Confrontations Europe – Group Climate & Energy

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ELECTRICITY CONSUMPTION AND PRODUCTION: IS BALANCE RESPONSIBILITY "RENEWABLES-PROOF"?

The present note summarises the contributions of the five panellists:

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- **James MATTHYS-DONNADIEU**, Head of Market Integration, ELIA
- **Dirk Hendricks,** Senior Policy Advisor, European Renewable Energies Federation
- **Nicolas KUEN**, Policy Officer, DG ENERGY, European Commission
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Michel CRUCIANI, Climate and Energy Adviser for Confrontations Europe, was moderator of the discussions.

INTRODUCTION

According to the assessments attached to the Clean Energy Package, wind and solar energies might supply nearly 30% of the overall electricity consumed in the EU in 2030. Their intermittent and decentralised nature increases the complexity of the mission entrusted to Transmission System Operators (TSOs), which consists in constantly balancing consumption and production. At the same time, TSOs are requested to better integrate cross-border availabilities, as well as a greater flexibility of the European electricity market.

These observations have led us to question the evolution of the balancing responsibility and its apportion among actors of the electricity system (producers, consumers, third parties etc.), which is deeply impacted by the arrival of new entrants.

THE PROPOSAL FOR THE EUROPEAN COMMISSION:
A BALANCE BETWEEN A MARKET-BASED APPROACH AND PRAGMATIC VISION

One of the main driver for the proposal of the European Commission is the increasing share of intermittent renewables in the market. The wholesale market needs to adapt in order to tackle this challenge. In the Commission's view, what is important on balancing responsibility is how to integrate renewables sources (RES) into the market. A range of network codes and guidelines already set some principles on the short-term market, the intraday market, the forward market and the balancing market. The Commission's text confirms these general principles but also goes beyond in terms of responsibility of balancing for RES: it aims at ensuring a level playing field for intermittent and decentralised players. It is about who pays the imbalance in the system. How do we ensure that?

- First, any actor in the market needs to be a balance responsible party, which means that whoever causes imbalance in the system and affects it has to pay. On the contrary, actors who help the overall system to be balanced should receive money. Financial responsibility can also be delegated to other actors, acting in the name of those who produce or consume electricity.
- Second, priority dispatch and priority access have to be dealt with through a market-based approach. With the exception of very small sources, RES will no longer have priority over the other sources to be injected in the grids. The new proposal extends the merit order based dispatch, meaning that the less expensive units will be called first. The Commission's proposal also sets up a market-based approach on curtailment: payment, in the form of a market-based compensation, will be required in case the generation of electricity by RES is stopped. If this is not possible for security reasons, there should be a clear priority order on which generation to curtail first.
- Third, the text tries to clarify existing provisions on non-discriminatory access to the balancing market for all kinds of generation, consumption, renewables, demand response etc. Today, exchange of balancing across borders is very limited, pricing of imbalance is very different from one country to another, so the signal of the imbalance can vary greatly just because of the way the market is designed. Moving to a marginal pricing is therefore very important. Paying for the balancing energy price should therefore be done through marginal pricing and should be consistent with the pricing method in the day-ahead in the intraday balance mechanism. Clear price signals are key in integrating RES. Therefore, the European Commission proposes a common rule on day ahead markets for activating balancing energy by TSOs and standard products across borders. A regional approach is also applied to capacity markets, in the sizing of balancing capacities that are needed in the system in order to reduce the volumes procured by the TS0s, and by doing so, adding more flexibility to the market.

All institutions agree on the common principle that every participant needs to be a responsible balancing party; the main point of discussion between the Council and the Parliament is on the exemptions and the corresponding thresholds. Should we give some, or not at all? The Commission's proposal is a compromise between a market-based approach as a general principle, and the reality on the ground with some possibilities for exemptions, which should be eventually phased out. This concept should not be misunderstood, the Commission does not think that RES or CHP are against being balance responsible, but they need to have the tools in case of imbalance. That is the reason why the Commission's focus is on the implementation of the intraday market in

Europe, by pushing for a closer to real time cross border market that will complement the balancing responsibility of RES. Negotiating parties sometimes need to be very ambitious and take extreme approach when entering negotiations to make small changes happen.

THE TRANSMISSION SYSTEM OPERATORS: INCREASING FLEXIBILITY WHILE ENSURING ADEQUATE BALANCE, OPERATION SAFETY, AND RESPECTI OF LOCAL SPECIFICITIES

The French TSO, RTE

Renewable energy is a success story in Europe: RTE forecasts positive results for RES development out of final energy consumption growth until 2020. France is quite in advance compared to some other countries with around 37% of RES in installed capacities. The total amount of RES accounts for 89 MWh, and it is constantly increasing. On the long term view, since 2008, Europe has known very low (even sometimes negative) wholesale prices, which leads us to questioning the efficiency of price signals in energy only market in Europe, and the implications on investments. Generation from wind and solar will keep increasing until 2025, and even more until 2045, meaning that the other capacities will be gradually phased out and only used at peak hour. They will need to be compensated for this, if we expect this kind of generation to balance the system in real time. Therefore, insufficiencies on the market price signals and investment decisions need to be mitigated. Some Member States such as France, Poland, Spain, Italy, Finland etc. have addressed this issue by setting up capacity mechanisms, with different characteristics. DG COMP has recently approved a number of them.

On shorter time solutions, one of them is to find new sources of flexibility and give them value. One of these new sources is demand response from both industrials and households, in affordable and sustainable solutions. The challenges here are ensuring a level-playing field for consumers and benefits for the system's security at the same time. In France, demand response is a functioning solution.

Some questions are rising while reviewing the electricity market design. In principles, when it comes to European market integration and RES, we have to look at grid operation safety and local situations at the same time. The market design needs to be in coherence with what the TSOs can do, the local market conditions and the reserves, and at reasonable costs for consumers. The proposal of the Commission is a mix of regulatory expertise and legislative overview. However, some projects are currently being implemented in Europe (PICASSO[1] and MARI[2] projects, etc.) and it would be more coherent to rather assess whether these projects work before designing new rules. The package being now under discussion is worrying by some aspects; an overdetailed "one-size fits all" rule may not consider all objectives, notably of security operation with local conditions.

[1] PICASSO: the Platform for the International Coordination of Automated Frequency Restoration and Stable System Operation, is a regional project initiated by eight TSOs from five countries.

[2] MARI: Manually Activated Reserves Initiative, this is the European implementation project for the creation of the European Manual Frequency Restoration Reserves.

The Belgium TSO, ELIA

Technically, balancing is a big responsibility for market actors; they have many instruments to ensure that within 15 minutes their portfolio is balanced. In some countries, TSOs intervene in less than one hour, in others, they wait a bit longer. ELIA does so with a two steps mechanism: first, ELIA activates reserves, and then, it allows its balancing parties to cause imbalances in their own portfolio as long as it helps balancing the whole system. Based on the forecasted price signals that ELIA issues, balancing responsibility parties can also, in a non-transactional way, help back.

Integration of RES is causing some challenges: by 2020, with increasing decentralisation and regionalisation, the flexibility needs will be considerably higher than the currently existing flexibility, but new sources of flexibility are coming as well. ELIA has developed a solution, which consists of keeping its reserve needs under control by enforcing balancing responsibility parties.

ELIA also needs to cover reserves in the most efficient way, by sharing reserves with our TSOs colleagues, by integrating its balancing markets cross-border, by moving to short-term procurement of reserves. ELIA has also opened its markets to all actors, independent of their location and technology. It has also created an open market of non-contracted reserves, where actors can offer flexibility even on the last minute. On top of that, ELIA also allows any actor to sell its flexibility without the approval of its supplier. These measures have resulted in a largely augmented playing field in some of ELIA's reserves, a big part of which goes to non-conventional actors.

Take-aways:

- ELIA continues to put balancing responsibility parties at the centre of the balance management, while ensuring that as much as flexibility as possible in the system can be out-locked and digital technologies will enable further potential.
- ELIA ensures that balancing responsibility parties have the right price incentives to keep its portfolio balanced, so definitely going for marginal pricing.
- ELIA ensures that in specific cases, additional ex ante and post operational processes are in place to ensure security of supply

However, will this system be robust enough after 2030? This needs to be studied. "One size fits all" will not work and there is always need for some experts.

RENEWABLE INDUSTRY: EUROPE NEEDS TO ENSURE A REAL LEVEL PLAYING FIELD FOR RENEWABLES

Following a vision of strong renewables since 2014, the idea is to move from a nuclear based and fossil fuel based system, centralised and nationalised, and with very few players, towards a system which is based on RES and energy efficiency, which is decentralised and which has a lot of different players, and flexible. To achieve this, the EU needs all RES and all technologies available. With a decentralised system, the idea is to include small actors such as energy communities, prosumers etc. and give them a much more prominent role. To do so, how should Europe's new energy system look like? There is a number of combined tools to avoid a huge amount of unbalancing: regional cooperation, European interconnectivity, intraday and common balancing market, demand side and demand response, storage, digitalisation etc. EREF is opposed to solutions such as capacity markets and mechanisms because there is a great danger that they lock in inflexible energy productions. The new players, which can help to boost RES deployment, are energy citizens and energy cooperative.

On the electricity market design, some proponents are betting at market-based solutions and others look at State interventions. Currently, there is no level playing field because of huge over-capacities from coal and nuclear power plants, and capacity markets, that EREF sees as hidden subsidies. This locks in non-flexible solutions, making balancing more difficult. In particular, there is a natural merit order effect in the current priority dispatch and access; any nuclear power plant or any coal power station cannot be ran down in a very short time, they therefore remain on the grid and renewables are switched off. The Commission's proposal aims at lowering the cost of producing energy, which is possible thanks to RES. The trick is that subsidies and capacity mechanisms are making electricity coming from nuclear power plants cheaper than RES sources. Priority access is therefore key. Exemptions measures are very important; EREF is asking for the lowest possible threshold, in particular for SMEs, energy cooperative etc. to make it easier for them to enter the market. This is necessary because these investors have specific characteristics, they are quite vulnerable, with different capabilities in dealing with these kind of requirements, and in particular investment risk.

THE FOSSIL-FREE ENERGY DISTRICT PROJECT FROM THE GOTHENBURG REGION: THE FUTURE OF ENERGY PRODUCTION AND CONSUMPTION?

The Fossil-free Energy District Project is a local initiative; it is a project demonstration focusing on local energy communities. A brief market context: there are a lot of RES in the Nordic system, especially wind power, which leads to an increasing amount of variable generation. In addition, nuclear power which in the future is going to be phased out. Swedish aim to have a 100% RES powered system by 2030. Prices on energy market have been going down. From the system operator perspective, the demand for flexibility services will increase a lot, and flexibility resources are developing.

Looking at the demand side, this project is fossil free. The Gothenburg pilot is located in the campus area, because it is exempted from some rules related to grid. The market in Sweden is opening up for facilitating this kind of demonstration site. First, it is about lowering fossil peaks in the system. It encompasses district heating and cooling. There is a lot of flexibility potential here. In order to make this work, there is a local energy market in the system, , which does not work like an intraday market, but with PV areas to balance the system. It is combined with a service market, either to the grid itself or to the DSO and TSO. Half way through the project, different kind of results have been obtained [to develop].

An important number of actors such as real state owners, research institutions, regional authorities etc. carries this project. It is funded by an EU initiative called Urban Innovative Actions.