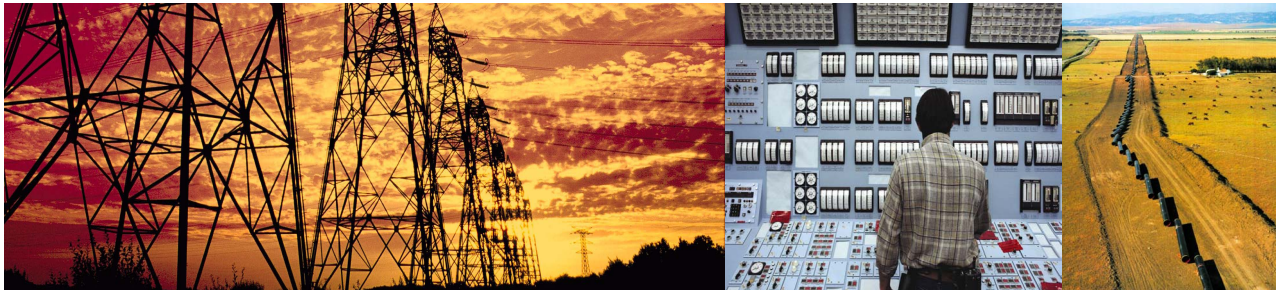




December 2003

Energy infrastructures: increasing security of supply in the Union



New legislative rules proposed

The Commission proposed on 10 December a new package of measures designed to encourage investments in the Union's energy infrastructures with a view to increasing security of supply and improving the functioning of the internal energy market. In spite of efforts deployed to contain energy consumption and of the development of new demand management technologies, considerable new investment in transmission and in generation capacity will indeed be necessary in the run-up to enlargement. These new proposals should also help prevent the reoccurrence of the blackouts that took place this summer, most notably in Italy.

The continuing need for new energy infrastructures

In our energy-intensive economy, adequate supply and distribution of energy is essential to the functioning and to the well being of society. Energy infrastructures are thus key assets to the development of the energy market and of the economy as the whole as underlines the Commission's recent 'Initiative for Growth' that initiates increased investments in networks and knowledge with the objective of boosting growth and employment.

Moreover, by July 2004 all commercial consumers will be able to choose their gas and electricity suppliers. By July 2007 this opportunity will be offered to all households. This opening of the Union's energy market also creates new challenges for energy infrastructures in the Union.

Energy infrastructures are necessary for the Union to:

- **Guarantee an effective opening of energy markets.** Without more interconnection between Member States, the functioning of the internal market will be constrained. This is particularly important where the historical producers and suppliers retain a strong position in their home market. Without measures designed to ensure that additional interconnector capacity is built up national energy markets will not be integrated in to the wider European market and customers will remain captive.
- **Ensure security of supply.** The power cuts and electricity blackouts that occurred repeatedly in Europe in the year 2003 demonstrate the need to strengthen energy networks in Europe, to establish sufficient generation capacity and most importantly to provide alternative transit routes so that isolated incidents are less likely to have devastating consequences on a global scale. A re-examination and clarification of rules is needed to ensure that the required levels of investments in electricity generation, in long distance gas transport and in the internal EU transmission networks are made.

A few figures

The Union's demand for energy has been growing at a rate of between 1% and 2% a year since 1986.

Energy demand in the new Member States should surge in the medium term as their economies will be growing much faster than those of the current Member States.

The Union currently imports some 50% of its energy requirements, a figure that will rise to 70% if nothing is done.

- **Reach its stringent environmental targets.** The Union has committed itself to reduce its greenhouse gases emissions. Member States are also required to increase their national share of green electricity to 18% by 2010. Adequate energy infrastructures are needed to improve the energy efficiency of a plant, reduce emissions and increase the use of renewables. This is especially true for the connection of wind farms new located in off-shore sites and for distributed generation.

The need for EU action

In the electricity sector, congestion, a lack of interconnection and difficulties in building new infrastructures hamper security of supply. EU level rules on supply and investment can alleviate these structural problems affecting the development of the internal electricity market as a whole.

For gas, though there is no general shortage of infrastructure, network use should be maximised to bring about a real competitive market for natural gas. An action plan to this effect was agreed at the Madrid Forum in September 2003 by regulators, industry and the Commission. The enormous progress made in this Forum now warrants being consolidated into European energy law.

Finally, with enlargement to take effect as of 1 May 2004, guidelines for the development of the Trans-European Energy Networks (TEN-E) need to be revised to take into account the priorities of the enlarged European Union.

The Commission thus decided to propose a new package of actions designed at delivering a functional internal market in terms of competition, security of supply and infrastructure investment.

Lessons from the Italian black-out

On the night between Saturday 27th and Sunday 28th September, a transmission line in Switzerland touched a tree causing the black-out in the whole of Italy. Italy imports 24 % of its electricity requirements at night periods, mainly from France. This is by far the highest level of import dependency of any EU country. It results from a combination of the decision to close down Italy's nuclear plants following a referendum in the 1980's and lack of new capacity investment in the latest years.

The reason for the black-out in Italy was an operational failure. A cascade of events started with a heavily loaded line touching a tree in Switzerland. After twenty minutes a second line could not handle the extra electricity and tripped. Soon after all interconnection lines importing electricity to Italy were disconnected, and in a couple of minutes the whole of Italy lost its electricity supply. There was enough time after the first line tripped to take the emergency measures planned for this incident, but these measures were not taken. The Italian black-out affected about 50 million people and it took up to 20 hours to restore the power in the whole country.

The black-out in Italy revealed lack of co-ordination between the transmission system operators. Emergency practises had been agreed between the system operators after previous incidents in the network. This was, however, not sufficient. Each network operator needs to know better the overall situation in key parts of the network. This incident is independent from the creation of the EU internal market. It is important to note that the Swiss grid remains operated by vertically integrated monopoly companies.

The new package of proposed measures

In addition to a Communication on Energy infrastructure and security of supply the Commission proposes:

- a directive on energy services and efficient use of energy
- a directive on measures to safeguard security of electricity supply and infrastructure investment;
- a decision on guidelines for trans-European energy networks;
- a regulation on conditions for access to the gas transmissions networks.

Issues arising in electricity infrastructure

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An assessment of the current context

To ensure regular supplies of electricity in the **medium to long term**, there are three prerequisites: enough generation capacity to meet demand, adequate infrastructure and robust technical rules on system operation. Despite the work undertaken in various fora since the start of the market opening, Member States do not have a set out overall policy with defined standards on these issues.

The 3 prerequisites for regular supplies of electricity

Balance between supply and demand. Electricity markets are characterised by inelastic supply and demand and wholesale prices tend to be volatile. Because of the uncertain frequency and timing of the very highest episodes of peak demand, the market may never deliver sufficient capacity. Member States must have a clear and unambiguous approach to the generation market otherwise the risk to investors may become unacceptable. In this context demand management has a crucial role to play due to its more rapid effect. The completion of new electric power generators and/or electricity transmission capacity, including the planning, authorisation and construction phases, moreover takes at present typically ten years and even longer in case of strong public objections.

Adequate transmission infrastructure. Interconnector investments are crucial to secure the commercial capacity and the security of the network. Transmission investments need to have a high degree of central coordination to deliver a rational network and to reduce uncertainty.

Security and reliability rules at Union level. Adequate rules and mechanisms need to be in place to control non-predictable flows from increasing cross border transactions. To this end, the Union of Coordination of Transmission Electricity has initiated work on an Operational Handbook which aims at binding security and reliability. The Commission will include such basic rules in the future guidelines on congestion management.

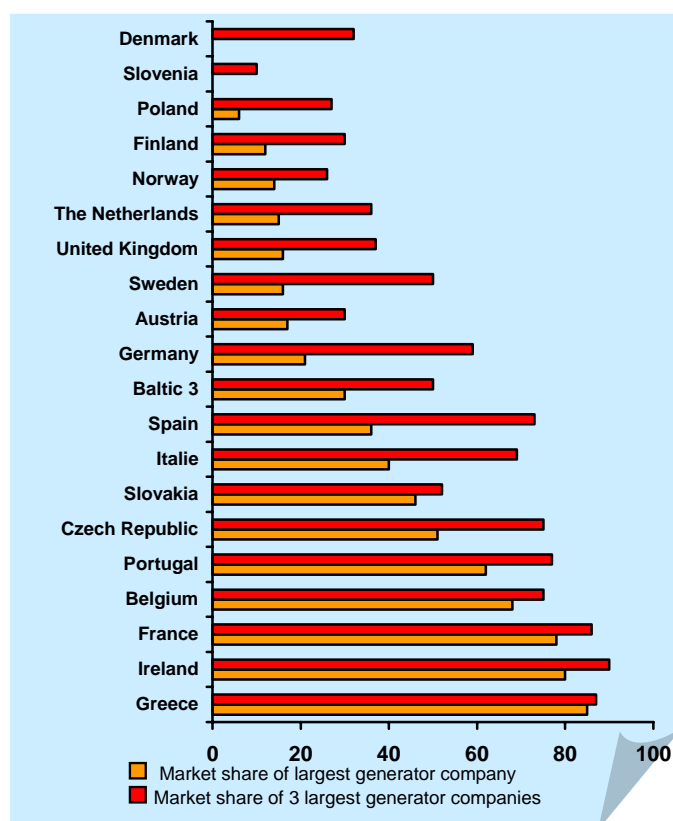
A further condition to guarantee security of electricity supply **in the short term** is the functioning of the internal electricity market and its level of interconnection in particular.

In this area progress is slow. The 10% interconnection target set by the Barcelona Council of March 2002 following the first Communication on energy infrastructures has not yet been met in all Member States. Moreover even this level of interconnection will not be sufficient, whenever companies still retain a large share of the available generation capacity. The entry of suppliers from other Member States is the only realistic way for competition to develop rapidly.

The graph on the right shows the degree of concentration in each market. There are several markets where conditions are far from optimal in this respect.

Benign neglect of this situation would deprive consumers of the benefits of competitive electricity prices and needlessly damage the overall performance of the European economy.

In line with the subsidiarity principle the prime responsibility for addressing this issue lies at national level. Member States have the authority to authorise new interconnectors, or increase the level of competition. However EU level action to support new investments should help improve the average interconnection level in Member States.



2 Ways to accelerate new electricity investment

Environmental and planning issues. The Commission considers there are a number of ways to considerably improve the public acceptance of the investment projects and help a timely completion:

- Major new projects should have the active and unconditional support from the European, national and local authorities. Member States should give preference to Trans European Networks Projects of Priority Interest.

- Early and close dialogue with people affected by the line should provide them with a real possibility to influence its routing. Proper compensation of the damage caused should be offered.
- Shorter time periods should be possible for the design and permit phase without reducing the possibilities for stakeholders to give input. Every effort should be made to accelerate procedures for priority projects of European Interest.

Local opposition to new lines

In various parts of Europe it has become increasingly difficult to achieve major electricity transmission projects. Several projects in advanced stages have been cancelled and there are even important projects which are almost finished but some short parts are missing. There are also examples of interconnectors between countries where one party has failed to finish the link whilst the other party has built the line to the border. Examples of these shortcomings include the links between Belgium-France, Italy-Switzerland, Italy-Greece and key projects to reinforce the Austrian network.

Use of new technologies such as undergrounding

The construction cost of underground cables is still between 5-20 times higher than the equivalent overhead lines for high voltage and extra-high voltages. However, underground cables also experience fewer losses and lower maintenance costs. Certain connections such as France-Italy would make economic sense. There is room for a concerted effort in Europe to extend the use of underground cables where the extra cost of underground cables can be justified such as:

- in areas which are badly affected by adverse weather conditions (winds, snow, ice),
- in specific segments of the missing cross-border electricity links that are considered as priority projects in the Trans European Energy Networks Guidelines of July 2003. The Commission has already proposed an increase in the EU contribution from 10% to 20% for the implementation of projects within the Axes of Priority European Interest. This may help offset the increased cost of undergrounding lines.

Overcoming financial and regulatory barriers

Financial barriers to investment also exist due to an inappropriate or unclear regulatory regime for new investments. Transmission System Operators must be rewarded for investments so that the returns on such investment at least cover the cost of capital of the business concerned. In some cases it may be appropriate to give higher incentives to new interconnector investment.

Regulatory authorities should have rights to influence the investment programme of the Transmission System Operators concerned and, if progress on certain investment projects is unsatisfactory, to arrange for such work to be conducted by a third party.

Actions proposed for the electricity market

The Commission thus proposes the following actions:

ACTION 1 A Directive on Electricity Infrastructure and Security of Supply which will;

- require Member States to have a clearly defined policy towards **the wholesale electricity market** which sets targets for reserve capacity where appropriate;
- require Member States to have **defined standards** to be met relating to the **security of the transmission and distribution networks**;
- require that each Transmission System Operator submits an **(multi)annual investment strategy** to its national regulator with the opportunity for the regulator to add important cross border projects . Regulators would submit a **summary of these investment programmes to the Commission**;
- include a right for regulators to **intervene to accelerate the completion of projects** and to issue a call for tender should the Transmission System Operator be unable or unwilling to complete the projects;

ACTION 2 A further Revision of the TENs guidelines for electricity which will;

- ensure that the need to **better integrate the accession countries and neighbouring regions** into a wider European energy market are fully taken into account in the list of projects qualifying for support and identified in the Trans European Energy Networks guidelines;
- **re-examine the Axes of Projects of Priority European interest in the light of the above;**
- introduce the **Declaration of European Interest** for some key cross-border projects on the Priority Axis and enable to nominate a **European co-ordinator** for a project;
- require the Commission to report annually on progress on the overall level of interconnection and on individual projects, including its contribution to the development of European infrastructure whether from TENs, structural and cohesion funds, or from the EIB.
- oblige Member States to set out a **streamlined timetable** for Trans European Energy Networks Axes of Priority European Interest projects, including the granting of appropriate planning permits.

Issues arising in gas infrastructure**1 Security of supply**

As for electricity, the gas network needs to be adequately developed to provide both a competitive market structure and ensure security of supply. The current situation for gas is however different:

- actual physical congestion of pipelines is not so frequent and there should already be scope for considerable cross border trade;
- gas can be stored and a greater degree of interruptibility of service is acceptable;
- the security of supply issue is equally related to investments outside the EU;
- gas being increasingly used for electricity generation, electricity and gas security of supply are linked.

Gas: the external dimension

70% of the Union's primary energy will be imported by in 2030 (compared to 47% in 2000). A large part of this increase will be natural gas. Important investments are necessary to transport gas from the producing countries to Europe whether by pipeline or through Liquid Natural Gas imports. A close energy dialogue with gas production or transit countries for Europe is thus needed. The most important example is the EU-Russia energy dialogue.

The internal gas network of the EU must be developed to ensure that sufficient capacity in the EU system is available. The Commission has already proposed, on 11 September 2002, a Directive to safeguard security of natural gas supply in the context of the internal market. The Commission thus call on Council and Parliament to rapidly adopt the draft Directive.

ACTION 3 Adoption of the Directive on Gas Security of Supply already proposed on September 2002.**2 Access to the gas transmission network**

The functioning of the gas competitive market is heavily influenced by the availability of gas from those countries with reserves. Other than the remaining UK and Dutch resources, there are essentially four main significant sources of external natural gas for the European Union; Russia, Algeria, Norway and Liquefied Natural Gas (LNG). New corridors for gas such as from Egypt, Libya and the central Asian republics are also in the process of being developed. However, if customers in Member States have access to gas from only one of these sources then the internal market cannot function.

The objective is thus that all individual customers in the EU have access to a portfolio of the various primary sources of natural gas.

The EU-Russia Energy Dialogue

Russia is already the largest single energy partner of the European Union. In 2001, over 40% of our gas imports came from Russia. Further integration of the EU and Russian gas markets, based on common regulatory principles and long term contracts, would thus increase security of supply and facilitate the financing of important infrastructures. Therefore, in October 2000, an energy dialogue was set up between the EU and Russia. In the three years of its existence, significant progress has been made on a number of the issues. Mutually acceptable solutions were found for instance regarding a number of restrictive clauses in existing long-term contracts, which have been revised and made compatible with EU competition rules.

This clearly requires a well developed network and consistent rules. Within the EU, in most cases, sufficient **physical capacity** is already available to allow customers to choose between different portfolios. However, the current lack of **coherence of tariffication** mechanisms used in different countries, the **non-transparent procedures for reserving capacity** and the overall **operational practices** used in gas networks mean that the full potential of the network is not being used.

The key issue in gas is thus the need for **binding EU rules on these issues**. Without this, network users will be faced with a patchwork of different regimes which will reduce scope for competition. The Guidelines for Good Practice agreed at Madrid in September 2003 relating to third party access to gas networks will already significantly add to the degree of competition that is possible with out further investment. However it is vital, to ensure a real level playing field in the internal gas market that these rules are legally enforced and that a legal framework exists to ensure their evolution over time. This is why the Commission proposes a new Regulation on cross border trade based on the guidelines.

ACTION 4 A new Regulation on Access Conditions to the gas network which will:

- provide for the adoption of **detailed binding guidelines**, based on the current Guidelines for Good practice agreed at the Madrid Forum and covering;
 - Third Party Access services to be offered by Transmission System Operators,
 - capacity allocation and congestion management, including use it or lose it and secondary trading mechanisms,
 - transparency requirements,
 - tariff structure and derivation, including balancing charges;
- provide a **method for the evolution** of these Guidelines;
- require national Regulators to ensure that the agreed guidelines are **implemented**.

3 Transmission network

In some parts of the European gas network real physical congestion exists. In these cases new investment is required. These bottlenecks are mainly in the western and south western part of the EU such as between northern and southern France and between France and Spain. However, as demand is growing rapidly it is expected that further congestion points might also develop. There are also a number of regions of the EU where the use of natural gas is only a recent development. Such networks will need to be extended in order to accommodate greater take up and extend to new areas the benefits of gas as a primary energy source.

At this stage, however, no specific infrastructure measure is proposed since the systematic congestion that exists for electricity is not present for gas. The Commission therefore proposes:

ACTION 5 A further revision of the TENs gas guidelines to:

- ensure that the **accession countries** and **neighbouring regions** are fully integrated into a wider European energy market taken in the Trans European Energy Networks guidelines
- provide for **additional funding** to allow such a modification of the guidelines to be effective.

Conclusions

The actions proposed in this package are required as a matter of **urgency**.

- the new proposal for a Directive on measures to safeguard security of electricity supply and infrastructure investment will complement the development of the internal market by requiring Member States to ensure that investors have a stable framework for constructing new generation and transmission capacity;
- the proposal to revise the TEN-E networks guidelines will, in conjunction give an impetus to the most important electricity and gas projects vital to provide a competitive market with a secure supply;
- finally, the proposed Regulation on Access to the Gas Transmission network will significantly improve the use made of the existing gas transmission network. This measure will give an important boost to competition and help further increase opportunities for customers to exercise their new rights.

MEMO is prepared by the Information and Communication Unit of DG Energy and Transport

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