Response to the Call for Evidence on the Renewable Energy Framework Post-2030 - Amprion

The transformation towards a decarbonised energy system with a renewable-dominant energy mix will fundamentally change system dynamics and infrastructure requirements. Ensuring security of supply, system stability and cost-efficiency in a system with 80-90% renewable energy requires a comprehensive and coherent regulatory framework that addresses generation, grids, markets and governance in an integrated manner.

Security of supply and enhancing capacity mechanisms

Recent analyses indicate a clear downward trend in market-based security of supply towards the middle of the 2030s. Germany is expected to rely increasingly on electricity imports in the coming years, with isolated shortfalls becoming possible during extreme system conditions. As renewable energy expands beyond 2040, market volatility is likely to continue increasing due to higher capacities of volatile wind and solar generation. To address this structural challenge, we support introducing and maintaining explicit incentives for firm capacity and availability and thereby giving these system requirements a price. A targeted framework that rewards the provision of reliable, flexible capacity is essential to maintaining security of supply in a power system dominated by renewables. Additionally, the further development of capacity mechanisms will play a pivotal role in responding to the growing expansion of renewable energy sources and the deeper integration of the European electricity market. In particular, greater spatial granularity in capacity markets is essential for providing local investment signals and responding to the often highly localised generation of renewable energy. Greater international cooperation in ensuring security of supply and procuring capacity will also be important for maintaining an efficient energy system.

From the perspective of the transmission grid, market-based procurement of ancillary services is playing an increasingly important role. Capacity mechanisms can make a decisive contribution here through more integrated procurement models.

Negative prices and controllability of renewable generation

Given the rapid expansion of solar PV, there is an increasing risk to system security arising from insufficient grid and market-based controllability. The necessary adjustments primarily concern distribution grids and market participants. In recent years, a significant discrepancy has emerged

between the legally required controllability of small-scale PV installations and their actual technical capabilities. From our perspective, recent legislative changes have not gone far enough, particularly given the slow rollout of smart meters with functional control capabilities. We therefore advocate amending the current fallback rule (60% feed-in limitation) to a zero-feed-in requirement for new installations lacking controllability. This should be combined with stronger incentives for direct marketing, including for small systems.

Improvement of the renewable PPA framework

Under the European Renewable Energy Directive, renewable PPAs require so-called additionality, meaning that the electricity sold to the off-taker must be generated in a way that is explicitly additional and CO_2-free. As a result, low-price or even free procurement of electricity from the market is excluded in this model. In the event of a “Dunkelflaute” (periods of low wind and solar output), the contractually agreed electricity volumes can-not be procured from the market; in the case of “Hellbrise” (periods of high renewable output), market opportunities arising from low or negative prices cannot be used.

Due to the long-term supply contract, the contracted generation is completely decoupled from market signals. So far, this has only been relevant for small volumes, e.g. for electrolysers, and has had little impact on the overall system. As renewable PPAs are, however, set to become the central support mechanism for renewables in Europe, their significance will increase considerably in the future, e.g. for supplying industry, storage facilities and other large consumers.

To allow market signals for both parties under a PPA, we recommend adapting European legislation to include a relatively simple component.

The criterion of additionality should be suspended in pre-defined market situations, for ex-ample when the market price falls below a certain threshold (e.g. 0 €/MWh) or when certain system conditions are met. Similar exemptions already exist for products such as “Nutzen statt Abregeln” under Section 13k of the German Energy Industry Act (EnWG), where renewable electricity that would otherwise be curtailed for grid reasons is classified as additional if it is used locally for hydrogen production. By analogy, one can assume that using electricity at prices of 0 €/MWh or below a certain threshold, while renewable generation is being fed in, would otherwise lead to market-based curtailment of renewables.

In this way, three efficiency gains can be realised:

1. The wind farm continues to receive a price signal and can use it, for example, for scheduling maintenance or other commercial opportunities.
2. The offtaker can realise market opportunities, for example at negative prices, which can significantly improve the currently difficult business case of, say, a storage operator.
3. Merely by allowing market signals to take effect, the TSO's potential for grid-friendly effects increases, namely through lower generation and/or higher load in the system. The TSO thus regains access to the capacities contracted under PPAs for steering interventions.

Grid planning, scenario governance and TYNDP cycle (European Grids Package)

The governance of our key task of further developing and enhancing the European transmission grid is the subject of much debate. Various European TSO experts cooperate under the ENTSO-E umbrella and in various regional initiatives to identify measures that demonstrate their societal benefits in different future energy system scenarios. Europe should not rely on a single 'central' scenario for long-lived grid infrastructure. Several central, plausible scenarios for electrification, industry, hydrogen and sector coupling should instead guide EU-wide grid planning. The European Commission should provide political framing, while ENTSOs and TSOs should ensure technical delivery. The European Commission should set the overall scenario boundaries, involving Member States, national authorities, TSOs and ENTSOs, and making explicit use of NECPs and the latest national developments, all of which should be aligned with EU decarbonisation targets.

Within this framework, the ENTSOs develop and consult on scenarios in their capacity as technical experts. The Commission approves these via an implementing act, thereby ensuring the involvement of Member States in the decision-making process and fostering a sense of political ownership. All stakeholders should be involved in scenario development: political actors (e.g. Member State ministries and NRAs) should define targets, while TSOs should contribute their technical expertise to this process.

The TYNDP (scenario, IoSN, CBA and PCI) should follow a stable two-year cycle to reflect the rapid changes in technology, markets and policy. The identification of system needs (IoSN) is a crucial process for the planning of grid development measures and should therefore go hand in hand, executed by the TSOs. Thereby, we ensure quality, coherence and credibility of the IoSN process and avoid additional interface.

Permitting, subsidiarity and regulatory coherence (European Grids Package)

In Germany, permitting for RES and grid projects has accelerated significantly, thanks to i.e. by streamlined procedures and increased resources from the relevant authorities. Learning curves and best practices have been applied on both sides.

EU rules should not primarily prescribe procedural steps. Permitting systems differ significantly between Member States and must reflect national administrative structures. Top-down requirements could undermine existing procedures, creating legal uncertainty and high transition costs without providing clear added value. EU legislation should therefore focus on removing unnecessary substantive requirements that are inappropriate for grid expansion projects. Positive elements already exist and should be strengthened, including EU-wide preclusion rules (Art. 6 EIA Acceleration Regulation) to strengthen legal certainty and predictability, clear species protection rules with a population-based approach (Art. 8 EIA Acceleration Regulation), more precise criteria for 'imperative reasons of overriding public interest' and the possibility of parallel coherence measures (RED III, Art. 16g) to accelerate procedures without lowering environmental standards, sector-specific environmental exemptions for transmission grids (Water Framework Directive, soil law, marine strategy) to avoid duplication, and clarification of liability during construction (RED III, Art. 15e) to avoid excessive risk for TSOs.

At the same time, however, similar provisions across multiple EU legal acts (e.g. data portals, deadlines, overriding public interest and exemptions) lead to fragmentation, additional bureaucracy and legal uncertainty. A coherent, central legal reference is required.

Grid capacity, flexibility and market design

Due to grid capacity constraints and a lack of flexibility, the electricity system can only absorb a limited amount of renewable electricity. Creating a secure and efficient system with 80-90% renewable energy requires significant effort from grid operators. They can only meet these requirements if the framework conditions for grid expansion and operation are appropriately set, including fast, harmonised and pragmatic planning and permitting procedures to create the necessary grid capacities and assets for secure system operation. Purely market-based behaviour must not endanger system security or increase overall system costs. Market design that strengthens locational and temporal price signals would incentivise investment in the grid-supporting flexibility that is urgently needed and contribute to the better utilisation of existing infrastructure. A new market design must also include a revision of redispatch and congestion management rules. Grid operators require regulatory frameworks and instruments, which are currently missing to integrate highly flexible customers, such as large-scale battery storage, into system operation securely and economically efficiently. Further development of existing instruments, such as replacing optional arrangements with an obligation to conclude

flexible connection agreements, would increase the planning certainty required for grid operation.

Reliable regulatory sandboxes are also needed to allow TSOs to test innovative concepts and 'out-of-the-box' approaches for efficient grid operation, without refinancing risks (e.g. grid booster initiatives and DataFlex initiatives). In addition, connection capacity is becoming a scarce resource, with different customer groups (including flexibility providers) competing for access. A system that aims to secure and efficiently integrate high shares of renewable energy requires political guidance, supported by regulation, to address this scarcity.

Connection Network Codes

The three European Connection Network Codes (Requirements for Generators, Demand Connection and High Voltage Direct Current) provide the legally binding and harmonised technical foundations for the grid connection of generation, demand and storage systems, as well as HVDC systems. They ensure system security and legal clarity and promote market integration while reducing fragmentation between Member States.

Since 2022, these codes have been under revision due to technological developments, including the increasing use of PV, wind, batteries, HVDC components, electrolysers and sector coupling. Following consultations by ENTSO-E and ACER, the proposal was submitted to the European Commission at the end of 2023. However, in June 2025, the Commission announced that the adoption of the new regulations would be postponed indefinitely, creating significant risks for security of supply, interoperability, investment and legal certainty, as well as the internal market. TSOs are experiencing a significant increase in connection requests for PV, wind, storage and electrolysers, while existing provisions are technically outdated. These new grid connection rules are crucial in a system with constantly growing renewable capacity (especially after 2030). National approaches (which were implanted e.g. in Germany, Finland or the Netherlands) as a temporary solution undermine EU-wide consistency, which creates inefficiencies as developers are working in international business cases. The European Commission is called upon to prioritise the CNC recast in 2025 with a clear timeline, allow the phased adoption of particularly urgent technical provisions (e.g. P2G, EVs and storage), and coordinate closely with Member States and stakeholders to prevent fragmentation during the transition period.

Overall, a secure, efficient and decarbonised energy system post-2030 requires a framework that recognises the central role of grids, ensures regulatory coherence, strengthens system-oriented market design, and enables the timely development of infrastructure across Europe.

Grid Investments must be attractive to acquire sufficient capital

Transmission grids are the key enabler of the integration of renewable electricity generation. In our German national grid development plan[1], we identify projects which aim at achieving climate neutrality looking at the years 2037 and 2045. To fulfil our massive investment pipeline[2], we need to be able to attract the required capital from our shareholders and the capital markets.

Unless appropriate and sufficient regulatory conditions are established, the implementation and financing of the investments will be severely hampered within the projected timeframes. Consequently, Amprion is advocating for a substantial improvement of the regulatory framework. Maintaining financial viability is indispensable. In order to raise the necessary capital and tap into new sources of funding, maintaining a solid investment-grade rating is a top priority for Amprion. To this end, Amprion is pursuing an investment strategy designed to support its credit rating.

The stronger support by the European Investment Bank by guarantees and low-price loans for grid projects could be helpful measures to support TSOs in their role.

[1] Details can be found here: Network Development Plan Electricity | Network Development Plan
[2] Details can be found here: Amprion Annual Reports