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**Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and
electricity sectors (Final Report)**

Priority Interconnection Plan

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1. DETAILS CONCERNING IMPLEMENTATION OF PRIORITY PROJECTS SPECIFIED IN THE TEN-E GUIDELINES

The main part of this annex is devoted to the presentation of the progress made in the implementation of electricity and gas connections, which are declared to be of European interest in the recently adopted TEN-E Guidelines

The highest priority projects, the 'Projects of European Interest', have the objective to support the rapid implementation of the most important cross-border interconnectors. These projects involve cross-border links or have significant impact on cross-border transmission capacity. The maturity of the projects is demonstrated by a firm starting date: for the initial projects this is the end of 2006 with completion before 2010 or 2013 for gas. The 2006 Guidelines identify 42 projects of European interest, which are of highest importance to achieve the objectives of EU energy policy (see figure 1 and 2). Figure 1 shows electricity projects of European interest. Figure 2 shows the projects of European interest for gas indicating the transport routes through neighbouring and third countries to the EU. With the exception of under-sea-cables, the electricity interconnectors are relatively short in comparison with the gas links.

Liquefied Natural Gas (LNG) terminals are not included in the list of projects of European interest because they are not of a cross-border nature. However, they clearly have an essential role in adding gas import capacity and therefore are included in the analysis.

An overview of the projects of European interest and the LNG terminals is given in Table 1-3 displaying respectively the electricity projects, gas projects and LNG terminals.

The analysis will take stock of the progress of the projects of European interest and the LNG terminals focussing on administrative, technical and financial problems and, when possible, indicating solutions.

2. DETAILS CONCERNING IMPLEMENTATION OF PRIORITY PROJECTS IN ELECTRICITY NETWORKS

In this annex, the progress in implementation of the projects of European interest is reviewed for each priority axis. Technical information about each project is given in Table 4.

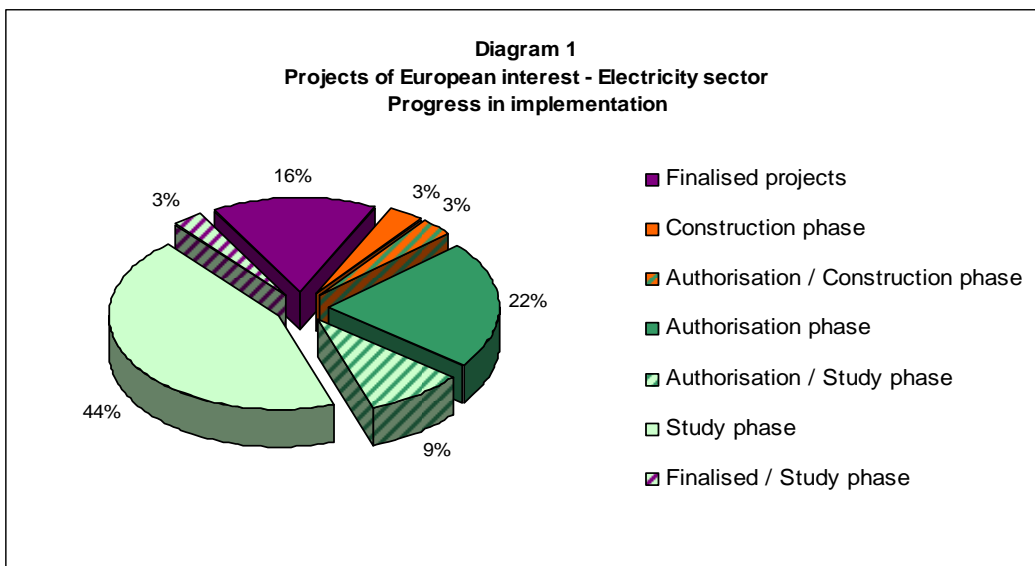
The most important fact is that all projects are being actively pursued. It appears that the declaration of European interest has given a renewed stimulation for some projects with a long history.

The progress in implementation is confirmed by the fact that there are five completed projects and one project where one section is finalised. One project is under construction. In total, for fourteen projects, i.e. 44% of projects, no delays are reported.

On the other side eighteen projects, i.e. 56% of projects face delays; eleven projects have a delay of between one to two years and seven projects face serious delays of 3 to five years.

The status of all projects is shown by diagram 1.

Diagram 1 – Projects of European interest, electricity sector – Progress in implementation



The progress in implementation is illustrated project by project in figures 3 and 4.

EL.1. France — Belgium — Netherlands — Germany:

Aveline (FR) - Avelgem (BE) line:

The link went into operation in 2005. The construction did not face any major problem, in spite of the fact that the route crosses a wildlife reserve and that two Belgian regions were involved in the permitting procedure.

Moulaine (FR) – Aubange (BE) line:

The link is completed on the Belgian side. On the French side, however, the works are not yet started. This part of the project of 13 to 16 km length is still in the study phase. In particular, the routing is not yet determined. The acceptability by the local population in urban areas poses the major difficulty. The line is scheduled to go into operation between 2010 and 2015.

Assessment:

The finalisation of the two projects will reduce congestion considerably. Congestion is a problem of this region. By additional means, in particular the development of Flexible AC Transmission Systems (FACTS), based on high-power electronics, the power flows can be better controlled and directed.

EL.2. Borders of Italy with France, Austria, Slovenia and Switzerland:

S. Fiorano (IT) – Robbia (IT)

The new line was completed at the end of 2004 (after 12 years) and its operation began on 20 January 2005. The obstacles were the opposition of local authorities to the site location, by environmental compensations requested and by rationalisation of the network. The solution was based on a Memorandum of Understanding (MoU) with local authorities on changes of routes and environmental compensation.

The development plan for the connection between Italy and Switzerland, S. Fiorano - Robbia, was started in 1992. In 2001, the studies on technical and environmental feasibility were carried out. Once the feasibility and preliminary design were achieved, a long and painful authorisation process started. The approval of the project was obtained thanks to a series of compensation measures and environmental impact mitigation, such as the dismantling of existing overhead lines in the area affected by this new project.

S. Fiorano (IT) – Nave (IT) – Gorlago (IT) line

The line (extending the cross-border link) went into operation in 2003.

The reconstructing of the line Fiorano - Nave was stopped because the line Fiorano - Robbia improved the capacity substantially. The route Nave - Gorlago was rebuilt over 10 km due to an archaeological site.

Austria-Italy (Thaur-Brixen) interconnection through the Brenner rail tunnel

The project is still in the study phase due to its complexity. The obstacles are crossing the Alps, coordination and integration with a railway project (commissioning time, cost and risk synergies) and the network rationalisation outside the tunnel. The unique feature of this

project is the synergy of different infrastructure, namely the synergy between Railway and Electricity Transmission, which leads to an environmentally friendly scenario based on the continuous use of the pilot tunnel for power transmission. The realisation of this link can be achieved by coordination at the Member State level. The line is scheduled to go into operation between 2013 and 2018.

St-Peter (AT) – Tauern (AT) line

Part I of the project is in the study phase and Part II in the authorisation phase (Part I : St Peter – Salzach “Neu”; Part II : Salzach “Neu” – Tauern).

The project is delayed due to the slowness of the authorisation procedure and local opposition. Furthermore, a new procedure is needed for the decommissioning of the old 220 kV line. The line is scheduled to go into operation between 2010 and 2012.

Lienz (AT) – Cordignano (IT) line

The project is still in the study phase. The project was seriously delayed due to the opposition of local authorities to the site location and opposition of the local population on account of environmental issues. A solution can possibly be found by means of in-depth consultation with local authorities, modification of the site and by rationalisation of the works in these areas (when consistent an increase of Total Transfer Capacity is necessary). The line is scheduled to go into operation in 2015.

Venezia Nord (IT) – Cordignano (IT) line

The project (extending the cross-border link) is still in the study phase due to opposition. The consultation with local authorities is ongoing. The line is scheduled to go into operation in 2011.

New interconnection between Italy and Slovenia

The project is still in the study phase due to opposition. The problems are the identification of the cross border point in coordination with the Friuli region and Slovenia. Furthermore, internal grid reinforcement to the sub-station Udine might be needed. The line is scheduled to go into operation in 2009.

Udine Ovest (IT) – Okroglo (SI) line

The project is still in the study phase due to opposition of local groups. The problems are the difficult identification of the cross border points between Italy and Slovenia, the highly populated area and a potential commercial problem. The line is scheduled to go into operation in 2010.

Südburgenland (AT) – Kainachtal (AT) line

The project is in the authorisation phase. There are severe problems due to the slowness of the authorisation procedure and the opposition of the local population. It appears that a transparent dialogue with all relevant local interest groups might be needed in conjunction with appropriate coordination of the procedures.

The line is scheduled to go into operation in 2009.

Assessment:

Crossing the Alps together with the sensitivity of the local population put severe constraints on the implementation. One possible solution is based on the exploitation of synergies between transport and energy infrastructure. In most cases a compromise needs to be found between new infrastructure needs and environmental concerns. This has been successfully achieved in the completed links and should be taken up in the negotiations. The ongoing projects have to be negotiated in a fair and transparent manner, possibly with the help of a facilitator or coordinator.

EL.3. France — Spain — Portugal:

Sentmenat (ES) – Bescanó (ES) – Baixas (FR) line

The link between France and Spain has experienced significant difficulties over the years and has now reached the authorisation phase. The obstacles are crossing the Pyrenees, the difficult definition of cross border points between Spain and France and, in particular, local opposition. A solution needs to be based on involving regional actors and by utilising and rebuilding existing lines.

The line is scheduled to go into operation in 2010.

Valdigem (PT) – Douro Internacional (PT) – Aldeadávila (ES) line and Douro Internacional facilities

The project is in the study phase; its operation is scheduled for 2009. The project route crosses rural areas with a low population density. To date, no problem has been identified.

Assessment:

Crossing the Pyrenees together with the sensitivity of the local population put severe constraints on implementation. A fair compromise needs to be found between new infrastructure needs and environmental concerns. This should be negotiated in a transparent manner, possibly with the help of a facilitator or coordinator.

EL4. Greece – Balkan countries – UCTE System

Philippi (EL) – Hamitabad (TR) line

The project is under construction and is scheduled to go into operation in 2008. No significant problem has been noticed for the time being.

Assessment:

A compromise needs to be found between new infrastructure needs and environmental concerns.

EL5. United Kingdom – continental and northern Europe

Undersea cable link between England (UK) and the Netherlands

The link is in the authorisation phase. The main reasons for a delay are the lengthy Dutch regulation procedures, lengthy environmental authorisation procedures, and lengthy public consultation procedures in both countries. In addition there is the uncertainty over TEN-E funding and additional grants, and over regulation of the link (e.g. exemption requirements / congestion management guidelines). Solutions could be based on an increased commitment of resources by the authorities responsible for environmental licensing, the involvement of authorisation parties and of the public in the process (based on communication and coordination), and on a greater clarity over regulation of interconnectors. The line is scheduled to go into operation in 2010.

Assessment:

Crossing the North Sea together with the diversity of procedures put severe constraints on the implementation. A compromise has to be found between new infrastructure needs and environmental concerns. This should be negotiated and coordinated in a transparent manner, possibly with the help of the regulators of the two Member States.

EL6. Ireland – United Kingdom

Undersea cable link between Ireland and Wales (UK)

The link is in the study phase. No significant problem has been noticed to date. It appears that the streamlined planning procedure resulting from specific provision for electricity interconnectors defined by the Irish government, and the strong involvement of the Irish Commission for Energy Regulation has facilitated the progress of the project. The line is scheduled to go into operation in 2012.

Assessment:

Crossing the Irish Sea together with the diversity of procedures could put severe constraints on the implementation. A compromise needs to be found between new infrastructure needs and environmental concerns. The involvement at Member State level is essential for finalising the project.

EL7. Denmark – Germany – Baltic Ring

Kassø (DK) – Hamburg/Dollern (DE) line

The link is in the study phase. There are ongoing planning activities concerning higher transport capacity e.g. with a new interconnector Kassø - Audorf. The main problems encountered are the high population density in the area of the project and the difficulty to plan for a very large amount of windpower to be transmitted between both countries. A solution could be based on the replacement of old line(s) or alternative routes, and on communication and coordination with local authorities. The line is scheduled to enter into operation in 2012.

Hamburg/Krümmel (DE) – Schwerin (DE) line

The link is in the authorisation phase. Two Bundesländer are involved (Schleswig-Holstein and Mecklenburg-Vorpommern). Problems are the result of the slowness of the procedures and of the opposition of the local population. The main arguments raised against the line were the routing, the deterioration of landscape view and the fear of the impact of the Electromagnetic fields. It appears that a fair and transparent dialogue with all relevant local interest groups might be needed. Furthermore, the line is included in the German Renewable Energy Sources Act (EEG) adopted in 2000. The line is expected to go into operation at the end of 2007.

Halle/Saale (DE) – Schweinfurt (DE)

The line is in the authorisation phase, although construction could already start on a 20km section. Three Bundesländer are involved, Sachsen-Anhalt, Thüringen and Bayern. The obstacles are the slowness of the procedures and the opposition of the local population. The main concerns regard the routing and the deterioration of the landscape (scenery of the Thüringer Wald), negative impact on tourism and the impact of the Electromagnetic fields. A possible solution could be found by using the routes of existing lines, setting up a transparent dialogue with all relevant local interest groups and developing coordination with local authorities. Furthermore, the line is included in the German Renewable Energy Sources Act (EEG) adopted in 2000. The link is expected to go into operation in 2009.

Connection of Poland and Lithuania, including the upgrading of the Polish electricity network and the PL-DE section as necessary, in order to allow participation in the internal energy market

The link has experienced significant difficulties over the years and to date has yet to complete the study phase. The main reasons for delays have been the change in scope and the coordination between both sides of the project up to 2000 and then environmental concerns regarding the natural protected area crossed by the routing. The other obstacles encountered are caused by the need for legal amendments to allow the procedure to continue, the uncertainty due to different synchronized areas and the lack of a formal public consultation process in Poland. The main problems have been overcome by the setting up of working groups at company and ministerial level, further studies of the Polish grid stability and security, and by using the route of an existing line. Furthermore, it appears that an input from UCTE, UPS and IPS and the upgrading of the Polish grid might facilitate the progress of the project. The study phase is expected to be completed by 2007 and the line is scheduled to go into operation between 2012 and 2013.

Kassø (DK) – Revsing (DK) – Tjele (DK) line

The first part of the project (Kassø – Revsing) is in the authorisation phase; its second part (Endrup-Idomlund) is in the study phase. The obstacles are due to the dependence on other projects (e.g. Kasso-Hamburg/Dollern, Skagerrak IV) and wind power allocation, the difficult acceptance of land owners, and the restructuring of relevant authorities. A solution might be the upgrading to a 2-circuit overhead line. *Furthermore, it appears that only deep support at ministerial level will facilitate the progress of the project.* The first part of the line is scheduled to go into operation in 2009 and the second part in 2015.

V. Hassing (DK) - Trige (DK) line

The project has been in operation since 2004. The construction had to face local opposition and the request from land owners for underground cables because of the disturbances to the landscape that an overhead line would cause (especially disturbances in farming). The solution came with the final approval of the Danish Ministry of Energy due to the declaration of European interest, the modification of the Power line route and some relevant expropriations.

Skagerrak 4 (DK) – Norway undersea cable

The link is in the study phase. The main problem encountered is to estimate the social economic benefit for both countries. It appears that the prioritisation of the project in the Nordel Master Plan could facilitate its progress. The study phase is to be completed by the end of 2006. The line is scheduled to go into operation in 2012.

Estlink undersea cable link between Finland and Estonia

The project is in operation since the 4th of December 2006. A strong governmental support in both countries and a solid coordination process with authorities participated to the success of the completion of the link without any delay.

The cable link between Estonia and Finland (ESTLINK) constitutes the first and so far the only electricity connection of the Baltic states with other Member States of the European Union. Consequently, the motivation to complete this connection was high. The implementation took in total 7 years, of which 3 years were needed for the authorisation phase and only two years for the construction.

Fennoscan undersea cable link between Finland and Sweden

The project is in the authorisation phase. Reasons for a delay are the lengthy permit process and the environmental impact assessment on the Swedish side, which has to deal with Swedish water-rights. A solution might be based on the involvement of regulating authorities in the project. Furthermore, the coordination of a detailed environmental impact assessment with relevant authorities might help the progress of the project. The line is scheduled to go into operation in 2010.

Assessment:

The diversity of legal and administrative procedures together with the great sensitivity of the local population put severe constraints on implementation. One possible solution is based on a solid coordination process including all actors involved or concerned by the project, in order to find a fair compromise between new infrastructures needs and environmental concerns. This should be negotiated in a fair and transparent manner, possibly with the help of a facilitator or coordinator. The transmission of wind generated power to the load centres requires additional links in Germany.

EL8. Germany – Poland – Czech Republic – Slovakia – Austria – Hungary – Slovenia

Neuenhagen (DE) – Vierraden (DE) – Krajnik (PL) line

The line is in the authorisation phase on the German side, whereas the interconnection with Poland is still in the study phase. A lengthy public consultation procedure, lengthy legal procedures on the German side, the lack of legal basis for the interconnection with Poland, the necessary additional upgrading of the Polish internal grid and the opposition of the local population are the main reasons for delays. The main arguments raised during the public consultation are the routing, the deterioration of the landscape and the fear of Electromagnetic fields. A solution could be based on the outcome from the bilateral Polish German study, on a fair and transparent dialogue with all the relevant local interest groups and coordination with local authorities. Furthermore, it appears that an input from UCTE, UPS and IPS and the upgrading of the Polish grid might facilitate the progress of the project.

The project is scheduled to go into operation after 2010.

Dürnrrohr (AT) – Slavětice (CZ) line

The line is in the study phase. The main obstacles encountered are the crossing of a protected area and the fear of electromagnetic fields. A solution could be based on using the route of an existing line. The project is scheduled to go into operation in 2009.

New interconnection between Germany and Poland

The link is in the study phase. The main reason for a delay is the need to conduct further studies integrating the flows with the Czech Republic. It appears that the progress of the project might be facilitated by the outcome from the bilateral Polish German study, an input from UCTE, UPS and IPS, and by the upgrading of the Polish grid. The line is scheduled to go into operation in 2010.

Veľké Kapušany (SK) – Lemešany (SK) – Moldava (SK) – Sajoivanka (HU)

The line is divided into three parts. The two Slovakian parts are in the authorisation phase, whereas the link Moldava (SK) – Sajoivanka (HU) is stuck in the study phase. The main obstacle is situated on the Hungarian side. Feasibility studies showed the impossibility of procuring the relevant authorisations from the environmental authorities, due to the crossing of landscape and forest protection areas and developed silviculture activity. As a consequence, the line Rimavska Sobota (SK) - Sajoivanka (HU) would be preferred but the cross border route is not yet defined. The line is scheduled to go into operation in 2011 on its Slovakian part, and in 2017 with regard to the interconnection between Slovakia and Hungary.

Gabčíkovo (SK) – Veľký Ďur (SK)

The link is currently in the authorisation phase. The project is scheduled to go into operation in 2011. *No information received on problems possibly encountered.*

Stupava (SK) – south-east Vienna (AT)

The link is in the study phase. The main obstacles are the strengthening of the Austrian grid from north to south, the high number of lines in the region of Vienna, a river to be crossed, a protected building (bridge) at the border, and local opposition owing to electromagnetic fields and wildlife. A solution might be based on coordination and on changing the route on the Austrian side. The line is scheduled to go into operation in 2015.

Assessment:

Crossing sensitive areas, the diversity of legal and administrative procedures together with the sensitivity of the local population put severe constraints on the implementation. One possible solution is based on a solid coordination process including all actors involved or concerned by the project, in order to find a compromise between new infrastructure needs and environmental concerns. This should be negotiated in a transparent manner, possibly with the help of a facilitator or coordinator.

EL9. Mediterranean Member States – Mediterranean electricity ring

Electricity connection between Tunisia and Italy

The link is in the study phase. The main problems are the uncertainty of the financial returns following the base case scenario of energy prices in the Tunisian market, and also the need to increase investments in the High Voltage grid in the Sicily and Calabria Regions. The line is scheduled to go into operation in 2015.

Assessment:

Crossing the Mediterranean together with the involvement of a third country could put severe constraints on the implementation. A compromise needs to be found between new infrastructure needs and environmental concerns.

3. DETAILS CONCERNING IMPLEMENTATION OF PRIORITY PROJECTS IN GAS NETWORKS

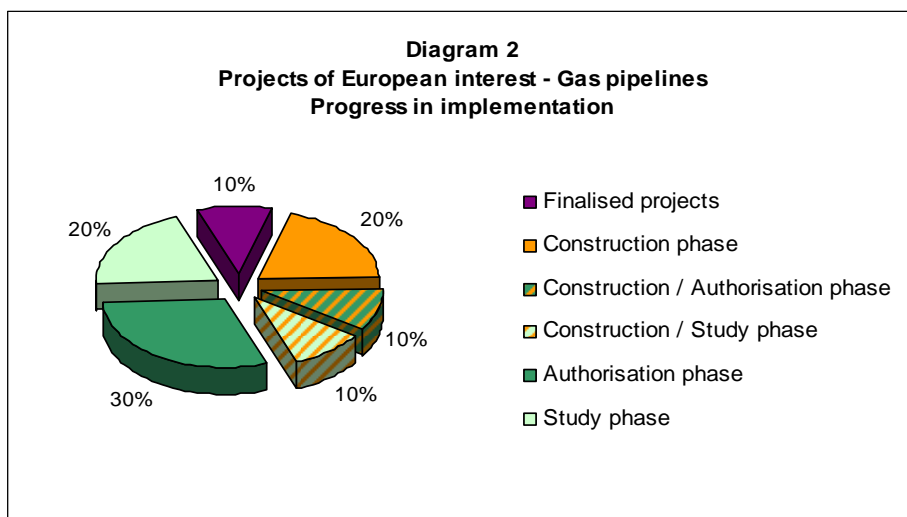
In this annex, the progress in implementation of the projects of European interest is reviewed for each priority axis. Technical information about each project is given in Table 5.

All Pipeline projects are being pursued. The majority of the LNG projects are on-going, apparently without major delays (6 projects are completed). However 9 LNG terminals have been cancelled.

Statistics on projects progress

1. Gas pipelines: 10 projects

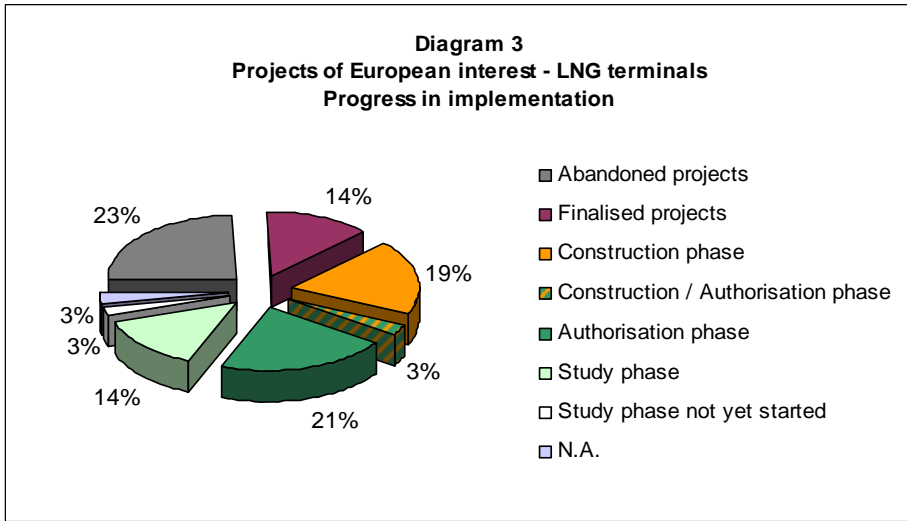
Diagram 2 – Projects of European interest, gas pipelines – Progress in implementation



The progress in implementation is illustrated project by project in figures 5 and 6.

2. LNG terminals: 29 active projects (8 deleted)

3 – Projects of European interest, LNG terminals – Progress in implementation



NG1. Gas connections between Great Britain- northern continental Europe-Russia

The North European Gas Pipeline (NEGP)

This pipeline aims at encouraging the development of a new route to deliver Russian gas to several Member States. It was recognised as one of the important gas projects of common interest at the EU-Russian summits of 2001 and 2003 on which occasion a memorandum of co-operation was signed between the UK and Russian Energy Ministers.

An agreement on the construction was signed in 2005 by the companies involved (Gazprom, BASF and EON), and the NEGP company was created the same year with the former German Chancellor, Mr Schroeder, as Chairman. In 2006, other companies such as Gaz de France, BP, Norsk Hydro and Gasunie have shown their interest in the project. The main source of gas will be the new Shtokman field in the Barents Sea, and additional gas from existing or new fields in Northern Siberia, like Yuzhno Russkoye. The main destinations will be Germany, Sweden, Benelux and perhaps France, and probably Great Britain via the Balgzand-Bacton Line (BBL) that will connect the Netherlands and UK gas networks in 2006/2007.

Details of the Northern Trans-European pipeline project

It will at first be an underwater pipeline starting near St. Petersburg and crossing the Baltic to the north-east German coast at Greifswald. A possible branch could link Sweden, and a downstream pipeline will connect Great Britain through Germany and the Netherlands [See above]. The total length of the pipeline will be around 2.000 km (of which 1200 km will be offshore). It is intended to commission the first pipe in 2010, which will have an annual throughput of 27.5 billion cubic metres of gas. Upon construction of the second pipe (in 2013/2015), the total annual throughput is expected to increase to 55 billion cubic metres. The total cost of the twin pipeline project is estimated to exceed €5 billion.

Political problems: This project, supported by the Russians and the Germans, is clearly in competition with the Yamal II project supported by Poland and the Baltic Countries in which the Commission is involved. It is now in the authorisation phase, and there should be few problems in the construction of the sub sea leg of the pipeline. For the onshore parts of the project, some of the routes could be in competition; but these should be easily defined once the gas arrives in Germany.

Additional problem: In the interest of a competitive market, NEGP should be encouraged to have an open season especially if the operators need any exemption from TPA.

The Yamal II project:

This is again a gas import route from Russia to Germany, but via Belarus and Poland, alongside the existing Yamal I Pipeline). Its length is around 700 km, for a nominal capacity of 43 bcm/y, and a total cost of 1.5 €B. The date to enter in operation was initially 2010.

The Polish company PGNiG submitted a proposal for a feasibility study on this project, which was selected by the Commission for funding under condition that the relevant Member States and companies concerned should be involved, in order to guarantee a comprehensive and high quality study.

The full support from the governments of the three Baltic States was obtained, but none of the relevant companies intends to collaborate. Consequently, PGNiG has informed the Commission that they have decided to resign from the study (by letter of 27 January 2006).

The lack of interest of the three Baltic gas companies can be explained by the fact that Gazprom and E.ON have together more than 70% of the shares of these companies. At the same time, Gazprom and E.ON are committed in the construction of the NEGP (see above) whose aim is to transport gas from almost the same origin and to the almost the same destinations, and the cost (more than 5B€) does not allow the two projects to go forward in parallel.

The plans of Russian and German companies, to by-pass the Baltic States and Poland, have been of great concern to these countries since they are afraid that it would undermine their security of gas supply. From a European perspective, any of the different options for new import routes, (including Yamal II) remains of the highest priority. Therefore, the Commission's Funding Decision for the feasibility study is still open and a letter was sent in April 2006 to the governments concerned asking for their support and for them to undertake any action they consider appropriate to motivate the companies to participate.

Conclusion: Despite these policy reasons, this project has some chances to be constructed, but probably after its competitor (the NEGP), and after 2013.

The Baltic gas Interconnector

It connects the markets from southern Sweden, northern Germany and eastern Denmark.

The study phase (no TEN-E support) was finished in 2001 with some viability. The authorisation phase finished in 2004 for Sweden and 2005 for Denmark. The last phase in Germany will be at the end of 2006, where there are different parties involved for each type of problem encountered. The location of the compressor station remains to be studied.

The pipeline should enter into operation in 2010 with a capacity of 3 Bm³/pa. Initially, the gas came from a part of the North Sea which is now in depletion. Therefore, the source is changing from North Sea to Russia. Since the NEGP also foresees a branch to Sweden, the objectives of this pipeline should be reviewed.

The increasing transmission capacity on the Germany-Belgium-Great Britain axis

This project is the logical complement of the new import pipelines NEGP and Yamal II. It is clear that the arrival of an additional capacity of 55 Bm³/pa in Germany will generate problems if the downstream pipelines cannot ensure adequate capacity.

However, the routes initially foreseen can still change until the construction of the NEGP or Yamal II.

One of the major elements of this project is the BBL sub sea pipeline linking the Netherlands (Balgzand) to Great Britain (Bacton). Its' feasibility study was supported by the TEN-E budget.

The total cost of BBL is 0.5 B€, and the project seems to have encountered no important problems; construction began in 2005 and it should be in operation in 2007 with a capacity of

16Bm³/pa. The BBL project was allowed an exemption from TPA according to Article 22 of the gas Directive. This was only possible as it fulfilled the strict criteria of the Directive.

For the link Germany-Belgium: no information.

Conclusion on the priority axis N°1:

Upstream, for the gas imports, one of the two pipelines of the project should be operational in 2012/2013. Therefore the EU should not have a problem to dispose of 25 to 30 Bcm³/pa additional capacity via this axis. Downstream, for the gas distribution, the projects are often not definitively fixed, except for the supply of Great Britain via BBL. They will naturally be clarified at the approach of the starting date(s) of the major import pipeline(s).

NG2. Gas connections between Algeria-Spain- Italy-France-northern continental Europe

The pipeline between Algeria-Spain-France and continental Europe (of which MEDGAZ)

There has been an agreement since 2002 between 6 European gas companies (GDF, Endesa, Iberdrola, Total, ENI, and Distrigaz) to buy 8 Bm³/pa of gas from the Algerians (Sonatrach).

The core element of this pipeline is its offshore part (called Medgaz) linking Beni Saf (Algeria) to Almeria (Spain). The study phase (partly supported by the TEN-E budget) finished at the beginning of 2006. The authorisation phase seems to have encountered no problems and should finish at the end of 2006. The construction phase will begin in 2007 and the pipeline should enter into operation in 2009, with an initial capacity of 8 Bm³/pa which could be doubled in a second phase.

The total cost of Medgaz is approximately 700 M€ for the installation of 2 pipes 200 km long at a depth of 2100 m, plus the associated onshore stations. For the other parts of this project, it seems as usual that the downstream pipelines in Spain and France are not yet defined. *No information on that important aspect.*

The GALSI pipeline linking Algeria to Italy via Sardinia, and with a branch to France via Corsica:

Global budget: around 2 B€, only for the Algeria Italy part, that is to say a 850 km pipeline (of which 550 is offshore) plus the associated onshore stations.

Capacity of the pipeline: 8 Bm³/pa in a first phase which could be doubled in a second phase.

The initial starting date for the first gas deliveries was 2012/2013, but as it is the very beginning of the study phase, and as it should link three Countries, there is a doubt as to this starting date.

No more information on this project, and especially on the connection with Corsica, then France.

The TRANSMED II pipeline between Algeria-Tunisia and Italy via Sicily

The first TRANSMED pipeline has been in operation since 1983. This extension is less a new pipeline than an upgrading of the Algerian and Tunisian sections which permit an increased capacity of approximately 6 Bm³/pa.

Works began at the end of 2003 and should finished between 2008 (first phase) and 2012 (last phase), and as it is an upgrading, it is reasonable to think that it will be fully operational in 2012.

No problems have been reported from Algeria or Tunisia, nor from the Italian side.

Conclusion on the priority axis N°2:

Upstream: for the gas imports, at least two to three pipelines of the project should be operational in 2010/2012. Therefore the EU should not have any problem to dispose of a minimum of 15 to 16 Bm³/pa additional capacity via this axis.

Downstream: for the gas distribution, the projects are often not definitively fixed. They will naturally be clarified at the approach of the starting date(s) of the major import pipeline(s); Nevertheless, Spain, France and Italy should insist to have a more clear vision of the situation on their territories. Concerning the GALSI pipeline, it is not clear whether the branch to Corsica is pursued.

NG3. Gas connections between central and South East Europe-Caspian sea countries – Middle East

The Turkey-Greece Interconnector (TGI)

This project aims at creating a new import route from the Caspian basin via Turkey, to satisfy the Greek gas demand, and beyond (Italy and perhaps the Western Balkan countries.) It has received TEN-E support for two different feasibility and technical studies (the last study will be finished for Turkey at the end of 2006). It is driven by DEPA (EL) and Botas (TR), who signed memorandums of understanding in 2001 and 2004, and a gas sales agreement in 2003.

The project consists of a pipeline 286 km long (of which 17 km will be offshore and 70 m deep), linking Karacabey (TR) to Komotini (EL). The pipe will have a foreseen capacity of 11 to 12 Bm³/pa.

The total cost will be around 280 M€ for the construction which should begin at the end of 2006, in order to have the pipe in operation at the end of 2007/beginning 2008.

The study phase is almost finished, and the authorisation phase is ongoing without encountering any important problems.

The gas Interconnector Greece-Italy (IGI)

This project is the prolongation of the previous one: it will transform Greece into a gas transit country by the creation of a new import route from the Caspian basin via Turkey to satisfy the Italian gas demand. It has received TEN-E support for three different feasibility and technical studies (the last one is still ongoing). It is driven by DEPA (EL) and Edison (IT), who signed a letter of understanding in 2005.

The same year, the Greek Minister of Development and the Italian Minister of Productive Activities signed a protocol of cooperation for the realisation of the project.

It will link Komotini (EL) to Otranto (IT) by a pipeline 800 km long (of which 210 km will be offshore and 1400 m deep). The foreseen capacity is 8 Bm³/pa.

The total cost will be around 1 B€ for the construction which should begin at the end of 2007, in order to have the pipeline in operation by the end of 2010.

The study phase will not be finished before 2007, and the authorisation phase is ongoing without encountering any problems.

To be complete, the Trans Adriatic Pipeline (TAP) must be mentioned because it is directly in competition with the IGI pipeline: the gas will have the same origin (Caspian Basin via Turkey and Greece) and the same final destination (south of Italy), but with a route through Albania. It is unclear if this project, which is not a project of European Interest, has the same maturity as the IGI project.

The Nabucco gas pipeline between the Caspian and Middle East gas fields-Turkey-Bulgaria-Romania-Hungary and Austria

This project aims again at creating a new import route from the Caspian basin and the Middle East via Turkey to satisfy the gas demand of the South east and central European countries. It has received TEN-E support for three different studies (the last one on marketing and financial issues will finish end in 2007). It is driven by OMV (AT) MOL (HU), Transgas (RO), Bulgargaz (BG) and Botas (TR) who signed a cooperation agreement in 2002.

It will link the Caspian Basin and Middle Eastern countries to Baumgarten in Austria by a pipeline 3400 km long (of which 20 km will be offshore and 70 m deep). The pipe will have a total capacity of 25 to 30 Bm³/pa in Turkey and 14 to 16 Bm³/pa in Baumgarten (12 to 15 Bm³/pa would be taken in transit countries).

The total cost will be 4,5 to 5 B€ for the construction which should begin in 2008, in order to have the pipe in operation in 2011.

The authorisation phase is ongoing without encountering any problems, and it should be finished by the end of 2007.

Conclusion on the priority axis N°3:

Upstream: for the gas imports, if we consider IGI and TGI as one project, the two pipelines of the project for axis N°3 should be operational in 2010/2012. Therefore the EU should not have any problems to dispose of a minimum of 30 to 35 Bm³/pa additional capacity via this axis.

Downstream: for gas transport inside the Member States, the projects are not yet well defined.

NG6. Gas ring between East Mediterranean Member States and their Mediterranean neighbours

The Greenstream pipeline between Libya and Italy via Sicily

This project aimed also at creating a new import route from North Africa (Libya) to satisfy the gas demand of the South European countries (mainly Italy). The first agreement for cooperation was signed between the two operators (Agip-ENI and NOC) in 2001. The construction phase began in 2003. The pipeline opened officially at the end of 2004 and was fully operational in 2005 with an average capacity of 8 Bm³/pa, and a maximum of 11 Bm³/pa. This rapid implementation seems to have encountered no problems, even though it was mainly a submarine pipeline.

The other projects of this axis:

None of them have been selected as Projects of European Interest.

Conclusion:

Again an additional capacity of at least 8 Bm³/pa is already available via this axis for the gas market of the Union.

General conclusion on the gas pipeline projects:

For the upstream pipelines allowing gas imports from outside the Union, the situation is the following: At least 75% of the projects (6 to 8) should be constructed in the coming years and the corresponding pipelines should enter into operation in 2010 / 2012. That represents an additional import capacity of 80 to 90 Bm³/pa in the short and medium term, and even if a major pipeline project like NEGP or NABUCCO should fail, the remaining additional capacity would be a bit more than 50 Bm³/pa. This roughly corresponds to the target of the Priority Interconnection Plan

For the downstream pipelines, for gas transport inside the Union, projects are often not well defined. They will probably be clarified at the approach of the starting date(s) of the major import pipeline(s); Nevertheless, all the recipient Member States should take care of this and work with the potential operators to have a clearer vision of the situation on their territories.

NG4. Liquefied natural gas terminals

The gas terminals are the other way to import gas and to diversify the supply sources of the EU. Today 12 terminals are in operation, which permits the import of around 80 Bm³/pa, but there are many projects for extensions or creation of new terminals.

The Baltic and North Sea LNG terminal projects:

Five of these are new and concern one Baltic project (Gdansk in Poland) and 4 North Sea projects (Willhelmshaffen in Germany, Eemshaven and two Rotterdam terminals in the Netherlands). Problems encountered: no feedback received.

They are planned to be operational in 2010 with a total capacity of 18/20 Bm³/pa. There are also two extensions which concern Zeebrugge (Belgium) and Grain (Great Britain) for an additional capacity of 12 Bm³/pa in 2008. If all these projects are implemented, the total additional capacity of the gas terminals in this area would be approximately 30 Bm³/pa. It is reasonable to envisage that at least half of them will be constructed that is to say 15 Bm³/pa.

The Atlantic LNG terminal projects:

The eleven projects of this area concern Great Britain (Anglesey and Milfordhaven for two projects), France (Le Verdon), Spain (extensions of Bilbao and Huelva plus new terminals of Gijon, Ferrol, Tenerife and Gran Canaria), and Portugal (Madeira).

The projects are planned to be operational between 2008 and 2011 with a capacity of 30/35 Bm³/pa. Therefore, if it is considered reasonable to envisage that at least half of them will be constructed, the total additional capacity of the gas terminals in this area would be approximately 15 Bm³/pa.

The western Mediterranean sea area:

The seven projects of this area concern Spain (extension of the three existing terminals of Cartagena, Sagunto and Barcelona), France (new terminal at Fos Cavaou), and the West Italian coast (New terminals of Toscana offshore, Rosignano, and Gioia Tauro).

Problems encountered: Mainly political and environmental problems during the authorisation phase in Italy.

The projects are planned to be operational between 2007 and 2011 with a capacity of 15/18 Bm³/pa. Therefore, if it is assumed that at least half of them will be constructed, the total additional capacity of the gas terminals in this area would be approximately 8 Bm³/pa.

The Eastern Mediterranean sea area:

The nine projects of this area concern Italy (New terminals on the East coast: Empedocle, Priolo, Tarento, Brindisi, Rovigo, Trieste Monfalcone), Greece (extension of Revithoussa), and Cyprus (New terminal of Vassiliko).

Problems encountered: Mainly political and environmental problems during the authorisation phase in Italy.

The projects are foreseen to be operational between 2008 and 2012 with a capacity of 30/35 Bm³/pa. Assuming again that half of them will be constructed, the total additional capacity of the gas terminals in this area would be approximately 15Bm³/pa.

General conclusion on the LNG terminal projects:

The construction of LNG terminals encounters more problems than for pipelines. The situation appears different between Member States. In some countries like Spain, it seems that there are no important problems that are likely to significantly delay the construction; in others like Italy, most of the projects are presently more or less blocked in the authorisation phase.

The main problems raised by the TSOs concerned happen at the occasion of the authorisation phase, and turn around environmental protection, industrial risk, and political problems at the local level.

Possible solutions could be better information for the local authorities and citizens, a collective compensation by financing some public investments, individual compensations by financing an insurance adequately covering the risk incurred by the people collected; Workshops at European level on exchanges of experiences should also be promoted.

Despite some critical situations, an additional capacity of 55 to 60 Bm³/pa of gas can be planned through gas terminals within the Union. This is somewhat above the target announced in the Priority Interconnection Plan

NG5. Underground gas storage in Spain, Portugal, Italy, Greece and Baltic region

With Europe relying more and more on gas from external sources, the Commission is concerned that adequate stocks need to be built up to ensure supplies in time of disruption. Gas stocks should be ensured for at least two months of normal consumption that is to say around 80/85 Bm³. This will contribute to improving the internal market by increasing the possibilities for transfer between Members States, and by securing the gas deliveries in case of supply crises.

Today the global capacity of the 130 existing gas storages within the Union is estimated at 70 Bm³. Additionally there are 37 projects (28 underground reservoirs.) with a total capacity of around 20 Bcm³

Conclusion on NG5:

With the new projects, we should approach the 85 Bm³ necessary for an acceptable situation.

4. ANNEXES

Table 1: Projects of European interest in the electricity sector

PROJECTS IN ELECTRICITY NETWORKS		COUNTRIES INVOLVED
1.	Aveline (FR) - Avelgem (BE) line	BE, FR
2.	Moulaine (FR) – Aubange (BE) line	BE, FR
3.	Lienz (AT) – Cordignano (IT) line	AT, IT
4.	New interconnection between Italy and Slovenia	IT, SI
5.	Udine Ovest (IT) – Okroglo (SI) line	IT, SI
6.	S. Fiorano (IT) – Nave (IT) – Gorlago (IT) line	IT
7.	S. Fiorano (IT) – Robbia (CH)	IT, CH
8.	Venezia Nord (IT) – Cordignano (IT) line	IT
9.	St-Peter (AT) – Tauern (AT) line	AT
10.	Südburgenland (AT) – Kainachtal (AT) line	AT
11.	Austria-Italy (Thaur-Brixen) interconnection through the Brenner rail tunnel	AT, IT
12.	Sentmenat (ES) – Bescanó (ES) – Baixas (FR) line	ES, FR
13.	Valdigem (PT) – Douro Internacional (PT) – Aldeadávila (ES) line and Douro Internacional facilities	ES, PT
14.	Philippi (EL) – Hamidabad (TR) line	EL, TR
15.	Undersea cable link between England (UK) and the Netherlands	NL, UK
16.	Undersea cable link between Ireland and Wales (UK)	IE, UK
17.	Kassø (DK) – Hamburg/Dollern (DE) line	DE, DK
18.	Kassø (DK) – Revsing (DK) – Tjele (DK) line	DK
19.	V. Hassing (DK) - Trige (DK) line	DK
20.	Hamburg/Krümmel (DE) – Schwerin (DE) line	DE
21.	Skagerrak 4 (DK) – Norway undersea cable	DK, NO
22.	Connection of Poland and Lithuania, including the upgrading of the Polish electricity network and the PL-DE section as necessary to allow participation in the internal energy market	LT, PL, DE
23.	Estlink undersea cable link between Finland and Estonia	EE, FI
24.	Fennoscan undersea cable link between Finland and Sweden	FI, SE

25.	Halle/Saale (DE) – Schweinfurt (DE)	DE
26.	Neuenhagen (DE) – Vierraden (DE) – Krajnik (PL) line	DE, PL
27.	Dürnrohr (AT) – Slavětice (CZ) line	AT, CZ
28.	New interconnection between Germany and Poland	DE, PL
29.	Veľké Kapušany (SK) – Lemešany (SK) – Moldava (SK) – Sajoivanka (HU)	HU, SK
30.	Gabčíkovo (SK) – Veľký Ďur (SK)	SK
31.	Stupava (SK) – south-east Vienna (AT)	AT, SK
32.	Electricity connection between Tunisia and Italy	IT, TN

Table 2: Projects of European interest in the gas sector

PROJECTS IN GAS NETWORKS		COUNTRIES INVOLVED
33.	North European gas pipeline	DE, RU
34.	Yamal – Europe gas pipeline	DE, PL, BY
35.	Natural gas pipeline linking Denmark, Germany and Sweden	DE, DK, SE
36.	Increase in transmission capacity on the Germany – Belgium – United Kingdom axis	BE, DK, SE
37.	Algeria – Tunisia – Italy gas pipeline	IT, DZ, TN
38.	Algeria – Italy gas pipeline, via Sardinia and Corsica, with a branch to France	IT, FR, DZ
39.	Medgas gas pipeline (Algeria – Spain – France – Continental Europe)	ES, DZ
40.	Turkey – Greece – Italy gas pipeline	EL, IT, TR
41.	Turkey – Austria gas pipeline	AT, HU, RO, BG, TR
42.	Lybia – Italy gas pipeline	IT, LY

Table 3: Liquefied Natural Gas terminal projects

LIQUEFIED NATURAL GAS PROJECTS		COUNTRIES INVOLVED
43.	LNG terminal in Santa Cruz de Tenerife, Canary Island (ES)	ES
44.	LNG terminal in Las Palmas de Gran Canaria (ES)	ES
45.	LNG terminal in Madeira (PT)	PT
46.	LNG in Cyprus, Vasilikos Energy Centre	CY
47.	LNG in Crete (EL)	EL
48.	LNG terminal at Le Verdon-sur-Mer (new terminal) and pipeline to Lussagnet storage	FR
49.	LNG terminal at Fos-sur-Mer (extension)	FR
50.	LNG terminal Huelva II, extending existing terminal	ES
51.	LNG terminal Cartagena II	ES
52.	LNG terminal Cartagena III, extending existing terminal	ES
53.	LNG terminal Galicia (new terminal)	ES
54.	LNG terminal Bilbao (new terminal)	ES
55.	LNG terminal Valencia region (new terminal)	ES
56.	LNG terminal in Barcelona (extension)	ES
57.	LNG in Sines (new terminal)	PT
58.	LNG terminal Revithoussa II	EL
59.	LNG terminal on the North Adriatic Coast (at Monfalcone)	IT
60.	LNG terminal at Muggia	IT
61.	LNG offshore in the North Adriatic Sea (Rovigo)	IT
62.	LNG terminal on the South Adriatic Coast	IT
63.	LNG terminal at Brindisi	IT
64.	LNG terminal at Taranto	IT
65.	LNG terminal at Gioia Tauro	IT
66.	New LNG terminal in Italy (Sicily)	IT
67.	LNG terminal at Livorno (offshore)	IT
68.	LNG terminal at Rosignano	IT
69.	LNG terminal Zeebrugge/Dudzele (extension)	BE

70.	Construction of a second LNG terminal in Greece	EL
71.	LNG terminal in Poland project	PL

Table 4: Information concerning electricity projects of European interest

Axis	2006 Guidelines	Projects of European interest in the electricity sector	Length (km)	Capacity increase (MW)	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
EL1	2.2	Aveline (FR) - Avelgem (BE) line	43	1.000 - 1.500	20 (FR)	1	F	2005	<ul style="list-style-type: none"> No problem noticed in spite of the fact that the route crosses a wildlife reserve, the Schelde river and a Motorway, and 2 Belgian regions Installation of the second circuit on existing towers 	<ul style="list-style-type: none"> MoU on electrical interconnections in 2005 between the two countries : response to the important cross-border stakes of public service missions concerning the security of electricity supply Solution involving the reinforcement of an existing line
EL1	2.1	Moulaine (FR) - Aubange (BE) line	25	400	17 (FR)	0,5	F/S	2010 - 2015	<u>FR side:</u> <ul style="list-style-type: none"> Priority given to the project Avelin-Avelgem Difficult acceptability in rural and urban areas Route not defined yet on FR side (13 to 16 km are missing) 	<ul style="list-style-type: none"> Optimisation of the 225 kV existing interconnection Interministry meeting at the end of Sept 2006
EL2	2.16	Lienz (AT) - Cordignano (IT) line	154	1800	140	0,4	S	2015	<ul style="list-style-type: none"> Opposition of local authorities on the site location because of farming, natural reserves (IT) Opposition of local population because of the impact on the landscape view and EMF Lengthy authorisation procedure (AT) Decrease of the EMF level Inexperienced people in charge of the authorisation deliveries in such big projects 	<ul style="list-style-type: none"> Consultation with local authorities / Modification of the site (IT) Information centres for the public (AT) Rationalisation of the interventions on these areas (Consistent increase of TTC is necessary) The procedure should involve experienced people and with a higher political position Coordination is not a problem : both countries are UCTE members Underground cable could be a solution
EL2	2.35	New interconnection between Italy and Slovenia	50	N/A	40	-	S	2009	<ul style="list-style-type: none"> Identification of the cross border point in coordination with the Friuli region and SI An internal grid enforcement to the sub-station Udine might be needed 	<ul style="list-style-type: none"> The interconnection shall be attached to the railway (corridor 5) The project shall be part of the Italian General Development Plan in 2007

Axis	2006 Guidelines	Projects of European interest in the electricity sector	Length (km)	Capacity increase (MW)	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
EL2	2.36	Udine Ovest (IT) - Okroglo (SI) line	80-120	800	30-50	0,5	S	2010-2011	<ul style="list-style-type: none"> • Difficult identification of the cross border points between Italy and Slovenia • Highly populated area • Potential commercial problem • Definition of the routing : 35% of SI territory is devoted to Natura 2000 programme • Opposition of local population : EMF, landscape view • Pre-condition on SI side : completion of Berecevo-Krsko line and interconnection to HU • Need to enhance IT grid 	<ul style="list-style-type: none"> • Different designs of the Towers are considered in order to reduce the visual impact
EL2	3.8	S. Fiorano (IT) - Nave (IT) - Gorlago (IT) line	10	N/A	100	-	F	2003	<ul style="list-style-type: none"> • The reconstructing of the line Fiorano - Nave was stopped because the real-time monitoring system on the line Fiorano-Robbia improved the capacity • The route Nave -Gorlago was rebuilt on 10 km due to an archeological site 	
EL2	3.9	Venezia Nord (IT) - Cordignano (IT) line	N/A	N/A	25	-	A	2011	<ul style="list-style-type: none"> • Consultation with local authorities on going • Densely populated area • Opposition of local authorities : EMF • Autorisation process stopped because of the Environmental study 	<ul style="list-style-type: none"> • Alternative routes are considered in cooperation with local authorities
EL2	3.60	St. Peter (AT) - Tauern (AT) line	156	1800	380	0,8 (Part I)	A/S	2009-2011	<ul style="list-style-type: none"> • Slowness of the authorisation procedure : additional coordination needed • Opposition of local population : EMF, landscape view, protected birds and bugs. • Forest trees may be cut in defined seasons • Difficult terrain • Authorities responsible for EIA and permitting are not adapted to large infrastructure projects 	<ul style="list-style-type: none"> • Decommissioning of old 220 kV line : new procedure needed • Early communication with local authorities and population • Public consultations • Expert panels • Local information offices

Axis	2006 Guidelines	Projects of European interest in the electricity sector	Length (km)	Capacity increase (MW)	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
EL2	3.61	Südburgenland (AT) - Kainachtal (AT) line	98	1800	153	-	A	2009	<ul style="list-style-type: none"> • Slowness of the authorisation procedure • Opposition of local population : landscape view, EMF, underground cable requested • Possibly opposition to building of access roads to the site • Authorities responsible for EIA and permitting are not adapted to large infrastructure projects 	<ul style="list-style-type: none"> • Public consultations • Expert panels • Local information offices
EL2	2.18	Austria-Italy (Taur-Brixen) interconnection through the Brenner rail tunnel	57-65	N/A	160 - 300	1	S	2020	<ul style="list-style-type: none"> • Crossing the Alps • Coordination and integration with Railway project (commissioning time, cost and risk synergies) • Network rationalisation outside the tunnel • Use of a new technology solution : gas insulated line (more designs needed) 	<ul style="list-style-type: none"> • Synergy Railway / Electricity Co • Synergy of infrastructures (good environmental scenario) • Continuous pilot tunnel • Good coordination with national authorities (including Länders)
EL2	4.3	S. Fiorano (IT) - Robbia (CH) line	196	1.400	54 (IT)	0,25	F	2005	<ul style="list-style-type: none"> • Opposition of local authorities on the sites location • Environmental compensations requested • Rationalisation of the network • Weather conditions in the Alps 	MoU with local authorities on changes of routes and environmental compensations
EL3	2.10	Sentmenat (ES) - Bescanó (ES) - Baixas (FR) line	210	1.200	140	0,6	A	2009	<ul style="list-style-type: none"> • Crossing the Pyrenees • Difficult definition of cross border points between Spain and France • Opposition of local population 	<ul style="list-style-type: none"> • Rebuilding existing lines • Modify the route • Additional public consultation • Involving regional actors • Project at a standstill : agreement at high political level needed
EL3	2.14	Valdigem (PT) - Douro Internacional (PT) - Aldeadavila (ES) line and Douro Internacional facilities	65	N/A	70	1,8	S	2009	<ul style="list-style-type: none"> • Rural areas and low population density in PT • Public consultation procedure in PT not as structured as other EU countries : no indication of problem yet 	<ul style="list-style-type: none"> • Excellent communication with Spanish partners
EL4	4.9	Philippi (GR) - Hamitabad (TR) line	250	N/A	70	0,55	C	2008	No significant problem for the time being	<ul style="list-style-type: none"> • Line defined as a national priority • Setting up of a UCTE sub-committee for the line coordination

Axis	2006 Guidelines	Projects of European interest in the electricity sector	Length (km)	Capacity increase (MW)	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
EL5	2.21	Undersea cable link between England (UK) and the Netherlands	250	1.000 - 1.320	400 - 500	8	A	2010	<ul style="list-style-type: none"> • Lengthy environmental procedures • Lengthy Dutch regulations procedure (ministry level, adoption by the Parliament, involvement of citizens) • time-consuming public consultation procedures in both Countries • Uncertainty over TEN-E funding and additional grants • Uncertainty over regulation of link (eg exemption requirements / congestion management guidelines) 	<ul style="list-style-type: none"> • Increased commitment of resources by authorities responsible for environmental licensing • Involve authorisation parties and public in the process, be generous with information and coordination opportunities • Greater clarity over regulation of interconnectors
EL6	1.1	Undersea cable link between Ireland and Wales (UK)	100-180	N/A	520	3	S	2012	<ul style="list-style-type: none"> • New independent status of the TSO in charge of the project in IE • New authorisation procedure possibly to be applied • Opposition of local population : EMF, landscape view and property devaluation 	<ul style="list-style-type: none"> • Streamlined planning procedure : Specific provision for electricity interconnectors defined by the Irish government • Strong involvement of the Irish Commission for Energy Regulation
EL7	2.22	Kasso (DK) - Hamburg/Dollern (DE) line	N/A	N/A	100 - 200	0,15	S	2012	<ul style="list-style-type: none"> • Densely populated area : numerous land owners • Foreseeing a very large amount of wind power to be transmitted between DE and DK 	Replacement of old line
EL7	3.48	Hamburg/Krümmel (DE) - Schwerin (DE) line	75	1.800	50	-	A/C	2007	<ul style="list-style-type: none"> • Opposition from local population : routing, fear of EMF, deterioration of landscape view • Time consuming public consultation procedures • Numerous stakeholders • No perception of supra-regional or European perspectives 	<ul style="list-style-type: none"> • Line legally justified by the EEG

axis	2006 Guidelines	Projects of European interest in the electricity sector	Length (km)	Capacity increase (MW)	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
EL7	3.2	Kasso (DK) - Revsing (DK) - Tjele (DK) line	155	2000-2500	160	-	A/S	2009-2015	<ul style="list-style-type: none"> • Depends on other projects especially between DK and DE, e.g. Kasso-Hamburg/Dollern and Skagerrak IV, and wind power allocation • Difficult acceptance from land owners • Restructuring period of authorities 	<ul style="list-style-type: none"> • Prioritisation at national level • Minister's intervention
EL7	3.2	V.Hassing (DK) -Trige (DK) line	114	900	120	-	F	2004	<ul style="list-style-type: none"> • Opposition of local population: request from land owners for underground cables because of disturbances (farming) in the landscape 	<ul style="list-style-type: none"> • Prioritisation at national level • Modification of the Power line route • Elaboration of a new design
EL7	4.26	Skagerrak 4 (DK) - Norway undersea cable	225	600	260	-	S	2012	<ul style="list-style-type: none"> • Social economic analysis 	Prioritisation in the Nordel Master Plan
EL7	2.29	Connection of Poland and Lithuania, including the upgrading of the Polish electricity network and the PL-DE section as necessary to allow participation in the internal energy market	154	1.000	684	0,15	S	2012-2013	<ul style="list-style-type: none"> • Coordination and commitment of both Poland and Lithuania • Uncertainty due to different synchronized areas • Stability of Polish grid • Natural protected area crossed • Expropriations requires law amendments in PL • Uncertainty about synchronisation areas 	<ul style="list-style-type: none"> • Upgrade of Polish grid • Further studies of the Polish grid stability and security • Input from UCTE / UPS / IPS • Following the route of an existing line • Working groups at company and Ministerial level • Regular meetings at Ministerial level • Back to back station
EL7	2.30	Estlink undersea cable link between Finland and Estonia	105	250	110	0,67	F	2006	<ul style="list-style-type: none"> • Weather conditions can delay the cable lay down 	<ul style="list-style-type: none"> • Strong governmental support in both countries • Good coordination process with authorities
EL7	2.15	Fennoscan undersea cable link between Finland and Sweden	300	800	250	0,55	A	2010	<ul style="list-style-type: none"> • Time consuming permit process (environmental permits) : Swedish water-rights 	<ul style="list-style-type: none"> • The involvement of regulating authorities helps a lot • The EIA shall be detailed and coordinated with relevant authorities before submitting

Axis	2006 Guidelines	Projects of European interest in the electricity sector	Length (km)	Capacity increase (MW)	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
EL7	3.49	Halle / Saale (DE) -Schweinfurt (DE) line	210	2.400	210	-	A	2009	<ul style="list-style-type: none"> • Crossing of Thüringer Wald • Opposition of local population : negative impact on tourism, routing, fear of EMF, landscape view • Diversity of stakeholders • No perception of supra-regional or European perspectives 	<ul style="list-style-type: none"> • Line legally justified by the EEG • Reduction of landscape impact by using routes of existing lines or motorways • Increasing renewable production
EL8	2.28	Neuenhagen (DE) - Vierraden (DE) - Krajnik (PL) line	125	N/A	439	-	A/S	2009 - After 2010	<ul style="list-style-type: none"> • Feasibility study depends on strengthening the Polish grid according to the development studies and results of PL - DE bilateral WG study • Additional PL internal grid upgrading necessary • Legal frame on DE side : prevents relevant expropriations for the interconnection with PL • Local opposition : route, fear of EMF, deterioration of landscape view • Time consuming public consultation 	<ul style="list-style-type: none"> • Upgrade of Polish grid • Possible input from UCTE / UPS / IPS study • Outcomes from bilateral PL - DE (PSE-O - VE-T) study
EL8	2.33	Dürnröhr (AT) - Slavetice (CZ) line	96	900	50	-	S	2009	<ul style="list-style-type: none"> • Austria's opposition to nuclear energy • Depends on strengthening the Austrian grid from north to south • Protected area • Local population sensitivity to EMF (AT) 	<ul style="list-style-type: none"> • Following the route of an existing line
EL8	2.32	New interconnection between Germany and Poland	65 (Baczyna - PL/DE border)	N/A	200	-	S	2010	<ul style="list-style-type: none"> • No additional transmission capacity but an increased loop flow between DE-PL-CZ, which will cause follow-up investments and require additional studies • Additional PL internal grid upgrading necessary • Agreement PL - DE required 	<ul style="list-style-type: none"> • Upgrade of Polish grid • Possible input from UCTE / UPS / IPS study • Outcomes from bilateral PL - DE (PSE-O - VE-T) study
EL8	2.26 3.75 3.76	Vel'ké Kapusany (SK) - Lemesany (SK) - Moldava (SK) - Sajoivanka (HU)	165	N/A	140	-	S	2017	<ul style="list-style-type: none"> • Landscape protection areas, silviculture and conservation of forests. Impossible procurement of permissions from the environmental authorities. 	<ul style="list-style-type: none"> • The line Rimavska Sobota (SK) - Sajoivanka (HU) (2.25 -2006 Guidelines) may be preferred.

Axis	2006 Guidelines	Projects of European interest in the electricity sector	Length (km)	Capacity increase (MW)	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
EL8	3.77	Gabcikovo (SK) - Vel'ky Ďur (SK)	93	N/A	51	-	A	2011	Nothing reported	Nothing reported
EL8	2.27	Stupava (SK) - south-east Vienna (AT)	53	1800	62	-	S	2015	<ul style="list-style-type: none"> • Depends on strengthening the Austrian grid from north to south • High number of lines in the region of Vienna • Level of EMF • Protected area and wildlife • Priority given in AT to other projects eg Vienna - Kainachtal 	Coordination of lines
EL9	4.25	Electricity connection between Tunisia and Italy	200	N/A	195 - 400	-	S	2015	<ul style="list-style-type: none"> • Uncertainty of the financial results coming from the base case scenario of energy prices in the Tunisia market • Need of increase investments on the HV grid in Sicily and Calabria Regions 	

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Table 5: Information concerning gas projects of European interest and LNG terminals in Belgium, France, Spain, Portugal, Italy, Greece, Cyprus, and Poland

Axis	2006 Guidelines	Projects of European interest in the gas sector	Length (km)	Operational additional capacity Bm3/a or Bm3	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
NG1	9.3	North European gas pipeline (Northstream)	2.117	55	4.400 (in EU)	-	C/S	2013	Nothing reported	-
NG1	9.16	Yamal - Europe gas pipeline	680	N/A	1.500 (in EU)	0,9	S not started	2009	<ul style="list-style-type: none"> • No final decision from governments concerned • Commitment of Russian side 	
NG1	7.24	Natural gas pipeline linking Denmark, Germany and Sweden (Baltic Gas Interconnector)	200 (offshore)	3	300	-	A	2010	<ul style="list-style-type: none"> • Diversity of authorisation counterparts in Germany to deal with : time consuming procedures • Relevancy of the project according to Russian gas resources • First pipeline project for authorisation authorities in DK and SE : time consuming procedures • Location of the compressor station still to be defined 	<ul style="list-style-type: none"> • Authorisation requested for 4 different locations • Public awareness campaign and public workshops
NG1	7.17	Increase in transmission capacity on the Germany-Belgium-United Kingdom axis	340	N/A	250	0,36	C	2010	<ul style="list-style-type: none"> • New EIA procedure in the Walloon region to be implemented for the first time • Modification of the project (DE-NL-UK instead of DE-BE-UK) • Investment decision postponed • Many Dutch provinces to be crossed • Crossing the Ijsselmeer lake • Many landowners involved • Sensitive nature reserves to be crossed • Habitat Directive • Dunes of Noord Holland 	• Alternative routes considered
NG2	9.34 (correction 9.33 asked)	Algeria - Tunisia - Italy gas pipeline (TRANSMED II)	160 (Sicily route)	N/A	200 (TN-IT link)	-	C	2008-2012	Nothing reported	-

Axis	2006 Guidelines	Projects of European interest in the gas sector	Length (km)	Operational additional capacity Bm3/a or Bm3	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
NG2	9.34	Algeria - Italy gas pipeline, via Sardinia and Corsica, with a branch to France (GALSI)	1.550	8-10	1.340	-	S	2011	Nothing reported	-
NG2	9.6	Medgas gas pipeline (Algeria - Spain - France - Continental Europe)	200	8	630-800	2	A	2009	Nothing reported	-
NG3	7.12	Turkey - Greece - Italy gas pipeline (branch : Greece - Italy gas pipeline)	800	8	950	8	A	2011	<ul style="list-style-type: none"> • Archaeology issues to be taken into account on the Greek side (in addition to environmental ones) • First Greek application for an offshore pipeline • Dependence of the project cost on the price of steel • Availability of offshore laying barges 	
NG3	9.22	Turkey - Greece - Italy gas pipeline (branch Greece - Turkey gas pipeline)	285	11,5	71.3 (GR part)	4,5	C	2007	<ul style="list-style-type: none"> • Political relations between GR and TR • The cross border point is a famous environmental protected area (Evros-Meric river) 	<ul style="list-style-type: none"> • Support and involvement by the Ministries of Foreign Affairs of both countries • The under river part (cross border point) is being built by an International company
NG3	9.21	Turkey - Austria gas pipeline (Nabucco pipeline)	3.282	31	4.600	1,7 4,8?	A	2011	<ul style="list-style-type: none"> • Managing a project crossing 5 countries • Geomorphology • Crossing a river • Soil composition • Wildlife protection • Social circumstances 	<ul style="list-style-type: none"> • Permanent communication between working groups
NG6	9.20	Libya-Italy (Gela) new submarine pipeline (Greenstream)	600 (520 under water)	8	1.400	-	F	2004	<ul style="list-style-type: none"> • Technical challenge : sea depth, slope of the seabed, environmental conditions 	

Axis	2006 Guidelines	LNG terminals	Length (km)	Operational additional capacity Bm3/a or Bm3	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
NG4	6.2	LNG terminal in Santa Cruz de Tenerife, Canary Island (ES)	-	1		0,8	S not started	N/A	Still in an initial discussion phase : not feasible by 2010/2011	-
NG4	6.3	LNG terminal in Las Palmas de Gran Canaria (ES)	-		152		A	2009	Nothing reported	-
NG4	6.4	LNG terminal in Madeira (PT)	-				N/A	N/A	Nothing reported	-
NG4	6.11	LNG in Cyprus, Vasilikos Energy Centre	-		670	-	S	2010	Nothing reported	-
NG4	6.13	LNG in Crete (GR)	-			0,13	S	N/A	An alternative option to the supply by LNG for electricity generation is currently developed	
NG4	8.1	LNG terminal at Le Verdon-sur-Mer (new terminal) and pipeline to Lussagnet storage	-				S	2011	Nothing reported	-
NG4	8.2	LNG terminal at Fos-sur-Mer (extension)	-		400		C	2007	<ul style="list-style-type: none"> • SEVESO classification : regulation more stringent • Upgrading of the seismic risks during the construction 	
NG4	8.3	LNG terminal Huelva II, extending existing terminal	-		72	Not assigned	C	2009	Nothing reported	-
NG4	8.4	LNG terminal Cartagena II	-		79	-	F	2002	No specific problem according to the previous project Cartagena I	-
NG4	8.4	LNG terminal Cartagena III, extending existing terminal	-		60	-	A	N/A	No specific problem according to the previous projects Cartagena I and II	-
NG4	8.5	LNG terminal Galicia (new terminal)	-		320		C	2007	Nothing reported	-
NG4	8.6	LNG terminal Bilbao (new terminal)	-		280		F	2003	Nothing reported	-

Axis	2006 Guidelines	LNG terminals	Length (km)	Operational additional capacity Bm3/a or Bm3	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
NG4	8.7	LNG terminal Valencia region (new terminal)	-				F	2006	• Lengthy procedures depending on the authority level	
NG4	8.8	LNG terminal in Barcelona (extension)	-		72	Not assigned	F	2005	Nothing reported	-
NG4	8.9	LNG in Sines (new terminal)	-			0,9	F	2003	Nothing reported	-
NG4	8.10	LNG terminal Revithoussa II	-	3,4	48	0,77	C	2007	• Delays in issuance • Lengthy procedures • Delays in procurement of SCVs	• Additional studies needed
NG4	8.11	LNG terminal on the North Adriatic Coast (Monfalcone)	-	8	580		A	2008	• Opposition of local authorities and environmental groups	
NG4	8.11	LNG terminal at Muggia	-		580		A	2008	Nothing reported	-
NG4	8.12	LNG offshore in the North Adriatic Sea (Rovigo)	-		1.000	-	C	2008	• Numerous permits to obtain (ca 100) • Pbs in obtaining the authorizations by the local authority (despite the permit delivered by the State authority) • Infringement procedure launched by DG ENV concerning the EIA : lengthy procedure and delay of mail exchanges with the Italian Government • Insufficient availability of new technology and innovative equipment on the market	• Communication plan • Additional local agreements and commitments • Sponsorship of local events (e.g.)
NG4	8.13	LNG terminal on the South Adriatic Coast	-		330		A/S	2006	Nothing reported	-
Axis	2006 Guidelines	LNG terminals	Length (km)	Operational additional capacity Bm3/a or Bm3	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment

NG4	8.13	LNG terminal at Brindisi	-		500		C	2009	<ul style="list-style-type: none"> • Local approval issues : construction works delayed (over-industrialisation of the zone, environmental Directives) • Lengthy authorisation procedure at national level (authorisation rejected twice by the highest Italian administrative court, il Consiglio di Stato) 	
NG4	8.14	LNG terminal on the Ionian Coast	-				D	2006	• Negative advice of the region	• Incorporated in the Gioia Tauro project
NG4	8.14	LNG terminal at Corigliano Calabro	-				D	2006	• Negative advice of the region	• Incorporated in the Gioia Tauro project
NG4	8.14	LNG terminal at Taranto	-	4	600	-	A	2009	Nothing reported	-
NG4	8.15	LNG terminal on the Tyrrhenian Coast	-				D	2006	Nothing reported	• Incorporated in the Rosignano project
NG4	8.15	LNG terminal at Montalto di Castro	-				D	N/A	Nothing reported	-
NG4	8.15	LNG terminal at Gioia Tauro	-	12	640		S	2010	NB: The implementation of this project is linked to the ones of the Livorno LNG plant and the Rovigo LNG plant.	
NG4	8.15	LNG terminal Tyrrhenian (Lamezia Terme)	-				D	2006	• Negative advice of the region	• Incorporated in the Gioia Tauro project
NG4	8.15	LNG terminal Tyrrhenian (S. Ferdinando)	-				D	2006	• Negative advice of the region	• Incorporated in the Gioia Tauro project
NG4	8.15	New LNG terminal in Italy (Sicily)	-				A	2010	NB Two projects	
NG4	8.16	LNG on the Ligurian Coast	-				D	N/A	Nothing reported	-
NG4	8.16	LNG terminal at Livorno (offshore)	-		250		A	2006	• Local opposition due to the possible consequences of an explosion on the Pise Tower.	

Axis	2006 Guidelines	LNG terminals	Length (km)	Operational additional capacity Bm3/a or Bm3	Estimated cost (M€)	TEN-E support (M€)	Status	In operation date	Obstacles	Assessment
NG4	8.16	LNG terminal at Rosignano	-	8	650	1,4	A	2011	<ul style="list-style-type: none"> • Rosignano municipality wants the location to be modified (further inland) • Additional investments to obtain the approval of the Community 	
NG4	8.16	LNG terminal at Vado Ligure	-				D	2006	Nothing reported	-
NG4	8.17	LNG terminal Zeebrugge/Dudzele (extension)					C	2007	Nothing reported	-
NG4	8.19	Construction of a second LNG terminal in Greece	-			1	D	-	Nothing reported	-
NG4	-	LNG terminal in Poland project	-		400		S	2010-2011	Nothing reported	-

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Figure 1: Projects of European interest in the electricity sector and potential contributions of Structural funds

Figure 2: Projects of European interest in the gas sector and potential contributions of Structural funds

Figure 3: State of play of projects of European interest in the electricity sector (EL1, EL5, EL6, EL7 and partly EL8)

Figure 4: State of play of projects of European interest in the electricity sector (EL2, EL3, EL4, partly EL8 and EL9)

Figure 5: State of play of projects of European interest in the gas sector (NG1, NG3)

Figure 6: State of play of projects of European interest in the gas sector (NG2)