CONTRIBUTION TO THE CONSULTATION ON THE REFORM OF THE EU'S ELECTRCITY MARKET DESIGN (02/2023)

Towards a clean and resilient energy market design: More responsibilities for renewables, less dependence on fossil fuels.

The energy crisis has accelerated Europes need for a fast decarbonisation of its energy supply. In order to achieve the European energy transition goals, strong incentives for the investment into renewable energy projects need to be put in place. At the same time, the energy market design must be adapted to sucessfully integrating the increasing shares of renewable energy into the system, in a way that substitute fossil fuels as fast and efficiently as possible.

Renewable electricity generation technologies are on their way to becoming the dominant generation source of electricity. In the future, **renewable energy must replace fossil energy sources in all sectors**. The decarbonization of the electricity system and the electrification of energy consumption in other sectors form the basis for effective climate protection. The current **energy crisis** provoked by the Russian invasion of Ukraine reinforces the need to reduce dependence on fossil gas as quickly as possible.

To enable a rapid transition towards a decarbonized energy system, the regulatory framework must ensure three things:

1. There needs to be **continuous investment** into renewable energy projects.
2. **Fossil fuel power plants** need to be **made redundant**.
3. **Effective price signals** need to reflect availabilities and shortages.

A larger share of renewable electricity will to an extent automatically lead to a decreased need for fossil fuel production. However, besides providing generation capacities in terms of volume, fossil fuel power plants, especially gas-fired power plants, are also relied on, to provide **stability and flexibility** to the system.

Without adjusting the market design, demand for fossil fuel fired power plants will remain (e.g., in form of reserve mechanisms). The use of green gas, which can substitute natural gas in many cases, is expensive and will be limited for several years. Therefore, **the need for gas in the electricity system,** to provide flexibility and stability, **must be reduced through the market design.**

Currently, wrong incentives as well as a lack of price signals, hinder renewables from contributing to flexibility services and system stability. Due to a lack of incentives for electricity producer to consider the capacities and limitations of the system ("produce and forget").

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A market design for the energy transition, must reduce the need for power for fossil gas by integrating market signals which will lead to a stronger contribution to system security from the outset.

Proposal for amendments in the electricity market design.

In order to advance the decarbonization of the energy system, the core conflicts in the system must be resolved.

This includes additional ways of financing renewable energy projects to the existing support schemes to ensure that investment security is granted **while reducing system costs**.

Key points

Renewable energy projects should have several financing options at the same time:

- **Direct marketing of** electricity via the spot market.
- **PPAs** to ensure long-term stability.
- **Capacity for RE plants depending on their grid serviceability** (e.g. size of the plant, location in the system, forecast feed-in profile, technical suitability for system services) via tenders.
- **Transitional: Continue feed-in tariff** for a (defined) part of the generation.

Capacities and scarcities should be given a price.

- **A steadily increasing CO_2 price** (or a binding shortage of emission rights), which act as an overarching market driver for zero-emission technologies.
- **Cost-reflective charges for grid users**, depending on the availability and demand of transport capacity**,** e.g., through nodal or zonal price elements.
- **Dynamic price signals for consumers**, to encourage demand side management and sector coupling (e.g.through flexibilisation of grid charges and other levies.)

Diversifying revenue potential for renewable energy projects

Since the establishing of renewable support schemes, renewables have received a reliable renumeration per kWh that was fed into the grid. Since a few years, renewable electricity is increasingly sold independently of support scheme, e.g. though Power Purchase Agreements. Until today, at least in Germany, the project developer must take the crucial decision, whether to operate within or outside a support scheme at the very beginning. After the strategy has been chosen initially, a switch between systems or even a combination is not allowed. Allowing more flexibility to change between systems, as well as to combine different streams of revenue generation, will allow project developers to take risks of operating independently of the support schemes more easily.

Direct marketing of renewable electricity quantities is to become the standard marketing channel. Trading of futures or direct trading "over the counter (OTC), e.g., by means of PPAs, can contribute to securing investment strategies.

The allocation of quantities among the different distribution channels is left to the operator. Adjusting the allocation between the different financing/support models should be easy and flexible, so that market developments can be considered.

In the medium-term, feed-in tariffs should be replaced by a multi-tier model that continues to offer basic security of planning and investment, while enabling project developers to take into account, market signals, limitation and opportunities.

An effective CO2 pricing with clear scarcity signals is fundamentally important to frame and enable the uptake of zero-emission technologies.

Acknowledging physical realities: Transportation has a price.

In an all-renewable energy system, the cost of electricity generation becomes increasingly lower, while the costs of managing and operating the system increase and become the largest cost factor for system users.

In an efficient and flexible energy market, the infrastructure and the market should be considered together. That way, price signals can create incentives to use and plan transport capacities as efficiently as possible. Transport charges must be dynamic, depending on the capacity of the grid, and be designed nodal or zonal. This way, costs can be avoided by reducing the need for transport and incentives are created to utilize the network intelligently by using flexibilities.Transmission charges are to be levied equally on both renewable and fossil electricity.

For such a change to happen quickly and in a targeted manner, the incentives for grid operators must be adjusted.

Establishing system stability as a revenue factor

By making part of the revenue dependent on position and operation of the renewable power plant, an incentive is provided for project developers to consider the needs and capabilities of the system from the outset. This way, grid

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congestion and curtailment can be reduced, allowing for more renewable electricity to be utilized.

Further, the incentive for considering scarcities and demands of the system when planning new renewable production generation, can reduce the need for redispatch measures in the future through the placement and sizing of RE plants.

In addition, RE plants, individually or pooled, can be made available to grid operators as part of the usual handling of system service (market-based and regulated), as is already the case today with fossil power plants.

This way, renewable energy can help to ensure system stability and successively replace fossil power plants.

Utilizing the potentials of sector coupling and flexibility

To phase-out fossil fuels, renewable energy must replace fossil fuel in all energy consumption sectors. One way is the flexible and smart coupling of sectors. Many storage and conversion technologies that enable flexible sector coupling already exist, e.g.

- Load control systems, battery storage and compressed air storage for short-term adjustment of load and feed-in profiles,
- High-temperature storage, electrolysers, pumped storage and biogas plants, whose products can be stored very well in the medium and partly in the long term and which can be used both directly/materially and for (re)generation for the power sector,
- Low-temperature storage, heat grids, and also gas grids, which are very well suited as buffers for renewable generation peaks due to the large energy demands and much slower grid and process management requirements and can also be used in part for seasonal shifting of energy generation and consumption.

In Germany, there have been multiple projects, which demonstrated the feasibility and synergy opportunities. The lessons learned should now be incorporated as quickly as possible into political practice and, above all, into the discussion of energy market design options.

Infrastructure planning processes also need to be further developed regarding the opportunities and requirements of successful sector coupling. Not only the national network development plans for the central transmission/transfer infrastructures need reform.

Further Information

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IMPRESSUM

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