

Internet-based Consultation

In view of the Revision of TEN-E Guidelines:

Key Issues

1. INTRODUCTION

This document is an Internet-based Consultation in view of the Revision of the Trans-European Energy Networks Guidelines. The consultation is based on the discussion of the key issues, which are the subject of the present consultation document, while additional information is given in two supporting documents entitled, respectively, "Overview of the Guidelines in Force for Trans-European Energy Networks (TEN-E)" and "Priority Axes and TEN-E Projects" (see list of consultation papers). Specific questions on which opinions and information are requested are set out in section 8 of this document.

Three maps illustrating the decided and envisaged priority axes and related projects of common interest are submitted, in addition, in order to illustrate the presentation of the networks, and a table summarising the envisaged investment along the priority axes (Doc-4).

The reader is guided through the arguments with references to the supporting documents where appropriate.

The following sections of this document give the essentials of revising the TEN-E Guidelines and outlines the need for further action, challenges and financing requirements. The later sections outline the scope of impacts to be considered together with a preliminary analysis of anticipated impacts and submit a number of relevant questions.

The feedback that will be received from this consultation will be carefully considered when preparing the corresponding proposals to be submitted to the European Commission with regard to energy networks in the European Union.

2. NEED FOR FURTHER ACTION

The development of the Trans-European Energy Networks (TEN-E) aims at supporting the EU energy policy objectives: reinforcing security of supply and competitiveness as well as protecting the environment. The effective operation of the internal energy market, providing for the cohesion in the Union and the climate change targets are in the centre of these policies.

A new revision of the guidelines is needed to take into account the priorities of **the enlarged European Union**, in particular the competitive operation of the internal energy market and the improvement of the security of energy supply for the 25 Member States. An important target is thus to fully **integrate the new Member States** in these guidelines and lists of projects.

2.1. RISKS INHERENT IN THE INITIAL SITUATION

A high risk is given by uncoordinated or contradictory energy network planning and operation in the Member States, which will hinder the integration in the internal market and will have adverse effects on the economy as well as on environment protection and cohesion.

Insufficient integration of new Member States in the energy sector can create obstacles in economic performance.

Without long-term measures (well-developed European energy networks, in combination with sufficient gas and oil stocks), Member States will not be able to carry out joint actions in case of shortages, accidents and (terrorist) threats.

2.2. TIME-SCALES

The completion of new electric power generators and/or electricity transmission capacity, including the planning, authorisation and construction phases, takes at present typically ten years and even longer in case of strong public objections. The completion time for pipeline infrastructure, once the decision for construction has been taken, is in general shorter compared to that needed for electricity infrastructure, since pipeline projects generally raise fewer objections. However, pipelines are very costly investments, thus the preparation of the financial package takes often a long time.

2.3. SECURITY OF SUPPLY

As highlighted in the Commission's Green Paper on Security of Energy Supply, the European Union faces the challenge of insufficient internal natural gas and crude oil resources in the European Union with the consequence that the external dependence for energy is high and is further increasing. Today, the European Union already imports almost two-thirds of its fossil fuel requirements (oil, gas and coal). These fuels represent 80 % of the European Union's energy consumption. On the basis of present trends, by 2020 this is expected to increase to 90 % of the European Union's oil consumption, and 70 % of gas consumption. The electricity consumption still increases steadily in all member states. Gas consumption is forecasted to increase even much more rapidly.

The main lessons that have emerged from the debate on security of supply were that there is a strong need for better organisation and co-ordinated use of oil and gas stocks and further, the need for a debate on the future of nuclear energy. In particular, better co-ordination of the use of existing resources would imply for Member States to have a minimum capacity of gas storage. It is emphasised that the corresponding action areas have important implications for the network infrastructure

The decision on nuclear energy is largely made by individual Member States. The increase, continuation or early decommissioning of nuclear power plants has a very important effect on the network infrastructure. A large share of the cross-border exchanges of electricity today is based on nuclear production.

Given the anticipated trends in energy consumption and supply, the more intensive use of the existing energy interconnection infrastructure cannot solve alone the above mentioned challenges. Consequently, additional infrastructure and interconnection capacities will be needed in the future.

2.4. INTERNAL MARKET

The amended directives for the Internal Market for Electricity and Gas have been agreed by the Council and the European Parliament in June 2003. To reap the full benefits of the Internal Market, sufficient transmission capacities are needed within and between national energy networks. This is important in order to enhance cross-border competition, to avoid supply interruptions due to transmission limitations and to optimize the use of generation capacity.

A new revision of the guidelines is needed to take into account the priorities of the enlarged European Union, the internal energy market for the 25 Member States. A full integration of the new Member States to the Internal energy market is only possible with developing interconnectors. It has to be recognised that until recently the electricity networks were not synchronously connected and only the main feed-in pipelines from Russia crossed the borders between new and present member states.

The heads of state in Barcelona in March 2002 agreed for electricity the target for Member States of a level of electricity interconnections equivalent to at least 10% of their installed production capacity by 2005.

2.5. NEIGHBOURING COUNTRIES POLICY

The Communication from the Commission to the Council and the European Parliament on the Development of Energy Policy for the Enlarged European Union, its Neighbours and Partner Countries (COM (2003) 262 final/2) has highlighted the following areas of action:

- The progressive creation of a real integrated European electricity and gas market.
- The integration of the South-East Europe electricity market.
- The acceleration of the concrete discussions regarding the creation of Euro-Med electricity and gas markets.
- The deepening of the energy dialogue with Russia.
- The close involvement of neighbouring countries and partners in developments regarding the technical harmonisation and interoperability of gas and electricity networks.
- The construction of the new infrastructure.
- The strengthening of the Northern Dimension in energy issues.

With respect to gas, it is forecasted that existing import capacity of 330 bcm will need to be increased by nearly 200 bcm. In order for these investments to take place, it is vital to

ensure that the European Union plays an active role to facilitate and to create a favorable context.

The main suppliers of natural gas are at present Norway, Russia and Northern Africa. In the future the Caspian Sea, the Middle East and the Gulf region will become important gas suppliers, in addition. These sources define the natural transit routes (for details we refer to Doc-3). Neighbouring countries become key partners for the transit of primary energy to the European Union (for details we refer to Doc-4).

At this stage no substantial import of electricity from sources outside the EU25 (e.g. from Russia or Ukraine) is feasible or foreseen. Electric energy is generated mainly within the European Union and is transmitted in and between the Member States through the interconnected electricity grids. The 1999 TACIS study indicated a possible 32TWh imports per year if the Russian network would be synchronously connected with the Central European network operated by the Union for Co-ordination of Transmission of Electricity. This represents about 1% of the consumption of the enlarged EU

With respect to oil, the principal issue to be addressed concerns security of supply and in view of recent accidents increased safety in transport, in particular maritime transport.

2.6. SUSTAINABLE DEVELOPMENT

In the Kyoto Protocol, the EU committed itself to reducing its emissions of the six Kyoto gases by 8% below their 1990 level by 2008-2012. In order to comply with the Kyoto Protocol, more stringent measures and policies from Member States are of utmost importance. This includes the initiative to reduce emissions from the power sector and to introduce common rules for the taxation of energy products. Emissions trading is a new environmental instrument, which will have a large impact on the energy market. There will be important consequences for the whole sector, since the location of generation and load can change significantly over time placing new challenges to the network development.

The Community has set ambitious targets to increase the share of renewable energies from its current level of 6% of total energy supply to 12% by 2010. In particular, the Directive on electricity from renewable energy sources (RES) is an important measure promoting the use of RES and supporting the electricity market. It leaves flexibility for Member States to select the instruments to reach the national targets for increasing the share of domestically produced green electricity.

Most of the renewable electricity generation will come from wind and biomass. Especially off-shore wind generation requires important investments in infrastructure, in the network, in the control systems and in the complementary generation units required for balancing the variable power output of the wind generators.

3. TECHNOLOGY DRIVERS

Technology development is the ultimate driving force for the long-term energy network development. Different technology options have different consequences regarding the development of energy transmission infrastructure. Key aspect is the centralisation versus decentralisation of the generation and the regional balance between generation and load.

In the current power system, electricity generation takes place predominantly in big units and the power is distributed through the transmission system and the distribution network to the consumers. In the future there will be increasingly more generation in the distribution networks. There are strongly varying views about the development of the share of distributed generation in the future. The penetration of promising distributed generation technologies like micro turbines and fuel-cells will depend strongly on their economic viability.

Wind generated electricity, in particular off-shore wind parks, creates a particular challenge to the network, since the electricity has to be transported to load centres usually located far away. The balancing of the variation of the output of the wind generation is another network challenge.

Future decisions on nuclear policy will have a significant effect on the needs of network infrastructure. Capital intensive nuclear power plants tend to maximise their running time and can sell base load electricity with low marginal costs. These cost differences can justify relatively big distances between the production and the load locations. Decisions, especially in France, but also in other present and future member states, regarding continuation of the nuclear programme will largely define whether these nuclear based base load exports will continue in the future.

Moving increasingly to gas based generation with Combined Cycle Gas Turbines will potentially locate production closer to load. In the European context it is generally cheaper to transport gas than electricity. The fact that the electricity network is often more congested than the gas grid, provides thus an incentive to locate the generation into deficit areas in order to avoid congestion charges. Marginal costs of CCGT plants do not normally differ very much between generators, so major long distance exports are less attractive.

4. SAFETY CONCERNS AND ENVIRONMENTAL PROTECTION

Harmonised safety standards at the ports and related import facilities for both natural gas and crude oil need to be set. Neighbouring countries to the European Union play a vital role in the Union's energy policy. Therefore, these countries should progressively adopt such harmonised safety standards, too.

The corresponding actions include developing schemes for shifting the Maritime transport towards pipelines or new safer transport means and to improving monitoring of the transportation of crude oil and oil products, including any equipment or installations essential for the entire oil transport system to operate properly, including protection, monitoring, control and pollution prevention systems.

Tools need to be in place for monitoring the production, the need and the optimal flow of gas, oil and electricity. Identifying the bottlenecks and missing links, especially cross-border, within the oil pipeline networks.

5. FINANCING

The Table (listed in Doc-4) gives an estimate for the investment costs of energy networks along the yet decided and further envisaged Priority Axes for the electricity, natural gas and crude oil sectors.

In total, for the construction of the Trans-European Energy infrastructure considered necessary in the next decade an amount in the range of 40 billion Euro will be needed - 26 billion Euro for investments inside the European Union and 14 billion Euro for investments outside the European Union.

The construction of new gas and oil pipelines to supply the Community's future needs will necessarily originate from, or will transit, areas where political risk insurance is a precondition for attracting finance. Such insurance can be expensive. The participation of the European Union in such costs, for projects clearly in the European Union's interest, can be a real catalyst and incentive to the development of these networks.

It appears, therefore, necessary to focus on such contributions more in the future. This will be possible under the Community financial regulation for TEN projects (EC No 2236/95), which should be exploited to its maximum possibilities or adapted accordingly when needed (for details we refer to Doc-2).

The present level of European Union support under the TEN-E budget line – mainly given for studies in the initial phase – amounts to about 20 Mio. Euro per year. Other substantial contributions to the financing of TEN-Energy projects have come from the European Investment Bank (EIB) in form of loans or from the Structural Funds in form of aid.

The objective to get projects of strong European interest into construction will require stronger financial measures. The coverage of specific risks may imply support in the order of several percent of the construction costs of the corresponding projects. The proper level of European Union budgetary resources dedicated to energy network infrastructure is the subject of a separate debate addressing the New Financial Perspectives for the period 2007-2013. The Commission will present appropriate proposals in due time.

Energy infrastructures are key assets. Infrastructure development and market development are inherently linked. The move towards integration of the European Union market and of the regional markets in Europe and in neighbouring countries requires linked progress in market development and infrastructure development.

The enlarged geographical range and the increased leverage of the TEN Energy scheme entail adequate European Union budgetary means for supporting infrastructure of European interest (for details we refer to Doc-2 and Doc-3 and the table in Doc-4).

As a rule, the interconnection and energy network projects should get financed entirely through the competitive market but should also take into account European interest and environment protection. The optimisation necessary for reaching "optimal solutions" might involve some amount of European Union funding. The proper amount of this European Union support is debatable.

6. REVISION OF THE TEN-GUIDELINES

The guidelines for TEN-E is the piece of EU legislation which identifies the actions regarding energy transmission infrastructures, e.g. the implementation of projects of common interest, and the conditions for these actions, e.g. the need for projects to display potential economic viability (for details we refer to Doc-2).

The objectives of the European energy policy are to:

- Enhance the security of energy supplies of the European continent,
- Strengthen the Internal Energy Market of the enlarged European Union,
- Support the modernisation of energy systems in our partner countries,
- Increase the share of renewable energies, in particular in electricity generation,
- And facilitate the realisation of major new energy infrastructure projects.

The policy options that are realistically available are related to the basic choices of the energy mix, i.e. energy scenarios, and the resulting consequences on the development of energy networks. The discussion has to address the consequences for infrastructure development and the role of the Community following the various energy scenarios. We recall the various options as discussed previously: increased use of natural gas in the European Union, development of the share in nuclear power generation, emerging clean coal technologies, increased share of renewables, especially wind and biomass. In addition, there are the issues of increased exchange of electricity with neighbouring countries and the safe transport of oil.

Without continuing guidance for further development of the energy networks the situation will get fragmented. The new Member States will be excluded leading to lower level of cohesion. The energy distribution networks need to get improved according to the emergence of bottlenecks and new priorities, e.g. renewable energy sources, in particular in the new Member States. The state of the energy infrastructure will affect industry through competition and, further, economic growth and employment. The consequences for regions in social and environmental terms are far reaching.

As a rule, the interconnections and energy network should get financed through the competitive market but should also take into account European interest and environment protection. The impetus necessary for reaching “optimal solutions” and meeting the “security of supply” criteria may involve adequate amounts of European Union funding.

The current TEN-energy policy is based on the following main action lines:

- The European Commission identifies projects candidate to Community support together with the Member states and the stakeholders.
- Projects of European interest which fulfil the criteria set out in the guidelines are proposed for the TEN-Energy guidelines and are approved by the Council and the Parliament in the co-decision procedure. Technical changes for the projects are possible through the comitology procedure.
- Companies, with the support of the Member states, submit a request for Community financing for projects, which are in the guidelines.
- The yearly budget of about 23M€ allows funding of 10-20 projects a year, spent mainly for the design and initial study phase.

The TEN-E guidelines contain a list of priority projects, which have a priority for Community funding. The available budget is sufficient to support feasibility studies and

various studies at the development phase of the project to the extent of 50%. In exceptional cases a small percentage of financing can be granted to the construction phase.

The influence of the TEN-E financing has a relatively minor effect to the overall budget of the project, but can act as an important stimulator at an early and risky stage of the project. The recognition as a project of European interest has also generally positive effects regarding project financing and acceptance by authorities and other parties involved. These indirect effects might be often much more important than the direct financial input.

The main reason for the revision of the TEN-E guidelines is the integration of the new Member States in the guidelines. New priority axis as well as projects of common interest covering the needs for the electricity and gas interconnectors have been proposed (Doc-3).

The revision of the guidelines will further identify appropriate actions for developing an adequate gas import infrastructure (supply pipelines from external sources, terminals for receiving liquefied natural gas and facilities for the storage of natural gas) in combination with adequate interconnection capacity, in addition to the actions stipulated in guidelines in force (for details we refer to Doc-2 and Doc-3).

In view of the growing importance of security of supply in conjunction with concerns regarding maritime safety of oil transport, the scope of the guidelines will be widened by taking account of the oil networks, which are not part of the guidelines in force. Therefore, the revised guidelines should include the oil import infrastructure (supply pipelines from external sources, harmonised safety and technical standards for terminals designed for receiving oil imports and facilities for the storage of oil stocks) and will boost the use of oil pipelines within the Member States.

7. IMPACT ASSESSMENT

On a preliminary basis, the likely positive and negative impacts of the selected options, particularly in terms of economic, social and environmental consequences are addressed.

The scope of impacts to be considered comprises:

7.1. ENVIRONMENTAL IMPACT

Environmental action under

The “Sixth Environmental Action Programme” fixes the frame for environmental action for the next ten years (2002 – 2012). Priority environmental problems are dealt through the development and evaluation of ‘Seven Thematic Strategies’. Energy infrastructure projects relate under the following ones: ‘Soil Protection’; ‘Protection and conservation of the marine environment’; ‘Sustainable use and management of resources’; ‘Waste recycling’ and ‘Air quality’.

7.2. SOCIAL AND ECONOMIC IMPACT

In our context, the following types of social impacts deserve special attention:

- Volume and quality of employment;
- Social protection;
- Equal treatment and the protection of citizen rights;
- Cohesion;
- Lisbon Strategy.

At the Lisbon European Council (March 2000), the European Union set itself a new strategic goal for the next decade: “to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion”. The strategy was designed to enable the Union to regain the conditions for full employment and to strengthen cohesion by 2010.

7.3. RELATION BETWEEN ENERGY INFRASTRUCTURE AND EMPLOYMENT.

Good energy infrastructure, in the geographical sense, is of special importance for social issues and employment. Infrastructure development and market development are inherently linked. Energy infrastructures, their organisation and operation, can be understood as fixed assets, which underpin the provision of energy services to the population, to business, SME’s and bigger industries and support economic growth. Important factors are the relationship between GDP growth and employment growth and the link between quality in work and productivity.

7.4. EXPECTED IMPACTS

Short-term environmental damage during the construction phase is expected to be offset by environmental benefit of a more efficient pan-European energy infrastructure network. The increased use of natural gas that is replacing in many Member States the use of other fossil fuels leads to a significant reduction of CO₂ emission. In conjunction with cogeneration the efficiency is increased, in addition. Therefore, gas is considered to be an environment friendly source of energy.

The long-term negative effects on the environment are expected to be very small; some debate is ongoing with regard to High-Voltage electricity overhead lines.

Objections based on environmental arguments can delay the construction of necessary energy infrastructure considerably or imply significantly higher costs (e.g. underground electricity lines).

Short to medium term job creation is expected as construction of projects get under way, particularly in accession countries.

Concerning environmental impacts and social cohesion, in particular concerning enlargement, the coal and/or nuclear option will rely strongly on technical progress concerning sequestration of CO₂ from coal burning plants and nuclear waste management. The big question regarding the Green Energy and Savings option is the consequential economic performance in world-wide global and competitive markets. A too strictly regulated market carries a high risk in consideration of international competition in the global markets.

Furthermore, the occurrence of electricity blackouts as a consequence of false regulation needs to be taken into consideration.

7.5. CONCLUSION

The improvement of the energy networks is essential for achieving economic growth in the knowledge-based economy, while improving the protection of the environment. For this objective a well-balanced co-ordinated approach appears best suited.

8. QUESTIONS

In order to further analyse the impacts implied by the new Revision of the TEN Energy Guidelines in more depth, a number of open questions that have arisen are put through public consultation.

Consequently, a **table of questions** is compiled constituting a second type of consequences emerging from this analysis.

1.) Support Measures:

Given the long time-scale needed for the completion of new energy network infrastructure (in several cases 10 years or longer) and given the substantial costs of the projects of European interest (40 billion Euro in total), which supportive measures do you expect from Member States and the European Union,

- a) concerning administrative support (e.g. authorisation),
- b) concerning financial support (is the volume of Community support in line with economic viability and fair competition?)
- c) concerning the scope of the Trans European Energy networks (gas and electricity transmission projects including the connection of wind energy, oil pipelines)?

2.) Triggering Investments:

How can investments from industry, companies and TSO's for needed improvements in the energy transmission system, in particular for cross-border interconnections, be triggered effectively?

3.) Priority projects:

Are the priority projects in the DOC-3 the adequate projects to have priority for Community funding?

4.) Oil pipelines:

How much crude oil can be transported via pipelines, thereby diminishing the risks (and the scale) of maritime transport? What is the greatest priority in terms of new pipelines to minimise the risk of maritime accidents?

5.) Results of lack of appropriate energy supply:

What is the extend of economic damages that result from unexpected breakdowns in energy supply (e.g. electricity breakdowns, rolling blackouts etc)?

Is there a quantitative relation between lack of energy infrastructure and economic losses?

6.) Indicators:

What could be appropriate indicators for qualitative and quantitative modeling the link between the standard of energy infrastructure and economic performance in terms of GDP, employment, productivity, quality of jobs and environmental impacts?

FEEDBACK

The TEN-E Guidelines have been selected as one of the pilot projects for an Extended Impact Assessment for 2003. The Commission services therefore give all stakeholders and interested parties the opportunity to communicate in writing their positions and concerns related to the TEN-E revision. Stakeholders are thus invited to provide comments in writing before **15th September 2003** to the following address:

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Directorate-General for Energy and Transport
TEN-E Revision
Office: DM 24 7/16
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Reactions can also be sent by e-mail to:

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