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INVESTMENT BANK**

State of the Energy Union 2015

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1. INTRODUCTION

The European Commission's "Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy"¹ has created a new momentum to bring about the transition to a low-carbon, secure and competitive economy. To keep this momentum, this first State of the Energy Union² looks at progress over the last nine months and identifies key issues that require specific political attention in 2016, a key year for implementation of the Energy Union.³

In a few days, world leaders will gather in Paris to agree how to tackle one of mankind's greatest challenges: climate change. The State of the Energy Union highlights Europe's contribution to the Paris negotiations and focuses on the follow-up. Europe's leadership in the transition to a low-carbon economy needs to continue after Paris, both through the implementation of the 2030 climate and energy targets and a coherent energy and climate diplomacy, ensuring that all countries follow-up on their commitments.

There is a strong business case for this transition. Leading European companies are changing their business models. Renewable energy and energy efficiency are creating jobs in Europe, requiring new skills and investments. Many of the changes linked to this transition will take place in cities and municipalities; when our cities become smarter, they become key enablers of the EU's sustainable energy policies.

The electricity and gas markets are still not performing as they should. For the transition towards a low-carbon economy and society to be successful and socially fair, citizens should take more ownership, benefit from new technologies and more competition to reduce their bills, and participate more actively in the market.

In 2015, geopolitical events in our immediate vicinity kept energy high on the agenda. To deal with these challenges, energy security, efficiency, infrastructure development, the completion of the internal energy market and sustainability are intrinsically linked. The 2nd list of Projects of Common Interest sets out the infrastructure projects which are urgently needed to meet our energy policy targets and objectives.

The State of the Energy Union presents key building blocks for an implementation mechanism leading to more predictable, transparent and stable policies. The guidance on integrated national energy and climate plans provides the basis for Member States to start developing their integrated national energy and climate plans for the period from 2021 to 2030. The proposed methodology on key indicators is the first step towards measuring and monitoring the delivery of the Energy Union.

In recent months, the Commission has visited many Member States to discuss the Energy Union with a wide range of stakeholders. In addition, technical discussions have taken place with all Member States. These contacts have enabled the Commission to produce an Energy Union assessment for each Member State and to identify policy conclusions for all five dimensions of the Energy Union.

¹ COM(2015)80.

² It is accompanied by a series of reports and staff working documents as a first step towards streamlining the Commission's reporting obligations.

³ Commission Work Programme, COM(2015)610. All proposals will be prepared in line with the principles of subsidiarity, proportionality and better regulation. Some of these proposals will be REFIT initiatives.

2. DECARBONISATION OF THE ECONOMY

Progress made

The EU economy is currently the most carbon-efficient major economy in the world. It has been particularly successful in decoupling economic growth and greenhouse gas emissions. Between 1990 and 2014, the combined gross domestic product of the EU grew by 46%, while total greenhouse gas emissions decreased by 23%. The EU is one of only three major economies⁴ that generate more than half of its electricity without producing greenhouse gases.⁵

One objective of the Energy Union Strategy is to move further away from an economy driven by fossil fuels. In 2015, progress was made in three fields that lie at the heart of this transition: emissions trading, renewables, and further investments in low carbon technologies and energy efficiency.

The agreement on the introduction of the Market Stability Reserve, in place from 2019, will strengthen the EU Emissions Trading System (ETS). In July 2015, the Commission presented a proposal to revise the EU Emissions Trading System. This is the final step to make the EU Emissions Trading System fit to play its full strength as the main European instrument to achieve the 2030 greenhouse gas emissions target. The Commission urges the European Parliament and the Council to take the proposal forward with priority.

Supporting the ambition to become the number one in renewables, the Commission came forward with a consultative Communication on a new electricity market design in July 2015, a central objective of which is to make the market fit for an increasing share of renewables. Renewables are becoming a mainstream source of energy. They already cater for the needs of 78 million Europeans, and the EU as such is on track to meet its target of 20% final energy consumption from renewable sources by 2020.

The transition to a low-carbon economy will need significant investments, notably in power grids, generation, energy efficiency and innovation⁶. The EU-budget contributes to deliver this shift through integrating climate objectives in all relevant policy initiatives, ensuring that at least 20% of EU budget 2014-2020 is climate relevant. This represents around EUR 180 billion from 2014 to 2020. More than EUR 110 billion is made available through the European Structural and Investment Funds (ESIF). In addition, sustainable energy projects have been among the first projects approved for the European Fund for Strategic Investments (EFSI) guarantee, in particular in Denmark, Finland, France, Spain and the United Kingdom.

In March 2015, the EU submitted a binding domestic economy-wide emissions reduction target of at least 40% by 2030 compared to 1990 levels, based on the Commission's 2030 Energy and Climate Framework. In September 2015, the EU agreed its position for the Paris climate conference (COP21)⁷. It confirmed the EU's readiness to negotiate an ambitious, binding and transparent global climate deal that provides a clearly defined pathway to limit rises in global average temperature to below 2°C. At the time of the adoption of this State of the Energy Union, more than 160 countries representing more than 90% of current global

⁴ The others are Brazil and Canada.

⁵ 27% produced from renewable energy sources and another 27% produced from nuclear energy.

⁶ COM(2014)15 and its impact assessment.

⁷ Environment Council conclusions of 18/09/2015.

emissions have presented their Intended Nationally Determined Contribution (INDC). The scale of these contributions is without precedent and will lead to a significant reduction of emissions around the globe, moving from "action by few" under the Kyoto Protocol to "action by all".

Reaching these targets will require further bold action at the local level. With that goal in mind, the Commission convened on 15 October 2015 the representatives from towns and cities to launch a new Covenant of Mayors, covering both climate change mitigation and adaptation initiatives. By launching a Global Covenant of Mayors, it will encourage action by local authorities worldwide, including in regions not involved so far.

More than 4000 businesses will also make commitments to action by the time of COP21. Delivering these commitments on the ground offers significant business opportunities for innovative EU enterprises and will create jobs and growth in the EU.

Way forward

Immediately after the Paris climate conference, all countries need to turn their commitments into concrete policy actions. In the first half of 2016, the Commission therefore intends to make proposals on the implementation of the non-ETS emissions reduction target of 30% compared to 2005, by setting national greenhouse gas reduction targets and addressing the integration of the land use, land use change and forestry (LULUCF) sector.

As about one third of the greenhouse gas emissions in the non-ETS sectors come from transport, the Commission foresees a Communication on actions needed to decarbonise all modes of transport. This should be followed by proposals, including on CO₂ emission standards for cars and vans, on monitoring for heavy duty vehicles, on fair and efficient pricing and on market access rules for road transport.

Effective enforcement of regulatory standards is a critical element in bringing down road transport emissions. Testing systems have seriously underestimated the emissions of greenhouse gases and certain air pollutants. In this context, the Commission is preparing a proposal to apply the World-harmonised Light-duty vehicle Test Procedure (WLTP) in the EU.⁸ Upon its entry into force in 2017, it will provide more accurate information on CO₂ emissions and fuel consumption. Furthermore, real driving emissions tests for measuring the air pollutant emissions of diesel cars will become mandatory from 2017 onwards to effectively bring down their emissions of nitrogen oxides (NO_x).⁹ Furthermore, the Commission is preparing proposals to strengthen the type approval and market surveillance system and reinforce the independence of vehicle testing.

The new Renewable Energy Directive and the bioenergy sustainability policy for 2030, to be presented in 2016, should provide the right framework to achieve the binding EU-level target of at least 27% renewable energy by 2030. It will lay out EU policies and measures that should, together with Member States' contributions described in their national energy and

⁸ The World-harmonised Light-duty vehicle Test Procedure (WLTP) has been adopted under the United Nations Economic Commission for Europe (UNECE) framework in 2014 to replace the old "New European Drive Cycle" (NEDC) test cycle.

⁹ This will ensure actual compliance of real life vehicles' emissions performance with the regulatory limit values, subject to tolerances due to the uncertainties of the test procedure and measuring instruments, which will be progressively reduced over time.

climate plans, make sure that that target will be achieved. To put the right decarbonisation incentives in place, we will also push for a phase-out of fossil fuel subsidies.

Policy conclusions at Member State, regional and EU levels:

- *The EU is on track towards meeting its EU 2020 targets in greenhouse gas emissions (i.e. -20% by 2020 compared to 1990). EU emissions were in 2014 23% below 1990 level and, according to the latest projections submitted by the Member States, emissions are expected to be 24% lower in 2020 than in 1990.*
- *24 Member States are expected to meet their EU 2020 national target in the non-ETS with existing policies and measures. Four Member States (Ireland, Luxembourg, Belgium and Austria) will need additional efforts to meet domestically their 2020 targets for the non-ETS sectors or make use of the existing flexibilities foreseen in the Effort Sharing Decision¹⁰.*
- *With regard to renewable energy, the EU as such is on track to meet the 2020 target. All but three Member States (Luxembourg, the Netherlands and the United Kingdom) met their 2013/14 interim target based on 2013 data.¹¹ Some Member States, i.e. France, Luxembourg, Malta, the Netherlands and the United Kingdom and to a lesser extent Belgium and Spain, need to assess whether their policies and tools are sufficient and effective in meeting their renewable energy objectives. Achievement of the 2020 renewable energy targets is also not certain in the case of Hungary and Poland. The other nineteen Member States may exceed – some even considerably – their 2020 renewable energy targets. The increasing share of renewable energy helps to enhance Europe's energy security.*
- *Moreover, further efforts are needed in the vast majority of Member States to ensure that renewable energy is better integrated into the market and to ensure consistency between support schemes and the functioning of the electricity markets in particular. All Member States must ensure that the new State Aid Guidelines for environment and energy are respected, including the basic requirement to grant aid in a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria and to bring renewables closer to the market.*
- *Sweden is the only Member State that so far has engaged in a renewable energy cooperation mechanism with another country (Norway). The enhancement of the scope of regional fora such as the Baltic Energy Market Interconnection Plan (BEMIP) to include Member State cooperation on renewable energy is encouraging. More such regional initiatives are needed e.g. with regard to the Northern Seas and Mediterranean region.*

3. ENERGY EFFICIENCY AS A CONTRIBUTION TO THE MODERATION OF ENERGY DEMAND

Progress made

To reach an ambitious level of energy efficiency by 2030, the Commission has started to put in place tools and instruments treating energy efficiency as a source in its own right. As a first

¹⁰ See the Climate Action Progress Report, COM(2015)576 + SWD(2015)246.

¹¹ As the interim targets are defined as an average of two years, new 2014 Eurostat data could change this assessment.

step, in July 2015, the Commission proposed a revision of the Energy Labelling Directive¹². This proposal makes the existing acquis on energy labelling more efficient and will strengthen enforcement. Also in 2015, a number of eco-design and energy labelling measures entered into force, with the potential to further reduce household's energy consumption and thereby bills. Later this year, the Commission intends to come forward with a new Ecodesign working plan that - in addition to improving energy efficiency - will in the future support the circular economy.

Energy efficiency plays an important part in the European Fund for Strategic Investments. The fund already supports strategic energy efficiency projects, for example in France and Italy. Many more projects are in the approval pipeline. This will be complementary to investments from the European Structural and Investment Funds.

The report on progress in implementing the 2020 energy efficiency target of 20% by 2020¹³, accompanying this Communication, shows that despite significant progress made, collective efforts of Member States correspond to only 17.6% primary energy savings compared to projections for 2020.¹⁴ However, the Commission remains optimistic that the 20% target can be achieved if existing EU legislation is correctly and fully implemented. Member States should increase ambition and investment conditions so that energy efficiency continues to improve in Europe.

Way forward

There are still numerous barriers to reaping the full potential of energy efficiency, such as information failures and a shortage of dedicated financial tools. This leads to a limited uptake of energy efficiency opportunities, products and technologies.

In 2016, the Commission foresees legislative proposals to align the Energy Efficiency Directive to the 2030 indicative EU-level target of at least 27% (to be reviewed by 2020, having in mind an EU level of 30%). Equally important is a particular focus on buildings, whose energy use represents about 40% of the EU's total final energy consumption and about a quarter of non-ETS direct greenhouse gas emissions. A thorough evaluation of the Energy Performance of Buildings Directive is being carried out in view of its revision.

Financing the required upfront energy efficiency investments remains a substantial challenge. Energy efficiency investments need to increase five-fold by 2030¹⁵. As a matter of priority, the Commission will work with its partners towards establishing, in 2016, schemes to aggregate smaller energy efficiency projects. These schemes should provide investors with better investment opportunities in energy efficiency and make capital better accessible for national, regional or local energy efficiency platforms and programmes, especially in those Member States that need them most. They will include strengthening technical and project development assistance in the context of the European Investment Advisory Hub (EIAH) set up by the Commission and the European Investment Bank to help public promoters to structure their projects and to promote financing schemes with standard terms and conditions, notably in the area of buildings. The Commission will launch the European Investment Project Portal (EIPP) in early 2016. Its purpose is to attract investors to good investment

¹² COM(2015)341.

¹³ COM(2015)574 and accompanying Staff working document SWD(2015)245.

¹⁴ COM(2014)520.

¹⁵ The Energy Efficiency Financial Institutions Groups (EEFIG) Report (www.eefig.eu).

projects in Europe. Energy stakeholders are encouraged to send their projects to building a critical mass of pre-launch projects.

Heating and cooling represents the biggest energy use in the EU. A dedicated strategy for heating and cooling is planned for early 2016, aiming for a smart transformation of this sector. The strategy should, inter alia, identify solutions and measures to reduce demand for heating and cooling in the residential, tertiary and industrial sectors, while at least monitoring the quality of the services and comfort, and reduce dependence on fossil fuels.

Policy conclusions at Member State, regional and EU levels:

- *Most Member States should take the additional measures to accelerate their ambition levels and efforts in order to achieve their national energy efficiency targets for 2020.*
- *Several Member States (Austria, Bulgaria, Croatia, Cyprus, France, Greece, Hungary, Italy, Malta, Spain and Sweden) have notified more ambitious national 2020 targets expressed in either primary or final energy consumption, which is encouraging. At same time five Member States lowered their ambition level for one of the two targets. In general, the levels of the indicative national targets for 2020 set by e.g. Croatia, Finland, Greece, and Romania – as well as Cyprus, Italy and Portugal when expressed in final energy consumption – are not ambitious enough with regard to expected economic growth.*
- *Belgium, Estonia, France, Germany, the Netherlands, Poland and Sweden will all need to reduce their primary energy consumption at a higher rate in 2014-2020 than in the period 2005-2013 to meet their indicative primary energy consumption targets by 2020. Austria, Belgium, Estonia, France, Germany, Lithuania, Malta and Slovakia have set themselves final energy consumption targets in 2020 which requires rates of final energy consumption reduction from 2014-2020 which are higher than the reduction rate in 2005-2013.*
- *With regard to energy intensity, there is a large difference between the Member State with the highest (Bulgaria) and lowest (Denmark and Ireland) energy intensity in industry. To a large extent, this is linked to structural differences between the Member States. However, all Member States but Greece, Hungary, Ireland and Latvia decreased energy intensity in the industry and construction sector from 2005 to 2013.*
- *For the generation sector, the analysed performance indicators showed a worsening trend in most countries. In particular, the share of heat produced from high-efficiency combined heat and power (CHP) as well as high-efficiency district heating and cooling needs to be further promoted by Member States.*

4. A FULLY-INTEGRATED INTERNAL ENERGY MARKET

Progress made

Electricity lines and gas pipelines form the backbone of an integrated energy market. Since the presentation of the Energy Union Framework Strategy, much has happened. The inauguration of the electricity cable between Italy and Malta in April 2015 ended the energy isolation of the Maltese electricity grid. The completion of Eastlink between Finland and Estonia, and Nordbalt between Lithuania and Sweden enabled the Baltic States to participate in the NordPool electricity market this year. Another example of good cooperation is the LitPolLink interconnection initiative between Lithuania and Poland which will be inaugurated

in December 2015. 2015 also saw the inauguration of a new France-Spain electricity interconnector, doubling the transmission capacity between the two countries. In gas, the new Liquefied Natural Gas (LNG) terminal in Klaipeda (Lithuania) brought for the first time supply diversification into the Baltic gas market, while the recent agreement on the gas interconnector between Poland and Lithuania will put an end to the isolation of the Baltic States from the internal gas market. The interconnector between Hungary and Slovakia is also an important milestone, while important reverse flow equipment was installed within the EU as well as on its borders to Ukraine facilitating bi-directional trade. In addition, the Baltic States agreed on the common strategic goal to synchronise their power systems with the Continental European Network.

During 2015, the Commission has worked intensively with Member States to set up High-Level Groups for gas and electricity interconnectivity of the Iberian Peninsula and the Central East South Europe Gas Connectivity (CESEC), as well as a reform of the High-Level Group for Baltic Sea region (BEMIP). Member States have stepped up cooperation in regional groupings which has started to bear fruit. The Central East South Europe Gas Connectivity High Level Group, for instance, has agreed a list of priority projects¹⁶, the implementation of which will enable the countries in the region to have access to at least three sources of gas.

The Energy Infrastructure Forum established by the Commission, which held its inaugural meeting in Copenhagen on 9-10 November, will work towards best practices on issues such as regulatory barriers, infrastructure development and public acceptance as well as financing.

The Commission has worked intensively with Member States to remove existing regulatory obstacles to cross-border trade of electricity and gas. In close cooperation with Member States, it has tackled problems with the full implementation of the Third Energy Package in different Member States. The intention of the Commission's market design initiative¹⁷ is to pave the way for a further alignment of the European regulatory framework to the reality of increasingly integrated European energy markets. The Commission has also continued to strictly enforce the Treaty's competition rules.

A fully-integrated internal energy market should first and foremost bring tangible benefits to consumers. This principle is fully reflected in the Communication *Delivering a new deal for consumers* of July 2015.¹⁸ The Communication acknowledges that consumers are still prevented from playing their full role in the transition of the energy system. From a consumer's perspective, the electricity and gas markets are still not performing as they should, as is illustrated by the document on energy consumer trends presented together with this State of the Energy Union.¹⁹

Way forward

In 2016, all actors need to step up their work on infrastructure projects. In particular, Projects of Common Interest (PCIs) need an urgent political push. Even though 13 projects from the first list of Projects of Common Interest will be completed by the end of 2015, and slightly

¹⁶ <http://ec.europa.eu/energy/en/topics/infrastructure/central-and-south-eastern-europe-gas-connectivity>.

¹⁷ COM(2015)340.

¹⁸ COM(2015)339; accompanied by a Staff Working Document on best practices on renewable energy self-consumption, SWD(2015)114.

¹⁹ SWD(2015)249.

more than 100 Projects of Common Interest are in the permitting phase, more than a quarter²⁰ face delays mainly due to permit granting and/or financing issues. The procedures simply take too long to be effective. Addressing them successfully requires Member States to fully implement the provisions of the Regulation on guidelines for trans-European energy infrastructure (TEN-E), in particular those related to permit granting.

The second list of Projects of Common Interest,²¹ adopted alongside this Communication, sets out those projects that are urgently needed to achieve our energy policy goals. The accompanying Staff Working Document²² sets out the improvements needed to deliver the infrastructure backbone for an integrated European energy market. The first benefits for infrastructure investments of the instruments developed under the European Fund for Strategic Investments are expected to materialise in 2016. Specifically on electricity, the Commission foresees a Communication on the necessary measures to reach the 15% electricity interconnection target for 2030. In addition, the Commission will consider how to fund both sides of projects on the borders of the EU and the Energy Community.

Member States and stakeholders have shown a great interest in cooperating in the Northern Seas region. Almost half of capital expenditure for all electricity Projects of Common Interest will be invested in the Northern Seas region. The Commission therefore intends to create a High-Level-Group for regional cooperation in the North Sea in order to tackle the regulatory, financial and spatial planning issues which impede the implementation of these projects.

Continuing investment in national network infrastructure will also be required to avoid regional constraints. Of particular concern are the distortions which insufficient national infrastructure causes where there are large single bidding zones. The bidding zone review process, carried out by the European Network of Transmission System Operators for Electricity (ENTSO-E), should identify critical network constraints and, where appropriate, separate bidding zones for constrained areas. Such bidding zones could also help highlight the need for greater network investment.

In addition, it is important to ensure that existing gas and electricity infrastructure is fully used for the benefit of market integration. The continued strict enforcement of competition rules will in particular aim at ensuring that markets are not partitioned by artificially restricting the use of existing capacity.

Legislative proposals to implement the new market design are planned for 2016. The key objectives of the legislation are to have better linked wholesale and retail markets; strengthened regional cooperation and increased cross-border trade; and developing short-term and long-term markets to send the right investment signals for modern technologies to both producers and consumers of electricity. The impact of a revised EU Emissions Trading System should also provide better long-term investment signals for low carbon investments. The Commission is ensuring that where Member States support increased investment in their energy markets through State aid, support policies are designed in line with the requirements in the State Aid Guidelines for environment and energy²³ to avoid potential distortions of the market. In addition, the ongoing State aid Sector Inquiry on Electricity Capacity

²⁰ 31% in electricity and 25% in gas, according to the ACER monitoring report on the implementation of Projects of Common Interest.

²¹ C(2015)8052

²² SWD(2015)247.

²³ OJ C 200/1 of 28 June 2014.

Mechanisms²⁴ is examining the extent to which existing and planned capacity mechanisms may hinder the efficiency of the internal market.

When preparing these legislative proposals, the Commission will put special emphasis on stimulating demand response participation as a means to increasing efficiency and flexibility in energy networks. Lack of information on cost and consumption, difficulties in switching suppliers and lack of reward for active participation should become a thing of the past.

Consumers – both households and industry – want more transparency of energy prices and costs. Therefore, the Commission is preparing, for publication in 2016, a new energy prices and costs report to provide an overview of the cost of energy, taxes, levies, but also subsidies. This should contribute to a more informed discussion on different price levels in Member States, the different components of energy prices, their influence on the competitiveness of European industry and investment in Europe and their ability to influence consumer behaviour. As a first step, the Commission presented today a proposal to improve European statistics on gas and electricity prices.²⁵

When reviewing key legislation in 2016, the Commission is paying particular attention to the protection of vulnerable consumers, such as in the review of the Energy Efficiency Directive or in the new market design proposal, where obligations of Member States and market operators with regard to vulnerable consumers could be better articulated. The Commission intends to ensure that financing programmes for energy efficiency are accessible to poor and vulnerable energy customers and it will seek to improve data collection on energy poverty.

Policy conclusions at Member State, regional and EU levels:

- *Many Member States have made good progress in opening up their wholesale markets to competition, and this has had significant benefits. However, there are large differences between Member States, and many Member States have not yet fully implemented the necessary rules that allow for competitive and liquid markets.*
- *With regard to electricity infrastructure, 22 Member States are on track to reach or have already reached the 10% electricity interconnection capacity target for 2020. The eight Member States currently remaining below the 2020 interconnection target are Cyprus, Ireland, Italy, Poland, Portugal, Romania, Spain and the United Kingdom.*
- *Interconnections are still needed to further deepen the internal electricity market (e.g. in South Western Europe) as well as between several Member States in Northern and Eastern Europe (e.g. Germany, Poland and the Czech Republic), or further connecting Member States (Ireland and the United Kingdom) with the rest of North Western Europe.*
- *Retail price regulation must be limited in time and confined to exceptional cases following a recent ruling of the European Court of Justice²⁶. While several more Member States have recently successfully moved away from end-user price regulation (Ireland, Latvia), prices for households remain regulated to different degrees in about half of the Member States which may constitute an obstacle to demand-side participation and retail competition.*

²⁴ C(2015)2814.

²⁵ COM(2015)496.

²⁶ C-36/14, European Commission v. Republic of Poland.

- *All Member States need to better inform consumers about energy efficiency options and to further improve the investment conditions for private consumers. In addition, more focused measures are needed for vulnerable consumers to address energy and fuel poverty effectively.*
- *Consumer empowerment via the roll-out of smart metering has been effectively implemented only in some Member States (most notably Finland, Italy and Sweden), as well as to a lesser extent in several more (including Denmark, Estonia and the Netherlands). In several Member States, administrative burdens act as barriers for consumers aiming to switch to new suppliers and better contractual conditions.*
- *At the regional level, by mid-2015 most of the EU wholesale electricity markets are coupled to one or several of their neighbours, with signs of price convergence. The situation is more contrasted with regard to gas. Despite some price convergence on major European gas hubs, marked price differences and inadequate market integration remain across the EU, due in part to the effects of long-term contracts and missing interconnections. Retail markets for both electricity and gas are still national (or sub-national). We need further efforts by all Member States to advance regional market integration.*

5. ENERGY SECURITY, SOLIDARITY AND TRUST

Progress made

The EU and its Member States have decided to support a more coherent EU foreign and energy policy action that takes geopolitical developments into account. In July 2015, the Council adopted conclusions on energy diplomacy along with an action plan²⁷. These point to the need for strengthened bi- and multilateral dialogues, enhanced use of foreign policy instruments to strengthen diversification, as well as the promotion of rule-based, transparent and sustainable energy markets.

The transition to a competitive, low carbon economy will reduce the use of imported fossil fuels by moderating energy demand and exploiting renewable and other indigenous sources of energy. Investment in resilient infrastructure has to take account of this changing environment, in order to avoid having stranded assets.

2015 has been characterised by the ongoing tensions between Russia and Ukraine; persistently low oil prices impacting energy markets all over the world; new initiatives for additional supply infrastructure for natural gas from Russia; new perspectives opened up by the nuclear agreement with Iran, as well as a continued decline of the domestic production of fossil fuels.

Despite the difficult political situation, Ukraine has proven during the winter 2014/15 to be a reliable transit partner for Russian gas. The EU believes that it is in the interest of all parties that Ukraine remains an important transit country. The EU actively supports the efforts of the Ukrainian Government and Naftogaz to ensure that this remains the case, in particular through the deep structural reforms of the gas sector that Ukraine is currently undertaking. It is essential that this reform process continues. Throughout 2015, the Commission has actively facilitated the negotiations between Ukraine and Russia to secure gas supply to Ukraine through the winter. This resulted in the initialling of a binding protocol on 25 September 2015

²⁷ Council conclusions on energy and climate diplomacy (10995/15 and 11029/15).

and its implementation as of 9 October 2015. The capacity of reverse flows from the EU, in particular from Slovakia, to Ukraine has also significantly increased over 2015, enabling Ukraine to import gas via the EU and thus reduce its direct dependence on Russia.

The Commission takes note of the plans of commercial companies to build further pipelines connecting Russia and Germany through the Baltic Sea. If built, Nord Stream 3 and 4 would not give access to a new source of supply and would further increase transmission capacity from Russia to the EU, while even now this is only used at 50% rate. These pipelines will have to comply fully with EU law. The Commission will assess any such project against the European regulatory framework on its own merits.

The EU will only support infrastructure projects that are in line with the core principles of the Energy Union, including the EU Energy Security Strategy²⁸. Diversification of energy sources, suppliers and routes is crucial for ensuring secure and resilient supplies to European citizens and companies. The Union's energy security is also closely linked to its Neighbourhood's energy security.²⁹ The Energy Community plays a central role in this respect, both in promoting priority interconnection projects but also in ensuring that the region operates under rules compatible with those of the EU. In this respect, at the Vienna Western Balkan Summit, the countries of the region decided to establish a regional electricity market. In the Central and South Eastern Europe Gas Connectivity High Level Group, six Energy Community countries have joined the Memorandum of Understanding and agreed to the Action Plan together with nine EU countries – a prime example of the fact that Energy Union extends and brings benefits beyond EU borders. Over 2015, the Commission has engaged in supporting the reform process in the Energy Community. The International Energy Charter was co-signed by the European Commission at the Conference on 20-21 May 2015 in The Hague.

The recent discoveries of gas in the East Mediterranean increase the potential of the Mediterranean region to contribute to Europe's energy security. Therefore, cooperation has been stepped up through the establishment of three Euro-Med platforms on gas, the regional electricity market, and the promotion of renewable energy and energy efficiency. Talks on the Trans-Caspian pipeline have been relaunched and work on the Southern Gas Corridor continued in 2015.

Attention over the last months has turned strongly to electricity. In some Member States the oversupply of electricity has been reduced during the last decade and the threat of brownouts is now being raised. In order to evaluate where the real problems in the electricity system are and how these can be best tackled, several initiatives were taken to ensure that electricity generation adequacy analysis is carried out on a regional basis and based on a common methodology.³⁰

Way forward

Geopolitical challenges will not go away in 2016. The EU will need to pursue its new energy diplomacy effectively and speak with one voice vis-à-vis third countries. It will also need to

²⁸ COM(2014)330.

²⁹ JOIN(2015)50, accompanied by SWD(2015)500.

³⁰ See e.g. the declaration of Germany and its neighbours on security of electricity, <http://www.benelux.int/files/4414/3375/5898/Jointdeclaration.pdf>.

develop the relevant energy diplomacy action plans so as to strengthen diversification also through foreign policy instruments.

The Revision of the Regulation on Security of Gas Supply foreseen for 2016 intends to improve the EU's resilience to supply disruptions. It will be particularly important to strengthen regional cooperation between Member States, both to prevent and to mitigate supply shocks, as well as to ensure solidarity in the event of an emergency. The Commission intends to come forward at the same time with a strategy for Liquefied Natural Gas (LNG) and gas storage, to ensure that the European Union can take full benefit of the diversification potential offered by Liquefied Natural Gas. In parallel, the Commission continues to stress the importance of energy in general and Liquefied Natural Gas in particular in the ongoing negotiations on the Transatlantic Trade and Investment Partnership (TTIP).

To increase transparency and to ensure that intergovernmental agreements (IGAs) in the energy field comply with applicable EU legislation and policies, the Commission is preparing a proposal to revise the current Decision on intergovernmental agreements.

By the end of 2016, the Commission intends to come forward with a new legal instrument on security of electricity supply designed to enhance transparency, ensure a common approach and better address cross-border solutions to security of electricity supply. This instrument is supposed to be fully integrated with the redesign of the electricity market.

In the nuclear field, the publication in 2016 of a new Nuclear Illustrative Programme (PIN) will provide an overview of investments envisaged by Member States until 2050 for all stages of the nuclear cycle. With half of the EU Member States having indicated their intention to continue relying on this energy source to generate part of their electricity, this initiative should bring more clarity on long-term nuclear investment needs and on the management of nuclear liabilities.

Policy conclusions at Member State, regional and EU levels:

- *The EU is making progress to diversify sources, routes and suppliers of energy. However, about 40% of the EU gas imports in 2013 came from Russia and a series of Member States are still totally or predominantly dependent on supply from Russia, notably Bulgaria, Czech Republic, Estonia, Finland Hungary, Latvia, Lithuania and Slovakia.*
- *Three Member States (Bulgaria, Lithuania and Portugal) have yet to meet the infrastructure standard of the Security of Gas Supply Regulation.*
- *There is a need to further connect in particular the Baltic States and Finland to the Central European gas market, to improve connections between Member States (e.g. Hungary, Romania, Bulgaria and Greece, Portugal and Spain with France) and to ensure that all Member States have access to liquid hubs and can benefit from the Liquefied Natural Gas (LNG) capacity that countries have been developing or have the potential to develop.*
- *At the regional level, the stress tests carried out in 2014 clearly show the benefits of regional cooperation to prevent or mitigate a gas crisis. The Commission already actively promotes such cooperation, e.g. through the Central and South Eastern Europe Gas Connectivity High Level Group (CESEC). This work should continue.*
- *Member States must also reinforce (regional) cooperation with regard to security of electricity supply and generation adequacy.*

6. AN ENERGY UNION FOR RESEARCH, INNOVATION AND COMPETITIVENESS

Progress made

Research, innovation (R&I) and competitiveness are paramount to accelerate the EU energy transition and to reap its benefits in terms of jobs and growth that the Energy union can bring. In September 2015, the Commission presented the Communication "Towards an Integrated Strategic Energy Technology (SET) Plan".³¹ This gives a new impetus to the development and deployment of low-carbon technologies, by better coordinating and prioritising research & innovation efforts across Europe.

Financing is key to bring innovation to the market. Therefore, the Commission and the European Investment Bank are developing their efforts under the Investment Plan for Europe and the European Fund for Strategic Investment (EFSI). In that sense, the InnovFin Energy Demonstration Projects provide risk financing in the form of loans, equity and guarantees, going beyond traditional grant-based support. This should boost the competitiveness of innovative energy technology companies.

The EU Emissions Trading System also provides financing opportunities for investments in innovation. On average, in 2014, Member States used or planned to use for climate and energy related purposes around 87 % of the total revenues from the auctioning of allowances under the EU Emissions Trading System, amounting to €3.2 billion. Under the NER 300 programme, a cumulative funding of € 2.1 billion, which is expected to leverage an additional € 2.7 billion of private investments, is destined to finance innovative projects in 20 Member States.

In the proposals for the revision of the Emissions Trading System Directive, presented in July 2015, the Commission proposed a new Innovation Fund and a new Modernisation Fund. The Innovation Fund builds on the NER 300 programme, while extending its scope to low carbon innovation in industrial sectors. By supporting low-carbon innovation and demonstration, the Innovation Fund will also contribute to realising the key actions of the Strategic Energy Technology Plan. The new Modernisation Fund is designed for Member States with a Gross Domestic Product (GDP) per capita below 60% of the EU average and will be targeted at modernising the energy system and improving energy efficiency. The revised EU Emissions Trading System Directive also proposes more targeted carbon leakage rules to safeguard the international competitiveness of the sectors most at risk of relocating their production outside the EU.

In addition, the Horizon 2020 Framework programme is crucial to support the research & innovation objectives of the Energy Union. In the period 2014-2015 its financial contribution amounted to more than € 9 billion to support energy research (including nuclear), clean transport, climate action and resource efficiency, bioeconomy and key enabling technologies. Moreover, energy and low-carbon research and innovation are one of the most commonly selected smart specialisation areas – for over 100 EU regions – which indicate that considerable funding from the European Structural and Investment Funds will be allocated to this. The Smart Specialisation Platform on Energy, launched by the Commission in 2015³², should support this work.

³¹ C(2015)6317.

³² <http://s3platform.jrc.ec.europa.eu/s3p-energy>.

Way forward

As part of the 2016 State of the Energy Union package, the Commission intends to present an integrated Energy Union strategy for research, innovation and competitiveness. This integrated strategy should reflect the findings of the consultation which the Commission will launch with the Member States and stakeholders on three interconnected strands: energy technologies, transport and global competitiveness. It involves increasing public and private investment in research and innovation, removing disincentives for innovation, and overcoming barriers to private investment. Bottom-up research should be better promoted as a major feature of a vibrant innovation ecosystem.

Attention will be paid in 2016 to a more effective coordination between the Energy Union, the Digital Single Market and the Circular Economy. This concerns, inter alia, the progressive digitalisation of the energy and transport sectors.

The energy transition will lead to changes in many sectors and therefore requires a closer involvement of the social partners. This could include ensuring that skills and training schemes match the needs of new job profiles, looking at working conditions in new sectors or facilitating a socially fair transition in sectors or regions where jobs will be lost. The Commission has started to engage with the Social Partners at the European level and will continue this dialogue in 2016. It encourages Member States to equally discuss with social partners the consequences of the energy transition and how they can best be anticipated and managed.³³

Policy conclusions at Member State, regional and EU levels:

- *European industry, research institutes and academic innovative actors are overall well positioned in the global energy landscape. There are many Member States (including Austria, Denmark, Finland, France, Germany and the United Kingdom) who have made significant efforts to promote innovation and business opportunities in energy efficiency and low-carbon technology. That is one of the reasons why, despite the economic and financial crisis, employment has grown in the renewable energy sector, with almost half a million additional jobs created in the EU in the last five years.*
- *Recent positive initiatives of some Member States (including France, the Netherlands and Portugal) have led to more environmental and growth friendly tax systems. Still, there remain opportunities to shift the tax system in a way that stimulates employment and competitiveness while contributing to the Energy Union objectives in a number of Member States)³⁴. Member States engaging in such tax shift should at the same time ensure to avoid disproportionate impacts on the affordability of energy. Key enabling conditions are necessary to bring innovation to markets. By better reflecting environmental and economic costs, tax reforms, e.g. in the area of transport and mobility, have the potential to support this transition.*

³³ The new EU-wide Skills Agenda that the Commission is preparing should set out measures on how to better anticipate skills needs and improve the transparency and recognition of qualifications.

³⁴ Tax Reforms Report in the EU Member States, 2015 (November) – Taxation Paper N°58; http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_58.pdf.

7. IMPLEMENTATION OF THE ENERGY UNION

Progress made

The Energy Union needs a reliable and transparent governance process, anchored in legislation, to make sure that energy-related actions at European, regional, national and local level all contribute to the Energy Union's objectives.

At the political level, Vice-President Šefčovič has undertaken an Energy Union Tour over the last several months. He engaged in a dialogue with national governments and parliaments and with the European Parliament as well as stakeholders and citizens. These visits, as well as the many outreach activities of many other Commissioners, notably of Commissioner Arias Cañete, are instrumental to listen and discuss the Energy Union and its opportunities for the EU and its Member States.

Supported by a technical dialogue with Member States, this process has led to a much clearer picture of the opportunities, strengths, threats and weaknesses of the Energy Union at Member State level, as can be seen in the accompanying factsheets which have been validated with Member States following bilateral discussions.³⁵ It also resulted in the proposed methodology on key indicators attached to this State of the Energy Union.³⁶ This Staff Working Document shows the comparative EU-wide situation for the five dimensions of the Energy Union using these first key indicators. Key indicators will be used in the future to measure and monitor the delivery of the Energy Union.

The energy transition requires strategic planning. Currently only around a third of Member States have comprehensive energy and climate strategies in place beyond 2020, including national indicative targets for greenhouse gas emissions, renewables and energy efficiency. This is a matter of serious concern in view of the necessity to create a predictable framework for investments in areas which often require long-term planning.

Way forward

Integrated national energy and climate plans, addressing all five dimensions of the Energy Union, are necessary tools to have more strategic planning. They will be instrumental for the achievement of the 2030 targets. The related guidance document, annexed to this State of the Energy Union, provides the basis for Member States to start developing their plans for the period covered by the 2030 framework.

In order to provide certainty and predictability to project developers and investors in a rapidly changing environment, preparatory work should start without delay. Member States should therefore present draft National Plans in 2017 as a basis for further discussions, with a view to finalising these National Plans in 2018 so that they will be operational well before 2021.

National plans also need to reflect the outcome of regional consultations in areas that would benefit from enhanced cooperation with neighbouring Member States. In 2016 the Commission intends to come forward with guidance on how to strengthen regional cooperation in the broader sense and how the Commission can facilitate regional approaches.

³⁵ The Member States' factsheets are included in SWD(2015)208-209, 217-242.

³⁶ SWD(2015)243.

In order to track progress, a transparent monitoring system needs to be put in place based on key indicators as well as on Member States' biannual reports concerning progress made on their national plans. The Commission intends to assess collective progress made at the EU level in its annual State of the Energy Union and, if necessary, propose policy actions and measures to ensure the delivery of the Energy Union objectives.

Based on inter alia a fitness check of current reporting obligations³⁷ and ongoing discussions with Member States, the European Parliament and stakeholders, the Commission foresees in 2016 a proposal on streamlining planning and reporting requirements related to climate and energy actions for Member States and the Commission to reduce as soon as possible unnecessary administrative burden in line with the better regulation agenda and to align planning and reporting requirements with the Energy Union Framework Strategy.

8. CONCLUSIONS AND WAY FORWARD

It is essential to maintain the ambition, balance and momentum created by the launch of the Energy Union Framework Strategy in February 2015. 2016 will be an important year, a year of delivery, in which the strategic vision set out in the Energy Union Strategy will be translated in EU-level legislative initiatives, more coherence in our engagement with external partners, and further development and implementation of the Energy Union.

³⁷ Item 10 of the REFIT initiatives, Annex II of the Commission Work Programme (COM(2015)610).