

Summary consultation ‘Basic schemes for TSO-DSO coordination and ancillary service provision’

1. Overview of respondents

A consultation was organized related to possible coordination schemes between TSOs and DSOs in the context of ancillary service provision. Respondents could provide answers via the website or by email for a period of 2 months. Nineteen answers were received in total. Eighteen answers were considered complete and the feedback is integrated in the report. The answers provided came from 10 different countries. Figure 1 gives an overview of the respondents per country.

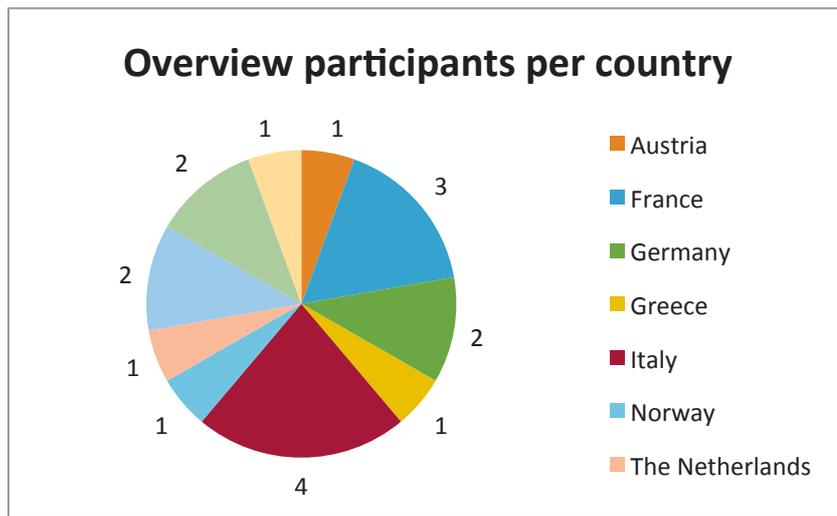


Figure 1 Overview participants per country

The background of the respondents was diverse, i.e. regulators, system operators, research institutes and commercial companies provided feedback. Figure 2 gives an overview of the respondents per category.

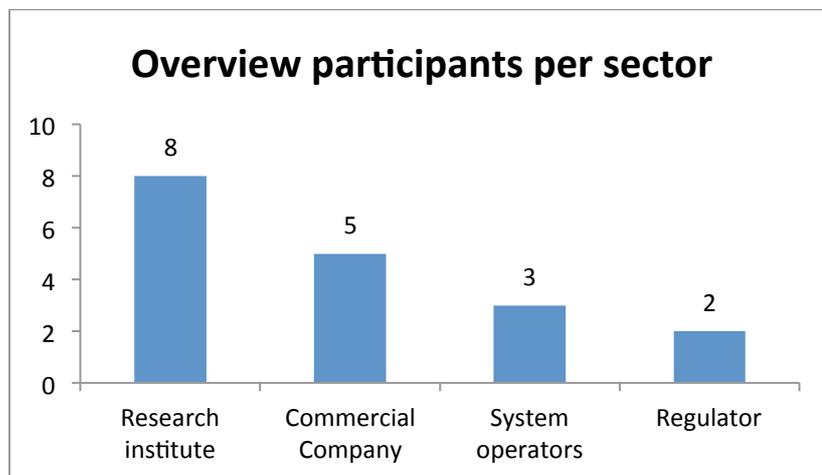


Figure 2 Overview participants per sector

2. Main feedback from respondents

In general, all respondents support the idea of increased coordination between TSOs and DSOs. The consultation asked specific questions related to the role of system operators, the appropriate market design, the relevant use cases and the feasibility of the coordination schemes. A summary of the answers is presented in the sections below.

2.1 Role of the TSO and the DSO

All respondents confirm that, although increased coordination between system operators is needed, it should be clear that TSOs should be responsible for the transmission grid and DSOs remain responsible for the distribution grid. This implies that DSOs will be responsible for local constraint management.

Several additional roles for the DSO are discussed in the consultation: the role of the DSO as local market operator, the role of the DSO as balance responsible for the distribution grid and the role of the DSO as buyer of flexibility.

The role of local market operator by the DSO is considered as a possibility by several respondents, similar to the current responsibility of the TSO as market operator of current AS markets. However, other respondents raise important attention points. In order to guarantee a neutral market facilitation and a transparent functioning of the market, the option of an independent market operator could be considered.

With respect to the question on the possible role of the DSO as balance responsible, most respondents agree that this is probably not a cost efficient solution. They prefer that balance responsibility is organized at the system level by the TSO. In particular, it should be avoided that by splitting up the balance responsibility, inefficiencies are created that might increase grid costs that will be charged to end consumers, i.e. duplication of dispatching centers, costly procurement of resources,.... Due to the fact that the DSO has access to a more limited set of resources, compared to the TSO, the cost of balancing might increase, leading to a sub-optimal solution from a system wide perspective. In addition, splitting up the responsibility for balancing is going against the European trend of increased integration of balancing markets. However, some respondents see also benefits in case the DSO becomes balance responsible, i.e. faster reaction on large imbalances, induced by very local situations.

The procurement of flexibility by DSOs in the short term as an alternative for grid investments is considered as very realistic by all respondents, under the condition that regulation provides the appropriate framework, including proper cost remuneration for the use of flexibility. Also, DSOs will need to adopt a new way of working with dynamic real-time operational security assessments.

One respondent also highlighted the need for system operators to resell previous contracted flexibility back to the market.

2.2 Market design

General elements are mentioned by several respondents about the main characteristics of a proper market design. The market design should allocate flexibility in the most efficient way, should minimize gaming and unfortunate price effects, should ensure sufficient liquidity, should be transparent, should support competition, should respect grid constraints and should stimulate participation to the market for both buyers and sellers of flexibility. Several respondents mention the fact that a proper market design should assure that system operators do not activate flexibility resources that are in conflict with actions done by the other system operator.

The consultation highlights a clear preference for a more centralized market organisation to guarantee liquidity, efficiency in market operation and standardized products and processes. In addition, a central market place is also considered as a facilitator for small DER to participate to the market for ancillary services because aggregation can happen across a larger area. One remark was given that, when combining both constraints of transmission and distribution in one single market place, the optimisation problem might become highly complex and potentially not feasible to solve in an adequate time-frame.

Most respondents highlight several issues that might arise in case several local markets are organized. Liquidity in small local markets might be small and DSOs will not have the possibility to access flexibility located in a different DSO-area. Another element of attention is that the smaller the market size, the higher the risk for market power and high prices. Several respondents explicitly mention that fragmentation of markets should be avoided as much as possible.

Although consensus exists on how the market should be organized, diverging opinions are expressed on who should have access to this central market place as a buyer of flexibility. A small number of respondents prefer this market to be only accessible for the TSO, other respondents see this market as a common market for all system operators. A majority of respondents would prefer that both system operators and commercial companies compete in the same market environment to buy flexibility, under the condition that local grid constraints are respected.

Also in terms of priority, no consensus exist. Some respondents prefer a clear priority for the TSO to guarantee system security at all times. Others emphasize the need for priority for the DSO, due to the fact that at a local level, few options might exist for the DSO. In this case, clear rules should be determined in which situations the DSO should have priority. Other respondents do not want to assign any upfront priority to any system operator. On the contrary, they want market forces to determine where the use of a specific flexibility, in case, multiple parties are interested in the resource, has the highest economic value. Several respondents highlight the importance that in the end, the decision taken should lead to lower costs for end consumers.

2.3 Use cases

In terms of use cases, all respondents emphasize the importance of the use case related to balancing and congestion management, due to the relevancy for all system operators and as a consequence, the need for coordination. This use case is also considered as the most complex use case, due to the interactions between several market parties. In addition, the use case on the provision of frequency control is also seen as very relevant, especially from the perspective of the

TSO. The use case on the provision of voltage control to the transmission grid is seen as less crucial.

In addition, several respondents highlight the importance of future research on the use of flexibility from the distribution grid for local voltage control.

2.4 Feasibility of the Coordination Schemes

In terms of feasibility of the coordination schemes, respondents are relatively in line. The *Centralized AS market model* is considered as most compatible with existing AS markets and as a result, will be feasible already today in the near future. Other coordination schemes seem to be considered as feasible by 2030, however, clear preferences exist for specific schemes.

Although the *Centralized AS market model* is closest to current market organisation, it is only put forward as the preferred scheme by a limited number of respondents. Most respondents consider this scheme as sufficient for the kick-start of the market but too constrained in terms of dynamic interaction of TSOs, DSOs and commercial market players. Also, this scheme does not address the DSO needs sufficiently.

Most respondents do not favor the *Local AS market model* or the *Shared balancing responsibility model* as they are both considered as not very cost-efficient, lacking economies of scale. Therefore, although considered as feasible by 2030, it is by none of the respondents the preferred option.

Almost all respondents have a clear preference for the *Common TSO-DSO AS market model* or the *Integrated flexibility market model*. Both market models seem to provide the most coherent answer to future grid, system and market challenges.

Respondents with a preference for the *Common TSO-DSO AS market model* emphasize as most important advantages the common optimisation of the use and the cost of flexibility by system operators. Respondents with a preference for the *Integrated flexibility market model* highlight the fact that the more buyers you allow in a market, the higher the liquidity and the lower the costs. This market might also give incentives to investors on which areas in the grid could benefit from investments in flexibility.

In terms of barriers, respondents are in line, highlighting several relevant issues.

A general precondition for the feasibility of the coordination schemes is the development of flexibility from the distribution grid. In addition, the access by DER to different markets is key. This also implies that all (regulatory) barriers to aggregation should be removed.

Another important barrier, emphasized by most respondents is the evolution of the role of the DSO. DSOs should be allowed to contract flexibility in a cost-efficient way. This also means that DSOs should develop the necessary business models and tools to anticipate to the use of flexibility, i.e. for grid planning, operational planning and real-time monitoring and control.

In addition, mentioned by several respondents, the incentive regulation for both TSOs and DSOs should take into account the use of flexibility and should develop specific performance targets that are in line with the participation to the upcoming flexibility markets.

Two respondents underline the current status of unbundling as a potential barrier. For example, there might be the risk that, in case DSOs are not unbundled, that the vertically integrated companies are favoured as flexibility provider by the DSO. The rules for unbundling also limit the trading possibilities of flexibility for DSOs.

Two respondents mention the existence of multiple TSOs and DSOs in one country that might hinder the implementation of certain coordination schemes. Specific attention should be given to solutions to facilitate TSO-DSO coordination in case multiple TSOs and DSOs are concerned.

One respondent emphasizes the need for new ways of data handling as, due to the increased real-time interaction between system operators and market parties, more data need to be processed/shared within a short time-frame.