EREF
European Renewable Energies Federation

As a federation of national renewable energy associations from EU Member States, EREF represents all renewable energy sectors such as wind, solar, small hydro, bio-energy, tidal, wave, and geothermal sources, at EU institutions. Its objective is to promote the interests of independent power, fuel and heat production from renewable sources and to establish non-discriminatory access to the European energy market. EREF strives to create, maintain and further develop stable and reliable framework conditions for renewable energy sources.

Positions and suggestions for a new EU energy market design

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President of the European Commission Jean-Claude Juncker announced in July 2014 the goal for the European Union to "become the world number one in renewable energies".

The Commission clearly reconfirmed its political will in its Communication on the Energy Union package[1] in February 2015 to transform the current centralised conventional energy system, based on fossil fuels and nuclear and built under monopolistic market conditions, into "a resilient Energy Union with an ambitious climate policy at its core is to give EU consumers - households and businesses - secure, sustainable, competitive and affordable energy. Achieving this goal will require a fundamental transformation of Europe's energy system."

EREF highly welcomes this initiative. This document provides EREF's suggestions for elements to be included in a new energy market design for the EU – elements which will strongly contribute towards the goal of making "the EU the world number one in renewable energies".

1. A new system approach: Renewables and energy efficiency as centre piece for a new energy system

The European Commission's Energy Roadmap 2050[2] and numerous internationally acknowledged studies[3] have demonstrated the political will and confidence as well as the feasibility to energise the EU mainly on renewable energy in a reliable and secure way.

[1] European Commission's communication, Energy Union Package (COM(2015) 80 final of 25 February 2015.
[2] European Commission's communication, Energy roadmap 2050 (COM(2011) 885 final of 15 December 2011.
[3] Examples include European Renewable Energy Council (EREC), Re-thinking 2050. A 100% Renewable Energy Vision for the European Union, 2010; European Climate Foundation (ECF), A Practical Guide to a Prosperous, Low-Carbon Europe, 2010; WWF-World Wide Fund For Nature, Re-Energising Europe. Putting the EU on Track for 100% Renewable Energy, 2013.

Renewables facilitate a stable, secure, affordable and democratic energy system for the European Union, generating jobs and wealth. A recent IRENA report[4] estimates employment in the renewable energy industry in 2014 in the EU at 1.2 million people and 7.7 million people worldwide.

With the European Commission's aim to fundamentally transform Europe's energy system, clear political, legal and financial exit signals for carbon-intensive and inefficient power plants are needed.

2. Promotion of all renewable energy sources and technologies

To reach the objective of a secure, sustainable, affordable and democratic energy supply, decision-makers need to promote the development of the different renewable energy technologies and technology segments in all sectors (electricity, heating and cooling, transport) to allow their deployment and exploitation in all geographic and climatic conditions across the EU.

The different renewable energy technologies have varying and often complementary characteristics. Using these efficiently will promote a flexible energy system and enable the market participation of many different stakeholders.

3. Increase of flexibility of energy production

The various available flexibility options in terms of generation, consumption and storage need to be further promoted and exploited. Specific attention should be given to the modification of the characteristics of the day-ahead, intraday, balancing and retail markets. These modifications should facilitate the integration of different renewable energy systems such as wind, solar photovoltaic, wave and tidal, and reward the flexibility from fully dispatchable renewable energy sources and technologies (e.g. hydro and geothermal) and from renewable heat technologies. This will enable demand-response schemes such as geothermal, hydrothermal, and aerothermal heat pumps. In particular, shortening gate closure times and more flexible prequalification standards for balancing markets and dynamic price contracts are necessary.

Flexibility options, including demand side management and flexible generation, can shave peaks and smooth load profiles reducing the need for fossil-fuelled must-run units. It is essential to develop equal market access for all flexibility options to ensure that they are available when needed.

Ancillary services markets open to all types of technologies that enable the broad participation of stakeholders should be created for services that exceed the minimum

[4] IRENA: Renewable Energy and Jobs: Annual Review 2015.

technical requirements. The latter must be made transparent by means of a cost-benefit analysis.

In this context fully dispatchable renewable energy sources such as hydropower and geothermal are desirable flexibility options for generating power along with demand-side management, as well as to take maximum advantage of interconnections and storage.

Hydropower pumped storage is an essential solution for system reliability. It is one of the most cost-effective large-scale options for grid energy storage, acting as a key provider of ancillary services. With an ability to respond almost instantaneously to changes in the amount of electricity running through the grid, hydropower pumped storage is an essential component of the future European electricity system.

Flexible renewable energy technologies can be used in partial load operation and in certain cases can quickly ramp their output up and down on demand. In binary technology even changes in the range of 20 to 100% with a speed of 2% per second could be achieved with proper management of turbine and by-pass valves, as has already been used according to the requirements of German legislation. Operators of flexible renewable energy system installations can therefore offer ancillary services to system operators and provide valuable short and long-term flexibility at a regional level, a step between centralised and decentralised systems.

4. Focus on regional and de-centralised energy production and consumption

As renewables become the centre-piece of the future energy system, decentralised local and regional energy production and consumption will increase significantly. Decentralised power production has the advantage of producing close to load centres, where it has the highest value. Properly connected to the rest of the energy system, it alleviates grid congestion and the need for costly storage infrastructure.

Facilitated by smart grid infrastructure and management, local and regional energy production can play a stronger role in a smart mix with larger-scale production such as biomass, geothermal, hydropower, large-scale PV, concentrated solar power, large-scale wave & tidal, as well as wind on- and off-shore.

5. The required transmission and distribution infrastructure including a strengthened European interconnectivity

Besides the deployment of the regional and local renewable electricity production sources, huge amounts of renewable energy will be generated in limited areas with higher potential, for example off-shore wind in the North Sea, hydropower in the Alps, and on-shore wind on the Iberian peninsula. Thus, further reinforcement and expansion of the transnational grid's capacity within Europe and bordering countries in the East and South of the EU is necessary

to create a fully integrated European internal energy market and reap all its benefits. This will ultimately lower consumer bills offsetting investments into grid reinforcements.

We encourage the swift implementation of the Projects of Common Interest (PCIs) as a means to tackle the major bottlenecks identified by the European Network of Transmission System Operators for Electricity (ENTSO-E) and to eliminate weaker electrical inter-connected areas known as "electric islands". This will help reach the goal of at least 10% interconnection capacity (and later 15%), which has been identified as an objective by the European Commission and the European Council.

Together with further market coupling, a higher degree of interconnection helps to balance larger shares of variable renewable energy, reduces the need for generation capacity, and improves supply and system security. It also reinforces the Commission's approach of fostering more regional cooperation (including the definition of cooperation mechanisms in the RES Directive 2009/28/CE) and prevents the artificial splitting of markets.

At the same time, new approaches should be developed to overcome bottlenecks and achieve a smart distribution grid that allows for the smooth integration and provision of services by decentralised generators, prosumers and consumers.

The automation of the MV network should be enhanced and distribution system operators (DSOs) should constantly monitor and asses the status of their grids. To facilitate the integration of growing shares of decentralised renewable energy sources, DSOs should undertake a cost-benefit analysis of all possible solutions, comparing grid extensions and reinforcements with other available measures, including the exploitation of system services provided by renewables.

6. Existence of a fully functioning intraday and common balancing markets

Balancing over greater areas not only reduces the need for flexible reserves, but also the system's vulnerability to unforeseen and disruptive events as well as the variability of renewable energy sources. To this end, the system operators need to improve and intensify regional including cross-border cooperation, for example by following a more proactive approach in balancing market arrangements.

Functioning intraday markets are crucial for the efficient and cost effective integration of large amounts of variable energy and for cost efficient system operation. Appropriate design of intraday and balancing markets and much closer cooperation between Member States is required to enable European market integration.

7. No to capacity markets

Capacity markets distort national and potentially also EU-energy markets and hinder the completion of a fully integrated and flexible European energy market, thus diminishing the overall acceptance and also the feasibility of the energy system transformation. They also increase costs and they lock in inflexible and unsustainable generation capacity.

Energy markets that have been further developed to enable the use of various flexibility potentials and complemented by a strategic capacity reserve outside the energy market provide the necessary supply security. Furthermore, in the rare circumstances where a lack of generation adequacy requires some Member States to take action, a full and transparent generation adequacy assessment – taking grid expansion measures and regional cooperation into account – needs to be conducted. The adopted measures must be temporary and – as a rule – open to cross-border participation, and the Member State in which the measure is implemented should not restrict the cross-border trade of electricity in times of scarcity.

The Commission and the Member States should focus their efforts on reducing the persistent surplus of fossil and nuclear generation capacity in Europe, while continuing to pursue ambitious and stable renewable energy and efficiency policies.

8. Priority dispatch for renewable energy

We understand priority or guaranteed access as the right of renewable energy generators to inject their electricity into the grid whenever this becomes available. We understand priority dispatch as the renewable energy generators' right to inject their electricity into the grid following the results of market clearing.

Electricity from renewables is produced at almost zero short-run marginal costs because sun, wind, tides and waves are available for free. In theory, electricity produced from renewable energy based power plants should be the first to be sold on the market and to be taken up by the grid. However, operational electrical system security rules may prevent this from happening. Some inflexible power generators (mostly nuclear and coal) need hours or even days to ramp down their production to zero. This is why, in case of network issues, it is allegedly much cheaper and simpler to curtail renewable energy generation than ramping down or curtailing inflexible power plants.

Consequently, inflexible power plants benefit from a "natural" priority dispatch. It is also worth noting that in some European countries coal-fired power plants benefit from "legal" priority dispatch as much as renewable technologies do: this is allowed by article 25 of Directive 2009/72/EC. However, renewables can offer balancing products such as hydropower and battery energy accumulation which should, alongside demand-side behaviour, gradually overcome the traditional inflexible power plants. Yet, consumers are offered no incentive to decrease or shift their demand to support the power system.

Priority access and dispatch for renewable energies are crucial to encourage the update and extension of the grids on the one hand, and to boost flexible power production technologies and elastic consumption behaviour on the other hand.

When the options for upgrading the grid and for enhancing flexible technologies are almost fully exploited the marginal costs of such measures increase. At this stage, it may become economically interesting to tap into the flexibility potentials offered by renewable energy generators. Rather than building a new grid segment that would only be used a few hours per year, it may be more cost-effective to curtail small amounts of peak wind or PV electricity or to equip the installations with storage capacities. Such measures can be fully consistent with priority dispatch rules. Already today, and within the framework of priority dispatch, renewable energy generators can decide to ramp down or store part of their production as part of a voluntary and remunerated arrangement. In this case, ramping down or curtailment would represent a remunerated grid service. It could also happen in response to market price variations. Both connection arrangements and the trade of services at distribution grid level require transparent and fair regulatory frameworks.

9. Continued national support schemes for renewables

According to the European Commission, "Higher shares of renewable energy, energy efficiency improvements and better and smarter energy infrastructure are "no regrets" options for transforming the EU's energy system"[5]. Both the European Council and the European Parliament support this view.[6]

Nevertheless, fossil fuels and nuclear continue benefiting from subsidies. Their external costs befall taxpayers and society; and are seldom included in power price calculations. According to a recent study of the International Monetary Fund Energy Agency (IMF)[7], fossil fuel companies are benefitting from global subsidies of $5.3 trillion (€4.74 tn) per year. The study demonstrates that fossil fuels are not cheap by revealing their real costs. An Ecofys study for the European Commission on electricity prices, costs and subsidies[8] demonstrates that the fossil fuel industry is the biggest beneficiary of public support.

The European Commission, within the framework of the 2001/77/EC Directive on the promotion of renewable electricity as well as in the 2009/28/EC on the promotion of renewable energy outlined as reason for the necessity for support for renewables the clear distortion of the energy market due to significant subsidies to the incumbent sector.[9]

[5] European Commission, Green Paper, A 2030 framework for climate and energy policies, COM(2013) 169 final, 27 March 2013.

[6] Presidency Conclusions on the Energy Roadmap 2050, 18 June 2012; European Parliament resolution of 14 March 2013 on the Energy roadmap 2050, a future with energy (2012/2103(INI).

[7] IMF: How Large Are Global Energy Subsidies?, May 2015

[8] Ecofys 2014 by order of: European Commission, Subsidies and costs of EU energy. Final report, November 2014; IMF: How Large Are Global Energy Subsidies?, May 2015.

[9] Communication from the Commission to the Council and the European Parliament (COM(2004) 366 final, 26 May 2004), The share of renewable energy in the EU. Commission Report in accordance with Article 3 of

Until and unless the external costs of energy are reflected in a strong ETS (providing a high enough and stable carbon price) and a fully flexible power market without over-capacity is in place to allow for balanced prices to develop, supportive and bridging measures for renewables should be continued.

Especially crucial is the possibility for EU Member States to continue national support schemes, specifically for local small scale renewable energy production, including self-consumption. Tapping into the large potential of small scale production enables consumers to become prosumers; promotes additional income to private households and SMEs; and contributes to the de-centralisation of the energy system and its stabilisation. Small scale production increases security of supply without massive investment needs in infrastructure.

It is further worth highlighting that the very objective of a support scheme is to allow newer and therefore more costly technologies, to progress along their learning curve. To avoid blocking innovation, support schemes should better take into consideration the different maturity levels, specific barriers as well as risk profiles of different renewable energy technologies.

10. No retrospective and retroactive measures against existing renewable energy projects and no to moratoria

The renewable energy sector has to deal with retrospective and sometimes even retroactive changes to renewable energy support schemes, as well as moratoria.[10] The development of the renewable energy sector in the affected countries clearly shows that such measures have a detrimental impact on regulatory stability and investor confidence and, thus, jeopardize the achievement of the agreed renewable energy targets for 2020 and 2030, both at national and EU levels.

EU Member States and the European Commission must not use the process of designing a new EU energy market design to impose retroactive changes of any type against existing renewable energy projects.

Directive 2001/77/EC, evaluation of the effect of legislative instruments and other Community policies on the development of the contribution of renewable energy sources in the EU and proposals for concrete actions, page 35.

[10] Latest overview of retrospective policy changes in EU Member States: Keep on Track Policy Briefing: Retroactive and retrospective changes and moratoria to RES support, Dörte Fouquet und Jana Nysten, March 2015.

11. Phasing out nuclear and fossil fuels

With the European Commission's aim to fundamentally transform Europe's energy system, clear political, legal and financial signals and frameworks are needed now for phasing out nuclear and fossil fuels.

Governments and the European Commission should work on plans and allocate funds to a structural change in those areas in which the fossil fuel sector still provides many jobs (e.g. coal miners in Romania and Poland).

12. Further developed interaction between the three sectors power; heating and cooling; and transport

Interaction between sectors facilitates a functioning flexibility-driven, de-centralised energy system. The market design of the future needs to tap into existing potential and integrate flexibility options across all sectors, such as using smart renewable heat technologies (aerothermal, hydrothermal, and geothermal heat pumps) enabling flexible consumption, using gas grids and salinity gradient technologies for storage, electric vehicles, and to enable improved integration of smart solutions.

13. Empower consumers

The European Commission regards the consumer as the centre of a transformed EU energy market. The new design should facilitate the transition from consumers to prosumers and strengthen the role of the latter, allowing them to participate in the market on an equal footing with centralised power generation.

Community and cooperative projects have democratised energy production and consumption in many European countries and have significantly contributed to revitalising the local economy, to creating jobs and regional value.

Demand-side response should also be valued, together with self-consumption and other mechanisms incentivising consumers to actively participate to the market. All barriers to self-consumption should be removed. We recommend that administrative constraints are limited to the lowest possible level. Regulatory barriers as well as disproportionate grid charges and taxes imposed on prosumers in some Member States should consequently be removed.