The North Seas Countries’ Offshore Grid Initiative

Market Arrangements under the Virtual Case Study

Deliverable 5 - final report

Working Group 2 – Market and Regulatory issues

8/11/2012
Executive Summary

In order to meet our fifth deliverable as per the WG2 Work Plan for 2012, WG2 must develop proposals for market mechanisms to facilitate the increased penetration of renewable generation. We propose to adopt this using a two-fold approach:

- Consider the implications of market coupling for offshore renewable energy sources (RES) and produce interim report for November 2012.
- Consider the interactions between market arrangements and renewable support schemes and combine with preliminary findings to produce initial conclusions for 2013.

This paper primarily focuses on the first issue. The first deliverable of WG2 identified a need to clarify the articulation between two principles:

- Priority Access and Priority Dispatch for RES as per the Renewables Directive.
- Congestion Management Guidelines and EU Target Model – the key issue being that electricity should flow according to price differentials.

The need for clarification of the articulation between the two principles mentioned above has been identified for all sorts of assets being used both for connection of offshore generation and cross-border trade. WG2 has used Virtual Case Studies to consider a number of options. In this paper, only the day-ahead timeframe has been considered, and the conclusions are subject to a number of hypotheses. In addition to the principles mentioned above, other criteria, such as social welfare, stability of and compatibility with legal framework and incentive value have also been taken into account in the analysis.

The initial conclusions of the study are the following:

- Even if it is connected to several national markets (for example by being connected to an interconnector (IC)), an Offshore Wind Generator (OWG) should only be allowed to bid into one of them.
- In case of congestion between OWG generation and cross-border trade on the same assets, the OWG generation should be prioritised, even when this leads to decreased day ahead interconnection capacities.
- The OWG should be charged for the asset connection in the same way as radially connected OWG, i.e. cost-based charges or costs being socialised. It should not need to buy interconnection capacities to get access to the market into which it is to bid.
- Capacities which are not used by the OWG should be accessible to all market participants as interconnection capacities.

These conclusions are to be confirmed through further studies, in particular on the influence of the RES support scheme applied, the articulation with other timeframes such as intraday and balancing. The classification and order of development of assets and the use of flexibility mechanisms should also be subject to further studies.
1. **Analysis criteria and hypotheses**

1.1. It is important to note that all our analysis must respect the principles of:

- **Priority Access** and Priority Dispatch for RES as per the Renewables Directive\(^1\).
- **Congestion Management Guidelines and EU Target Model** – the key issue being that electricity should flow according to price differentials. In this paper, we have focused on the Day-Ahead timeframe, for which Market Coupling is the target model, as defined in Congestion Management and Capacity Allocation Framework Guidelines.

1.2. Moreover, other important criteria for analysis are:

- Compatibility with current national legal frameworks (as far as applicable frameworks exist)
- Social welfare – generation costs, costs and benefits paid and received by grid users including resulting market price
- Consistency of the regulatory framework (e.g. non-discrimination), i.e. an OWG connected to a hybrid structure is treated the same way as any other OWG
- Incentive value – is the proposed arrangement acceptable for the OWG? For the IC operator? The most efficient behaviour should be incentivised (i.e. combined assets being preferred to radial connections plus IC when this is economically more attractive).

1.3. In this paper, we assume that the OWG is sensitive to the market price, i.e. that it is an active market player. Although this is not the case in all NSCOGI countries currently, it will be when offshore wind (and other energy technologies) becomes competitive and support schemes are no longer needed. Moreover, some support schemes make the OWG price sensitive.\(^2\)

1.4. Another assumption through the paper is that the marginal cost of the OWG is lower than the market price in both markets A & B, as it is close to zero. If one of the markets has an oversupply of intermittent energy, conclusions would need more analysis.

2. **Virtual Case Study 1 (VC1) – Basic Model**

2.1. There are two countries, A and B each with their own hub (market). The two markets are joined by an IC with a capacity of 1000MW. An OWG (capacity 200MW) is attached to this IC. The entire connection between the OWG and country B is defined as an IC. The 200 MW portion of the IC

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\(^1\) The Renewables Directive says that **priority access implies that assurance is given to connected generators of electricity from renewable energy sources that they will be able to sell and transmit the electricity from renewable energy sources in accordance with connection rules at all times, whenever the source becomes available.** It gives MS the alternative to provide either guaranteed or priority access. Priority access is considered to be (implicitly) given in support systems including a purchase obligation (FIT systems), while guaranteed access is considered to correspond to a situation where the RES electricity is sold on the market: In the event that the electricity from renewable energy sources is integrated into the spot market, guaranteed access ensures that all electricity sold and supported obtains access to the grid, allowing the use of a maximum amount of renewable energy sources from installations connected to the grid. For the sake of convenience the term priority access is used here to refer to both situations. Priority Dispatch refers to the obligation on transmission system operators to give priority of dispatch to renewable generators insofar as secure operation of the national electricity system permits as set out in Article 16(2)(C) of the RES Directive.

\(^2\) The impact of the different support schemes applied to renewables will be discussed in further work, see also par. 10.3.
between the OWG and country A is classified partly as a "virtual" grid connection, partly as an IC (cf. Figure 1).

Figure 1: Virtual Case Study 1

3. **Option 1: OWG in National Hub**

3.1. In this example, the OWG is domiciled in hub A (see Figure 1). The OWG is treated as any other trader in Hub A.

3.2. The trading mechanism can be described as follows:

- Traders in A and the OWG bid into Hub A; Traders in B bid into Hub B
- Market coupling algorithm establishes the prices in Hubs A and B and therefore determines the direction of flows across the IC, taking into account available IC capacity (B>A depending on the volume generated by the OWG).
- Traders in A and the OWG receive the price in Hub A; Traders in B receive the price in Hub B.

Figure 2: OWG in National Hub

Note: The green arrows indicate the direction of the commercial flows rather than the physical flow. The physical flow is 800MW out from A, 1000MW into B.

3 The price the OWG finally receives will depend on the applicable support scheme.
3.3. There are two possible outcomes that will emerge from this scenario:
   1. Price in Hub B is greater than Hub A → **prevailing flow is from A to B** (as the example above)
   2. Price in Hub A is greater than Hub B → **prevailing flow is from B to A** (commercial outgoing flow from B if OWG produces at its full capacity: 800MW)

3.4. We assume that the OWG is accepted into the merit order in Hub A on the basis that it will bid in at a zero (or negative) price given its low/zero marginal costs. Therefore, if the **prevailing flow is from A to B**, and if the OWG is producing to capacity, the OWG will supply 200MW to A’s network, with 1000MW exported from A’s onshore network (including the 200 MW of the OWG which physically is sent directly to hub B) to hub B. In this case:
   - **Priority access**: RES will be dispatched and therefore the outcome is consistent with the objectives of priority access.
   - **Congestion Management Guidelines** (CMGs): day ahead physical flows are rational, based on the prices determined via market coupling.
   - **Non-discriminatory** – OWG is treated like any other generator (OWG or not) which would have to be domiciled in a particular hub (and can only access prices in another hub if it buys long term capacity or agrees a Contract for Difference with a counter party).
   - **Cost efficiency** – efficient physical flows guarantee lowest possible market prices (as long as the offshore generation is taken into account in the Day Ahead market, i.e. guaranteed at an early stage), lowest-cost generation (OWG) is used.

3.5. However, issues may arise if the **prevailing flow is from B to A**. In this case (again assuming the OWG is generating to full capacity) there is a conflict between cross-border flows and the transmission of the OWG to hub A, both needing access to a congested asset. There are a number of routes available:
   a) OWG must be constrained off the system and be compensated accordingly or;
   b) OWG, in the direction B to A, participates in the long-term capacity market and pays for firm access to the IC (unused capacity released for cross-border flows as soon as possible: Day Ahead, Intraday markets) or;
   c) Priority dispatch with reservation of variable capacity on the IC. The OWG is not charged for the use of the asset in any way – except use of system charges.

3.6. If we go down route (a), this implies IC capacity is guaranteed regardless of the OWG. **This raises a serious question of compatibility with the rules of Art 16 of the Renewable Energy Directive (RED) and in particular the provisions requiring minimising curtailment of electricity from RES.**

3.7. However, this may make an integrated structure such as VC1 more attractive for a merchant IC, than a situation where the OWG does not pay for the access, as it means they will be able to offer the full IC capacity to the market at all times.
3.8. If the OWG is constrained off the system, there is then a question as to how much compensation it should receive and who should pay it. Provided the OWG is paying some form of transmission access or use of system charge (which is the case in most NSCOGI countries), it has the right to compensation in the event of curtailment and it is the responsibility of the system operator (SO) to provide this compensation.

3.9. As the renewables targets of the RED are based on physical supply, curtailing wind may also present difficulties in Member States that rely on wind to meet their renewables targets. Indeed, payment of RES support schemes are based on physical production in some Member States with feed in tariffs.

3.10. Moreover, from a global cost and price perspective, constraining OWG in order to maintain maximum IC capacity results means, as long as the market price (=marginal production cost) in Hub B is higher than the OWG marginal cost, that more expensive generation in Hub B will be needed for export (+200MW). This will have several negative consequences:
   - Higher total generation cost
   - Higher market price in Hub B – the price in Hub A is not being influenced
   - This higher market price in Hub B will cause a decrease in the value per MWh of the IC capacity. The decreased MWh value will tend to decrease the total income of the IC operator. However, as the available capacity is increased, this will tend to increase its total income. Therefore, the consequence on the total income of the IC operator is uncertain, although intuitively one might think that he would prefer to maximise available IC capacity.

3.11. If we now consider the alternative of route (b) whereby the OWG pays for firm access to the IC (guaranteed at least up to day-ahead), the question becomes how the charge is calculated (on which basis).

3.12. One option (b1) would be for the OWG to purchase long-term capacity into Country A via the IC through an explicit auction. However, this exposes the OWG to a market risk to which radially connected OWG are not exposed to the same degree, as only OWG connected to combined infrastructure depend totally on having IC capacity to sell their generation. Finally there is also a question of what length of time ‘long-term capacity’ is referring to (monthly/yearly/15-year product) and the nature of the capacity rights – i.e. physical or financial transmission rights could also be an important factor.

3.13. Another option (b2) would be an access price based on construction and maintenance/operation costs, accessible only to concerned OWGs. This approach would be, from

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4 Possibly this would be the IC operator – because the OWG is paying the IC operator for access to its system. The terms of access would then have to be negotiated between the IC operator and the OWG. In case it could not access the system – the IC operator would be responsible for paying compensation.

5 In Germany OWG do not have to pay a system charge nor a fee for the transmission access. On the other hand each RE-operator receives a compensation by the system operator, if his RE-installation is effected by feed-in management measurements. This means, the system operator takes over the technical control of the installation and the installation cannot feed-in all produced electricity or is switched-off for as long as there is an overload in the grid-system.
the OWG’s point of view, similar to the current model in GB where offshore radially connected
generators pay a TNUoS (use of system) charge which effectively gives them firm access to the
network, or similar to the currently applied connection costs (one-shot) applied to radially
connected OWGs in France, the difference between the two being merely how the price is paid
(once for all or smoothed out on a price per used MWh).

3.14. However, in the case of a merchant IC, the IC operator will wish to maximise revenue and
might therefore prefer the full market value of the capacity (if total income is expected to be
higher – see point 3.10). When necessary this might be solved by compensating for the lost
opportunity (how and by whom is yet to be defined). In any case, if the connection and terms of
connection/access for the OWG is decided early enough to be integrated in the IC business plan
this may not be an issue, as the constructed IC capacity may be adjusted accordingly.

3.15. Under whichever option, at the day-ahead stage the OWG would nominate its flows and
should it not expect to generate its full 200MW the remaining capacity would be made available
to market coupling.

3.16. A question would also arise as to the compatibility with the rules in the RED, in particular
Art. 16(6)-(7) which forbids charging rules discriminating against RES if this leads to less
favourable terms compared to conventional generators.

3.17. So as not to be considered discriminatory as against other IC users, one might argue that
the IC capacity would have to be made available to all users, for example through an auction.
However, with the OWG being the only generator to depend entirely on the use of the IC to
transport its generation to the market, the situation seems to be sufficiently different from other
generators to justify a different treatment.

3.18. Finally if we look at option (c), the RES generation will be given priority dispatch over any
other generation and is guaranteed firm access rights to the system. The difference to (b) is that
it doesn’t pay for these access rights, as they are guaranteed as part of the RED and socialised by
all grid users through tariffs (regulated ICs) or through possibly decreased benefits (merchant IC,
 cf. point 3.10), which possibly compensated by all grid users (point 3.14). IC capacity would be
curtailed based on the day-ahead wind power forecast in order to accommodate this and all
remaining capacity would be given to the market coupling mechanisms for use in the day-ahead
spot price calculation. This would reflect the situation in Denmark where there is priority feed-in
for RES without other charges (connection charges…) than use of system charges paid by OWG
and no curtailment of wind except in times of emergency operation of the grid6.

3.19. In terms of non-discrimination, if the IC is operated by the TSO (as in Denmark) (c) may be
a solution. This is due to the fact that, as in solution b), equal access for all market players is
ensured since all remaining capacity is given to the market coupling mechanisms, i.e. only
capacity used for ensuring priority access for RES would not be available for the market.
However, if the IC operator is a commercial party, there would need to be a mechanism in place
to compensate them for their lost IC capacity, or at least a cost reflective charge for the capacity

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6 Also Priority Dispatch has been interpreted in Ireland as being ‘absolute’ in the sense that the system operators must dispatch
renewable generation ahead of non priority dispatch generation (subject to system security) though renewable generators are
curtailed ahead of IC flows and OWG pay use of system charges. TSOs are required to redispacth and countertrade to avoid
curtailment of RES.
used would need to be paid by the OWG or by grid users through tariff (socialized costs). The compensation would be determined on the basis of the expected future congestion rent and other future income from use of the capacity.

3.20. In countries where a radial connection is paid for by the OWG (most NSCOGI countries), free access to an IC would over-incentivise OWGs to prefer hybrid assets – even when this is not the most efficient solution. So in such countries (France, UK...), free access may mean both an incentive to inefficient behaviour and discrimination between OWGs with radial connections and OWGs connected to hybrid assets.

3.21. On the basis of this discussion, option 1 seems to be a good solution when congestion is resolved by priority access to the OWG. The basis for the access charges for OWGs should mirror existing arrangements for radial connections in individual MS. Therefore, in France and the UK for example charges would be based upon the cost of the assets involved, whereas a socialised charging regime would be used in countries such as Denmark.

3.22. It should be mentioned that applying different financing schemes in different countries may seem “unfair”, or suboptimal. However, as this unfairness or suboptimality is not related to the fact that the asset is combining cross-border flows and transmission of renewable generation, nor to offshore development, but is a fact for general generation connection, we consider that it is out of scope for NSCOGI and this paper.

3.23. One should also note that as the OWG bids directly into Hub A without paying congestion rent (when price in hub A is higher) creates a “transfer” of congestion rent of a value of (price differential)*200MW from the IC operator to the OWG.

4. **Option 2: OWG in Floating Hub**

4.1. As part of our analysis we also considered two options in which the OWG is not domiciled in a particular hub. In the first case, it is able to ‘float’ between Hub A and Hub B depending on its expectation of the prices in each hub. The trading arrangements would be as follows:

- Traders in A bid into Hub A and Traders in B bid into Hub B; OWG bids into either Hub A or Hub B.
- Market coupling algorithm establishes the prices in Hubs A and B and therefore determines the direction of flows across the IC.
- Traders in A receive the price in Hub A; Traders in B receive the price in Hub B and the OWG receives the price of the Hub it bids into.

4.2. Again in our example of Figure 3, Hub B has the higher price, and therefore energy would flow from A to B.
4.3. If the OWG has access to accurate market information, the OWG will always bid into the Hub it expects to have the highest price. In addition, given that we expect the OWG will bid in at zero or negatively in order to ensure their bid will always be accepted into the merit order, the OWG will always receive the highest price (or at least as often as its guess is right). The implications of this option would be:

- **Priority access:** RES would always be dispatched
- **CMGs:** Flows are still rational and based on the prices determined via market coupling, and no capacity is reserved.
- **Discriminatory** – under this option the OWG connected to the integrated asset can chose the most expensive hub at any time and has priority access to cross-border capacity over other market participants.

4.4. There does not seem to be a justification for giving OWG connected to hybrid assets such privileges. Moreover, interpretation of the priority access requirement does not lead to the conclusion that RES should be paid the highest price – just that they should not be restricted from entering the market or accessing the system.

4.5. On the basis that Option 2 is discriminatory as against other market participants, we have decided to discard this option.

5. **Option 3: OWG in its own Hub**

5.1. In this option the OWG is placed in its own Hub separate to both Hub A and Hub B. The trading arrangements would be as follows:

- Traders in A bid into Hub A and Traders in B bid into Hub B; OWG bids into its own Hub, Hub C.
- Market coupling algorithm establishes the prices in Hubs A, B and C and therefore determines the direction of flows across the IC.
Traders in A receive the price in Hub A; Traders in B receive the price in Hub B and OWG receives the price in Hub C.

Figure 4: OWG in its own Hub

5.2. Given that there can be no congestion between Hub C and the lowest price hub it follows that the price in Hub C would be set by the lowest hub price out of A and B (in this example Hub A). The implication is therefore that the OWG will always receive the lowest price.

5.3. Considering this option against the criteria identified previously:
   - **Priority access**: Hub C will always merge with the lowest price Hub for the reasons noted above, therefore the RES will be accepted into the merit order and will be dispatched.
   - **CMGs**: prices are dictating flows so this option is consistent with the EU Target Model.
   - **Discriminatory** – under this option the OWG will receive the lowest price.

5.4. On the basis that Option 3 is discriminatory as against the OWG, we have decided to discard this option.

6. **Virtual Case Study 2 (VC2)**

6.1. VC2 is a variation from the basic model. There are two key changes to note; firstly, the link from country A to the OWG is defined as a part of the national transmission system of country A, with the link between the OWG and country B being classed as an IC – hence there is no hybrid status of assets.
6.2. A consequence of this first difference is that, in this case, the OWG could also be connected to country A by a meshed offshore grid out of which there are multiple routes to A’s onshore network (see figure 6). In either case, the IC is only the part of the transmission line between the OWG and country B, the rest is part of the transmission grid of country A.

7. Option 4: OWG in National Hub under VC2

7.1. This option is very similar to Option 1; the OWG bids into Hub A as any other market participant in Hub A:

- Traders in A and the OWG bid into Hub A; Traders in B bid into Hub B
- Market coupling algorithm establishes the prices in Hubs A and B and therefore determines the direction of flows across the IC.
- Traders in A and the OWG receive the price in Hub A; Traders in B receive the price in Hub B.
7.2. In terms of our criteria:

- **Priority Access:** RES will always be in merit in Hub A assuming they bid in at marginal cost (~zero). However, the same issues will arise as identified in Option 1 (the IC operator will either have to curtail the OWG and compensate accordingly, or allow the OWG access rights (to be purchased/paid for or the cost to be socialised)).
- **CMG:** IC flows will be rational based on the prices.
- **Non-discriminatory.**

7.3. This scenario is being discussed in Belgium at the moment. There is currently a proposal to connect two offshore platforms, both of which will be/are owned and operated by the Belgian TO, Elia. The next step will then be to connect this joint platform to an IC.

7.4. As, from a market arrangement/congestion management perspective, this option is identical to option 1, we consider that this solution should be kept for further studies, along with option 1 (cf. point 3.21).

7.5. One key difference from option 1 to be studied further would be the impact of the different classifications of assets in the two options.

8. **Initial Conclusions**

8.1. All the different options discussed proved to optimise physical flows, and thus minimise market prices if the right congestion solution is applied.

8.2. Options 1 and 4 (OWG always bidding into fixed national hub) seem to be the best solutions for market arrangements. They have the same effects, and, in case of congestion, may apply the same solutions (their main difference being the status given to the assets between the OWG and country A, and the possibility of option 4 to apply to a meshed national offshore network).

8.3. In case of congestion, different methods may be used, but it is important to ensure that the same connection/access charges are paid by OWGs connected to hybrid assets, as are paid by OWGs with radial/regular connections (connection costs). There are a number of options:

- The OWG could pay for priority access towards hub A: possibly in the same way as OWG generally pays for radial connections (TNUoS, one-shot connection cost, or costs being socialised in some countries). According this right to OWGs connected to an IC may be justified by their particular need for this access compared to other generators.
- Long term capacity rights could be sold through explicit auction: this seems more complicated, as this means market exposure for the OWG. Moreover, it would probably request multi-annual rights, which are not currently sold on ICs.
- The OWG could be constrained to preserve IC capacities: this option seems to be less promising, as it increases generation costs and market price. Constraint compensation should not incentivise this.

8.4. It is important to remember that this analysis assumes that wind generation levels may be forecast early enough to participate in the day ahead market. As IC capacity reservation for intraday markets is forbidden, different approaches may be studied. Two of these are:
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- Qualifying part of the combined asset as a grid connection (option 1).
- Qualifying part of the combined asset as part of the transmission grid (option 4).

8.5. This is not necessarily very different from what is actually applied in IC capacity calculation, where TSOs take into account forecasted intermittent energy generation (which has a priority access to the national transmission grid and thus may limit IC capacity).

9. Further Evaluation

9.1. Before we can consider the two options remaining (1 and 4) further, we need to explore a number of other issues:

9.2. National RES targets

9.2.1. As noted at the start of this paper, to be compatible with the EU Target model, the direction of flow must respond to price differentials. However, MS are also driven by a need to meet their renewables targets. For the RES asset to be supported by one country there may be a demand for the "green" benefits of the offshore generation to be considered separately to the physical flow across the integrated asset. This would ensure that the country administering the support scheme also receives the benefit via the contribution to their renewables target.

9.2.2. The compatibility of the options with the need to administer a support scheme could also be solved through the use of 'joint projects'. This solution will be considered in more depth in the second piece of work on this deliverable, in which we focus on the role of support schemes in the development of an integrated asset.

9.3. Interactions between trading approach and RES support

9.3.1. Different support schemes will affect the decision-making process of the OWG differently. Given that there is no harmonised approach to support schemes (and none anticipated) it is important that we bear these interactions in mind when considering which market arrangements will lend themselves to the realisation of an asset such as that defined in VC1 or VC2.

9.3.2. For example:

- If the OWG gets a Feed-in-Tariff (FiT), as in Germany or Denmark, it will be less concerned by the market price as it receives its support based on the volume it generates rather than the price of the generation.
- If it receives some form of green certificate, as is the case in the UK, Sweden, Norway and Belgium, it is subject to some market exposure as its support is based on an agreed or market driven uplift on the market price.
- If the OWG gets a FiT and a Contract for Difference (CfD)7 intuitively it must be associated with a particular Hub in order to enable a reference price (or strike price) to be established for the CfD.

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7 as per Electricity Market Reform proposals in the UK
9.4. Implications for intraday trading (and other timeframes: long term, balancing)

9.4.1. Throughout our analysis we have largely focused on the arrangements at the day-ahead stage with some consideration of the long-term trading arrangements where these may provide some solutions.

9.4.2. So far our analysis has not, however, stretched to cover intraday arrangements. In reality, while forecasting methods are continually improving, the OWG cannot be expected to have an exact idea of how much energy it will generate until the intraday stage. Developers may therefore suggest that in order for a project such as VC1 to be realised, they need firm access to the system up to the intraday stage. This would inherently create compatibility issues with the EU Target model which requires all capacity to be available for market coupling at the day-ahead stage.

9.4.3. A further but related point is that the intraday Target Model is continuous bilateral trading with congestion pricing. It is not yet clear how this will work in practice or how largescale deployment of OWG would operate under a system, where there is no market coupling auction and merit order which is the core of the day ahead target model.

9.4.4. It should be noted that the CACM Network Code focuses on the day-ahead arrangements. It is likely that, following implementation in 2014, the Target Model will develop over time as the level of renewable generation increases significantly throughout Europe. Given that this issue extends beyond the NSCOGI sphere it is potentially better addressed elsewhere. However, implications of this need to be kept in mind in choosing an appropriate model that will allow viability of OWG projects connected into ICs. We will therefore give further consideration to the interactions between OWGs and intraday capacity allocation and congestion management.

9.4.5. The other key timeframe to be considered is balancing and the Target Model for this which is set out in the Balancing Framework Guideline. Thought will need to be given to how this will affect OWGs, particularly given that the Framework Guideline states that ‘generation units from intermittent renewable energy sources do not receive special treatment for imbalances’. Efficient cross border balancing and counter trading arrangements will be important for OWGs.

9.5. Implications of the order of development of assets

9.5.1. This paper focuses on already existing assets, and defines two different options for market arrangements, whose main difference is the classification of assets. However, the optimal classification of assets may vary with their order of development.

9.5.2. For instance, if a meshed national offshore network of one MS is being connected to another (offshore or onshore), option 4 seems at first sight a logical classification of assets.

9.5.3. However, if a new offshore generator is connected to an existing IC, option 1 seems more appropriate.

9.5.4. These first ideas would need further study, possibly together with other scenarios to be defined.