may be crucial to facilitate the process towards the actual im-

plementation of offshore cooperation projects. Such standardised approaches may serve as a menu of options for cost-benefit related elements of a blueprint for offshore cooperation.

Next steps: Discussion on impact of additional factors and potential bidding zone configuration; blueprint

Conclusions on support models for Joint Projects

The potential role of hydrogen in the North Seas

- SG3 recognises that hydrogen as well as other power-to-X and storage technologies may have the potential to support the integration of large volumes of offshore wind power and the full decarbonisation of the energy system by 2050. On the long run the investigation of cross-border opportunities for cooperation in the North Seas should therefore take due account of potential opportunities of combining offshore wind power with hydrogen production. .
- Using parts of the North Seas offshore wind power for hydrogen production has the potential to reduce congestion in the onshore transmission grid and the need of onshore transmission capacity.
- SG3 acknowledges that additional investment costs are related to electrolysers and the hydrogen infrastructure (storage and transportation). Therefore, combining offshore wind with hydrogen production is likely to require additional financial support apart from the support needed for the offshore wind park.

Options of combining offshore wind with hydrogen

- SG3 recognises that there are multiple options for combining offshore wind with hydrogen production. The electrolyser may be located either onshore or offshore and may have either a direct connection to the offshore wind project or connected direct connection to the onshore grid.
- The most suitable project configuration will be context specific and may depend on the location of the OWP (far-offshore or nearshore), the location of hydrogen demand centres (near or far from the coast), whether the electricity for the electrolysis should be exclusively delivered from the OWP or from the grid and the local conditions for the infrastructure needed to store and transport hydrogen.
- SG3 acknowledges that in particular the RED II requirements for the accounting of "green" hydrogen to the renewable energy transport target, which will be further specified by the European Commission in a delegated act by 2021, may shape considerations on the different options of combining offshore wind with hydrogen production, e.g. with regard to location and possible grid connection.
- SG3 calls for continued work on investigating suitable options of combining offshore wind and hydrogen production at project level as well as investigating how to align the offshore wind expansion and hydrogen infrastructure at higher level.

Financing models and impacts on cooperation

- SG3 acknowledges that different models can be applied to finance the (increased) need of support if hydrogen production is added to offshore wind power. Fundamental models of financing hydrogen are – *inter alia* -:
    1) creating a market obligation based on a quota for (green) hydrogen,
    2) dedicated support for hydrogen through up-front investment support for the electrolyser and hydrogen infrastructure and / or operating support for hydrogen production,
    3) providing combined operating support by financing hydrogen production and the offshore-wind electricity generation through the RES support schemes.
- A central question in the design of a financing model for hydrogen is who will eventually bear the costs of support as costs can be passed on to the end-users of gases, the taxpayers or remain with the

electricity sector by passing costs if, for example, costs are passed to the levy payers of the existing RES support mechanisms.

- The suitability of financing models depends on location (onshore versus offshore) and the grid connection (to OWP or to onshore grid).
- In addition, SG3 takes due account that the potential impacts of hydrogen production on the allocation of costs and benefits of a cross-border OWP between the cooperating countries may require detailed assessment and may have implications on a mechanism to reallocate costs and benefits between countries.
- SG3 emphasises that EU funds could reduce the complexity of achieving a fair cost-benefit distribution among cooperating countries for joint projects involving offshore wind and the production of green hydrogen. To this effect, calls for proposals within EU funds could be developed that combine offshore wind and hydrogen for instance in the calls for projects in the PCI process, the newly established cross-border renewables project funding line in the new CEF regulation, the Union renewable energy financing mechanism or the InvestEU scheme.

Challenges for support schemes and financing

Challenges:

- **substantial coordination efforts** on various different and complex topics, for instance:
  - methodology to select projects
  - support scheme design
  - allocation of support expenditures and additional costs/benefits
  - target accounting: statistical allocation of the produced renewable energy
  - type of support cost recovery model (joint/separate funds/schemes)

- **impact of additional cost factors** on distribution/re-allocation of costs and benefits, such as grid integration cost and costs for integration of new technologies (hydrogen)
- **impact of potential bidding zone configuration** on support schemes and financing of joint and hybrid offshore projects
- **impact of new financing opportunities** for joint and hybrid offshore wind projects

Next steps:

1. **Agreement on a menu of design options and common principles for joint (including hybrid) offshore wind projects [as simple as possible]**

   → Envisaged result: Common design principles and design options that standardize and facilitate the set-up of joint offshore wind projects

2. **Assessment of additional aspects**

- assess the impact of potential bidding zone configuration on support schemes and financing of joint and hybrid offshore projects [coordination with SG 1]
- assess additional financing opportunities for joint and hybrid offshore wind projects, in particular through the Connecting Europe Facility, the Union renewable energy financing mechanism under the Regulation on the Governance of the Energy Union and the Invest EU Program