

European Commission Public Consultation on Renewable Energy Strategy

TenneT is Europe's first cross-border grid operator for electricity. With approximately 20,000 kilometres of (extra) high voltage lines and 35 million end users in the Netherlands and Germany we rank among the top five grid operators in Europe. Our focus is to develop a Northwest European energy market and to facilitate the integration of renewable energy in system and grid development. For this reason, TenneT is pleased to respond to the EU's Public consultation on Renewable Energy Strategy.

In order to achieve and to maintain sustainability, security of supply and an economically efficient electricity system, it is crucial to integrate Renewable Energy Sources (RES) into the system and to further develop a fully functioning European electricity market. With regard to these considerable challenges it is indispensable to take a European perspective and to act accordingly. The consultation of the European Commission is an opportunity that TenneT would like to use to express some general thoughts with respect to the future market and system integration of RES.

For this reason, TenneT will answer to the questions, which deal with

- Grid integration of RES
- Market integration
- The regional and international dimension
- The financial dimension

Grid Integration of Renewable Energy

1. *Do you consider that any of the following national rules and framework conditions will still create obstacles to renewable energy production after 2020? If so please specify which obstacles and the nature and degree of them for each of the following*
 - Grid connection rules
 - Cost-sharing rules
 - Balancing rules
 - Curtailment regime
 - None of the above

2. *Which renewables-specific grid related rules do you consider necessary and proportionate in a post-2020 perspective? (please explain why)*
 - Obligation for network operator to develop network
 - Priority or guaranteed access
 - Priority dispatch and obligation on TSO to counteract curtailment
 - Other (please specify).
 - None of the above

3. *With regard to system integration of wind and solar power, what measures do you consider most important to increase the flexibility reserve of the system?*
 - Increase flexible back-up capacity (capacity payments ...)
 - Increase availability of demand response (smart grids ...)
 - Accelerate infrastructure development and interconnection
 - Market-based measures: better use of interconnectors (implicit auctions), trading closer to real time
 - Increased availability of storage
 - Enable renewable generators to offer balancing services to TSOs
 - Other (please specify)

According to recent Communications of the European Commission and agreements between the European Institutions and the Member States, the share of RES will increase significantly in the next decades. The challenges for TenneT and other European Transmission System Operators (TSOs) faces in this regard touch upon a) the connection of RES and b) maintenance of system stability when RES penetration as a share of electricity increases.

Connection of RES The limitation of resources (available technology and human expertise), as is seen in the recent experience with connecting offshore wind farms in Germany indicates a necessity to change the current (national) regulatory regime in order to better share the burden of risks associated to investments with a new technological profile.

System Stability When the share of RES in the system increases, it is first of all necessary that RES will face the same market responsibilities as conventional energy sources in order to maintain system stability and to guarantee an efficient electricity system. It is therefore necessary that RES should be exposed to market signals

leading to a full market integration in the long run. This includes responsibility for their balancing group, the provision of reactive power and of ancillary services – otherwise, the increasing volume of RES will lead to a distortion of market signals. In a system where balancing tasks function on the basis of economic incentives, it is to be expected that an increased need for flexibility will create economic value for producers of renewable energy to play their role accordingly. In an integrated European electricity market common European rules for redispatch of RES should therefore be established and rules for priority status for RES should be reviewed in the light of future European RES targets.

In addition, higher RES-penetration of the European electricity market will increase the need to manage system imbalances by utilizing DC Interconnectors (DCI) to import and export RES from places with most cost-effective production to consumer centres. TenneT foresees that in the near future, with prices converging due to the integration of the European electricity market, the business case to develop interconnectors on basis of congestion rents alone will diminish. Socio-economic benefits of DCI (for instance DCI to import cost-efficient energy and DCI for balancing loopflows arriving from peak winds) will however remain. It will therefore become important to work on a regulatory framework that will provide the right incentives. More coherence on a European level will contribute to a level playing field.

Moreover, it is important to set commercial (i.e. price) signals which would lead to the installation of capacities to storage electricity. In case market signals are not sufficient, discussions about subsidies for storage capacities should be initiated on European level.

Market Integration

Current national support schemes expose renewable energies to market signals to various degrees. In many cases, these support schemes nevertheless result in parallel "systems" for conventional and for renewable generation which are largely unresponsive to each other. The following questions ask in which way this could be addressed in a post-2020 perspective where renewables will represent a significant share of the market.

- 1. In which of the following ways could renewable energy be made responsive to market signals?*
 - Price risk - producers of renewable energy should be obliged to sell their production on the market and aid be granted exclusively as a) premiums or b) investment aid*
 - Price risk – producers of renewable energy should operate without any aid*
 - Producers of renewable energy should bear greater responsibility for system costs.*
 - Balancing risk – producers of renewable energy should bear balancing responsibility towards TSOs (if so, please specify how: responsibility on individual operator or centrally organised, same balancing rules for all operators or specific rules for variable generation?)*
 - Producers of renewable energy should continue to be treated separately (no exposure to conventional market)*

- 2. How can it be ensured that market arrangements reward flexibility?*
 - Dedicated arrangements to reward availability of generation capacity*
 - Favourable regulatory treatment of storage operators*
 - Develop demand response to market signals (please specify, e.g. smart grids, smart meters, demand aggregation, interruptible demand)*
 - Current market arrangements are sufficient to reward flexibility*

- 3. In how far do you think today's market design needs to be adapted to provide an appropriate framework for renewables*
 - The current wholesale market model based on short-run marginal cost pricing is appropriate*
 - The current wholesale market model based on short-run marginal cost pricing would have to be supplemented by instruments incentivising investment in generation capacities with a high capex/opex ratio (please specify which)*
 - Wholesale markets would have to move to reflecting full costs*
 - Electricity markets should evolve into energy services markets, earning revenues from more than just electricity*

With a significant share of 20% RES in the European electricity market, the successful support schemes, established to reach the 2020 targets, should be adapted in order to prevent severe market distortions and threats for system stability. This should also involve balancing responsibility for RES which should be treated the same way as conventional energy sources in a longterm perspective.

For this reason, market oriented behaviour of (mature) RES should be encouraged by responsible authorities. The value of this demand for flexibility could be developed on a harmonisation/coordinated basis. A level playing field could be accomplished in for instance the determination of imbalances and the definition of payment systems. It is not to be recommended to come to a central organization or a 'European balancing zone': the demand for flexibility should remain specific within congestion zones

(bidding zones) for security of supply reasons. In order to facilitate market entry for nascent RES, attractive support schemes and supportive rules seem, however, still to be useful.

In an integrated European energy market, implementing harmonized market mechanisms is a logical consequence of further European integration. To ensure system stability and to facilitate network control, it therefore seems useful to develop a common European approach for the future development and market oriented integration of RES. This also implies to install RES in those regions where they are more efficient and reliable which leads to the necessity of interconnection infrastructure and grid development inside Member States according to the TYNDP and EIP (i.e. PCIs).

As a consequence, further Europeanization of back-up capacity markets is crucial to guarantee system stability and to increase social welfare for the EU as a whole.

Regional & International dimensions

The cooperation mechanisms of the current Directive offer a framework for cooperation between Member States and with third countries. A number of initiatives are currently under consideration for putting regional coordination in practice, both within the EU as well as with neighbouring regions.

1. Do you consider current rules for cooperation between Member States sufficient to fulfil their purpose, i.e. realisation of cost-efficient renewable potential in the EU?

- Yes.
- No. (Please specify how they should be amended or which elements added)

2. Do you think the EU should further facilitate cooperation with third countries when it comes to the development of the potential for renewable energy?

- No, the EU should first focus on developing its own renewable potential
- Yes, cooperation with third countries should be further promoted (please specify how and with whom, i.e. only neighbouring countries or more widely)

3. Should investments in electricity networks in some Member States (i.e. Spain, Greece, Italy) be prioritized for this purpose?

- Yes (explain in which way and to which degree)
- No (explain why)

Strengthening the cooperation between Member States is important to further increase the share of RES in the European electricity market in a cost-efficient way while maintaining security of supply and increasing public welfare. An integrated European approach with view to RES should therefore be aspired.

Also, cooperation with third countries might be useful to optimise the return of investment and to use the high potential for RES outside the European Union. However, these investments should only be made in the light of a clear political strategy of the European Union. In this context it is also important to further develop and integrate other regions inside the European Union with high potential for RES (e.g. North-Sea Offshore Windpower) wisely into the European electricity system. After all, a holistic approach for grid development inside the Union is necessary for an efficient use of the produced energy throughout Europe.

Financial support

Member States at present rely on various forms of national support mechanisms to fulfil their national renewable targets for 2020. This section refers to the further development of support mechanisms post-2020.

1. Do you consider that financial support will continue to be necessary to support renewables post 2020 given their expected greater penetration?

- Yes
- No
- For selected technologies/circumstances/markets (please specify)

2. If renewable energy sources require support post-2020, how do you think this can best be achieved with a view to achieving a cost-effective deployment?

- Making support schemes more market-oriented (please specify how)
- Accelerate convergence of national support schemes
- Open up national support schemes to cross-border projects
- Phase out support schemes over time (please specify for which technologies if applicable)

3. Do you think it would be useful to develop common approaches as regards Member States' financial support for renewables?

- Yes, with benchmark values for support level per technology per Member State
- Yes, with EU-wide benchmark values for support level per technology
- No, support levels should be entirely up to Member States.

4. Should the structure of financial support be gradually aligned EU-wide?

- Yes (please explain how this could be achieved and which support structure you consider most suitable)
- No

With regard to questions 3. and 4. please specify if you see a difference between the different sectors (electricity, heating and cooling, transport).

5. How do you see the relation between support schemes for renewable energy and the requirements of the internal electricity market for the period after 2020 against the background of a rising share of renewables?

- Member States need to be able to continue to operate support schemes on a national level and retain control over who benefits from national schemes.
- Member States need to open their support schemes to renewable generation from other Member States (if so, please explain how this could be achieved, e.g. through convergence of national schemes, compensation mechanisms or other)
- Member States should open their support schemes to renewable generation from third countries (as above, please explain how this could be achieved)

As outlined above, further support for (mature) RES post 2020 should be carefully examined and adapted in order to prevent severe market distortions and threats for system stability. From a TSO perspective, it is recommended to accelerate convergence of national support schemes and/or open them up for cross-border projects. Recent experience indicates to market inefficiencies resulting from a non-

aligned support policy in Member States. A good example is the 'Cobra cable' initially planned to interconnect the Netherlands and Denmark as well as to integrate electricity of offshore windparks at the German coast. At this stage, it appeared to be impossible to connect windparks offshore directly as national support schemes in Germany incentives (obliges) transportation of electricity to Germany. For this reason, it was examined to include an additional connection (a 'third leg') towards Germany. No convergence of support scheme in this case either leads to a failure of the ambition to include offshore wind energy or an increase of investment by introducing a third connection. After all, it should however be the long-term objective of EU support schemes, to phase-out financial support and special treatment of RES.

In this context it is important to underline that as a consequence of a further increase of RES in the electricity market, significant investments in grid development are necessary and adequate planning and coordination of infrastructure/production is crucial. The transfer from grey energy to green energy will most likely result in higher costs for society; not only because of new production capacity, but also by constructing necessary electricity infrastructure. It should therefore be prevented that society will face unnecessary additional costs for infrastructure arriving from (unnecessary) long distance transportation. Nonetheless, the investments that European TSOs are facing cannot be covered by public funding alone. For this reason, a sound regulatory regime and an adequate rate of return compatible with investors needs is key if we want to achieve Europe's ambitious targets.

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