Public consultation on EIB's Energy Lending Policy

A EURELECTRIC response

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The **Union of the Electricity Industry–EURELECTRIC** is the sector association representing the common interests of the electricity industry at pan-European level, plus its affiliates and associates on several other continents.

In line with its mission, EURELECTRIC seeks to contribute to the competitiveness of the electricity industry, to provide effective representation for the industry in public affairs, and to promote the role of electricity both in the advancement of society and in helping provide solutions to the challenges of sustainable development.

EURELECTRIC's formal opinions, policy positions and reports are formulated in Working Groups, composed of experts from the electricity industry, supervised by five Committees. This "structure of expertise" ensures that EURELECTRIC's published documents are based on high-quality input with up-to-date information.

For further information on EURELECTRIC activities, visit our website, which provides general information on the association and on policy issues relevant to the electricity industry; latest news of our activities; EURELECTRIC positions and statements; a publications catalogue listing EURELECTRIC reports; and information on our events and conferences.

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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KEY MESSAGES

EURELECTRIC recognises the EIB's important role in providing funding to the energy sector and is pleased to be given the opportunity to express the European power sector's views on the review of the EIB's energy lending policy. Our response addresses the questions raised by the EIB, as well as the sector's experience with and views on EIB funding.

EURELECTRIC has itself recently published a report (*Powering Investments – Challenges for the Liberalised Electricity Sector*) addressing the challenges that investors face. As such, the report can also provide useful information for the review of the EIB's energy lending policy.

The European power industry remains committed to achieving a competitive, sustainable and secure energy supply. However, a favourable investment climate and long-term predictability are prerequisites for the successful transition towards the future energy system. EURELECTRIC wishes to draw the EIB's attention to the fact that **energy companies experience the investment climate as increasingly challenging due to the economic crisis and an unstable and contradictory regulatory framework.**

There are various reasons why our member companies find it difficult to raise capital. The capital markets have become tighter and competition for access to financing facilities has grown. Sovereign risk represents a very recent and fast growing risk and contributes to the capital-raising difficulties that companies experience.

In addition, the regulatory framework includes overlapping, conflicting policies and targets (renewables, CO_2, energy efficiency) that do not lead to cost-efficient solutions. Policy and regulatory changes that influence the profitability of investments are introduced unexpectedly and sometimes retroactively. EURELECTRIC believes that a sound regulatory framework meeting the following criteria would facilitate a cost-effective transition to a low-carbon economy while guaranteeing security of supply and system stability:

- **A stable policy framework that relies on the EU Emissions Trading System as the main driver to decrease emissions:** Once the policy framework is set, policymakers should let the market work and deliver. Overlapping and conflicting policies and targets should be abandoned. **A recent survey among EURELECTRIC's members has shown that energy companies perceive regulatory risk as larger than market risk.**
- **Renewable energy sources integrated into the market:** The distortive impact of support schemes on the market should be decreased. Support schemes should encourage competition between renewable electricity technologies and incentivise deployment of the most cost-efficient technologies. The focus should increasingly be shifted towards support for research and development.
- **A well-functioning and integrated electricity market:** Markets should be allowed to function properly, allowing investments to be based on market signals rather than support schemes. Completion of the internal electricity market is needed to integrate the renewables into the market.
- Markets cannot function properly if **critical interconnection capacity is missing. Existing high-voltage grids are insufficient** to transport the planned large amounts of renewable electricity across Europe to the main areas of consumption. **Similarly, the development of a smarter grid at mid- and low-voltage distribution level is needed** to ensure that renewable energy can be used to its full potential.

- **Innovation contributing to competitiveness, jobs and long-term sustainable growth:** The transition towards a low-carbon energy system requires the deployment of innovative technologies – both new technologies and improvements to existing ones.
- **An EU energy policy with a global dimension:** Electricity has a global dimension. Most fundamentally, it is an enabler for the functioning of other industries that can choose in which regions they invest. In addition, fuel and technology markets are global and the European power market has to compete on a global basis to attract capital. EU energy policy must reflect this.

The review of the EIB energy sector lending policy should ensure that

1) **the EIB contributes more actively to reducing the financing costs and risks of energy projects and improving utilities' access to capital**, and
2) **the EIB contributes to solutions that support the completion and effective functioning of the energy market and cost-efficient, low-carbon power systems and that accommodate the new needs created by the economic crisis.**

In order to achieve these two aims, EURELECTRIC proposes that EIB energy lending policy reflect the following views:

- Electricity is a key vehicle for the transition towards a competitive low carbon economy; investments in the electricity sector (in power generation, transmission, distribution and energy efficiency to accommodate new solutions and replace and modernise old capacity) are essential for reaching the targets of the EU energy and climate policy. The economic crisis has led to a drop in power demand, but in the longer term EURELECTRIC expects power demand to grow due to the growth of new electric applications such as electric vehicles. **As it is the EIB's objective to support the implementation of the EU energy and climate policy, the EIB should have a significant role in promoting the decarbonisation of the electricity sector.**
- Companies planning investments currently face a number of problems due to the economic crisis and regulatory risks. **EURELECTRIC believes that cost-efficient public-private schemes and financing institutions with policy-orientated goals can play an important role during the crisis.** Energy sector investments are valuable investments in the future, because they provide jobs and support long-term growth of the economy at large.
- **The EIB should contribute to risk-sharing of investments in research, development and innovation.** Promising technologies close to market deployment require risk-sharing to overcome the final hurdle before entering the market on a wider scale. These stages are financially risky, and finding partners and banks willing to contribute to the financing of the project is thus often very difficult.
- EURELECTRIC notes with concern that the huge difficulties many banks are facing (especially in southern Europe) mean **not enough banks meet EIB criteria** for transactions regarding intermediated loans and EIB guarantees to banks. EURELECTRIC would expect the EIB to find a sound response to deal with this temporary situation.
- EURELECTRIC believes that **project bonds** can be an effective instrument for attracting private capital. It should be clarified how the bonds relate to the credit limits of the EIB.
- Given the importance of investments in the energy sector we consider that the EIB should extend its practice of covering in some cases **a larger share of funding (e.g. 75%)** than the usual 50%.
- The selection of projects to be funded should be based on the principle of **technology neutrality**.

Energy companies appreciate EIB financing due to the longer time periods and the fact that EIB financing may attract other private investment. Loans in currencies other than euros provide benefits for companies that also operate outside of the Eurozone. However, companies often experience the process of obtaining EIB financing as time-consuming and bureaucratic.

RESPONSES TO QUESTIONS RAISED IN THE ISSUES PAPER

General energy and economic context

Particularly in the current economic climate, is there a trade-off between promoting a competitive and secure energy supply and one which is environmentally sustainable? Where should the balance lie and what implications does this have for energy sector investments?

Competitive, environmentally sustainable and secure energy supply is possible reach and the European power industry is committed to these goals. However, an appropriate policy framework is a prerequisite. Eurelectric's view is that the current policy framework does not encourage and focus on the most cost-efficient ways towards secure and environmentally sustainable energy supply. Europe should aim at energy policy that encourages competition between different low-carbon technologies and imposes the same market responsibilities for all producers. Energy innovation should become a driver for competitiveness, jobs and long-term sustainable growth. Discretionary measures (such as introduction policy instruments that distort market mechanisms: discretionary taxation; retroactive changes to support schemes) and multiple and conflicting policies and targets should be abandoned and completion of a well-functioning and integrated energy market to ensured. Competitive prices, sustainability and security supply in the long term should be the goals of energy policy.

There is a need for European energy policy which reconciles national policies and cares about consistency. The European energy policy should consider also global developments, because it influences Europe's competitiveness and European power market has to compete on a global basis to attract capital to invest in projects. Global developments that may lead to significant changes include for example the unconventional gas exploitation on US energy market.

Due to the current economic crisis energy companies face difficulties in their investments, and for this reason it is even more important to ensure that the regulatory framework is stable. In addition, EURELECTRIC sees that cost-efficient public private schemes and financing institutions with societal objectives (e.g. EIB) could play an important role during the crisis. Energy sector's investments are valuable investments into future, because they provide jobs and support industries' and other sectors' growth in the long term.

How does investment in the energy sector contribute to growth and employment? Are investments in all energy sub-sectors equally valuable? And how does investment in the energy sector rank relative to other investments in the economy which support growth and employment?

A safe supply of electricity provides one of the cornerstones of modern society. One need hardly mention its contribution to heating, cooling, health care, mobility, communications and information technology and many other areas, they seem so obvious. Electricity is an enabler for the functioning of other industries. Cost-competitive power prices and secure power supply are among key criteria for selecting regions to invest in especially for energy intensive industries that are vital for the competitiveness of European economies. In addition, competitively priced electricity contributes to the economic growth also in the service sector, transport etc. As electricity is necessary in a modern society, and a major contributor to sustainable future it is of outmost importance to take care that investments that are needed to ensure security of power supply and shift towards low-carbon economies take place.

In addition to being an enabler for other industries, investments in power generation, utilisation of local fuels, grids and small and smart appliances have a potential to create local jobs. For example, hydro power industry is mainly European as a consequence of expansion of hydro power capacity in Europe. Denmark has been successful in creating its own wind power industry. In an increasingly global world, investments in certain technology do not necessarily lead to strong regional industry, but potential for this still exist.

The opportunities for making electricity a low carbon product are plenty and they make electricity also a key vehicle for transition towards low-carbon economy. Electricity has a crucial role to play in reducing overall energy consumption and diminishing adverse environmental effects through wider application of efficient end-use electric technologies (e.g. electric vehicles).

What impact do you consider the current economic crisis will have on the energy sector (demand, policies, supply)?

After a decade of growth and a partial recovery in 2010 after the economic crisis of 2009, electricity demand fell again in 2011 primarily due to the prolonged sovereign debt crisis. Amid these ever-changing macro-economic conditions, forecasting electricity demand up to 2020 is proving difficult. Signals pointing to a fast recovery of electricity demand are few, but in the longer term, EURELECTRIC expects an increase in power consumptions due to adoption of energy efficient technologies such as electric vehicles.

Investments should be based on market signals, and it is a logical development that the reduced economic crisis and reduced demand influence the investments in the energy sector. However, investments in power sector do not only refer to new low carbon power generation but also to investments in existing power plants and grid to improve energy efficiency, reduce emissions and ensure that network capacity and smart grids and flexible and back up capacity are available and enabling the integration of variable renewable power generation. In addition, when considering future investment needs we have to remember that power plants are operated for decades before being decommissioned, there is a need for replacing aging power plants in Europe, and new investments are needed to ensure the shift towards low carbon economy.

While IEA and European Commission estimate that slightly less than €1 trillion up to 2020, and €3 trillion up to 2030[1] should be invested in the entire European electricity value chain, for generation, transmission, distribution and storage, EURELECTRIC's members, electricity companies, believe that only half of these investments will take place. When asked to compare different type of risks to each other, EURELECTRIC's members saw the regulatory risk as the most significant one followed by market risk, credit risk and liquidity risk.

So far the economic crisis has made several countries to cut their subsidies for renewable energies and increase the taxes on energy. EURELECTRIC wishes the regulatory framework to be based on stable policies that encourage competition and thus contribute to cost-efficient shift towards low carbon economy.

Renewable Energy

The Bank's economic justification for supporting emerging renewable energy technologies, whose cost is significantly above that of conventional and mature renewable energy technologies, is that continued investments in these technologies will eventually lead to cost

[1] IEA estimates in the WEO 2012.

reductions and will ultimately be the least-cost approach to meeting the EU's renewable energy targets. Do you agree with this approach? Is there an alternative approach to the economic justification of these technologies which you consider more appropriate?

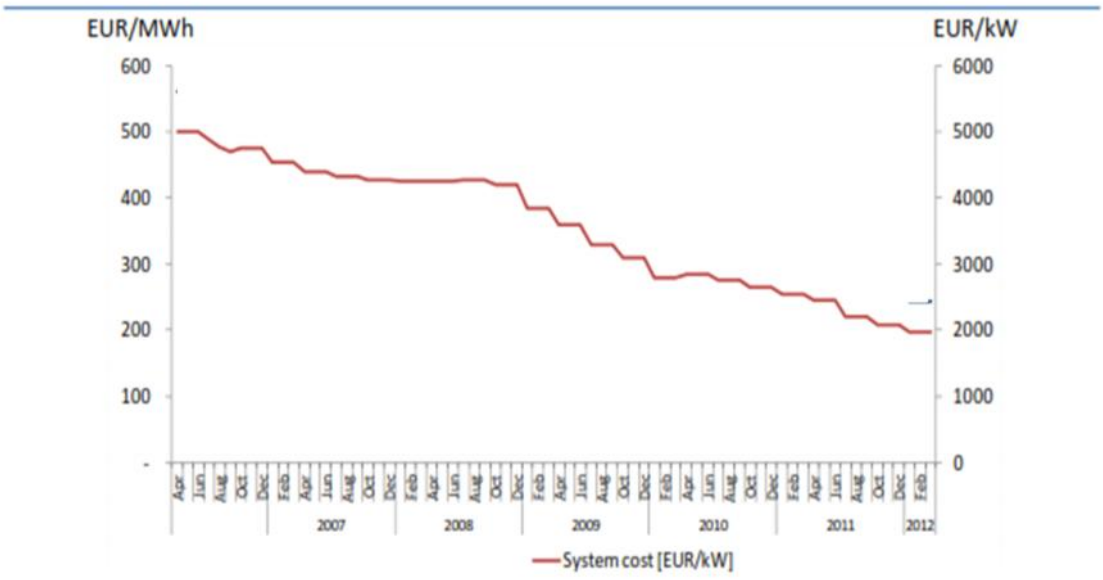
There are several examples which show that deployment of emerging renewable technologies have led to gradually decreasing costs.

There is a need to support renewable technologies, but it has in many cases been done in a very costly manner, e.g. with feed-in tariff schemes that have led to very high direct and indirect costs. Immature technologies that are not yet ready for large scale market uptake should be supported as pilot projects rather than with renewable energy subsidies with extensive scope and costs for tax payers or power consumers. It should also be taken into account, that generous subsidies have a tendency to influence the prices of technologies. EURELECTRIC recommends EIB to assess carefully the maturity of the technology in question, and choose the measures accordingly.

What evidence is there that the cost of emerging renewable technology is falling?

The development of costs of wind power and solar power (figure below) are examples of renewable energy technologies that have become more cost-competitive. Cost have decreased both due to economics of scale and increasing investments in the development of the technology in question.

Figure 1. Solar PV system costs medium-scale systems (up to 100 kW), Germany 2006-2012 (source: IEA 2012, Securing Power During the Transition)



What level of investment in RE do you expect in the short and medium term?

In general, investors are facing various difficulties at the moment. Regulatory framework cannot be described as stable, and the economic crisis is increasing the difficulties for finding financing for investments in power generation.

Support schemes for renewable energy have been the main driver for investments in the recent years and they have led to fast increase in renewable power generation. Support schemes have

disconnected the link between market price signals that reflect the demand and availability of supply, and investments. For this reason, in some regions support schemes are leading to overcapacity or so fast increase in variable renewable capacity that power systems are struggling to adapt in a corresponding speed (necessary network investments lag behind etc). The increasing need for back up capacity and flexibility should not be met by introducing mechanisms that cause further distortions in the market but by removing distortions which hinder the balance of demand and supply.

As the economic crisis persists, reforms of support schemes to improve their cost-efficiency have been carried out in many countries. The introduced cuts to subsidies are bound to slow down the investments in the technologies that they apply to. In addition, retroactive or unplanned changes to support schemes and other sudden changes in policies are likely to make investors increasingly cautious. The possibilities for regulatory intervention depends on the design of the support scheme, this is likely to influence the investors' trust in them.

In the regions where energy policy has provided more stable investment climate for power generators, and economic crisis has had less impact, investments are more likely to take place. There are large regional differences in the investment climate for the energy sector in Europe.

In the longer term, it can be expected that the costs of renewable energy fall with time when the technology development proceeds. EURELECTRIC recommends that for this reason the subsidies for renewable energy will be gradually removed, and focused on emerging technologies.

What are the barriers to investment in renewable energy outside Europe? How might these be overcome?

EURELECTRIC has recently carried out a survey among its members on the barriers to investment in sustainable energy on a global scale. This survey was done in the context of Sustainable Energy for All, a UN initiative[2] that EURELECTRIC participates in.

In the context of this project, barriers to investment in sustainable energy on a global scale have been recognised. They include physical and geographical barriers to reach remote communities, political risks and uncertain regulatory frameworks, financial barriers and mind set and attitudes:

- Physical and geographical barriers (to reach remote communities)
    - Technical development and absence of infrastructures
    - Capacity and training level associated to the technical development
    - Lack of local experts that could help to design and implement the project as well as make the evaluation
    - Construction time: Longer construction process expected than in Europe (e.g. longer permitting process expected)
- Political (country risk) and regulatory uncertainty
    - Lack of supportive policy as well as legal and institutional frameworks to ease private investments
    - Often no regulator established yet
    - Lack of information transparency: a lot is up to negotiation with public authorities.
- Financial barriers
    - the financial effort required to provide infrastructure for access to electricity is huge
- Mind set

[2] Sustainable Energy for All has three goals: 1) to ensure universal access to modern energy services 2) to double the global rate of improvement in energy efficiency and 3) double the share of renewable energy in the global energy mix

- The prevailing notion is to think of these efforts as corporate social responsibility instead of as viable business models in their own right

It is also worth noticing, that economic arguments and power prices play often a higher role for policy makers outside of EU, and they are likely encourage investments that lead to competitively priced electricity.

Do you agree that there is significant scope for investment in renewable heating and cooling?

Renewable heating and cooling comprises various technologies such as heat pumps, solar heat, pellets and renewable district heating and cooling. The potential for utilisation of these technologies depends both on the characteristics of the technology in question, and the current infrastructure and heating and cooling needs.

Depending on the need for heating, heat pumps can be used alone, or to complete direct electric heating and increase energy efficiency. In locations where new district heating and cooling networks provide an economically feasible alternative or have already been built, heat only and combined heat and power plants can be converted to use biomass, biogas or renewable waste either as the sole fuel or in cofiring. There are also opportunities for replacing fossil fuels in heating with pellets or solar heating.

The potential for adoption of these technologies varies largely between different regions. Altogether, they have a significant potential to contribute to EU renewable energy targets.

Major reductions in demand for heating energy can be reached in the future low energy buildings, and this should also be taken into account when selecting the heating and cooling technology or assessing the potential for their increasing utilisation. The investment costs of direct electrical heating are low, and for this reasons it can provide a viable option for low energy buildings. Combined with electricity produced from mainly carbon free sources, it provides also a solution with low emissions.

What are the barriers to investments in this sector and how might these be overcome?

The pay-back times are in some cases long, and aging of population, especially house owners, may not be motivated to investments.

There are large regional differences in investments in renewable heating and cooling which can mainly be attributed to the lack of incentives to invest in renewable heating and cooling.

Energy Efficiency

What do you think are the main barriers to energy efficiency investments? What might be done to overcome these?

End-users, even if informed about energy efficiency opportunities and interested in potential savings, do not necessarily feel the need to invest in energy efficiency. The market fails to stimulate especially the uptake of energy efficiency measures with high energy saving potential but long payback times and high upfront capital investments even if they are cost-effective. Positive spin-off effects from energy efficiency measures are often overlooked and/or not fully

understood. Small and medium enterprises (SMEs) - and sometimes also large companies - usually do not have the right competences to guarantee the success of energy efficiency interventions and need reliable technical and financial support. Public authorities certainly have a role to play in promoting energy efficiency. However, for many public administrations energy efficiency has so far ranked rather low on the list of priorities.

Incentives to invest in energy efficiency are many times missing, as well as a well-functioning regulatory framework or voluntary measures. The focus of measures may be on electricity, although transport and heating also hold large energy efficiency potential. In some cases, learning curves are still at an early stage and pay-back times may be long.

Due to the various barriers, there needs to be a variety of measures to address them as well. EURELECTRIC believes that the measures to increase energy efficiency should take into account the following principles:

- Energy efficiency must become a profitable business in itself, leading to a robust internal market for energy services, energy-saving techniques and practices, and commercial opportunities.
- All relevant stakeholders (authorities, banks, ESCOs, research institutes, energy companies etc) should be incentivised to take actions in a system-wide approach to promoting and implementing energy efficiency practices, maximising the use of their skills, competences and resources and making the most of synergies.
- In order to achieve results in energy efficiency schemes, it is important that final customers, including those in the domestic sector, pay the real price of energy.

In case of market failure, public intervention or financing from investment banks such as the EIB might be needed to finance or co-finance certain activities. Funding mechanisms should reflect local realities; thus we do not support a "one-size-fits-all" approach. EURELECTRIC therefore supports banks' choice to get involved with other projects / organisations. This approach help the Bank to be able to finance energy efficiency projects that reach other than large energy consumers (households or SMEs) and such sectors as construction and transport.

Benchmarking with other investment banks that are committed to work on the basis of energy policy objectives can also be helpful. Good results have been achieved for example with the loans that the German KfW has provided for construction of energy-efficient homes and energy efficient refurbishment of older residential buildings.

What role can Energy Service Companies (ESCOs) play in developing energy efficiency investments?

EURELECTRIC believes that ESCOs can play an important role in improving energy efficiency. In this respect, energy supply companies can be a major player in the energy services market: they already have, in fact, commercial incentives to design and provide tailor-made energy services to their customers. Therefore they could certainly play an important role in the development of such a market.

Large end-users should be offered the chance to invest directly in energy efficiency or to ask a third party/ESCO to invest on their behalf (through the benefit-sharing approach, also known as energy performance contracting) in order to avoid diverting money from their core business. The second option entails an immediate benefit for the end-user (shared with the energy service operator) in terms of competitiveness and cost reduction.

A large number of small ESCOs make use of the model of "third party financing" and which therefore depend on monetary resources and credit from financial institutions/banks.

Considering the uncertainties of the market, the participation of banks and insurances in the system approach increases the possibility for investments either directly by consumers or by ESCOs.

The role of ESCOs is also strongly dependent on the general market environment and whether it is regulated or driven by competition.

What is the potential for energy efficiency outside Europe?

There is no doubt that globally the potential for increasing energy efficiency is huge. As an example, the IEA has estimated, that is its proposed actions policies and measures to improve energy efficiency could save 7,6 Gt CO_2 emissions by 2030[3]. This corresponds to approximately twice the current EU27 annual CO_2 emissions.

Do you consider the criteria used by the Bank to categorise projects as Energy Efficiency projects appropriate (see Annex 1)? What alternative would you propose?

The main goal in increasing energy efficiency and the share of carbon free electricity is to reduce carbon dioxide emissions. EURELECTRIC believes that emissions trading should be the main policy instrument to decrease CO_2 emissions. The CO_2 emission reductions should be reflected in the Bank's criteria to categorise projects as Energy Efficiency Projects.

Eurelectric agrees that it is meaningful to pay attention to energy efficiency in all projects that the Bank finances and consider how the need to increase energy efficiency has been taken into account.

Security of Supply

Is the traditional model for electricity transmission and distribution changing? What implications does this have for future investments in electricity networks?

The increase of variable and distributed energy resources in the European energy system has implications for both the transmission and distribution of electricity. Investments are needed on the cross-border and domestic transmission grids to enhance market integrity within the EU (e.g. through the interconnection of isolated power systems – islands), to ensure overall stability and maximize the use of renewable generation. The increase in variable renewable electricity stresses also the need to complete integration of wholesale electricity market, which has implications for TSOs. For example regional balancing markets should be established.

Altogether €200 billion investments are needed into European networks by 2020. According to a EURELECRIC survey about two thirds of this amount should be invested into distribution networks by 2020. Drivers for electricity distribution investments include the need to ensure local and regional stability and balancing, integration of renewables, new use of energy use like electrical cars and heat pumps, energy efficiency and demand response. With the rising share of variable RES in the system, to ensure stability there will be an increasing demand for flexibility in the distribution system where load follows production in a greater extent than before. We are "moving" from customers' connections towards a development that will implement distributed generation, smart meters, electric vehicles, telecommunications etc. The traditional way of network development as well as roles and responsibilities on the market will develop.

[3] IEA 2011. 25 Energy Efficiency Policy Recommendations – Update 2011.

To meet these challenges the DSO will play a central role as the neutral facilitator to ensure the reliability and stability of the system while facilitating commercial activities of other market actors in competition. In order to integrate distributed energy resources in secure and safe way, solutions enabling the DSO to mitigate the fluctuations through more advanced system management (that earlier on was only the responsibility of the TSO) will be required.

As the DSO has to make the bulk of the expected "smart grid" investments, it is essential that European and national regulators allow new technology to be adequately financed by the DSOs grid tariffs or other revenue streams. The main implications for the future investments for the distribution infrastructure are the increase in risk that is not compensated in most of today's regulatory models due to the uncertainty regarding market development and technology. Innovation is not incentivized which is one great barrier for investing for long term needs.

What is the future role of smart grids, offshore grids and energy storage solutions?

Smart grids, offshore grids and energy storage solutions enable the decarbonisation of power systems. As mentioned above, investments in smart grids are necessary to ensure the integration of small scale power generation. Eurelectric fully supports the high priority given by the Bank to such projects. Among these technologies, "smart metering" technologies would deserve to be explicitly mentioned, as they are one of the key element giving the technical capacity to integrate renewable energy within a secure distribution network.

Electrical storage technologies can smooth out supply and demand, thereby helping to keep the system balanced while the share of variable renewable generation increases. Both investments in large scale centralised solutions (e.g. pumped hydro) and small-scale storage technologies could support and optimise the operation of the grid and power system.

High voltage overlays connecting distinct, neighbouring power systems provide an opportunity to integrate high resource areas and link neighbouring power systems and thus provide optimal conditions for utilisation of offshore wind power. It should be taken into account that HVDC grids are a promising alternative for offshore grids.

The new roles of distribution grids and the need for offshore grids should also be taken into account in policy and regulation as they impose new roles and needs for cooperation.

Fossil Fuel

Gas is an important bridging fuel source in the transition to a low carbon economy: to what extent and under what conditions should gas-fired generation be supported?

EURELECTRIC believes that that the EIB, in line with EU policies, should respect neutrality regarding power generation technologies. Gas fired power generation is one option for providing both flexible medium and peak load power generation and base load power, the economic viability of which however depends strongly on low gas prices in the long-run and on the diversification of gas supply sources to ensure security of supply. There is a growing need for flexible power generation as the share of variable renewable electricity increases. In addition to gas, there are options from hydro power to coal to provide flexible power generation.

Due to the combination of low prices of coal of emission allowances, high gas prices and in some cases high taxes on gas, producers prefer in many cases to run the coal plants instead of gas fired generation. Also, the new huge renewable power generation capacity that has been commissioned due to the support schemes decreases the running hours of thermal power plants

and has a lowering effect on the electricity spot price. Flexible gas based power generation capacity is therefore in different countries becoming unprofitable: existing plants are being decommissioned and new investments are put on hold. For this reason, several member states have introduced or are considering specific measures (e.g. capacity remuneration schemes) in order to ensure security of supply. Eurelectric urges the European authorities to coordinate these initiatives and to determine guidelines in order to avoid diverging national measures that might hinder market integration and distort competition amongst countries that are part of the same integrated market.

EURELECTRIC does not opt for specific support for gas fired generation but believes that energy policy framework should allow all power generation technologies to compete in the market and the emissions trading should be used as the main instrument to reduce carbon dioxide emissions.

A higher CO_2 price and more integrated and liquid gas markets, substantiated by efficient capacity allocation and balancing mechanisms, is a key pre-requisite to make gas pricing more competitive while ensuring at the same time flexibility of the energy system and security of supply.

What role will coal and lignite fired generation have in the EU power system in the medium term, with or without CCS, and how is this consistent with the EU's Climate Action goals and its security of supply objectives?

EURELECTRIC shares the European Commission assessment that the energy sector should be carbon-neutral by 2050 in order to decarbonise the EU economy. However, this doesn't mean ruling out the possibility of using carbon-based fuels such as hard coal and lignite in power generation, for those allow for a more competitive electricity price while ensuring readily-available electricity around the clock. Furthermore, substitution of old, less efficient coal-fired power stations with newer, more efficient ones is a step towards reaching the climate goals.

To make coal-firing consistent with the EU's climate goals, it is of the utmost importance that the EU CCS demonstration programme is actually delivered by 2020, so as to allow for the deployment of the technology at commercial scale immediately afterwards. Beyond the European context, the dominant energy sources in growing Asian economies such as China is coal and successful reduction of CO_2 emissions without availability of CCS technology would be very hard.

What will be the role of local coal supplies as input for highly efficient CHPs?

Local coal supplies play a major role in the Asian economies whereas lignite plays a more prominent role in Europe. While the focus of future investments should be in renewable energy and other CO_2 free solutions, it should be noted that highly efficient combined heat and power technology done in a technically- and economically -sound way can double the efficiency of a condensing power plant. Consequently, its CO_2 emissions are approximately half of those of a condensing power plant. Similar impact applies also to other emissions to air.

Power plant projects should be assessed against other available options (economy, sustainability, security of supply) and the likely evolution of the surrounding power systems and electricity market.

What evaluation criteria should the Bank use to assess the economic, environmental and financial viability of coal and lignite fired generation?

The viability of a certain technology is not only connected to the technology itself, but also the characteristics and expected development of the electricity market and regulatory framework and available options for coal or lignite. The CO_2 emissions associated with the power generation should be used included in the criteria. Best Available Technologies can provide benchmark values for assessments.

What is the scope for the development of shale gas resources in the EU?

The remaining technically recoverable shale gas resources have been estimated to be 16 tcm in OECD-Europe and 12 tcm in Eastern Europe and Eurasia. Shale gas may provide an opportunity for increasing and diversifying gas supply in Europe and could potentially contribute to a decrease in gas prices.

Efforts need to be taken to minimise the negative environmental impacts of shale gas. Eurelectric has so far no position on the development of shale gas.

Do you expect the share of natural gas in EU primary energy consumption to grow further?

The prospects for use of gas in power stations are currently uncertain in Europe and taking into account the current economic crisis, and the unstable regulatory framework, it is difficult to predict also the future demand for gas. In general, the power producers have estimated regulatory risks to be the largest risk regarding investments.

The IEA expects the resurge in the US gas production to have a strong influence on the global gas market, but it is likely to be felt less in Europe than in other parts of the world[4]. Gas prices in Asia are currently higher than in Europe, which could motivate exporters to focus on Asia.

What would be the best approach to increase security of gas supply and reduce import dependency?

Import dependency is not a problem as such, if adequate diversification of sources is ensured and the actors in the business have a level playing field. EURELECTRIC takes the view that we need to maximise the potential gas available from all sources (e.g. conventional, unconventional, LNG, etc.), including new supply counterparts and routes, without neglecting the import role of domestic source. To this end, fostering relations with multiple suppliers, both within and outside Europe is key. For example, the South Corridor may enhance security of supply.

Given the large uncertainty on future gas demand, what is the risk that investment in natural gas infrastructure may be stranded?

Investments in all technologies involve risks. As regulatory risks cannot be hedged, EURELECTRIC would like to stress the need to minimise them.

Nuclear

What role do you expect nuclear power to play in the European energy market?

[4] IEA WEO 2012

Nuclear power is expected to remain an important part of the power mix in many European countries up to 2050 and beyond. The reaction to Fukushima accident has varied significantly in the EU Members States. While some have reverted back to the previously agreed phase-outs, others are proceeding with policies and plans aiming at increase in their nuclear capacity.

The EU Commission presented in its Energy Roadmap 2050 five scenarios which explore routes towards decarbonisation of the energy system. The share of nuclear power in power generation mix varies from 3 to 19 %, with the Delayed CCS Scenario and Diversified supply technologies showing the highest share of nuclear power and the lowest costs[5].

As nuclear power stations are ageing, should their life time be extended (where possible) or should they be replaced with other generation sources?

The extension of a lifetime of a nuclear power plant should be judged case by case. Firstly, all nuclear power plants have to meet the safety requirements decided upon by national regulators. If they are met, it should be up to the power plant operator to estimate whether it is economical to extend the lifetime of a nuclear power plant. Whether nuclear units are replaced by other energy sources depends on the business case drawn by its operator, the national energy policy and available options for nuclear power, taking into account their costs, security of supply and emissions.

What will be the impact on electricity generation and climate action of the reconsideration of nuclear policies within EU member states, in particular after the Fukushima accident?

A significant share of power demand is met with nuclear power in the EU (27% in 2010). Significant further decrease in nuclear capacity is likely to lead to increase in CO_2 emissions at least in the short term. This can be observed in Germany: data of AG Energiebilanzen shows, that lignite consumption increased by 5.9% and hard coal by 3.2% while gas demand decreased by 1.6% when comparing the first three quarters of 2012 to the first three quarters of 2011).

RDI

Which are the key innovative energy technologies under development? The development of which key innovative low-carbon energy technologies should receive most financial support?

RD&D support needs to be available for technologies throughout the entire innovation cycle. Immature technologies should be promoted within pilot projects not supported through extensive support schemes. Promising areas for low-carbon energy technologies in generation are both among the conventional ones (e.g. to increase efficiency and flexibility) and the renewables. Especially research should be technology open and opportunities should not be narrowed down by accepting only a limited set of answers as valid.

Promising technologies close to market deployment require risk sharing in overcoming the final hurdle before entering the market in a wider scale. These stages are decisive for going 'from

[5] The average annual energy system costs 2011-2050 are 2525 bn € for Delayed CCS Scenario and 2535 bn € for Diversified supply technologies while the costs of other Decarbonisation scenarios vary between 2552-2615 bn €.

promise to practice', but are financially risky and finding partners and banks willing to contribute to the financing of the project is often very difficult. The focus should be at this stage on solutions that have a cost-efficient potential to contribute to the three major energy policy objectives of competitiveness, security of supply and sustainable development possibility for reaching market viability before 2020. In this respect, power generation technologies, CCS, storage, smart grids and system level solutions are all relevant. Regarding power distribution, the DSOs need to develop new solutions for improving power quality to minimize the risks for outages due to the increase of intermittent renewables in the distribution network. This RD&D cannot be delayed due to the enormous amount of networks that exists throughout Europe and their long life-time. Large scale smart grid demonstrations throughout Europe are necessary to test the system integration of the innovative solutions.

As it is the objective of European Investment Bank to help EU to meet the goals of its energy policy, EURELECTRIC believes that EIB should contribute to risk sharing in RD&D and contribute for example demonstration projects for emerging technologies.

Beyond "hard ware" innovation into technologies, it is important to support service innovation ('soft ware" innovation) as well. EURELECTRIC is currently elaborating an *Innovation Action Plan* which will examine the industry's role in shaping the future prospects of energy technologies. To complement its delivery, EURELECTRIC will organise a high-level conference on 14 May 2013.

Which barrier(s) are hindering the deployment of innovative, low-carbon energy technologies most significantly?

Unlike a couple of decades ago, the energy sector is currently changing fast, and power producers are expected to adopt new technologies in circumstances where regulatory framework undergoes constant evolution. Risk sharing is a key element in bringing promising and strategically important technologies like smart grids or CCS to the commercial stage. Easing access to loans, guarantees and other forms of risk finance combined with reduced bureaucracy for utilities and equipment manufacturers increases the commitment of the private sector to invest in innovation projects.

The subsidies for generation technologies, recently mainly renewable energy sources, have a tendency to lead to commitment to supported technologies rather than those with largest potential regarding its technical, economic and environmental performance. The realistic potential of technologies in question should be taken into account while selecting projects for financing.

Current CO2 prices impacted by different support schemes for technologies also do not facilitate investments in low-carbon energy technologies. Therefore, EU ETS system should be restored to ensure its role in the market.

Should financial support be spread across a large number of small research projects or be selective and concentrated on a few promising large research projects?

The meaningful size of a research project depends on the technology in question. While deployment of some technologies can be encourages through small-scale projects, there are also technologies that require large research projects. For example, CSS research requires large projects while research on distributed power generation can often take place in smaller projects. Similarly, system integration of the innovative solutions on distribution networks need to be

demonstrated on large scale (even throughout Europe) but product proof of concepts should be tested first in small scale demonstrations.

EIB external and Cotonou mandates

In a developing market context, where should the balance lie between meeting local energy needs at least cost and reducing global greenhouse gas emissions – the trade-off between affordable energy for all and sustainable energy for all?

Efforts should be taken to prevent carbon lock-in developing markets. At the same time, not only environmental sustainability plays a role but also economic sustainability and security of electricity supply. The solutions should take into account also the development of the whole electricity infrastructure, the demand patterns by different customer groups (industry, services and households) and an ability to repair the required equipment locally.

The opportunities for deployment of renewable technologies and energy efficient solutions are many. Due to the lack of solid grid infrastructure, distributed power generation is often an optimal option in developing markets. For example in larger points of consumption, where renewable power generation is not an option, solutions that minimise emissions should be a priority.

What should be the role of the EIB in promoting new technology and helping to transfer existing technologies to new markets?

The efforts to reduce carbon dioxide emissions should be strengthened outside EU, and the EIB can contribute to this by promoting new technology and helping to
transfer existing technologies to new markets. There should be a balance between economic and environmental sustainability and security of supply.

What are the main barriers to developing sustainable energy sources in developing markets?

Major barriers in the developing market are often connected to poor and high political and regulatory risks. One example of them are the difficulties CEZ has recently faced in Albania after having investing in the Albanian distribution network. There are also barriers related to the maintaining of the equipment, and financing of investments.

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