Achieving the Energy Union – A collective effort by all EU Member States

A EURELECTRIC position paper

October 2015

EURELECTRIC is the voice of the electricity industry in Europe.

We speak for more than 3,500 companies in power generation, distribution, and supply.

We Stand For:

***Carbon-neutral electricity** by 2050*

We have committed to making Europe's electricity cleaner. To deliver, we need to make use of **all low-carbon technologies**: more renewables, but also clean coal and gas, and nuclear. Efficient electric technologies in **transport and buildings**, combined with the development of smart grids and a major push in **energy efficiency** play a key role in reducing fossil fuel consumption and making our electricity more sustainable.

***Competitive** electricity for our customers*

We support well-functioning, distortion-free **energy and carbon markets as** the best way to produce electricity and reduce emissions cost-efficiently. Integrated EU-wide electricity and gas markets are also crucial to offer our customers the **full benefits of liberalisation**: they ensure the best use of generation resources, improve **security of supply**, allow full EU-wide competition, and increase **customer choice**.

***Continent-wide** electricity through a coherent European approach*

Europe's energy and climate challenges can only be solved by **European – or even global – policies,** not incoherent national measures. Such policies should complement, not contradict each other: coherent and integrated approaches reduce costs. This will encourage **effective investment to** ensure a sustainable and reliable electricity supply for Europe's businesses and consumers.

EURELECTRIC. Electricity for Europe.

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KEY MESSAGES

The European power sector has a key role to play in helping to achieve European and national energy, environment and climate policy objectives. EURELECTRIC calls for an ambitious, European approach to energy policy. **The Energy Union process should lead to a clear and coherent energy and climate policy path[1] at the European level.** It should also provide visibility to the implementation of this policy path through a combination of EU wide, regional and national measures. Progress should be monitored within the Energy Union governance framework through national plans and their follow-up.

This paper highlights through specific **examples the added value of regional and EU wide cooperation regarding market integration, renewables and security of supply and provides recommendations for the Member States and the EU** to achieve the Energy Union. It is above all the Member States that will shape the Energy Union and determine to a large extent the investment framework which is crucial to Europe's future energy system. **Member States contribute, not only through effective implementation of EU legislation, but also by ensuring that national measures work with, rather than against, the grain of the single market.** EURELECTRIC calls for increased coordination of policies and the assessment of the regional and EU level impacts of national policy measures (e.g. support measures, taxes and charges).

Europe needs to move towards a common approach to its decarbonisation and sustainability goals. A technology neutral, European approach can be achieved in the power sector by using the **EU ETS as the main instrument to deliver decarbonisation**. Through their policy choices, Member States should ensure that the EU ETS can be the main driver for low carbon investments after 2020. The State Aid guidelines should be implemented swiftly and Member States should take voluntary bottom-up initiatives to enhance the convergence and coordination of RES policies.

The Member States should gradually move **from a mainly national approach to a more regional approach to security of supply**. This applies both to adequacy assessments, and capacity remuneration mechanisms. To guarantee this evolution, the Commission should push for harmonised solutions, while the Member States should commit to regional cooperation on security of supply.

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[1] While recognising that the freedom to determine the energy mix remains the competence of Member States.

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Introduction - demand for a common approach to energy

The European power sector has a key role to play in helping to achieve European and national energy, environment and climate policy objectives. The European electricity sector is a world leader in sustainability on the basis of its RES portfolio and greenhouse gas emissions[2]. In 2013, the share of low carbon power generation stood at 52% of the power mix, comprising 26.8% from nuclear and from 25.4 % RES (of which 45.5% hydropower, 26.5 % wind, 17.8 % bioenergy, 9.6 % solar, 0.6% other). The European power sector believes that in order to drive the energy transition in the coming years, we need an ambitious, European approach to energy, and we therefore call for a strong Energy Union. A greater share of renewable energy means an increased need for trade in electricity in both day-ahead and short-term markets, and calls for a reinforcement of power networks, reflecting the importance of the single European energy market. A European approach to energy is also needed in order to provide investors with the long term stability that helps mobilise financing for the investments in low carbon technologies.

EURELECTRIC has previously outlined its recommendations in the paper *Governance of the Energy Union and the 2030 Framework* published in April 2015. With this current paper, EURELECTRIC is contributing to the iterative process to build the Energy Union by **emphasising the contribution of the Member States in the Energy Union process**. It provides a national, regional and European perspective on the selected items of relevance at the European and regional levels. It introduces **examples on the need for more cooperation between European countries**, it identifies **bottlenecks or barriers that can hamper national policies from evolving into more regional and European ones**, **it provides examples of successful cooperation and makes concrete proposals on how to achieve the Energy Union**. The paper is based on responses to a questionnaire completed by 18 of EURELECTRIC's members. While the responses show some differences in the details, a number of clear, common themes, and proposals for solutions are reflected in the responses received from the power sector across Europe.

While recognising the differences between Member States, EURELECTRIC's believes that, the Energy Union concept be helpful in placing an increasing focus on the common benefits in taking a more common and European approach to energy. The EU single energy market can help us achieve the energy transition in a sustainable and cost-efficient manner, while ensuring security of supply and competitive prices. Member State policies should be consistent with the single market and ensure effective implementation of EU legislation. There is a need to cooperate not only within the EU, but also with the EEA countries, Energy Community countries, Switzerland and other partner countries e.g. North African countries.

EURELECTRIC's members considered that the following policy areas call for immediate action in the Energy Union, at the EU, regional and national level:

- **Establish a technology neutral approach as a key principle of European energy policy:** the EU ETS needs to be reinforced to achieve a stronger carbon price which will drive low carbon investment.

- **Adopt smart policies to develop renewables in a cost-effective and market-oriented way:** Member States should move towards a more convergent and coordinated approach. There is a need to have EU wide top-down approach to the harmonisation and coordination of RES

[2] The global utility ranking published in EI New Energy Global, in 2014, showed that, of the 100 Green Utilities selected on the basis of the volume of their renewable energy portfolio and their greenhouse gas emissions, 6 out of the top 10 companies are European.

policy, as well as Member States' voluntary regional efforts (bottom up approach), bearing in mind the importance of a stable framework for investment.

- **Drive decarbonisation on all fronts:** the potential of low carbon electricity in the transport and heating and cooling sectors needs to be unlocked through electrification[3].

- **Accelerate the integration of electricity markets:** This includes the integration of the intraday and balancing markets to ensure that flexibility sources are incentivised. It is also important to speed up the implementation of agreed legislation and **evolve towards a more regional approach to security of supply.**

- **Reduce the burden of state imposed, unrelated policy add-ons on electricity customers and** explore ways to make support for energy-related policies less distortive and burdensome on the power bill.

- **Develop cost-effective the interconnection capacity and optimise the use of existing capacity** to enable the single electricity market, market integration of RES and to enhance security of supply. Grid projects with a positive macro-economic cost–benefit analysis (CBA) should be executed, while those with a negative CBA should not be executed.

- **Ensure more consistent policies,** including measures to promote energy efficiency and renewables, and reduce competition distortion, including in areas of policy that are of national competence.

- **Ensure investor predictability:** this is intrinsically linked to all the points mentioned above.

This **paper focuses on the following four key areas** because they are associated with significant cross border impacts, and are at the core of the ongoing energy transition**: internal electricity market, RES policy, interconnections, and security of supply**. The paper aims to highlight the potential and need for further cooperation by Member States in achieving the Energy Union **by focusing on concrete examples.**

[3] EURELECTRIC report, '*The benefits of electrification - Electricity's contribution to sustainable energy use*', September 2015.

1. Internal electricity market at the core

Benefits of market integration

The implementation of the internal electricity market is at varying stages in the EU. While most Member States are working to integrate the short-term markets and reserves, which also facilitate the market integration of RES, others are working on the more basic aspects of implementation of agreed legislation and market integration. The Energy Union should bring new impetus and political commitment to proceed in both cases.

The integration of forward, day-ahead, intraday and balancing markets optimises the use of assets, including flexibility sources, across the whole of Europe. This leads to more efficient market participation by all agents and, ultimately, to more cost-efficient delivery of energy to consumers. The examples below illustrate why market integration is needed and describe the benefits of market integration to the Member States.

Further progress should also be made with liberalising European gas markets, to ensure that cost-effective and reliable supplies are available throughout Europe. As with electricity this will require both a convergence of market rules and a strengthening of infrastructure.

Table 1 – Examples of the benefits of market integration

NEED FOR FURTHER MARKET INTEGRATION
BULGARIA: Ensuring removal of barriers to market entry, particularly on the supply side to allow **effective competition would improve the market functioning** in Bulgaria. Currently, the three subsidiaries of the state-owned Bulgarian Energy Holding supply more than 90% of the energy on the free market. At the same time, Bulgaria has to tackle with **the significant overcapacity of its electricity system.** The creation of an open and competitive electricity market would enable Bulgaria to participate in the internal market for energy in the EU. More interconnection to Turkey would also provide important benefits to Bulgaria.
THE NETHERLANDS AND GERMANY: According to a study by WEC Netherlands (under formation) and WEC Germany[4], the Netherlands and Germany would benefit substantially from **coordination of their energy markets**. For example, by having gas fired power plants in the Netherlands, serving as back up for renewables (wind) in Germany, an overall reduction of capacity can be achieved. The benefits of cooperation include benefits associated with market integration like operational costs (decreased fuel costs and decreased balancing costs) and investment cost (decreased needs for additional transmission and production investments) as well as more indirect benefits, including improved investment climate and new economic activities related to innovation. Recommendations on aligning policies include, for example, further harmonisation of regulatory models that can contribute to better functioning price signals and the further removal of impediments to trade. A prime example is the harmonisation of balancing responsibility for all market participants and in all markets to efficiently achieve stable networks and further enhance market integration of renewable electricity.

[4] WEC Germany and WEC Netherlands (under formation), September 2014. The benefits of coordination - Increasing welfare through coordination of German and Dutch energy markets and policies.

SPAIN AND PORTUGAL: The Spanish and Portuguese power markets are already deeply integrated (single regional price 94% of the time), but some steps remain to be taken. Basing the bidding zone borders to physical constrictions regardless of national borders, in this case becoming **a single, larger bidding zone, would improve competition in the wholesale and retail markets and increase hedging opportunities** in Portugal. Larger bidding zones present more advantages for the functioning of the market, however the capacity of the grid should be duly taken into account.
GREECE: So far, the power market in Greece consists of a day-ahead market which operates as a "mandatory pool". Forward, intraday and balancing markets are not in place. **Implementation of the target model, and market coupling with neighbouring countries** (especially Italy) should be accelerated. The transfer of existing experience and know-how from other European countries to Greece could prove valuable.

Barriers to market integration

While barriers can be manifold, the **key factor for success** in the implementation of the target model and market integration has often been the **political commitment by the Member States and their clear vision of the resulting benefits**.

Cooperation and coordination between national regulators is also a key factor and will need to be enhanced in future.

Regarding the integration of the balancing markets, the national balancing markets in Europe have significantly different market designs and operation principles, because they are strongly linked to the local market context and network conditions. This makes it challenging to evolve towards a genuine European balancing market, implying a need for cost benefit assessments.

The way forward

Examples on where Member States are making good progress in the implementation of the target model and the integration of the power markets are described below.

Table 2 - Examples of notable Member State initiatives on market integration

NOTABLE MEMBER STATE INITIATIVES
FRANCE, GREAT BRITAIN, GREECE, ITALY, PORTUGAL, SPAIN AND SWITZERLAND: The implementation of TERRE (Trans European Replacement Reserve Exchange), **an early pilot project for the Replacement Reserves (RR),** based on a Common Merit Order list and standard product, which fulfil the objectives of the Balancing Framework Guidelines, should be accelerated. The participant countries are France, Great Britain, Greece, Italy, Portugal, Spain and Switzerland. Prior to TERRE, project BALIT was implemented to exchange replacement reserves between FR-ES-PT. However, BALIT is not as efficient as TERRE. It is not based on a Common Merit Order list, and only a small amount of replacement reserve energy is being traded. Under BALIT, only "surpluses" are traded, meaning that the balancing energy from the most efficient available resources is not always activated.

SPAIN: Spain requires **wind generators to bid in the electricity markets and to be subject to balancing obligations**. Although the amount of wind and, more generally, intermittent generation has, increased significantly in the last years (e.g. wind capacity from 15,000 MW in 2007 to 23,000 MW currently, or PV capacity from less than 1,000 MW of PV capacity prior to 2,007 to almost 6,000 MW currently), there has not been a corresponding increase in the amount of energy mobilised in the Ancillary Services Markets and Mechanisms. Instead, **fluctuations in wind and PV generation are forecasted and managed through day-ahead and intra-day trading**. Forecasting has greatly improved. From the point of view of wind and PV generators, imbalance charges to be paid are quite low: about 1 €/MWh for wind generators and even less for PV plants.

THE NORDIC COUNTRIES: The balancing market has been fully integrated in the Nordic market (Sweden, Norway, Finland and Denmark) for several years. Common products enable the **sharing of balancing resources** to a large extent. The common market comprises 4 countries and 12 bidding zones. **A joint regional service company for balance and settlement,** eSett, has recently been established. eSett will start operating the imbalance settlement in autumn 2016. The governments and regulators of the participating countries Finland, Norway and Sweden support a common Nordic Imbalance Settlement provider. Harmonisation of the imbalance settlement is an important step towards a fully functional common Nordic retail market in the three countries.

EURELECTRIC's recommendations on market integration

EU wide measures

The governance of the internal electricity market, including the role of ACER, must be developed with a European mind-set safeguarding the interests of the European customers. The first step should be to develop a vision for the role of ACER. TSOs should evolve from national to at least regional system operation.

ACER should first and foremost implement the mandate it received in the Third Energy Package to its full extent, acting more proactively and firmly as a facilitator among National Regulatory Authorities (NRAs) for cross-border projects and taking faster decisions in case of disagreement between NRAs. This should particularly apply to the implementation of PCIs (Projects of Common Interest). In case of NRA disagreement on cross-border issues (related to markets or infrastructure), ACER should be allowed to initiate action and a possibility should be available for parties other than NRAs to call upon ACER's right to initiate. A proper implementation of network codes and guidelines provisions should be ensured.

ACER also needs to focus more on regional projects with multiple Member States involvement, promoting best practices (benchmarking of national systems) among NRAs, including regarding innovation. Cooperation with stakeholders should be reinforced, e.g. developing and monitoring the implementation of network codes (e.g. the Generators Network Code).

Delays in the implementation of the cross-border intraday solutions have been regrettable, and EURELECTRIC is satisfied that an agreement has been reached among power exchanges for the implementation of the central European Intraday Platform. We urge project parties to stick to the

agreed timeline of July 2017 for the go-live date with all Local Implementation Projects (LIPs) attached.

EURELECTRIC believes that the development of the Electricity Balancing Network Code and the implementation of the regional pilot projects, when providing for a common target model and subject to a robust cost benefit analysis, are the right instruments to progressively align European balancing markets. The implementation process of the balancing guideline that is based on the key parameters already defined (settlement period – subject to the result of the cost benefit assessment, single price, marginal price...) and the others to follow (standard products, COBAs...) should lead to the fine-tuning of the design: it should reveal a clear target model for the balancing markets, as it is the case for the forward, day ahead, intraday markets.

Member States' measures

Member State policies should be consistent with the single market. The Third Energy Package should be implemented, prioritising the development of robust cross-border intra-day and balancing markets and adequate interconnection capacity, as well as the better utilisation of the existing capacity. The considerable barriers to entry in some Member States should be removed. For example, licensing rules in some countries deny market entry to companies that do not have a registered office in that country. Furthermore, some countries deny access to their energy exchanges to traders who do not speak the language.

Benefits of tackling market distortions

The benefits of the internal electricity market will remain partly untapped until we reach a more level playing field that ensures stronger competition. Different taxes and charges on power generation often lead to market distortions. The same applies to taxes on demand response and storage. The examples below illustrate policy measures that can potentially lead to market distortions and hamper competition in the internal market. They show the desirability of coordination and alignment of policies.

Table 3 – Examples on the need for coordination on policy measures

NEED FOR COORDINATION ON TAXES AND CHARGES
G-CHARGES IN SEVERAL COUNTRIES: For example, **Belgium** and **Slovakia** have introduced **G-charges (charges on transmission for power generators) which may lead to competition distortions**. In Belgium, the G-charges were introduced in 2012, and were cancelled in 2013 as a result of a court appeal. Slovakia has applied G-charges since 2014, with no regional coordination on the issue. Other countries like **Austria, Finland, Norway, the UK and Sweden** also apply G-charges.
UNITED KINGDOM: The **UK applies a carbon price floor**, which is designed to incentivise low-carbon generation given the relatively weak EU ETS price, which leads to market distortions between the UK and non-UK generators, without producing benefits in terms of GHG reduction at the EU level.

TAXES IN SEVERAL COUNTRIES: Several Member States impose **taxes or levies on energy products used for power generation (fuel tax on gas and/or coal) or specific taxes on hydro power or nuclear power generation**. The Energy Tax Directive states that Member States shall generally exempt energy products used for production of electricity from taxation. Taxes on energy products used to produce electricity are allowed only for environmental reasons.

- **Finland, Norway and Sweden** apply higher property taxes than generally applied for hydro power. Sweden applies a capacity based nuclear tax, annually 1,4 ME/1000 MWth, and this tax has recently been increased by 17%. Currently, companies are considering early closure of up to four nuclear units (Ringhals 1 and 2 and Oskarshamn 1 and 2). The final decisions have not been taken yet, but the possible closure is due to low electricity prices and the high nuclear tax.

- **Latvia** applies a tax on gas that is used in power generation.

- **Spanish** hydro power plants are subject to a specific hydro tax amounting to 22% of generation incomes (on top of a general 7% tax on all generation), whereas Portuguese hydro plants located on common basins (e.g. Duero or Tagus rivers) are exempt.

- In **Portugal** a tax on the energy companies assets was introduced, and the generators are paying a social tariff for the electricity.

- **Greece** applies substantial excise duties imposed on natural gas and diesel as well as a special lignite levy for electricity generation from lignite-fired power plants.

- In **Spain**, a new law was approved by Parliament in December 2012, imposing new taxes on electricity generation, with the aim to collect about 3 billion euro per year. Specifically, there is a new 7% tax on all generators incomes. In addition, new nuclear taxes on spent fuel (2,190 €/kg spent fuel, about 5 €/MWh), a new 22% hydro tax on hydroelectric facilities income (the tax is reduced to 2.2% for facilities under 50 MW and pumping stations), new natural gas and coal taxes (about 7 €/MWh for coal-fired power plants and about 4.5 €/MWh for CCGTs).

BELGIUM, GERMANY AND AUSTRIA: Pumped storage in several countries, including Belgium, Germany and Austria, is subject to **double grid fees and other charges** such as policy support costs. In Germany the distortive taxation applies to electricity storage facilities in the electricity supply system in general. They are treated as end-customers.[5]

GREECE: There is a need to progress also with the development of **level playing field** with neighbouring regions. This is evident for example in **South Eastern Europe**. The Greek power sector has surplus capacity due to the escalated economic crisis. At the same time, power generators in the neighbouring countries apart from Italy do not have to purchase **CO_2 allowances** (either because they are not EU Member States or because they are EU Member States with free allowances allocated to their electricity sector). This has led to an increase of imports to Greece.

[5] For Germany, see Definition of the term "Energy storage facility", BDEW, October 2014

APPROACHES IN THE IMPLEMENTAITON OF EU ENVIRONMENTAL LEGISLATION: Member States have adopted different approaches in the implementation of EU environmental legislation, which may also in some cases influence competition. For example, the costs of implementing the Water Framework Directive are borne in some cases by generators and in others by tax payers.

Recommendations on tackling market distortions

Member States should assess not only the national pros and cons but also the impacts of domestic taxes, levies, charges to competition on the internal market, both between different countries and different technologies. EURELECTRIC encourages Member States to work towards greater policy convergence.

2. Renewable energy – towards an EU wide approach

Benefits of cooperation on RES

Cooperation in renewable electricity has been estimated to lead to more cost-effective decarbonisation, and thus lower the costs to society. RES support schemes from recent years have successfully increased the RES capacity in Europe. At the same time, this has resulted in a reduction in the wholesale power prices and has influenced flows in the electricity transmission network beyond the borders of the country in question, thus impacting the profitability of existing generation capacity and potentially also security of supply in other Member States.

The framework for RES should provide policy clarity and market stability to minimise regulatory uncertainty and lower the risks. EURELECTRIC's members agree that greater convergence and coordination of RES policies affecting the power sector would facilitate a smoother and more cost-efficient decarbonisation. The EU ETS, which is a technology-neutral, European wide instrument, has the potential to bring an increasingly EU wide approach to low carbon technologies development and investment. However, European carbon prices have been too low in recent years to drive the necessary investments, due to economic crisis, energy efficiency measures and the RES support schemes. The approach to foster renewables has remained very national.

The State aid guidelines that were adopted in 2014 and are valid until 31 December 2020, set requirements on the design of support schemes that constitute State aid. The implementation of these guidelines should produce a gradual convergence of national support schemes.

Table 4 – Examples of the need for policy coordination on RES

NEED FOR COORDINATION OF RES POLICIES
NORTHERN EUROPE: **North Seas Grid/offshore development** is an area where more coordination between Member States would be beneficial. Today, the area is made up of national markets which are relatively small. This hampers the industrialisation and optimisation of supply chains (e.g. for offshore wind), which have a significant growth potential in the region. A more regional approach to regulation and grid development would enhance cost efficiency and increase the free flow of electricity across borders. The European Commission and Member States should work to identify and promote projects which can advance the North Seas energy agenda..
A more holistic approach is also needed regarding the assessment of **environmental impacts of projects** bringing more flexibility to the market. For example, environmental impacts of hydro plants are usually rather local, but flexibility provided by hydro power and pumped storage facilitates increase in variable RES beyond borders. This should be taken into account in weighing the environmental impacts of projects.

Barriers to cooperation on RES

A lack of interconnections, limitations of cross-border trade and the **incomplete harmonisation of market rules** and other policies influencing RES investments effectively hinder cooperation on RES today. **RES policies are not only driven by decarbonisation**, but also by other national or even local objectives, related to employment, industrial development, and security of supply. Communication

with voters on the benefits of cross border cooperation on RES is seen as a challenge. Citizens are also concerned about paying for RES investments in other countries.

The way forward

Table 5 - Examples on how Member States are cooperating on RES are described below.

NOTABLE MEMBER STATE INITIATIVES
GERMANY: State aid guidelines recommend partial **opening of support schemes for operators located in other Member States**. Germany is currently the first country to test the opening of tendering through a pilot tender for solar installations on the ground. The opening of tendering has the potential to reduce costs for German electricity customers and reduces market distortions between Germany and other EU Member States. The market impacts of RES support in Germany have been particularly large due to Germany's ambitious RES targets and fast progress in this area.
NORWAY AND SWEDEN: Norway and Sweden have had a **common green certificate scheme** since January 2012, the first common support scheme in Europe. Due to the certificate scheme, there are **less market distortions caused by RES support** between the neighbouring, strongly connected Norwegian and Swedish electricity markets. However, the common certificate scheme has revealed that **when support schemes converge, there could be a need for harmonisation in other areas of policy and regulation,** such as taxation and transmission tariff structures. Investors favour countries where the administrative processes can be completed more efficiently and other policy related costs are lower. 80% of investments currently go to Sweden, which is not explained by the economic RES potential. Norway is yet to proceed in improving other investment conditions for RES, and should do so without delay.
NORWAY: Electricity is a carbon neutral energy carrier and, if used more widely, will open the door for many more positive changes and spill-overs in other sectors such as transport and heating and cooling. In addition, the use of electric vehicle batteries or electric appliances (e.g. water heaters) as flexible demand and decentralised energy storage opens up the energy system to very high renewable penetration. Norway should actively share its experience for the upcoming transport package and take a lead in the **electrification of the transport** sector. During the first quarter of 2015 20,4 % of new car sales in Norway were electric vehicles.[6] The total number of electric cars in the country exceeds 50 000.

EURELECTRIC's recommendations on coordination of RES policy and cooperation

The Energy and Environment State aid guidelines provide a good basis for convergence since they reduce the scope of possible RES support schemes to a few mechanisms. They also require (at least partially) the operational integration of RES, encourage a gradual opening to projects in other countries and increase cost-efficiency by avoiding overcompensation. EURELECTRIC supports the effective implementation of these guidelines. However, the main aim of the State aid guidelines is not the harmonisation of approach to RES, and they do not oblige Member States to integrate RES to the market to the extent that it would be possible. For example, several requirements on market

[6] (In Norwegian) http://elbil.no/nyheter/elbiler/3618-elbilsalget-flater-ut

integration do not apply to small scale renewables, although they would be able to participate in the market through service providers.

When changing their support schemes to comply with the State aid guidelines, Member States have an opportunity to increasingly coordinate their approach to RES, and seek for common, market-orientated solutions[7] in the implementation. The approach of the State aid guidelines should therefore be complemented by voluntary bottom-up initiatives to accelerate and enhance the convergence and cooperation on support schemes. This includes options like a common approach to market integration of RES, a framework for distributed generation, and a partial opening of support schemes. Member States should increasingly seek opportunities for cooperation in the area of research, development and demonstration of new RES, demand response and storage technologies.

Implementation of the state aid guidelines, complemented with voluntary regionally coordinated approach to RES electricity can be the starting point, and a common EU wide approach to RES and other low carbon investments through the ETS the goal after 2020. Other EU wide and national measured on RES should be mainly focused on sectors outside the EU ETS and on immature technologies.

EU wide measures

The EU ETS needs to be urgently reformed to provide incentives to reduce greenhouse gas emissions, to improve energy efficiency and to invest in low carbon technologies. EURELECTRIC considers that the Commission has tabled a balanced legislative proposal to revise EU ETS Directive, in line with the political agreement reached by the Heads of State in October 2014 on the 2030 climate and energy framework.

The European Commission Directorate General for Competition should ensure the strict enforcement of the existing state aid rules in the area of support schemes, and the State Aid Guidelines for Energy and Environment should be reviewed in good time for the post- 2020 period. Among other goals, the new guidelines and the reform of EU RES policy in the context of the 2030 climate and energy framework should ensure full market integration of renewables. The reform of the State aid guidelines and the review of the RES Directive and market design should take into account the need to ensure cost-effective development of distributed generation and grids, as well as a fair allocation of costs and benefits[8].

The Energy Union process, including the Commission's recommendations to Member States, the State of the Energy Union report and the preparation of National Plans, should ensure that cross-border impacts of national approach to RES are identified and addressed, while the benefits of coordination and opportunities for cooperation on RES should be identified. Alternative approaches should be analysed, taking into account both costs and benefits, including the impacts on network development and security of supply etc. If additional measures are used in the power sector to drive mature technologies after 2020, their impacts on the EU ETS as well as on cross border market impacts should be assessed and mitigated. The Energy Union Governance should ensure that Europe proceeds towards the agreed 2030 targets while ensuring security of supply, competitiveness, and sustainability.

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7 EURELECTRIC report, *'Renewable Energy and Security of Supply: Finding market solutions for more details'*, October 2014.

8 The impacts of taxes and levies in final customers' bills are addressed in the EURELECTRIC publications '*Prosumers – an integral part of the power system and the market'* and *'The benefits of electrification – electricity's contribution to sustainable energy use'*.

Member States' measures

When ensuring compliance with the state aid guidelines, the Member States should actively seek opportunities to move towards a more regional approach to RES. EURELECTRIC encourages Member States to ensure through their policy choices that EU ETS will become the main driver for increasing deployment of mature renewable technologies in the power sector.

3. Interconnections – necessary for RES, integrated power markets and security of supply

Benefits of adequately connected markets

A more efficient operation of existing interconnections and an increase in interconnection capacity is needed in order to integrate the power markets, to facilitate the integration of renewables, and to enhance security of supply. RES increases the need for cross border trade, and changes the internal flows of electricity, leading also to the need for investments in both cross-border capacity, and Member States internal transmission capacity. Stronger transmission grids will also allow the export of RES production over larger geographical areas and thus use flexibility located in other markets. In addition, the EU continues to have "energy islands" as well as areas with loop flows, especially in the CEE area. Some countries (e.g. Norway and Bulgaria) face surplus capacity, which could be used more optimally with increased interconnections. At the same time, other countries, such as the UK, have concerns over generation adequacy. The recent investment decision on a UK-Norway interconnector is therefore a welcome step.

Grid projects with a positive macro-economic cost–benefit analysis (CBA) should be executed, and those with a negative CBA should not be executed. Alternative solutions should be considered to find the most cost efficient solutions.

The safe operation of the grids requires continuous improvement due to the growing complexity that results from the contribution of variable energy sources, and integration of the power systems. The electricity networks need to be operated in a more integrated manner and capacity needs to be managed more optimally through the development of rules on capacity allocation and congestion management.

Table 6 - The examples below illustrate the need to ensure adequate level of interconnection, and the benefits that follow.

NEED FOR ADEQUATE LEVEL OF INTERCONNECTION
SLOVAKIA AND HUNGARY: Electricity interconnection reinforcement between Slovakia and Hungary should be achieved as soon as possible to **enhance system reliability, improve security of supply and promote further market integration within the region**. At the same time, the above mentioned interconnection was also identified as PCI project, which emphasises the importance of such infrastructure reinforcement also from European perspective.

THE NORDIC COUNTRIES: The Nordic area has benefited many years from a common electricity market, which has enabled the sharing of production resources and the establishment of a common electricity forward market. The common market and interconnections have facilitated for example the high share of wind power in Denmark, by meeting the need for increased flexibility through the hydro power in Scandinavia. However, **current European developments such as the market coupling with CWE, increased interconnection and increased investment in variable RES should lead to further developments of the Nordic market**. For example, price convergence has been very varied for the past 5 years, swinging from 26% to only 11% in 2014. It is therefore time to further improve the performance of the Nordic market by increasing grid investments and addressing exiting restrictions that limit power flow across borders. The lack of interconnection capacity and occasional curtailments distort the market, distort investment signals for generation, load and transmission and worst of all, lead to a reduced European and Nordic welfare. TSOs need to have a regional view, when planning the transmission grids.

GERMANY AND THE NORDIC COUNTRIES: The internal German grid congestion has led to heavy curtailment of transmission capacity, disconnecting much of the time the Nordic market areas from the remaining market coupled region. This interconnection capacity curtailment distorts investment signals for generation, load and transmission and leads to a reduced European welfare. The RWTH-Aachen University study *"Investigation of welfare effects of increasing cross-border capacities on the DK1-DE interconnector*" outlines this lost European welfare as a case for the DK1-DE interconnector which is the main interconnector between the Nordics and continental Europe. However, the problem is not confined to this particular interconnector only, but also includes the SE4-DE and SE4-PL interconnectors.

GERMANY AND THE NETHERLANDS: The price divergence between Germany and the Netherlands **increased between 2011 and 2013, because the interconnection capacity has not been increasing at the same pace as the capacity of variable RES** in Germany. Significant change took place from 2011 to 2013, in 2011 the prices converged around 90% of the time, while in 2013 the prices converged around 20% of the time.

THE BALTIC COUNTRIES: The Baltic area has **long remained an energy island in the EU. Now the market integration and security of supply are improving due to the PCIs.** Interconnection capacity in the Baltic States region will be significantly increased after the completion of PCIs, some of them already in stage of construction or commissioning (NordBalt, LitPOL, Latvian-Estonian 3rd interconnection). All projects will be finished by 2020. Currently there are two price zones in the Baltic States: Estonian and Latvian/Lithuanian. After increase in the interconnection capacity to Estonia and Scandinavia, the power price is expected to decrease in the Baltic States.

SPAIN, FRANCE AND PORTUGAL: In January 2015 the Transmission System Operators of Spain, France and Portugal signed **a common strategy paper for the development of interconnections.** Sometime later the Commission created **a new High Level Group to render the cooperation concrete**. When implemented cost efficiently, increase of interconnectivity in South –West Europe would foster the integration of renewable energy, lead to more competitive prices and improve security of supply. Iberian generators would be provided with a better access to the internal electricity market. However, all alternative interconnection technologies should be considered and the proposed projects should be subject to a rigorous cost-benefit analysis (only projects with positive CBA should be executed). There are concerns regarding the costs and benefits of some planned projects and current practice often falls short of these standards: cheaper alternative solutions have not been considered. For instance, the new underground France-Iberia interconnector came at a cost of 700 M€, about ten times more expensive than an equivalent overhead interconnector or the new proposal of a 2.200 MW sub-sea interconnector (Western Interconnection ES-FR Gatica- Aquitaine) that according to the Spanish TSO (REE) would cost 1,600 – 1,900 M€, while alternatives consisting of transforming existing AC connections into DC have not been evaluated. The Spanish regulator has voiced concerns over high transmission costs and missing CBAs[9]. There is a need to develop system operation - TSOs should evolve from national to at least regional system operation.

GREECE: Many small/micro power systems in Greek **islands would benefit from connection to mainland**. The Greek islands have in general an **excellent RES potential, but there are concerns regarding security of supply**. Connection to mainland would improve the security of supply in the islands, while providing a means to transport renewable electricity to the mainland, and increase the share of renewables in Greece.

Barriers to building interconnectors

The costs and benefits of building interconnectors are often not realised in the same area/country, which can make it difficult to proceed. The Projects of Common Interest (PCI) process aims to address this problem.

Authorisation of transmission lines and public acceptance continue to be major challenges in increasing the interconnector capacity.

EURELECTRIC's recommendations on ensuring adequate interconnection capacity

EU wide measures

The power sector is very supportive of the PCIs. **The PCI process should focus on efficient performance, prioritising cost-efficient alternatives** and taking into account novel approaches, both regarding technology (e.g. upgrading of AC interconnectors to DC ones) and the institutional side (e.g. tendering open to 3rd parties other than direct allocation to the involved TSOs). We would welcome a more active role by the European Commission / ACER in pushing PCI projects to be materialised when significant delay occurs.

[9] Even the Spanish National Regulator has voiced concerns on the high transmission costs and inadequate cost-benefit analysis (CNMC, *Informe sobre la propuesta de planificación de la red de transporte de energía eléctrica 2015-2020*).

There is a need to pay attention to not only the interconnection capacity, but also their use. EURELECTRIC believes it would be useful if ACER could present more precise data on capacity curtailment of cross border infrastructure in the annual Market Monitoring Report.

Member States' measures

The Member States should ensure that cross-border trade is not restricted by moving internal bottlenecks to national borders. TSOs should address potential internal congestions by re-dispatch or by investments in interconnections and transmission capacity.

4. Security of supply – from diversification to a regional approach

Security of supply, including capacity mechanisms and generation adequacy assessments was seen as another field that calls for a more coordinated approach due to the cross-border dimension. Energy-only markets remain the reference for the completion of the internal electricity market. However, as in many markets, the introduction of a capacity element is becoming increasingly important, EURELECTRIC recognises that properly designed capacity markets, developed in line with the objective of the IEM, are an integral part of a future market design. At the moment, European countries apply diverse capacity mechanisms (capacity markets, strategic reserves) or energy-only markets without cross-border coordination on the applied approach. The diverse approaches do not provide a level playing field.

In EURELECTRIC's view, Member States with CRMs should, coordinate among themselves and adopt market-based, technology neutral mechanisms that allow cross-border participation. Ideally, the preferred approach would be to adopt the same model at regional level, and allow cross border participation.

Table 7 - Examples on how the cooperation on security of supply would benefit the Member States are described below.

NEED FOR COOPERATION IN TACKLING THE SECURITY OF SUPPLY
SEVERAL EUROPEAN COUNTRIES: According to a study[10] by Prognos AG significant benefits could be achieved if **Member States cooperated more in ensuring generation adequacy**. Fifteen countries were analysed: seven members of the Pentalateral Energy Forum (**DE, BE, NL, LU, FR, AT & CH**) and eight additional bordering countries (**PL, IT, UK, ES, DK, CZ, PT & IE**). Adequacy considerations at a national level can be relieved, for example, because load peaks in Europe do not occur simultaneously and the feed-in from renewable energy takes place at different times. Potential savings arise, as less capacity needs to be secured by conventional power plants. In addition, geographic scope increases system balance. Better market integration reduces costs, improves generation adequacy and postpones the need for storage.
FRANCE AND GERMANY: A study by Artelys[11] shows that a coordinated approach to security of supply, and particularly a **coordinated approach on the introduction of capacity mechanisms** in France and Germany, would result in efficiency benefits for all. It is by far more efficient to deliver security of supply on a bilateral and regional basis rather than on a purely national basis: the total capacity is optimised to ensure security of supply, the structure of the mix evolves as a result of the reduced risk. In addition, the global welfare is increased across the whole zone.
BELGIUM: Belgium has a **strategic reserve,** while other kind of **CRMs,** covering both existing assets and new investments have been introduced or are being introduced in the region**.** More regional coordination is needed on security of supply.

[10] Prognos AG (Berlin/Basel) December 2014. *Security of supply: a pan-European approach The opportunities and requirements of greater cooperation across European electricity markets* (Commissioned by Weltenergierat – Deutschland e.V.).

[11] Artelys, July 2015. *France-Germany Study - Energy transition and capacity mechanisms* (Commissioned by UFE and BDEW).

Barriers to cooperation on security of supply

It is commonly thought that Member States will tend to reserve capacity for their own customers when the system is tight. Agreement on clear emergency arrangements would be a step towards tackling this issue.

The way forward

Table 7- Examples on encouraging progress on cooperation on security of supply are described below.

SECURITY OF SUPPLY: NOTABLE MEMBER STATE INITIATIVES
Within the Pentalateral Energy Forum, the issue of s**ystem adequacy is increasingly dealt with on a regional level**. The **first regional generation adequacy assessment** took place in March 2015. The PLEF declaration, adopted on 8 June 2015, contains detailed information about the next steps, calling inter alia or open borders in times of scarcity and for a free determination of the price. On the very same day, there was also a joint declaration on regional cooperation of 12 EU Member States.
The European member states have been criticised for **not coordinating major energy policy decisions with its neighbours**, on whom those decisions have direct impact (e.g. Germany's decision on shut-down and phase-out of nuclear energy after the Fukushima incident). Consequently, some countries started to consult **also the neighbouring countries on the implementation of national energy policies, as Germany did opening its public consultation on** electricity market design and security of supply. Such process are necessary to ensure true dialogue, and reconsideration of options based on the feedback, and allow to more coordination between member states on energy policies, particularly in the framework of the Energy Union

EURELECTRIC's recommendations on cooperation on security of supply

EU wide measures

Europe needs a **common methodology to assess generation adequacy and a regional approach to capacity markets.** The methodology to assess power system adequacy should be harmonised in the EU to a possible extent. Adequacy assessments should evolve in their geographic scope at least to a regional level, while not losing focus on the goal of the EU wide market integration.

Energy-only markets remain the reference for the completion of the internal electricity market. If needed, capacity markets should be market-based, technology-neutral, open to new and existing plants, and open to generation, demand response and storage. Cross-border participation in capacity markets should be seen as a stepping-stone towards regional capacity markets[12] and the introduction of cross-border participation rules should be a central element for capacity markets' implementation. Capacity markets should result from a coordinated effort to trigger the right level

[12] EURELECTRIC report 2015. *A reference model for European capacity markets*.

of investment/decommissioning decisions in order to reach the security of supply objective of the different zones at the least cost on a regional basis.

To guarantee this evolution, the European Commission should push for harmonised solutions, ensuring compatibility of capacity markets, and enabling their convergence. EURELECTRIC has proposed a reference model for the European capacity markets.

EURELECTRIC supports a cross-border participation model where the market participant (generator, DSR provider or storage) is the cross-border capacity provider and the product being traded cross-border is availability. The interconnector gets paid for the "congestion rent". This model minimises energy market distortions, and it also guarantees that market agents, and not regulated entities, participate in the capacity market.

Member States' measures

The Member States should place increasing emphasis on a regional approach to security of supply. This applies both to adequacy assessments, and capacity remuneration mechanisms. Member States should, at the very least, coordinate among themselves and adopt market-based mechanisms that allow cross-border participation. Ideally, the preferred approach would be to adopt the same model at regional level and allow cross-border participation.

Conclusions

Achieving the Energy Union requires political commitment from the highest level and identifying the common benefits. The EU institutions and Member States should work together to ensure that collective and national measures fit in with the development of a competitive single market in energy. This can enhance security of supply, cost competitiveness and emissions reduction in ways which individual countries cannot achieve on their own. Internal electricity market, including the interconnections, coordination of national policy measures and removal of market distortions, renewable energy and security of supply are key areas where EURELECTRIC encourages Member States to cooperate.

Diversity in energy policies across European Union Member States is natural, and derives from national and local circumstances. However, market distortions caused by the differences between some key instruments of energy policy leave many benefits of a truly common power market untapped, while increasing the costs of the energy transition. There is room for increased cooperation while taking into account the national circumstances, and recognising that the energy mix is a national competence. The Energy Union process should lead to an overall energy policy path at the European level, and implementation of this policy path through a combination of EU wide, regional and national measures that are monitored through the development of national plans.

EURELECTRIC pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability

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