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GREEN PAPER

**TOWARDS A SECURE, SUSTAINABLE AND COMPETITIVE EUROPEAN
ENERGY NETWORK**

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1	Introduction	3
2	Future priorities for European network development	4
2.1	A new focus for EU energy network policy.....	4
2.2	EU support to energy network development.....	4
2.3	Administrative and regulatory barriers to energy network projects.....	5
2.3.1	<i>Planning and authorisation procedures</i>	5
2.3.2	<i>Regulatory framework</i>	5
2.4	Moving towards a fully integrated and flexible European energy network.....	5
2.5	Identifying new priorities	7
3	A new EU approach to energy network development.....	7
3.1	EU energy policy goals and objectives	7
3.1.1	<i>Promoting public understanding and solidarity</i>	7
3.1.2	<i>Achieving the "20-20-20" objectives by 2020</i>	7
3.1.3	<i>Innovation and new technologies</i>	8
3.1.4	<i>International energy networks</i>	8
3.2	A fully interconnected European energy network	9
3.2.1	<i>An effective internal energy market</i>	9
3.2.2	<i>The inter-regional dimension</i>	10
3.2.3	<i>A new approach to planning</i>	10
3.3	Putting TEN-E at the service of security and solidarity.....	11
3.3.1	<i>Revised TEN-E guidelines</i>	11
3.3.2	<i>Other options for enhancing TEN-E</i>	12
3.3.3	<i>Coordination between TEN-E and other EU financial instruments</i>	12
4	Conclusions	13
	Questions	

1. INTRODUCTION

Europe's energy networks are the arteries on which we all depend for the energy to fuel our homes, businesses and leisure. The EU's energy policy¹ sets out clear goals and objectives² for sustainable, competitive and secure energy. The renewable energy and climate change package of January 2008³ will commit Member States to ambitious renewable energy and emissions reductions targets. However, the EU will not achieve its ambitions unless its energy networks change considerably, and fast.

Today, Europe's energy networks – that is, the infrastructure to transport electricity, gas, oil and other fuels from producers to consumers – are aging. They are based on traditional fossil fuel supplies, and large, centralised production, with cheap and plentiful energy. The lack of suitable network links is a barrier to investment in renewable energy and decentralised generation. The enlarged EU has inherited poor east-west and south-north connections. This makes it more difficult for energy to move freely around the EU and makes some regions more vulnerable to supply disruption. With energy imports set to rise under almost all scenarios, new import routes are urgently needed to give the EU greater flexibility in its supplies.

Reflecting widespread concern about the ability of Europe's energy networks to deliver the energy which Europe's citizens need, on 16 October 2008 the European Council called on the Commission to "reinforce and complete critical infrastructures"⁴.

Recent events in Georgia have also shown that this is a critical time for energy security and that the EU needs to intensify its efforts with regard to the security of energy supply.

It has always been assumed that energy networks would be self-financing. To achieve this a clear and stable legal framework is the main precondition for stimulating private sector investment in generation and transmission/transport. Creating this framework is one of the principal aims of the energy and climate package and the third internal energy market package⁵ on the completion of the internal gas and electricity market.

The third internal energy market package, once implemented, will introduce significant changes in network planning, including rules on unbundling, regulatory coordination and new collaborative networks bringing together transmissions system operators. These should stimulate investments, synergies, efficiencies and innovation in energy networks.

However, in view of challenges to security of supply and the scale of the investments which Europe's energy networks need⁶, the EU needs to reinforce its policy on energy network development. It should for example be able to intervene or mediate where public and private parties are unable to move forward on key projects with a European impact. It should also review its funding framework, notably Trans-European Networks for Energy (TEN-E), to

¹ Energy Policy for Europe, COM(2007)1 final

² 20% reduction in greenhouse gas emissions, 20% share of renewable energy in EU final energy consumption and 20% improvement in energy efficiency by 2020
³ http://ec.europa.eu/energy/climate_actions/index_en.htm

⁴ http://www.consilium.europa.eu/cms3_applications/Applications/newsRoom/related.asp?BID=76&GRP=14127&LANG=1&cmsId=339

⁵ http://ec.europa.eu/energy/electricity/package_2007/index_en.htm

⁶ €17 billions in electricity networks in the coming 5 years according to a report issued by UCTE (May 2008 Transmission Development Plan) and something like €300 billions for electricity and gas networks in the next 25 years

direct it better towards policy goals. Planning and authorisation difficulties must also be addressed.

This Green Paper seeks views on how the EU can better promote the new energy networks which Europe needs, using all the instruments at its disposal, notably but not only TEN-E. It also suggests a number of major strategic projects which the EU could promote to strengthen solidarity and security of supply in a truly European energy network.

2. FUTURE PRIORITIES FOR EUROPEAN NETWORK DEVELOPMENT

2.1. A new focus for EU energy network policy

Network development is an important element of energy policy. The emphasis of EU network policy has been to "plug gaps" in networks or deal with "bottlenecks", for internal security of supply reasons. This is important, but not enough to deal with global security of supply challenges, to benefit from new technologies, to diversify energy sources and to assure solidarity in an energy crisis. EU network policy needs to be fully aligned with EU energy policy.

As shown in personal reports from the EU appointed European Coordinators⁷, the EU needs a more pro-active role in promoting strategic projects. TEN-E needs to be updated and made more effective in service of the new energy policy and its goals of sustainability, security of supply and competitiveness.

Energy networks are also important to the EU's external relations. The EU's internal energy market would not work without energy import networks. Several international initiatives, such as the strategic EU-Africa Partnership, also cover energy network investments.

2.2. EU support to energy network development

The EC Treaty states that the Community shall contribute to the establishment and development of trans-European network and that action by the Community shall aim at promoting the interconnection and interoperability of national networks, as well as access to such networks" (Article 154). Trans-European Networks for Energy (TEN-E) is the main energy policy instrument for EU support to energy network development. TEN's were originally an internal market instrument. In the energy sector, the assumption was that investments would be borne by the market players who pass the costs to consumers.

The first TEN-E guidelines were adopted in 1996 and have had successive revisions, most recently in 2006. Under the TEN-E guidelines⁸ and TEN Regulation⁹, the EU funds mainly pre-investment feasibility studies for a specified list of projects, identified by Member States.

⁷ Appointed in September 2007 to four particularly complex projects: Spain-France Interconnector (Prof Monti, Polish-Lithuanian Power Link (Prof Mielczarski), Offshore wind network in North and Baltic Seas (Mr Adamowitsch), Southern Gas transit corridor (Mr Van Aartsen). Their reports are available on http://ec.europa.eu/ten/energy/coordinators/index_en.htm

⁸ Decision No 1364/2006/EC of the European Parliament and the Council of 6 September 2006 laying down guidelines for trans-European energy networks and repealing Decision 96/391/EC and Decision No 1229/2003/EC, OJ L 262, 22.9.2006

⁹ Regulation (EC) No 680/2007 of the European Parliament and of the Council of 20 June 2007 laying down general rules for the granting of Community financial aid in the field of the trans-European transport and energy networks, OJ L162/1, 22.6.2007

A report for 2002-2006 accompanies this paper¹⁰. It is clear that the impact and visibility of TEN-E needs improving.

This means bringing TEN-E fully into line with EU energy objective as defined in the 2007 Energy Policy for Europe. Major changes in the guidelines are also needed to make the programme more effective. The question of budgets is crucial. A number of issues for possible revisions to TEN-E are set out below.

The EU also needs to improve coherence between different network actions and increase the leverage of the various funding possibilities for infrastructure investments, including TEN-E, Structural Funds and the EIB.

2.3. Administrative and Regulatory barriers to energy network projects

2.3.1. Planning and authorisation procedures

Planning and administrative authorisation procedures are a common source of delays to energy projects due to differences in local and national planning rules. It is likely that approvals and permits for large infrastructure projects would benefit from a more harmonised approach. However, the EU has no competence in land use planning.

Another difficulty is the "not in my backyard" (NIMBY) reaction, where the European interest is not shared at the local level. Placing cables underground is one way around this, but cost is a major barrier to this.

Lack of information and poor coordination also causes local resistance to worthwhile projects.

A special approach to a special project : EU appoints a European Coordinator to the project for an electricity interconnection between France and Spain

Alerted to the slow progress in plans to expand links between the French and Spain electricity grids, the EU appointed in September 2007 a special coordinator to help mediate between the interested parties. This project is a priority interconnection for the Member States concerned and EU as a whole. The coordinator succeeded in negotiating a compromise solution acceptable to all sides, and endorsed by the heads of government/state of Spain and France. This case demonstrates that the EU can help promote progress towards a European network by enabling the parties to find a compromise solution which takes account of the local population's requests, as well as satisfy security of supply and environmental concerns, and at a cost that could be borne by the transmission system operators.

2.3.2. Regulatory framework

The foreseen Agency for the Cooperation of Energy Regulators (ACER), together with the two new European Networks of Transmission System Operators (ENTSO's), as set up by the third internal energy market package, will help ensure greater coordination and transparency in network planning, operation, research and innovation(see below).

However, a specific problem arises in the case of cross-border or regional projects, particularly those which bring together a number of different energy systems.

Priority projects for energy priorities: developing an offshore wind network

¹⁰ Report on the implementation of the Trans-European Energy Networks Programme in the period 2002-2006, COM (2008) 743

The EU also appointed a European coordinator to oversee progress on the development of the grid connections between the wind turbines in the North and Baltic Seas and the main onshore grid. Nevertheless, the wind power which consumers demand cannot be delivered without new networks. There is little strategic planning across Member States and inadequate dialogue with the public. The experience of the coordinator has shown that the development of the offshore grid to connect the windfarms to the onshore grid has also to allow trade and to help balancing. But it can only be done if it involves all the Member States concerned, the TSO's and the regulatory authorities and the other stakeholders including NGO's. The coordinator launched in July 2008 a working group gathering all of them with a view to steer the process which is truly multinational.

2.4. Moving towards a fully integrated and flexible European energy network

The first aim of the network is to link all the Member States of the European Union, enabling them to benefit fully of the internal energy market. This is particularly the case since the two recent enlargements, where the new Member States appear not to be connected or insufficiently connected between themselves and with the old Member States.

Bridging gaps in the network: the Polish-Lithuanian Power Link

Establishing common structures between TSO's and administrations have helped resolve project difficulties in the Powerlink project designed to link up the power transmission systems of Poland and Lithuania. The European Coordinator in this case helped the respective TSO's establish a joint venture, LITPOL, to carry out the preparatory work for the link. The link could have dual benefits for security of supply in the region, bridging the gap between the network of the three Baltic States and the rest of the EU, as well as opening up the possibilities for power exports from the planned nuclear plant in Lithuania.

The task of modernising the power grid to integrate more distributed generation units and "smart" technologies to allow better demand management and to absorb large amounts of renewable energy generation, going beyond 2020, must become a top priority for the EU¹¹.

It is also essential to ensure that all parts of the EU are able to benefit from the new energy resources being developed in the EU, such as offshore wind and photovoltaic/concentrated solar power, through more inter-regional links.

Security of imports also requires attention. Some of the main pipelines serving Europe's customers are overstretched or in need for maintenance. New import routes, notably from Central Asia and the Caspian as well as from the Middle East and Africa, will also be needed.

Security of supply: public interest may warrant public intervention where the market does not deliver

The EU coordinator for the Southern gas corridor including the Nabucco project has highlighted a fundamental difficulty for network planning and implementation. The political, security and non-commercial risks associated with new infrastructure projects are a huge disincentive to commercial companies who are not prepared to take the "first mover" risk. In a

¹¹ "Smart" grid technologies and their contribution to the 20-20-20 targets are discussed in the ELECTRA report. http://ec.europa.eu/enterprise/electr_equipment/electra.htm. See also *Addressing the challenge of energy efficiency through Information and Communication Technologies* (COM(2008)241). For future publication: *The Contribution of the European Electrical Engineering Industry to the Community's Climate Action Plan and Agenda for Growth and Jobs*

competitive market, public authorities must continue to play a role in creating incentives for private companies to invest in new, "greenfield" projects.

2.5. Identifying new priorities

The European Council of 15-16 October 2008 gave some orientations for network priorities for the EU. The Commission has outlined more specific examples in its second Strategic Energy Review *An EU energy security and solidarity action plan*¹². These are elaborated below (Conclusions). However, to take these priorities forward will need a realignment of policy and instruments. The issues raised below identify a number of options which the EU may develop as part of a more coherent energy network policy which is fully consistent with its energy and climate goals and which will help deliver the priority projects to serve all EU citizens.

3. A NEW EU APPROACH TO ENERGY NETWORK DEVELOPMENT

3.1. EU energy policy goals and objectives

3.1.1. Promoting public understanding and solidarity

The European Commission and Member States must improve information and communication with citizens on energy network issues, including the aims and objectives of TEN-E, how solidarity in energy supply works, and how new networks can deliver sustainable, secure and competitive energy. The public and the private sectors should be involved in this task.

Access to information must be improved. Regular discussions are needed with Member States and others on investment issues, notably in electricity generation. The Commission will re-examine the contribution which could be made by Council Regulation (EC) 736/96 on notifying the Commission of investment projects in the petroleum, gas and electricity sectors. The Commission's Market Observatory for Energy can complement such information.

3.1.2. Achieving the "20-20-20" targets by 2020¹³

The new renewable energy and climate change legislation, including the "20-20-20" goals, urgently needs to be reflected in network planning and programmes in the public and private sectors.

The EU must develop a comprehensive strategy on integrating renewable energy sources into the grid, in full cooperation with national and regional authorities and market actors. This should address such issues as cost allocation along the supply chain, back-up costs, transmission technologies, the link between local and European grids and regulatory coherence. The EU, Member States, and local and regional authorities should also encourage and facilitate decentralised energy production, which contributes to energy security and offers an important opportunity for regional development, creating growth and jobs.

The EU needs to promote projects which can carry power from resource-rich areas (e.g. wind in coastal areas, and solar in the Mediterranean) to where consumers need it. At the same time, new grid technologies must be promoted for a more efficient and flexible use of local

¹² Second Strategic Energy Review, COM(2008)744

¹³ See footnote 2

energy sources, for example power generation in individual households and combined heat and power.

Energy from offshore wind could play a significant role in delivering renewable energy targets, as well as improving security of supply and solidarity. Europe-wide offshore grids and trans-European overlay grids are required to integrate wind energy fully into the European grid. The Commission is publishing a Communication on offshore wind¹⁴ with this Green Paper.

The promotion of CO₂ capture, transport and storage (CCS) has implications for networks. Extensive CO₂ pipelines connecting CO₂ emission sources and storage sites are needed. The EU needs to consider what role it can play in promoting the necessary investments in this area, including TEN-E.

Related to this, the implications of climate change for Europe's energy networks, for example, the positioning of plants, power lines and pipelines, need to be taken into account.

3.1.3. *Innovation and new technologies*

A better focus on energy network technologies is needed in research and technology demonstration programmes. Europe's science community must be motivated to cooperate fully with the private sector in developing solutions. Putting into place a flexible European grid with ample storage capacities, incorporating different sources of electricity production from renewable energies and conventional sources, is a key technology challenge for the years up to 2020.

The European industrial initiative on electricity grids is a priority of the Strategic Energy Technology Plan¹⁵ and will receive initial support from the 7th EU Framework Programme for Research and Development. A few large-scale RTD and demonstration projects, proving the feasibility of "intelligent" network technologies, could give the necessary impetus to rapid deployment of better, more flexible and robust systems and pre-empt the need for less efficient infrastructure investment.

The Strategic Energy Technology Plan also includes measures important for future network development, such as the action on transition planning towards low-carbon energy systems. Another issue which should be further researched is the impact of electric and plug-in hybrid vehicles on electricity networks.

The EU must aim at the dissemination of vital experience across the EU. EU instruments need to be used more efficiently, including the EU Structural and Cohesion Funds and RTD Framework Programmes, but also the Competitiveness and Innovation Programme (Intelligent Energy Europe) and the proposed Energy Research Alliance¹⁶ [to foster and develop new energy technologies and innovative solutions](#). Moreover, the European Institute of Innovation and Technology (EIT) will launch in 2009 its first call for Knowledge and Innovation Communities (KICs) concerning notably climate change and sustainable energy.. Collaboration with European Standards Organisations (ESO's) also needs to be deepened, as these produce necessary standards for the market take-up of new technologies.

3.1.4. *International energy networks*

International energy networks projects serving EU security of energy supply necessarily involve the agreement of third country governments. It is important that the EU's

¹⁴ Offshore wind energy, COM(2008)736

¹⁵ Strategic Energy Technology Plan, COM(2007)0723 endorsed by the Council and Parliament

¹⁶ See Strategic Energy Technology Plan

international cooperation framework encourage the development of such projects, notably by providing a long-term political framework for commitments by the private companies involved in the investments, and for possible guarantees by European banks such as EIB, EBRD.

Existing EU groupings, such as the Network of Energy Security Correspondents, Gas Coordination Group and Oil Supply Group, could be exploited to discuss proposed international energy projects at an early stage. This will help build up solidarity among Member States and anticipate political sensitivities.

Final decisions about import pipelines are a commercial matter to be taken together with the countries concerned. For some projects, it might be appropriate to provide a political reassurance to third countries that the EU is prepared to enter into a long term energy relationship. A special emphasis may also be put on the support to investment projects when the private investor perceives the non-commercial risks as too significant.

The EU should continue to work on bridging differences in regulatory frameworks in third countries and consider how to be involved early enough in the design of international agreements relating to strategic projects to ensure they are compatible with the EU acquis.

Such concerns should also be reflected in the EU's external instruments. International agreements could be used to prepare the ground for energy interconnections with the EU market, early information on market and policy development. International trade agreements could also be used to offer clear conditions of access to the EU market, and vice versa, and dispute-resolving procedures.

An improved economic and legal framework for EU relations with supplier and transit countries will help promote more stable and predictable investment conditions for private investments in energy infrastructure.

3.2. A fully interconnected European energy network

3.2.1. An effective internal energy market

The third internal energy market package, when implemented, will enhance cooperation among transmission system operators (TSO's) and among energy regulators, enabling them to identify the necessary interconnections on the basis of a transparent, coherent 10-year investment plan. Some progress has been made in the power sector. For gas, plans need to progress more quickly.

The ENTSO's and ACER could broaden their cooperation beyond enhancing competition, as now, to other issues, including security of supply, research and innovation, and the achievement of the 20-20-20 targets.

The ENTSO's and ACER cooperation must help assure the optimum use of existing networks, e.g. reducing losses in power lines and stimulating more efficient demand patterns. It should foster a more flexible approach to tariffs for new grid infrastructure (e.g. offshore wind or "smart" grids). It must also help resolve other obstacles to investment, such as equitable return on investments for national TSO's.

Coordinated planning needs to take account of the implications of integrating local "smart" grids, and their effect on the respective responsibilities of the TSO's (high voltage) and Distribution System Operators (low voltage).

3.2.2. *The inter-regional dimension*

Within the EU internal market, regional (cross-border and multi-country) networks are important for security of supply and solidarity and are a first step towards a fully interconnected internal energy market.

Bringing networks together – the gas sector

The New Europe Transmission System (NETS) project, advocated by several TSO's, is a highly promising initiative to integrate gas transmission operators across Central and South Eastern Europe. This has the possibility to create the framework for a regional gas market. Such a market would have sufficient size to attract new investments, which is not the case for the individual national markets, and could significantly reduce operating and investment costs.

Another forward-looking initiative which could also improve the integration of assets and management of networks is the European Transmission System Operator idea, promoted by some major gas players. The aim is to build progressively an independent company to manage a unified gas transport network throughout the EU. A progressive unification of networks, provided that it is organised in a manner compatible with competition law, would enhance incentives for gas companies to invest in new network projects

Specific initiatives are needed to help interlink more isolated parts of the EU or incorporate new energy forms into the network. Areas which could be given political priority are: the Baltic Sea region, the Mediterranean, and south-eastern Europe.

3.2.3. *A new approach to planning*

The European Council has called for the Commission to "table proposals aiming at streamlining approval procedures" for network projects¹⁷. With this in mind, European priority projects could be included in national strategic plans, as well as the future priorities of regulators and TSO's. Member States would then need to take the necessary steps to ensure that agreed timetables are met. This could become a condition of TEN-E support.

More uniform procedures and criteria would assist the completion of strategic cross-border projects, including indicative timetables. In the absence of a specific EU competence, a reflection is needed on how the EU can help simplify planning procedures in the case of major cross-border energy projects.

The European Commission should promote exchange of information and best practice among Member States on these issues. A number of Member States are reviewing or have reformed their planning regulations to speed up important infrastructure projects.

EU environmental rules should be correctly interpreted and applied, in the light of guidelines issued by the Commission. Complying with EU environmental legislation and meeting energy policy goals can and should be mutually supportive.

Based on the experience of the EU coordinators¹⁸, there needs to be an option, within existing rules, for an appeal to be made to public authorities where an EU-relevant project faces planning delays. If no national solution is found, the Commission might carry out an analysis, or appoint a mediator.

¹⁷ Presidency Conclusions, European Council, 8-9 March 2007

¹⁸ See DG TREN webpage: http://ec.europa.eu/ten/energy/coordinators/index_en.htm

3.3. Putting TEN-E at the service of security and solidarity

3.3.1. Revised TEN-E guidelines

TEN-E needs to be made more effective as an instrument to facilitate important EU projects which serve security of supply, competition, environmental or solidarity goals.

Subject to the response to this Green Paper, the Commission would like to revise the TEN-E guidelines in the following ways:

1) TEN-E **objectives** should be driven by the European energy policy (the 20-20-20 objectives, and the complementary goals of security of supply and solidarity, sustainability and competitiveness).

2) The **scope** of TEN-E should be the full energy transportation network. Gas, including LNG terminals and underground storage, and electricity transmission networks must remain at the forefront of the programme. However, urgent consideration should be given to extending the scope to oil pipelines. Rising volumes of maritime oil transport presents serious risks to supply and maritime security. A Commission staff working paper on oil infrastructures¹⁹ accompanies this Green Paper.

TEN-E scope could be extended to transportation infrastructures associated with new technologies, starting with carbon dioxide for CCS projects. Other options could include adapting networks for biogas for combined heat and power or compressed natural gas vehicle applications.

The programme also needs to be more flexible in the light of grid developments which affect both transmission and distribution networks, including "smart" grids.

3) TEN-E **planning** should be market-driven, with a clear remit for ENTSO's and ACER. The EU should have an active facilitating and mediatory role.

4) The Commission proposed in its Priority Interconnection Plan²⁰ to narrow the focus of TEN-E on a limited number of strategic projects. Accordingly, the **number of priority projects** should therefore be small, involving cross-border projects, projects connecting isolated Member States to the European grid or those serving several Member States (in practice an amalgamation of several individual projects). The five priority areas identified in the conclusions below are examples of the priority projects which an updated TEN-E could support.

TEN-E projects should also be incorporated into national infrastructure plans and, where relevant, into the priorities of the European Investment Bank or European Bank for Reconstruction and Development. Member States who benefit may also be expected to contribute.

5) **Accompanying measures** should be built up to disseminate information and exchange good practice among projects and Member States.

6) In exceptional cases, such as large-scale regional projects or projects involving a third country, a **European coordinator** may be appointed. Any new appointment should take into account the experience gained until now.

¹⁹ Oil infrastructures: An assessment of the existing and planned oil infrastructures within and towards the EU, SEC(2008)2799

²⁰ Priority Interconnection Plan, COM(2006)846

7) The issue of **resources** is important. The budget for TEN-E has remained more or less stable, with a budget of €155m for 2007-2013 (compared to €148m for 2000-2006) for some 300 eligible projects. This limits the impact of the programme. It is debatable whether the market will make the necessary investments serving public interests without serious public intervention. While seeking ways of improving the effectiveness of the programme within existing means, the EU should nevertheless consider ways of increasing the TEN-E budget, not least in order to facilitate some investments serving non-commercial goals, such as security of supply.

Regarding projects external to the EU, ways need to be found to exploit fully available financial instruments in full coherence with internal instruments including in particular the TEN-E funds. For the future, there should be a reflection on how the existing TEN-E instrument could be replaced by a new instrument, **the EU Energy Security and Infrastructure Instrument** and how best to articulate it with the EU's external financial instruments. Responses to the Green Paper are invited on the scope of such an instrument as well as on how best it could contribute to ensuring coherence between internal and external spending.

3.3.2. *Other options for enhancing TEN-E*

Non-financial support needs to be developed as a means of leveraging support from other sources, for example the award of a recognised "EU" label. More efforts are needed to use TEN as a leverage for other sources of funding, particularly from International financing institutions.

Synergies should be sought with other EU network activities in e.g. telecommunications, transport and environmental infrastructures (e.g. combining power lines with land transport infrastructures such as railways or roads).

A further question is whether the EU should offer support to projects which incur extra cost for contributing to **public (non-commercial) goals**, for example spare gas or power capacity which would help EU security of supply, links to bring new renewable generation to the grid, or cable under-grounding for environmental reasons. This might lead to an expectation that the extra costs would be compensated by the EU, which would not be possible.

Security of supply: where the public interest may warrant public intervention

A striking example of public financing of a pipeline for security of supply, when the market did not see the need, is the Czech decision to build the IKL (Ingolstadt-Kralupy-Litvínov) oil pipeline in the nineties to open a western route besides the eastern route. It is now Mero, a fully state owned company, which is operating this pipeline, with revenues covering the loans interest and reimbursement. This pipeline has been very useful since July 2008 as commercial entities supplying Russian crude oil through the eastern route unexpectedly reduced their supplies to their Czech customers.

A further option is to move away from specific projects to **general studies** aimed at developing solutions to current challenges facing network developers, e.g. how to resolve network issues associated with the large scale connection of offshore wind or solar or the use of "smart" grids.

3.3.3. *Coordination between TEN-E and other EU financial instruments*

Potential investors in energy networks must have access to a wide range of different finance sources. Therefore, TEN-E needs to be fully aligned and coordinated with other major EU programmes which have an impact on infrastructure development – notably the Structural and

Cohesion Funds and RTD Framework Programmes. For example, the Cohesion policy invests €75 M in TEN-E projects for the period 2007-2013. Another example is the 7th RTD Framework Programme invests €100m in electricity networks (2007-2009). Their results must be widely publicised and lead to further research and demonstration and market investment.

Increased coordination between external policy instruments, such as the European Neighbourhood and Partnership Instrument (ENPI) and TEN-E should be explored especially for infrastructures in transit countries.

Existing coordination between TEN-E and the European Investment Bank (EIB) and European Bank for Reconstruction and Development (EBRD) needs to be built up at all levels. A link between TEN-E support and the intervention of the EIB could be considered. Moreover a fund under the aegis of the EIB could be envisaged, providing equity, quasi-equity, guarantees and similar financial instruments for individual projects.

Another potential partner is the World Bank Accelerated Programmatic Loan which provides funding to reform programmes in approved countries.

4. CONCLUSIONS

As set out in the Commission's second Strategic Energy Review²¹ and elaborated here, the EU will be unable to deliver its climate and energy goals without new and improved networks. Energy networks must take a more prominent place in energy policy development and implementation. At the same time, energy network planning needs to be better coordinated at the political level.

The internal energy market, with benefits of the third package currently under discussion, must be the main driver of investment in energy networks, but the EU must also have an active facilitator role on projects of clear relevance to European energy security, including international projects.

The main EU instrument for European energy network development, TEN-E, was not designed to deal with today's energy challenges and is not properly aligned with the new energy policy for Europe. It also lacks coherence with internal market and other developments, e.g. research and external policies. Its budget is seriously inadequate.

The EU needs to develop a new strategic approach, incorporating available instruments, including launching a reflection on how the existing TEN-E instrument could be replaced by a new instrument, the **EU Energy Security and Infrastructure Instrument** with the possible objectives of (i) completing the Internal Energy Market, (ii) ensuring the development of the grid to permit the achievement of the EU's renewable energy objectives and (iii) guaranteeing EU security of energy supply, through assistance for key infrastructure projects within and outside the EU.

As part of this strategy, the Commission has identified the following projects, as set out in its second Strategic Energy Review *An EU energy security and solidarity action plan*

- **A Baltic Interconnection Plan:** Connecting the remaining isolated energy markets in Europe is a priority. As clearly recognised by the European Council in its conclusions of 16 October 2008, interconnecting the Baltic Sea region is necessary to enhance security of supply for all countries bordering the Baltic and for wider security of supply and solidarity in the EU. Together with the Member States concerned, the Commission will develop this

²¹ See footnote 13

Plan as part of a Baltic Sea Regional Strategy, covering gas, electricity (including offshore wind and potentially tidal power) and storage. This will bring together existing projects into a cohesive system benefiting the whole region. The efficient development of the market as well as the contribution of energy efficiency and renewables to increased security of supply will need to be duly taken into account in developing the Plan.

- **A new Southern Gas Corridor:** With the high possibility that the role of the Caspian region and Middle East in global oil and gas supplies will grow in the future, and with the need to avoid increasing the already high risks associated with maritime transport of oil and LNG, this appears more necessary than ever. The Commission will work with the countries concerned to secure no later than one year from now firm commitments for the construction of the Nabucco pipeline. A block purchasing mechanism for Caspian gas will be explored, in full respect of competition rules. Transit must be agreed with Turkey in a way that respects both the basic principles of the EU acquis and Turkey's legitimate concern for its own energy security.
- **Liquefied natural gas (LNG):** LNG benefits security of supply by making the gas market a more liquid global market comparable to the oil market. An appropriate LNG capacity consisting of LNG terminals and ship-based regasification should be made available to all Member States, either directly or through other Member States on the basis of a security-sharing arrangement. The Energy Community may also be involved, with the option of extending the network to the Adriatic Coast. Sufficient **gas storage** capacity must be built.
- **A Mediterranean Energy Ring:** The Mediterranean area and Africa also need to be better connected not only for fossil fuels but also for renewables. A Mediterranean energy ring will enable Europe and North Africa to better exploit natural resources available there. This initiative will build on the proposal made within the context of the Union for the Mediterranean - Barcelona Process, of a Mediterranean grid feeding electricity from solar energy (PV and concentrated solar power) and also wind into the EU. **Interconnection projects with the European mainland would also significantly enhance the energy security of the most isolated European countries.**
- **North-South gas and electricity interconnections within Central and South-East Europe** need to be developed as a priority, building notably on the New European Transmission System (NETS) initiative to create a common gas transmission system operator²², the Energy Community Gas Ring, the priority interconnections identified by the Energy Community ministerial in December 2007²³, and the Pan-European Oil Pipeline²⁴. The new Internal Energy Market package envisages the establishment of a regular 10-year Network Development Plan outlining missing links and the action necessary to complete them.
- A **Blueprint for a North Sea offshore grid** should be developed to interconnect national electricity grids in North-West Europe together and plug-in the numerous planned offshore wind projects. It should become, together with the Mediterranean Ring and the Baltic Interconnection project, one of the building blocks of a future European supergrid.

The Commission invites views on this Green Paper, which may follow the structure of the following **questions**:

²² www.molgroup.hu/en/press_centre/press_releases/european_energy_infrastructure__ndash__nets_project/

²³ www.energy-community.org/

²⁴ www.ens-newswire.com/ens/apr2007/2007-04-03-03.asp

Network Policy

- (1) What do you consider to be the main barriers to the development of a European grid and gas network? How far can they be addressed at national/regional level, and when should the EU act?
- (2) What circumstances justify an EU intervention in local planning disputes related to energy infrastructure? In those circumstances, what should the EU do?
- (3) Is a more focussed and structured approach to research and demonstration relating to European networks needed? How should it look?
- (4) What do you think is the most important activity for the EU in network development?
- (5) Should the EU be more involved in facilitating infrastructure projects in third countries? If so, in what way?

TEN-E

- (6) What sort of support should the EU provide to developers of new energy networks to have the greatest impact, considering that resources are limited? Is the approach of TEN-E still relevant? How can the EU help improve the conditions for investment?
- (7) In view of the proposed revision to the TEN-E guidelines, how can the EU improve the focus, effectiveness and impact of the TEN-E policy within its existing budget?
- (8) Should TEN-E be extended to oil infrastructure? Should it also be extended to new networks for CO₂, biogas or other networks?
- (9) Do you have views on, or suggestions for new priority projects which the EU should give backing to?
- (10) Would it help TEN-E/EU to gain more impact and visibility if it was turned into an operational security of supply and solidarity instrument?
- (11) What additional EU measures beyond those mentioned in this Green Paper would help secure a sustainable infrastructure for the EU?

For more information see: http://ec.europa.eu/energy/index_en.html You are invited to send your response to the European Commission by 31 March 2009 addressed to

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