Consultation Paper

The European Investment Bank reviews its Energy Sector Lending Policy

Call for public views

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1. Purpose of this document

The European Investment Bank's (the "EIB" or the "Bank") current Energy Sector Lending Policy was developed in 2006 and 2007 and is set out in three documents:

- Clean Energy for Europe[1];
- EIB Energy Review[2];
- EIB and Financing of Nuclear Energy[3].

The Bank's Energy Sector Lending Policy takes as its base the relevant EU sector policies and translates these into lending objectives and project screening criteria for Bank financing. Within the overall framework of the Bank's Corporate Operational Plan (the "COP"), these determine the volume and type of energy projects financed by the Bank[4].

The Bank is currently in the process of reviewing its Energy Sector Lending Policy in the light of market and EU policy developments and is seeking the views of external stakeholders as an input to this review. The purpose of this document is to provide external stakeholders with background material for this review.

The remainder of this paper is structured as follows:

- Section 2: provides an overview of the Bank and its energy sector lending;
- Section 3: discusses some key developments in global energy markets and EU policy since 2007; and
- Section 4: highlights some key issues and questions for the review.

This paper is intended to be read alongside the Bank's Energy Sector Lending Policy Documents and the Bank's other key strategy and policy documents notably the Bank's Corporate Operational Plan, the other sectoral lending policies and the Bank's Environmental and Social Principles and Standards[5].

EIB welcomes written responses on the Bank's current Energy Sector Lending Policy and the issues raised in this paper at any time up to 31 December 2012.

The results of the public consultation will be an important input to the Bank's review of its Energy Sector Lending Policy. The revised Policy is expected to be in place in summer 2013.

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1 *Clean Energy for Europe: A Reinforced EIB Contribution,* June 2007 (http://www.eib.org/infocentre/publications/all/clean-energy-for-europe.htm)

2 *EIB Energy Review,* October 2006 (http://www.eib.org/infocentre/publications/all/eib-energy-review.htm)

3 *EIB and Financing of Nuclear Energy*, July 2007 (http://www.eib.org/infocentre/publications/all/eib-and-financing-of-nuclear-energy.htm)

4 The current COP is available at http://www.eib.org/infocentre/publications/all/operational-plan-2012-2014.htm.

5 http://www.eib.org/infocentre/publications/all/eib-transparency-policy.htm, http://www.eib.org/attachments/strategies/eib_statement_esps_en.pdf

2. Overview of the European Investment Bank and its support to the energy sector

The European Investment Bank is the European Union's Bank. Its shareholders are the 27 EU Member States. Within the European Union the EIB provides financing and technical and financial assistance to projects which support EU policy objectives across a number of sectors, including energy. Outside the EU, the Bank is active in over 150 countries where it supports projects which contribute to the EU's external cooperation and development policies. In 2011, some 88% of the EIB's total financing of EUR 62 billion was for projects located in the EU.

As a public institution, the EIB must ensure that the projects it finances are technically, economically and financially viable and that its financial or technical support to projects improves their design, implementation or financial viability. As a bank, the EIB must also ensure that its overall level and mix of activity is consistent with maintaining its solid financial position.

2.1 EIB Energy sector activity

In 2011 the Bank provided EUR 12.8bn of financing to energy projects, EUR 10.8bn within the EU and EUR 2bn outside, representing just over 20% of the total financing provided by the Bank. Over the next COP period energy projects are expected to continue to account for approximately one fifth of the Bank's signatures and, through the financing of renewable energy and energy efficiency projects, for nearly 40% of the Bank's Environmental Sustainability Goal.

In addition energy projects make a significant contribution to the Bank's Climate Action objective under which at least 25% of all projects financed by the Bank should be in support of climate action projects. EIB's climate action focuses on low-carbon investments that mitigate greenhouse gas emissions and on climate-resilient projects that improve adaptation to climate change impacts. Climate change considerations are mainstreamed in all EIB sectoral policies, including the Energy Policy, and integrated into all operational activities. They are also systematically included in all EIB project appraisals to make the Bank's lending portfolio across all sectors more climate-friendly.

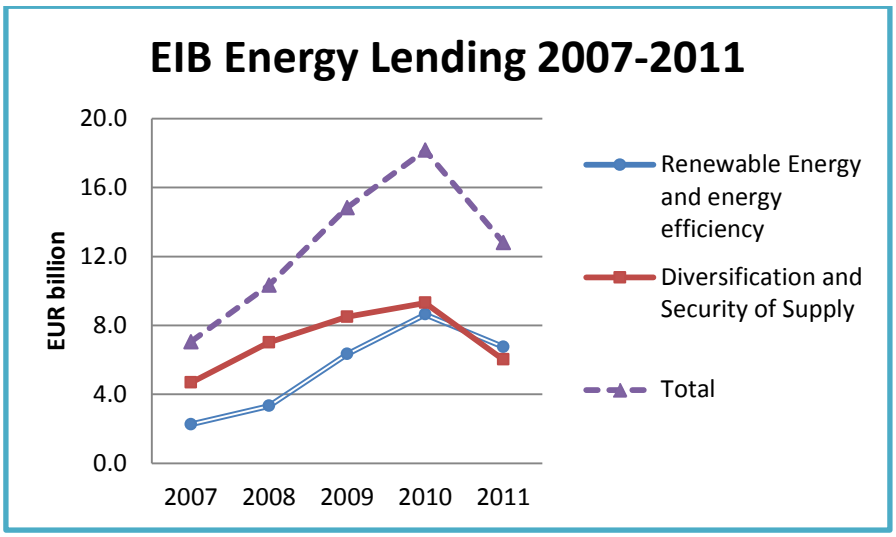
The type and mix of energy projects financed by the Bank is determined by the current Energy Sector Lending Policy. The Lending Policy is based on the EU's policy objectives, and aims to strike a balance between the potentially competing EU objectives of energy security of supply, competitiveness and climate action. The current policy prioritises:

- Renewable energy, promoting the integration of renewable energy sources into the energy market;
- Energy efficiency, both through financial instruments and technical assistance, targeting buildings, industry and SMEs, energy service companies (ESCOs), as well as high efficiency cogeneration plants (CHPs) and district heating and cooling systems;
- Security of supply, supporting investments in electricity and gas systems, including transmission and distribution networks, smart grids, LNG and storage facilities, as well as gas fired power generation;
- Research, development and innovation in energy, sustaining public and private research initiatives with a technology-neutral approach;
- External energy security and economic development (Neighbour and Partner countries).

In addition to these high level policy goals the Bank also screens projects to ensure that they are technically, economically and financially viable. The criteria the Bank uses to screen projects are set out in the Energy Sector Lending Policy documents and summarised in Annex 1. Alongside the high level energy lending objectives and the Bank's other key policies, notably its environmental and social standards, these sector-

based criteria have an important impact on the selection of energy projects financed by the Bank and are an important part of the Energy Sector Lending Policy.

Since the introduction of the Energy Sector Lending Policy the Bank's lending to the sector grew by 82% between 2007 and 2011, increasing from approximately 14% of total Bank lending in 2007 to 20% in 2011. Over the same period lending to renewable energy and energy efficiency projects increased from 32% of total lending to the energy sector to over 52%, reflecting the strong growth in those markets and the high priority given to these sectors over this period.



2.2 Energy sector lending outside the EU

Energy is a key priority of the EIB outside the EU under its external and Cotonou mandates[6]. These mandates support the implementation of EU development aid and cooperation policies and have three high-level objectives

- local private sector development;
- development of social and economic infrastructure; and
- climate change mitigation and adaptation.

These are translated into regional operational guidelines. Each region has a slightly different emphasis on energy efficiency, promotion of renewables and research and development. In developing countries in general, the EIB promotes access to modern sources of energy and the development of sustainable energy solutions. The aim is to contribute to the partner countries' development and reduce the environmental impact of energy activities. In the European "Neighbourhood" countries[7] a particular aim is to extend the benefits of the EU's internal market by creating a pan-European energy community and to facilitate energy imports into the EU originating in, or transiting through, these countries.

2.3 Technical and financial assistance in the energy sector

The Bank also provides a range of technical and financial assistance to projects in the energy sector, most of which fall into one of the following categories:

- Traditional technical assistance to support a promoter or financial intermediary in developing, delivering and improving the quality of a project that the Bank will finance. In the energy sector, this form of support is particularly important in projects outside the EU where substantial technical assistance is often required to ensure that projects comply with EU and Bank requirements. Outside the EU, the

6 http://www.eib.org/infocentre/publications/all/supporting-the-eu-external-action.htm

7 Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, Occupied Palestinian Territory, Syria, Tunisia and Ukraine.

EIB manages technical assistance programmes to support project preparation and operation in several regions.

- Fee based advisory services to the European Commission or third parties. Examples in the energy sector include the ELENA programme, which provides grants to promoters developing energy efficiency projects which the Bank manages on behalf of the Commission, and the NER300 funding programme where the Bank is providing technical and financial advice to the Commission on the innovative renewable energy and carbon capture and storage projects submitted by member states to the Commission for financing.
- Financial and non-financial instruments set up as joint-initiatives between the Bank, the Commission and other international financial institutions to make use of EU's structural funds; or risk-sharing instruments between the EU and the Bank's own resources, for the financing of projects in particular market segments. Examples include JESSICA, and the Risk Sharing Finance Facility which can be used to finance innovative/RDI projects in the energy sector.

3. Perspectives on the energy sector

3.1 Energy markets

Since the introduction of the Energy Sector Lending Policy, the global energy market has undergone profound changes. On the demand side, energy markets have become increasingly dominated by demand from emerging markets, in particular China, which has consolidated its position as the world's largest energy consumer. Conversely, consumption in the European Union and the United States, accounting together for about one third of global demand, has shown a sharp cumulative decline. The period has also been characterised by historically high and volatile energy prices and the global economic and financial crisis, both of which have acted to moderate the overall growth in energy demand. The future dynamics of energy markets are expected to be increasingly determined by emerging countries. Even as China's energy demand growth is expected to slow, energy consumption in both the US and the EU is likely to plateau. By 2030 fossil fuels are still expected to account for the largest share of primary energy consumption globally, but their dominance is poised to decline, particularly in the EU.

Energy markets have also undergone major changes on the supply side, particularly in the gas, renewable and nuclear energy sectors. The EU has become increasingly dependent on imported gas from Russia, North Africa and the Middle East (as LNG), as North Sea gas fields are depleted, with consequent impacts on the EU's security of supply. The exploitation of unconventional gas (especially shale gas in the US) has increased the supply of gas available in the EU and other markets. This, together with the reduction in demand, has led to significant supply/demand imbalances and resulted in gas and oil prices becoming de-linked in some markets. This de-linking could have an important impact on the use of gas in electricity generation, where gas is mainly in competition with coal. Switching existing power generation capacity from coal to gas could have a significant positive impact on carbon emission levels. However, investors in many EU countries have currently little incentives to invest in gas fired power plants, due to the current and possibly future high market risks. In particular low or negative commercial margins ("spark spread") coupled with limited utilisation rates ("load factors") discourage investment in CCGTs and may raise or worsen security of supply issues.

Climate action policies have also played a key role in shaping global energy markets, by promoting the development of renewable energy sources, particularly in electricity generation – where the share of electricity produced from renewable energy sources in the EU has doubled - from around 10% in 2000 to 20% in 2010. Electricity can be expected to play an increasingly important role in energy markets as part of the transition to a low carbon economy. This is because the power sector is, in many cases, the most cost effective way to decarbonise energy markets on a large scale, and

decarbonised electricity can be substituted for fossil fuels in transport (e.g. electric vehicles) and heating (e.g. heat pumps).

Electricity networks will need to be reinforced and expanded to: integrate renewables-based generation – particularly in the EU; improve quality of supply and access to electricity at least-cost – particularly in less developed countries; accommodate demand growth; facilitate the use of electricity in road transport; and increase trade in electricity across borders. Further storage may be necessary, particularly hydro pumped storage solutions. Most of the features of network technology have evolved progressively since the early days of the industry a century ago, but there has been considerable innovation in some areas, including the introduction of digital communication and control technologies; the evolution of such "smart grids" has just started and is expected to continue in coming decades.

The public and political acceptability of nuclear power as a source of low carbon electricity generation has been impacted by the accident at the Fukushima reactor (Japan, 2011). Within the EU, whilst nuclear power is no longer accepted in a number of countries, most notably Germany, it continues to be viewed as a source of secure, low-carbon electricity generation in a number of others.

3.2 EU Energy policies

The current EIB Energy Sector Lending Policy largely anticipated the evolution of European policies over the past five years (in particular the Renewable Energy Directive[8], the new ETS Directive[9] and the CCS Directive[10]), and the EIB has played an important role in supporting Member States to achieve their 20/20/20 targets.

The **Renewable Energy** Directive set mandatory national targets for the overall share of energy from renewable sources in gross final energy consumption. Renewable sources are expected to account for 21.7% of final energy consumption by 2020[11], up from 12% in 2010, thus in principle exceeding the Directive's target. Achieving this, however, may prove a challenge in the current economic climate, and Member States are likely to progress towards their targets at different speeds. The outlook for renewables beyond 2020 is uncertain. For this reason the Commission adopted a communication[12] in June 2012 calling for a more coordinated approach to the establishment and reform of support schemes and an increased use of renewable energy trading among Member States. These actions should support innovation and help to reduce costs, maintaining renewables as a promising growth sector for investment. The communication proposes to start the process on preparing future policy options and milestones for 2030.

The main **energy efficiency** policy targets are set by the Energy Efficiency Plan communicated in 2011, following on from the Action Plan for Energy Efficiency first proposed in 2006. This document establishes a goal of achieving 20% savings in primary energy by 2020, compared to projected consumption. Despite these targets, savings of just 9% are expected under current policies. A new energy efficiency directive repealing the current Energy Service[13] and CHP[14] Directives was proposed in 2011 and it is expected to be adopted by the end of 2012. This will reinforce the EU's efforts to reach a goal of reducing energy consumption by 20% by 2020. There are several sector policies aiming at promoting energy efficiency, related to the major consuming sectors. The most notable among them from the Bank's perspective is the recast directive on energy performance of buildings adopted in 2010. According to this directive, from 2018 new public buildings will need to be near zero energy consumption and all new buildings will need to be so from 2020.

8 Directive 2009/28/EC on the promotion of the use of renewable energy sources
9 Directive 2009/29/EC to improve and extend the greenhouse gas emission allowance trading scheme of the EU
10 Directive 2009/31/EC on the geological storage of carbon dioxide
11 National Renewable Energy Action Plans.
12 COM (2012) 271 final, "Renewable Energy: a major player in the European energy market".
13 Directive 2006/32/EC on energy end-use efficiency and energy services.
14 COM 2004/8/EC: "Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market".

In line with its continued efforts to create a **single energy market**, the European Commission presented its proposal for a regulation on guidelines for trans-European energy infrastructure[15] in October 2011. This proposal aims at ensuring that strategic energy networks and storage facilities are completed by 2020. An additional regulation establishing the Connecting Europe Facility (CEF) addresses the rules for the use of EU financial assistance in the next multiannual financial framework (2014-2020). The first of these regulations is expected to come into effect on 1 January 2013, with an EU-wide list of projects of common interest expected to be agreed in 2014. In this context, smart grids and electricity storage are expected to play a fundamental role in helping EU member states to meet the 20/20/20 energy and climate change objectives.

Overall **carbon** emissions have declined in the EU, including for those sectors falling under the EU Emissions Trading System (ETS). The ETS has successfully capped emissions; however, carbon prices under the system have remained volatile and are currently below those needed to support investments in low carbon technologies (such as carbon capture and storage) and may therefore distort investment decisions between carbon intensive technologies.

As part of the EU's **climate action** agenda, the European Commission is setting out a plan to meet the long-term target of reducing domestic GHG emissions by 80 to 95%, as agreed by European heads of state and governments. This entails the preparation of several sector roadmaps providing an analysis of various pathways toward a competitive low-carbon economy in 2050, including the Energy Roadmap 2050[16]. In most of the Energy Roadmap scenarios natural gas is expected to be critical for the transition to a low carbon energy system: substitution of coal (and oil) by gas in the short to medium term could help to reduce emissions with existing technologies until at least 2030 or 2035. In order for fossil fuels to continue playing a role in such an environment beyond 2030 the successful development of carbon capture and storage (CCS) will be critical. The directive on the geological storage of CO_2 (the so-called CCS Directive) establishes a legal framework for the environmentally safe geological storage of CO_2. It covers all CO_2 storage in geological formations in the EU, and lays down requirements covering the entire lifetime of a storage site.

New energy technologies and solutions are needed to meet the ambitious energy objectives of the EU at an affordable cost. More and better research, development & innovation (**RDI**) in the energy sector is therefore essential, as also confirmed by the EU Strategic Energy Technology (SET) Plan[17] and the Energy Roadmap 2050. The FP7 program is the main instrument for RDI funding at the EU level. As of 2014 it will be replaced by the Horizon 2020 Programme which is currently going through approval by the European legislator.

4. Key issues for the current review

This final section highlights some of the key issues and questions expected to be important in the context of the review of the EIB Energy Sector Lending Policy. Consultees are invited to provide responses to these issues or to address any other area that they consider should be taken into account in the review of the policy.

4.1 General energy and economic context

The goal of the European energy policy is to establish a sustainable, competitive and secure energy system that meets society's economic, social and environmental needs and is conducive to an inclusive society and a fully integrated and competitive Europe. Transforming and decarbonising the energy sector in line with these policy directions will require substantial investment. As a policy-driven bank, the EIB is committed to

[15] COM(2011) 658 Regulation of the European Parliament and the Council on guidelines for trans-European energy infrastructure and repealing Decision No. 1364/2006/EC.

[16] COM (2011) 112 "Roadmap for moving to a competitive low-carbon economy in 2050".

[17] COM(2007) 723 final

supporting the EU's objectives by assisting projects and programmes which support these objectives.

The EU policy goals will require enormous investments in energy in the period to 2020, including energy efficiency investments outside the energy sector. These are estimated by the EU Commission to be of the order of EUR120bn per annum for the energy sector and EUR85bn per annum in energy efficiency. These investments are substantial when set against the current economic crisis in the EU, which has led to a number of member states reducing their support for renewable energy technologies. The current crisis has also reduced energy demand in a number of member states.

The global economic and financial crisis, accompanied by highly volatile energy prices, is also impacting energy demand and supply. The lack of certainty on policy beyond 2020 hinders potential investments; moreover, due to their generally long technical life, energy assets may be stranded in the system for decades, which could constrain the envisaged decarbonisation process.

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?

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?

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

4.2 Renewable Energy

Investment in renewable energy ("RE") has increased substantially in the last decade, notably in the power sector. The Bank's approach has been to support a broad range of technologies, making a distinction between its approach to mature and emerging technologies (see Annex 1). However, the coming decade is likely to be more challenging for the sector as a result of the financial and economic crisis and reduced direct financial support from governments. This may result in reduced investment in renewables in the short term. Investment will need to recover however if member states are to achieve their binding 2020 targets, and investments in renewables are critical to achieving the long term decarbonisation of the energy system.

There have been substantial changes in the relative costs of a number of technologies; PV is rapidly approaching competitiveness with the best available alternative in locations with high solar irradiation or where the cost of the alternative is high (e.g. remote locations reliant on diesel generators). This result may, however, be due in large part to the current substantial over-supply in solar cell manufacturing capacity, which is not sustainable in the medium term. On the other hand, offshore wind continues to see its costs rise as increasingly complex projects are implemented and due to the lack of responsiveness of the supply chain. These factors are creating considerable uncertainty in the outlook both for renewables generally and also for some specific technologies.

Outside the EU, complex hydro-generation projects, including large dams[18], are normally financed by the EIB in combination with other IFIs. These projects need to comply with the Bank's environmental and social standards, notably concerning involuntary

[18] Based on ICOLD's definition a Large Dam is a dam (i) with a height of 15m or more from the foundation, or (ii) with a height between 5m and 15m and a reservoir volume exceeding 3 Million m^3.

resettlement and impacts on indigenous people and other vulnerable groups. For large dams, the Bank requires the involvement of an independent Panel of Experts reviewing the design, site investigation, construction and commissioning of the dam and reservoir.

While investments in the renewable power sector have been at high levels, even during the financial and economic crisis, investment in the renewable heating & cooling sectors has substantially underperformed expectations. Renewables in heating and cooling can be competitive with fossil fuel alternatives in many locations with a good biomass, geothermal or solar thermal resource, but investment has been limited to date in most of the EU countries.

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 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?

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

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

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

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

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

4.3 Energy Efficiency

Policies to increase energy efficiency ("EE") concern all economic activities (energy, transport, industry, households, services and the primary sector). Similarly to renewable energy, increasing energy efficiency is a priority of EU energy policy, because of its contribution to environment protection, security of energy supply and the competitiveness of the EU economy in general. While substantial steps have been taken to meet the goals, based on current progress it appears most likely the target will substantially be undershot. Most of the EE potential yet to be developed lies in the building sector and the SME sector to a lesser extent. The development of this potential is challenging, due inter alia to the small size of the projects and the involvement of numerous actors. Development of the sector requires the policies and frameworks that enable investments to be scaled up, through the creation of new business models that can mobilise the large investments required and reduce transaction costs. Examples in the EU of such programmes include the German programme on energy efficiency in buildings, the Grenelle de l'environnement in France or more recently the Green Deal in the UK.

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

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

What is the potential for energy efficiency outside Europe?

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?

4.4 Security of supply

Over the last decade, electricity networks have become increasingly important in the EU's energy infrastructure and consequently in the EIB lending activities. The central role of electricity grids in meeting the EU's core energy policy objectives is being further strengthened for the decade to come. ENTSO-E[19] estimates that the transmission projects of European significance for the decade up to 2020 will involve over 50,000 km of new or refurbished extra high voltage routes. Delays due to a lack of social acceptance and longer than expected approval procedures might be expected to affect a significant proportion of these projects. The rise of distributed energy, driven by government policy and the increasing competitiveness of PV with retail electricity prices, has the potential to disrupt the compensation model for many regulated electricity grid companies, over the medium to long term. A number of innovative concepts such as the deployment of smart grids and offshore grids in European northern seas, as well as the development of electricity storage, are also proposed for development.

While these new technologies hold substantial promise, their successful implementation requires a number of political, regulatory and financial barriers to be addressed.

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

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

4.5 Fossil Fuel

In line with EU policy, the EIB Energy Sector Lending Policy recognises the potential positive effect that investments in fossil fuel power plants can have in meeting the EU's competitiveness and security of energy supply goals and the EU's Climate Action objectives. Gas has a significantly lower carbon intensity than coal and is widely recognised as an important bridging fuel source in the transition to a low carbon economy; substitution of coal (and oil) by gas in the short to medium term could help to reduce emissions from existing technologies until at least 2030 or 2035. The current lending criteria also allow the financing of coal fired power and CHP projects in certain limited circumstances.

Carbon capture and storage (CCS) involves capturing the carbon dioxide in fossil fuels either before or after combustion and storing it for the long term in deep geological formations. It would allow for the decarbonised use of fossil fuel-fired power plants. The technology for the different segments of carbon capture, transport and storage is in principle available; however, demonstration of the integrated chain on a commercial scale is still lacking. To date, capture technologies have only been demonstrated at small scale. The full scale demonstration of CCS is currently facing challenges such as high costs and negative public perception. CCS is an essential technology if fossil fuels are to be relevant in a decarbonised world.

[19] ENTSO-E, "*10-year Network Development Plan 2012*", Draft for public consultation, 1.3.2012

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?

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?

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

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

The impacts on the global gas market from North American shale gas[20] production raise questions regarding what impacts unconventional gas reserves and extraction technologies (shale gas, coal seam gas, fracking etc.) have on gas pricing, energy investments, climate change, environmental sustainability, how the market may develop in Europe, and what role the EIB may have in financing projects in the sector. As a result of these developments, gas prospects at the global level appear promising, especially if, as noted above, gas plays a substantial role in the relative decarbonisation of the energy system. Shale gas is often present in countries with limited diversification of gas supplies and high coal utilisation, and the potential for gas as a transition fuel may be particularly welcome in such cases. However, gas expansion will require large production and network investments, and these are not easy to implement in some countries.

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

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

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

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

4.6 Nuclear

Nuclear energy currently generates approximately one third of the overall electricity consumed in the EU and two thirds of its low-carbon electricity. Despite the weight of nuclear power in the energy mix, its political and social acceptability remains an issue in some Member States. Since the accident in Fukushima, public policy on nuclear energy has changed in some Member States, while others continue to see nuclear energy as a secure, reliable and affordable source of low-carbon electricity generation. Projects for new installed nuclear capacity in EU countries point to investment needs in excess of EUR 100 billion over the period to 2030.

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

[20] Technically, shale gas is categorised as one type of unconventional gas—these are gas resources that require further underground interventions after drilling before gas can flow, unlike conventional gas which requires no such intervention and flows naturally.

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

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?

4.7 RDI

New energy technologies and solutions are needed to meet the ambitious energy objectives of the EU at an affordable cost. More and better research, development & innovation (RDI) in the energy sector is therefore essential, as also confirmed by the EU Strategic Energy Technology (SET) Plan and the Energy Roadmap 2050. This RDI activity must be delivered by private and public corporations, supported by research institutes. Despite being a vital component in all businesses, innovation in energy tends to be hindered by the sector's particular features, such as the infrastructure's long technical life. It is therefore widely acknowledged that both technology-push and demand-pull measures are necessary to accelerate RDI activities in the energy sector. The Bank's risk-taking capability is limited but it has been increased for RDI operations through risk-sharing mechanisms which have been developed in cooperation with the European Commission.

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

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

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?

4.8 EIB external and Cotonou mandates

Energy demand is growing strongly in developing and emerging markets as their economies and prosperity improve. Given their demand requirements most of the countries will continue to expand their use of fossil fuels substantially. Coal, oil and gas will remain dominant sources of energy even as renewable energy expands. Many of the partner countries are major energy suppliers to the EU and/or transit energy imports to the EU, in the case of neighbour countries.

As energy demand is expanding fast in most partner countries, they need to invest substantially to develop their energy networks. Generally, the investment requirements are not being met in many countries, resulting in poor quality of energy services (in extreme cases, electricity is only available for some few hours per day). This is a major impediment to economic development and has substantial cost and environmental implications (e.g. development of inefficient electricity production at consumer level using diesel generators). Another important issue for developing countries is access to modern sources of energy, in particular electricity (see the Millennium Development Goals). This access is still rather limited in some developing countries, in particular in Africa.

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?

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

Some of the developing economies already have significant markets for new RE technologies such as wind power and solar PV (China, India and Brazil in particular), or are in the process of launching RE programmes (e.g. South Africa). The expansion of new RE technology largely reflects the aim of government policies, driven in particular by industrial development considerations, to position these countries in the expanding RE markets (such as in the case of China). But, for some countries, economic competitiveness is increasingly important, in view of the declining cost of RE (e.g. solar). In an increasing number of cases local content rules or other distortions are being considered to protect and support these industries.

In many of these countries there are high energy and fossil fuel subsidies. According to the latest WEO, fossil fuel consumption subsidies amounted to USD 409bn in 2010, with oil subsidies accounting for half of this amount, followed by electricity and gas. Developing countries are responsible for 85% of the subsidies. These subsidies are a significant obstacle to improving energy efficiency and developing renewable energy.

Developing countries are usually reliant on foreign capital to finance energy investments and, where local financing is constrained, the costs of capital are high, which becomes an impediment to the implementation of energy infrastructures. IFIs such as the EIB have a significant role to play in mobilising capital and financing for these countries, and in helping them obtain access to modern and more sustainable sources of energy.

Where can sources of low-cost finance be more effectively used by the private sector to develop energy projects?

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

Annex 1

Criteria for selection of energy projects

On the basis of the views expressed during the consultation, the Bank intends to consolidate its Energy Sector Lending Policy into a single document.

The EIB's current Energy Sector Lending Policy is based on two sets of criteria: a set of general principles which apply to all projects financed by the Bank and sector specific criteria.

A. General criteria

All projects proposed for financing by the Bank are screened against the following criteria using standardised indicators:

1. ***Consistency with EU policies:*** Projects financed by the Bank should contribute to meeting EU objectives as set out in the Bank's Corporate Operational Plan[21] and in the Bank's external and Cotonou mandates.

2. ***Sound Projects:*** The Bank seeks to finance projects which are economically justified, financially and technically sound, socially and environmentally sustainable and which comply with EU Directives, in particular on procurement and environment.

3. ***EIB contribution;*** The Bank should positively contribute to the project either through its financial value added and/or the technical or financial advice it provides to project sponsors or other stakeholders.

Those projects which score most highly against these criteria are prioritised for funding.

B. Energy sector specific criteria

In addition to the general criteria set out above there are sector specific criteria for renewable energy, energy efficiency, energy networks, fossil fuel and nuclear energy projects, and RDI. The most important sector specific requirements are summarised below with full details contained in the current Energy Lending Guideline documents.

1. Renewable energy

In line with the EU's objective to develop more sustainable energy sources, the current EIB energy policy prioritises the financing of renewable energy projects.

The Bank's policy towards the renewable energy sector has been to support a broad range of technologies from early demonstration projects to mature technologies, in all the energy segments – power, heating & cooling, biofuels & biomass and transport. As these technologies are at varying stages of development, the Bank has divided the commercially proven technologies in this sector into two categories: mature and emerging. It applies different criteria for each of these categories when establishing whether the projects are considered to be economically justified in line with the second of the general principles above.

[21] http://www.eib.org/infocentre/publications/all/operational-plan-2012-2014.htm

Mature renewable technologies include onshore wind farms, hydropower, conventional geothermal, and biomass for energy (notably for heating & cooling and 1st generation biofuel projects). These projects are considered to be commercially mature, further major innovations are not expected and the investment cost of these projects is therefore expected to decline only modestly – although still generally faster than conventional fossil fuel alternatives. To be considered for Bank financing these projects must demonstrate that their economic cost is equal to or below those of the least cost alternative[22]. This would typically be a CCGT in continental Europe for projects in the power sector or an individual gas boiler for heating projects.

In addition for all biomass projects, promoters must demonstrate that the biomass demand does not lead to unjustifiable distortions on the food or animal feed market and that the biomass required for the project is from sustainable sources and available in sufficient quantities over the life of the project.

Emerging renewable energy technologies include photovoltaic (PV), solar thermal power and offshore wind. Although the investment cost of these technologies is expected to decline rapidly over coming years from learning by doing and scale effects (as has already been observed for PV), their levelised cost per kWh generated is currently substantially above that of the least cost alternative, even when the cost of externalities are included in the analysis. They may nevertheless eventually prove to be the cheapest source of renewable energy in the future and the Bank considers that investing in these emerging technologies today can be justified as wider deployment today is likely to lead to future reductions in their cost. It is the Bank's policy to finance such projects provided that:

- they show the potential to become economically competitive with alternatives in a reasonable time frame and;

- as is the case for all projects financed by the Bank, that the unit cost (per MW or equivalent) is consistent with that technology's benchmark cost. This is to ensure that the project is economically efficient within its technology category.

Highly innovative renewable technologies such as wave power generation and 2nd generation biofuels, are not considered to be commercially proven and are therefore still at demonstration phase. These projects can be considered for financing as RDI projects and are assessed on the same basis as other innovation projects, including likely future technical and commercial viability.

2. Energy efficiency

Energy efficiency investments are generally the most cost-effective way to reduce carbon emissions and improve the EU's security of energy supply. Supporting energy efficiency projects is therefore a high priority for bank financing.

The Bank's approach to energy efficiency recognises the potential for energy savings in all sectors in which it operates, and energy efficiency has been "mainstreamed" with all projects financed by the Bank assessed against the extent to which their design takes into account the potential for energy savings. For projects to be considered for financing by the Bank as energy efficiency projects, they must demonstrate that they will reduce energy consumption by at least 20% compared to the situation before their implementation, or ensure that the energy savings resulting from the project account for at least 50% of the investment cost over the project's life.

The current level of investment in energy efficiency is small in comparison to the potential, and finance alone is considered to be insufficient to unlock this market's potential. The Bank is therefore providing particular support to this sector through the provision of technical assistance and is, for example, working with the European Commission on joint initiatives such as ELENA (European Local Energy Assistance).

[22] Taking into account external environmental costs associated with CO_2 and other pollutants and security of supply externalities. This is currently EUR 96/MWh in the EU

Managed by the EIB and funded by the Commission, ELENA assists local authorities to accelerate their energy efficiency and renewable energy investment programmes in urban areas.

Combined heat and power (CHP) projects, including coal and lignite fired stations, can also be considered for financing by the Bank under the EU's energy efficiency objective provided that they are high efficiency CHP projects as defined in the relevant EU directives[23].

3. Energy network projects

Energy network projects help to enhance the security of the energy supply, including diversification of imports, and contribute to the creation of the internal energy market. Financing energy network projects is a core part of EIB lending to the energy sector, forming about 40% of the energy lending portfolio.

Achieving long-term solutions for Europe's energy security needs will not be possible without a modern, interconnected and reliable electricity grid and gas networks. These projects also contribute to the completion of the internal energy market. The Bank therefore prioritises economically justified projects which are part of the EU trans-European energy network (TEN-E projects). Such projects include electricity and gas transmission networks, liquefied natural gas (LNG) terminals, underground gas storage projects and interconnectors. In addition, the Bank finances energy network projects which are not part of the TEN-E network provided they contribute to an improvement in the security of energy supply and are economically justified. For electricity networks, projects that contribute to the integration of renewable energy production and/or development of "smart grid" technologies which aim to increase the demand responsiveness of the energy network are also given a high priority by the Bank.

4. Fossil fuel energy projects

As noted above the current energy policy places particular emphasis on developing renewable energy projects, reducing energy consumption through energy efficiency and diversifying energy sources. The current energy policy considers that conventional energy generation projects (i.e. gas, coal/lignite, and oil fired power plants) can nevertheless have an important role to play in ensuring the security of Europe's energy supply.

The Bank's economic assessment of fossil fuel projects is based on the cost of the best available alternatives[24], including the cost of externalities. This ensures that the impact on the climate of such projects is properly reflected in the economic analysis. In addition, for new coal and lignite projects[25], which are particularly carbon-intensive fuel sources, the Bank has adopted additional criteria under which such projects would only be eligible for EIB financing if they:

- replace existing coal/lignite plants and involve a decrease of at least 20% in the carbon intensity of power generation; and
- use best available technology; and
- are "carbon capture ready", i.e. are able to exploit CCS once that technology becomes commercially available.

These criteria are designed to ensure that investments in coal or lignite fired power stations are consistent with the EU's 20/20/20 targets. Most coal and lignite projects presented to the Bank since 2007 have not met these criteria, typically because they have failed to demonstrate that they replace existing capacity and result in a 20%

[23] Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market, as amended.

[24] In most cases, within the EU, CCGTs are the best available alternatives

[25] Equivalent criteria exist for coal and lignite rehabilitation projects

reduction in carbon intensity. These same criteria are also used to screen coal and lignite fired CHP projects (see above).

5. Nuclear power

At present EU policy in relation to nuclear power is focused primarily on the safety aspects of the technology. The European Council has stated that it is for each Member State to decide whether or not to rely on nuclear energy, but stressed that this has to be done while further improving nuclear safety and the management of radioactive waste. Nuclear power has only attracted limited financing from the EIB over the course of the current policy, mostly focused on these aspects.
The Bank's current policy closely follows this approach and provides for the Bank to consider financing new investments in nuclear power subject to the favourable opinion of the Commission under Article 41 of the Euratom Treaty. Nuclear projects must also comply with the general criteria noted above, notwithstanding that they raise complex issues that need to be assessed with extreme care, notably the treatment of waste and spent fuel, and plant decommissioning.

6. Research and Development

New energy technologies and solutions are needed to meet the ambitious energy objectives of the EU at an affordable cost. More and better research, development & innovation (RDI) in the energy sector is therefore essential, as is also confirmed by the EU Strategic Energy Technology (SET) Plan and the Energy Roadmap 2050. This RDI activity is delivered by private and public corporations, supported by research institutes. The EIB supports energy RDI activities through a variety of non-financial and financial products. Non-financial support consists mostly of expert advice to promoters on how to best structure their projects into bankable and eligible operations. Further, the Bank cooperates closely with the European Commission on, for instance, the implementation of the SET-Plan and the NER300 scheme.

The Bank supports sound RDI initiatives in the energy sector - ranging from research infrastructures to industrial RDI activities and demonstration plants - with a particular focus on those investments which are in line with the Research Agendas of European framework programmes or implementation plans of European Industrial Initiatives under the SET-Plan.

7. Operations under the EU External Lending & Cotonou Mandates

Outside the Union EIB operates under a mandate from the European Council and Parliament ("External Mandate"), except for the African, Caribbean and Pacific countries, which are covered by the separate Cotonou agreement[26]. The current External Mandate is for the period from 2007-2013 and was amended in 2011 to provide additional resources to support projects in support of climate action and high level objectives for financing across all eligible countries, namely to support:

- local private sector development;
- development of social and economic infrastructure; and
- climate change mitigation and adaptation

These are translated into regional operational guidelines with each region having a slightly different emphasis on energy efficiency, promotion of renewables, and research and development

[26] The Cotonou Mandate, currently under the second financial protocol (10th European Development Fund), running from 2008-2013, was also amended, in 2010, to give emphasis to climate change mitigation and adaptation.

Particular priority is given to projects outside the Union that enhance the EU's security of supply, such as the construction of pipelines and LNG terminals to transport energy to Europe, or support the development of renewable energies such as the Mediterranean Solar Plan, which aims to develop all renewable energy sources in the region, with a special focus on wind and solar power.

In other regions the Bank's main objectives are to increase access to affordable energy services, including through regional exchanges, with a focus on meeting energy demand with sustainable energy solutions, and financing climate action projects, where possible. The Bank also works closely with the EC on new risk guarantee schemes in developing countries, in response to the Sustainable Energy for All initiative (SE4A), which have the potential to support investment by providing investors with the certainty required to realise otherwise profitable projects.

In addition, the EIB manages technical assistance programmes to support project preparation and operation in the Mediterranean region, the western Balkans and the African, Caribbean and Pacific (ACP) countries. In these regions, technical assistance in the field of energy efficiency and renewable energies is gaining in importance. In developing countries in general, the EIB promotes access to modern sources of energy and the development of sustainable energy solutions. The aim is to contribute to the partner countries' development and reduce the environmental impact of energy activities.