SUMMARY

The European Investment Bank has requested public contributions to a review of its energy lending policy. The text gives comments and responses to the questions which were submitted by the EIB to the public, grouped under the main headings of economic environment, renewable energy, energy efficiency, security of supply, fossil fuels, nuclear energy, and the role of the Bank’s financing mandates outside the EU. The main observations can be summarized by noting that the main contribution to competitiveness in Europe is via the indirect effects of energy policies, since the direct effects will tend to be marginal. Thus the impact of low energy prices will have the overriding effects on jobs creation and a restart of economic growth, and conversely, high commercial energy prices will stifle such effects. The further development of renewable energy is hindered by the limitations on the available subsidies. Energy efficiency investments are best encouraged by high energy prices. Regarding the Bank’s investment criteria, a key comment is that the Bank should try to formulate its own energy lending policy, based on sound and rational investment criteria, rather than merely following EU guidelines, which are often politically motivated, technically unrealistic, or unduly inspired by vociferous lobby groups. In the view of this expert, present proposals are too biased in favour of renewable energy forms, and do not pay sufficient attention to ensuring a competitive and secure energy supply for Europe. Investments in gas-fired generating plants tend to be uneconomic in the present environment of excess renewable capacities. In some countries, such as Germany, large coal and lignite-fired plants account for most of the load, with adverse consequences in terms of CO2 emissions. Nuclear energy will continue to play an important role in France, Britain and several smaller European countries, and the EIB should contribute to the renewal of this generating stock to ensure a reasonable stability of supply and acceptable prices.
Economic Environment

• 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?

There is definitely a trade-off between economic and environmental considerations, although for certain types of primary energy such as nuclear the two objectives can be compatible, since the latter can be viewed as both a sustainable and a low cost form of energy.

• 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?

Energy investments that are economically competitive support employment and jobs generation indirectly. The sector as such is not a major jobs generator for Europe, with certain exceptions that imply highly specialized knowledge. Over-emphasis of investment in high cost energy segments, such as some renewables, will hardly contribute toward growth and Europe's competitiveness in general. The most obvious contribution that energy investments can make to growth and employment is by the indirect means of making Europe's industries competitive.

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

The current crisis will serve to dampen demand for energy, but it must be hoped that this phase can be overcome as rapidly as possible. Once growth resumes, energy demand will also increase, because any efficiency gains will be more than compensated by new forms of consumption and growth in secondary residences and appliances.

A key problem is that current energy policies themselves, with the emphasis on high cost renewables, risk to have a strong dampening effect on economic growth since they impact particularly on a broad segment of lower income households, thus contributing to the stifling of consumer demand in general.

Renewables

• 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?
In this expert’s view, the approach of banking on future cost reductions is somewhat risky. There are intrinsic technical and environmental factors that limit the potential of certain new technologies, for instance, the limited insolation in many parts of Europe, or the limits of electricity storage technologies based on chemical storage. The EU's targets for renewables were set based on political considerations as well as the magic of round and similar numbers, and do not appear to reflect any particular scientific criteria. It would be preferable to base the economic justification on projections by independent market research institutes, and not purely on the views of particular lobby groups. In Germany, there is already an excess of photovoltaic generating capacity (some 30 000 MW), and as regards wind energy there is the issue of a lack of high power transmission lines to centres of demand in the south.

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

Some preliminary evidence is available that costs for some forms of renewable energy technologies are decreasing, but the relevant indicator is their costs relative to other forms of commercial energy, and on this count some forms of renewable energy such as solar are still far too expensive to be commercially viable.

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

Previous high growth rates can be expected to level off, since subsidy budgets are being stretched beyond economically sustainable limits, and in some cases technological barriers cannot be rapidly lifted (e.g. transport of wind energy to consumption areas). In other cases negative external impacts of renewable energy projects, such as limited availability of biomass, adverse effects on existing ecosystems, or the lack of social acceptability of wind generators close to inhabited areas may limit possible investments.

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

Usage of renewable forms of energy have been traditional practice in many developing countries, which also have a much lower per capita energy consumption. It is doubtful that income levels can justify novel technologies, which still tend to be very expensive in the absence of subsidies.

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

Yes, but the investments will tend to be smaller and decentralized, hence less amenable to large Bank operations.

- **What are the barriers to investments in this sector and how might these be overcome?**
The smaller scale of such investments will make centralized control difficult. Perhaps the services of existing primary energy suppliers can be enlisted.

**Energy Efficiency**

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

The main limiting factor is low prices of energy, and these are not unwelcome per se. Every investment in efficiency will depend on energy prices rising.

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

So far, the cost of renewables has fallen for solar and to a lesser extent for wind, and remained stable for biofuels. But compared to still very plentiful supplies of competing fossil fuels, renewables are still fundamentally uncompetitive and are likely to remain so within present investment horizons.

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

In view of the continued requirements for subsidies, such investments will strongly depend on available funds for such subsidies.

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

Some role possible, but the main burden will rest on final consumers and the pricing signals they observe.

- **What is the potential for energy efficiency outside Europe?**

Depends strongly on region, high in middle-income countries, lower in developing countries.

*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?*
Some comments:

General Criteria – Consistency with EU Policy: EU policies in some cases may be technically unrealistic or driven by purely political criteria, in which case the EIB should attempt to evolve more consistent and realistic criteria, based on technical and economic analysis. Otherwise, the Bank risks being politically exposed.

- Sound Projects: Financial sustainability, if not supported by fundamental economics, risks being overly dependent on political and budgetary uncertainties, hence fundamental economics should retain a primal role as a decision criterion. The subsidy requirements for wind and solar renewable energy projects will continue to be very high (in Germany, subsidies paid to producers of photovoltaic power are currently some 14.5 billion EUR/year), also in view of the plentiful supply of fossil fuels on world markets in the foreseeable future (massive use of shale gas in U.S.).

Sector criteria

Renewables – their priority for EIB financing may be questionable in my view, and should be revised in favour of a more balanced approach, taking account of security of supply and cost considerations, which would put renewables on an equal footing with conventional commercial forms of energy, in particular if they are low-carbon generating. In cost comparisons, an alternative should be the cost of nuclear power generation, as based on a levelized cost for a mature system such as that in France, where costs are of the order of 4-5 cents/kWh. For off-shore wind projects, the requirements for huge additional investments in high power transmission lines should be factored in.

Energy Efficiency – the payback period of energy efficiency investments should be much shorter than the value implicit in the guidance indicated in the annex, and it should normally not exceed 3-5 years.

Energy network projects – the adverse environmental impact of LNG terminals and underground storage should be fully taken into account. Current construction of high tension power lines is considerably behind schedule, for instance in Germany out of a total of planned new lines of 1834 km, only 214 km have been built to date, and current annual construction rates are only some 35 km per year.

Fossil-fuel projects – Shale gas should receive serious consideration, it is not mentioned in the criteria. Carbon capture is likely to remain unacceptable or unrealistic for environmental and intrinsic cost reasons, as has been demonstrated in the large scale pilot plants built in the United States, which have shown to have additional generating costs of 50% or more.

Nuclear power - Should be retained as part of a secure final primary energy mix. There are eventually likely to be many reconstruction/life extension projects coming up for financing, in line with trends on a worldwide scale, and policies to limit carbon emissions while ensuring a dependable source of commercial energy.
Security of Supply

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

There will certainly be an evolution in grid structure and practices, largely conditioned by high subsidization of decentralized electricity generation.

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

These will have a limited role in relation to the magnitude of overall demand. Smarter grids should certainly be developed, but additional hydro-storage schemes will have a high environmental cost in terms of negative impacts particularly on alpine environments.

Fossil fuels

- *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?*

Gas-fired generation will have trouble being economic, since demand is so limited and total usage hours per year will be too few, given the large photovoltaic capacities, to make this form of generation economically attractive.

- *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?*

Unfortunately, there will be a huge recourse to high-emission coal fired capacities as nuclear is phased out in Germany, and this will add a heavy burden to greenhouse gas emissions. Practically all the nuclear capacity will thus be substituted by lignite or brown coal fired power plants.

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

Limited role, since brown-coal open cast mining in Europe is confined to a few locations, which thus limits the heat sales potential to those areas only. Most high density urban environments will thus not have access to this source of CHP.

- *What evaluation criteria should the Bank use to assess the economic, environmental and financial viability of coal and lignite fired generation?*
The usual criteria of economic and financial soundness, and testing sensitivity to high carbon emission prices.

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

Needs to be investigated country by country.

- **Do you expect the share of natural gas in EU primary energy consumption to grow further?**
  
Not necessarily

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

One example would be to implement the Nabuco gas pipeline project as speedily as possible.

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

Some risks exist, but these are difficult to quantify.

**Nuclear**

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

Nuclear generation of electric power will continue to supply a high share of the market in certain countries, such as France, Belgium, Britain and Switzerland.

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

Life extension by some 10-20 years may be feasible in many cases, and in others the construction of entirely new plants on the lines of new builds in China and other countries may be indicated.

- **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?**

Germany has already reacted to the accident in Japan, but other European countries are unlikely to follow suit as the drawbacks of Germany's approach become more apparent (high subsidy requirements, less reliable networks, unused renewables because of lack of transmission capacities or excess supply during limited periods, lack of competitiveness of industries relying on cheap power, larger carbon dioxide emissions
from coal-fired power stations).

**External 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?*

  Difficult for the EIB to determine such an optimum.

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

  Again, EIB is not really suited as an institution for this purpose.

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

  Depends on policies of individual countries.

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

  Many considerations can limit an increase in wind, photovoltaic or hydro-capacities, and these may include environmental considerations, such as the preservation of unique sites or biotopes, financial considerations (need to limit indebtedness of developing countries), or social traditions.