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Working Group 1: Europe's energy policy and security of supply

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1. Energy Policy in the European Union

Beyond the long term objective of forming part of the general aims of EU economic policy, the 1995 'White Paper on Energy Policy for the EU', for the first time identified that EU energy policy should pursue the three main objectives of competitiveness, security of supply and protection of the environment. In the context of new energy and climate change realities facing Europe in the 21st century, the objectives were reconfirmed in 2006 by the Green Paper on a European Strategy for Sustainable, Competitive and Secure Energy. Hence in recent years, activity has been more intense than ever in the energy policy field, aiming to update and revise the European energy policy.

The EU Treaty confirms that although energy policy is largely regarded as the Member States' responsibility (subsidiarity principle), the sphere of EU activity does encompasses the energy sector. Should the Lisbon Treaty (signed in December 2007) come into force, it will signal a further move towards a common energy policy, by introducing a distinct chapter on energy (Title XX, Art 176A), making energy policy a shared competence. Under this new article, the main aims of EU's energy policy would be "in a spirit of solidarity between Member States" to:

- ensure the functioning of the energy market;
- ensure security of energy supply in the Union;
- promote energy efficiency and energy saving and the development of new and renewable forms of energy; and
- promote interconnection of the energy networks.

Which ever way viewed, security has been and remains a central element of the energy policy of the European Union.

2. Security of energy supply and risk elements

2.1 Definition of security of energy supply

Energy security is obtained when there is an uninterruptible supply of energy, in terms of quantities required to meet demand at affordable prices[1]. Security of energy supply may be defined as the ability to minimise the effects on users of disruption to energy supply or price volatility. At the policy making level the concept of security of supply is often also used to describe measures to reduce vulnerability, adequate investments, diversification of energy sources, fuel origins and routes, technical reliability and flexibility of energy systems.

In a strict definition of energy supply, the main risks to be considered are[2]:

1. Manipulation of prices (e.g. oligopolistic pricing behaviour of energy suppliers or speculation);
2. Disruption of supplies through deliberate behaviour of energy producers;
3. Disruption of supplies because of accident (or lack of investment) or natural disaster.

While security of supply risks are primarily due to events of international relevance (wars, financial crisis etc.), there are also risks of supply disruption arising within the EU (for instance power cuts due to lack of infrastructure investment or natural disasters).

[1] World Energy Council, Europe's Vulnerability to Energy Crises: Executive Summary, p. 1.
[2] Definition adapted from J.H. Keppler "La sécurité des approvisionnements énergétiques en Europe: principes et mesures", April 2007, Note for the IFRI.

Box 1: Time line of some major events affecting global security of energy supply (disruptions, price increases and crises)

Date	Event
Nov 1956 - Mar 1957	Suez crisis
Jun - Aug 1667	Six day war
Oct 1973 - Mar 1974	Arab-Israeli war and OPEC oil export embargo by many major Arab oil-producing states, in response to western support of Israel during the Yom Kippur War
Nov 1978 - Apr 1979	Iranian revolution
Oct 1980 - Jan 1981	Outbreak of Gulf War (Iran-Iraq) - spike in oil price
Aug 1990 - Jan 1991	Iraqi invasion
2000 -2001	California electricity crisis (following deregulation) - high prices and black-outs
2000	UK fuel protest over raise in crude oil price and high taxation of road fuel
Jun - Jul 2001	Iraqi oil export suspension
Dec 2002 - Mar 2003	Venezuelan strike causing decreased exports
Mar - Dec 2003	War in Iraq
Summer 2003	Power cuts in several EU Member States (Italy, UK, Denmark, Sweden)
2004	Argentine energy crisis - a natural gas supply shortage with lacking emergency reserves
Sep 2005	Hurricanes Katrina/Rita
Mar 2005 - Jan 2006	Russia-Ukraine gas dispute (over the price of natural gas and prices for the transition of Gazprom's gas to Europe)
4 Nov 2006	Power black out in Germany leading to supply disruptions across most of Western Europe with 10 million people without electricity for hours
Jan - Aug 2007	Russia-Belarus energy dispute
2008	Central Asia energy shortage after abnormally cold temperatures and low water levels in an area dependent on hydroelectric power. Electricity shortage in South Africa.

2.2 Dependency

The risk of supply disruptions has grown in recent years for a number of reasons including continued demand growth, increased concentration of the remaining oil reserves in a smaller number of countries, the concentration of oil use in the transport sector, and insufficient capacity additions (both upstream and downstream) to keep pace with demand[3].

According to the European Commission's (EC) Green Paper on an Energy Strategy for Europe[4], the EU's energy dependency could climb from 50% in 2000 to 70% in 2030 if no action is taken. The EU energy demand has stabilised the last couple of years, however due to a decrease in energy production the EU energy dependence rate in 2006 rose to 54%. Overall, between 1997 and 2006 the EU27 energy production fell by 9%, consumption rose by 7%, and net imports increased by 29%[5]. Other regions like Asia and the Americas have rising energy demands, increasing the global competition for energy sources. Global energy demand is expected by 2030 to rise by 60% compared to 2002[6].

The table to the right indicates the particular situation for main imported fossil fuels[7].

Box 2: Main imported fossil fuels

Oil	• Oil represents 37% of total EU energy consumption • EU produces only the equivalent of 17% of EU oil consumption • 33% of imports come from Russia, 21% from Middle East, 16% from Norway, 12% from North Africa • By 2030, EU import dependency is forecasted to rise to 95% of EU oil consumption
Gas	• Gas represents 24% of total EU energy consumption • EU produces less than 40 of % domestic production • 42% of imports come from Russia, 31% from North Africa, Nigeria and Middle East, 24% Norway • By 2030, overall EU gas import dependency is expected to pass 80%, with over 60% imports to come from Russia
Coal	• By 2030, 85% of EU needs expected to be covered by imports.

[3] Source: IEA online 2008.
[4] A European Strategy for Sustainable, Competitive and Secure Energy, COM(2006)105 of 8.3.2006.
[5] Eurostat newsrelease 10 July 2008, and Eurostat energy data online.
[6] IEA World Energy Outlook 2004.
[7] Figures are for year 2006 based on Eurostat data from May 2008, published by the EC in Statistical Pocketbook; Trends to 2030 - Update 2007" published April 2008 by EC DG for Transport and Energy; and IEA World Energy Outlook 2004.

2.3 Price volatility

The last months have yet again demonstrated the volatility of energy prices with oil rising above $146 per barrel in June, only to fall again below $100, for the first time in over six months, by mid September 2008. Since the outbreak of the financial crisis, the oil market has been falling parallel to stock markets and stands today at $59 a barrel[8].

Some market analysts believe that a good proportion of the price increase has been due to market speculation on "energy futures". Other economists believe that fundamental supply-demand imbalance independent of speculative activities led to the price increase. There seems to be some agreement, however, that over the short term, speculation may have some part to play and that schemes to dampen energy speculation may be helpful. In this regard, legislation is under adoption in the US for the strengthening of market control measures on the energy market[9].

The IEA in its new World Energy Outlook predicts that as soon as the world economy recovers from the current financial crisis, oil prices will rise to above $100 a barrel. The IEA also predicts the price will exceed $200 by 2030[10]. In September the EP called in a Joint Resolution[11] for a strong political commitment for concrete measures towards cutting energy demand, to promote renewables and energy efficiency, and to pursue diversification of energy supply and reduce dependence on imported fossil fuels. Members called on Commissioner Piebalgs and the French Presidency to come up with measures to make oil markets more transparent and to break the link between oil and gas prices and high energy prices.

2.4 Price control

On 24 October 2008 in Vienna, oil ministers from OPEC, in reaction to falling prices and slowing demand, decided to cut their total production by 1.5 million barrels per day. The decrease from the cartel's current quota of 28.8 million barrels per day, took effect from the start of November[12].

Despite the news, benchmark light sweet crude oil fell by more than $3 a barrel to around $64. OPEC's reduction of supply is deemed to take some time before it is actually felt on the markets and before a floor price is met, while oil prices could still be falling parallel to stock markets[13].

In parallel, on 21 October 2008, officials from Russia's gas monopoly Gazprom met counterparts from Iran and Qatar[14] to discuss setting up a natural gas cartel (a "Gas-OPEC"), which, if it comes to life, would control 60% of the world's gas supplies[15]. The announcement led to fears of price increases, and the EC reacted with opposition to the creation of a gas cartel that would try to control prices[16]. Analysts have said that a gas cartel similar to OPEC would not be possible to function in terms of a gas market since, at least in the short term, gas transportation being very rigid and subject to long-term contracts. The fear is that cooperation to develop the LNG business globally in the long run could become a price-setting mechanism, just as OPEC did in 1973 after the Yom Kippur oil crisis.

2.5 Infrastructure

Energy infrastructures globally and within the EU are key assets for ensuring adequate supply and distribution of energy to the EU's economy and to the development of the energy market. The power cuts and electricity blackouts that occurred repeatedly in Europe in the year 2003 demonstrated the need to strengthen energy networks in Europe, and most importantly provide alternative transit routes so that isolated incidents are less likely to have devastating consequences on a global scale.

In addition, rules need to ensure adequate levels of investments in energy generation, gas transport, electricity transmission, including for instance for the connection of off-shore wind farms or for distributed generation. A strong internal competitive market is necessary to generate much needed investment signals (to network operators and generators) and to ensure network access. The third

[8] Value on 12 November 2008, crude oil $59.36 on http://www.oil-price.net/. and $58 http://www.nymex.com/index.aspx
[9] The bill passed through the Congress in September 2008, over-riding the US President's veto - http://www.nytimes.com/2008/09/19/business/19speculate.html.
[10] IEA World Energy Report, due week 46 2008, summary of report to be found in FT.com, 5. november 2008, "Highlights of the IEA report" + "IEA predicts oil price to rebound to $100".
[11] Parliament resolution of 25.09.2008 on getting a grip on energy prices, P6_TA-PROV(2008)0460.
[12] Press release OPEC '150th (Extraordinary) Meeting of the OPEC Conference', 24 October 2008.
[13] http://online.wsj.com/article/SB122506985555270797.html?mod=googlenews_wsj.
[14] http://www.neurope.eu/articles/90317.php.
[15] http://www.guardian.co.uk/business/2008/oct/22/gas-russia-gazprom-iran-qatar, Macalister, The Guardian, 22 October 2008.
[16] Gas cartel plan attacked, European Voice 22 October 2008.

energy package on the EU electricity and gas market[17], aiming at strengthening the internal market is currently being negotiated in Council and Parliament (elements of the package are addressed later in this note).

Infrastructure outside the EU is often discussed at EU level, as the need for further investments is vital for the continued delivery of sources but problematic due to geopolitical tensions (further discussion of the infrastructure issues outside the EU see section 3.2.2).

3. How may Europe respond to energy security threats?

Possible responses to energy security threats include[18]:

1. Maintaining adequate security stocks and establishing solidarity & cooperation mechanisms;
2. Promoting diversification, including both development of alternative energy sources (such as RES) and diversifying supply and geographical sources;
3. Reduction of absolute levels of energy consumption (EE).

Parliament has advocated an approach to the Union's energy security that follows several tiers, namely: lowering dependency on external partners through greater diversification, including the use of Renewable Energy Sources (RES), greater Energy Efficiency (EE), and the development of the internal energy market. The Parliament also advocates a stronger common approach to energy in the foreign policy[19].

3.1 Security stocks, solidarity and cooperation mechanisms

3.1.1 Maintaining strategic security stocks

The IEA is responsible for emergency responses in case of global disruptions, and its members are required to establish strategic oil reserves equivalent to at least 90 days of net oil imports. IEA stocks stood at 4.1 billion barrels at the end of 2006, covering 122 days of net imports. In 2007, 17 out of the 26 members of the IEA held public stocks. With the accession of Poland and the Slovak Republic to the IEA, it is anticipated that 20 out of 28 IEA member countries will have public stocks by 2008.

IEA members must also maintain emergency response measures that can contribute to an IEA collective action during a severe oil supply disruption. Response measures include stockdraw, demand restraint, fuel switching, surge oil production and, if necessary, sharing of available oil supplies.

The use of security stocks can be a short run solution to diminished/lacking supply. There is some debate whether security stocks should also be used to smooth market fluctuations or to address physical disruption.

Several EU Member States are not members of the IEA. However since the 1960s, the EU has also been aware of the need to prevent potential oil supply shortages and has required Member States to maintain oil stocks to ensure security of supply[20]. Current legislation imposes Member States to maintain minimum stocks of crude oil and/or petroleum products for at least 90 days. But current shortcomings include a lack of coherent organization of Member States' systems (public and industrial stocks) and the lack of an EU efficient decision-making mechanism in supply crisis. A full EU participation in an IEA action could require a common EU mechanism.

A revision of the EU oil stock Directive is to be proposed in November 2008[21], aiming at further reducing risks by improving availability and mechanisms of emergency stocks; and it is foreseen to demand weekly publication of oil stocks.

There is no EU legislation on gas stocks, but the idea has been raised in several rounds. Parliament has in an own initiative report indicated that it would prioritise diversification of supply routes and

[17] See http://ec.europa.eu/energy/electricity/package_2007/doc/2007_09_19_explanatory_memorandum_en.pdf.
[18] Risk factors not considered in this paper include for instance delays in investments, shortages and terrorist atacks. For more on these see inter alia "Europe's Vulnerability to Energy Crisis" World Energy Council analysis 2008.
[19] Prospects for the internal gas and electricity market, Vidal-Quadras (EPP-ED, ES) for ITRE (INI/2007/2089); Joint resolution on security of energy supply in the European Union (RSP/2006/2530); Resolution on Energy efficiency or doing more with less, Vidal-Quadras (P6_TA(2006)0243); Resolution on oil prices and dependence on oil, (RSP/2005/2603); Resolution on Green Paper towards a European strategy for the security of supply, Chichester (P.392-543E/2001).
[20] Directive 2006/67/EC imposing an obligation on MS to maintain minimum stocks of crude oil and/or petroleum products.
[21] 2008/TREN/001, Revision of Directive 2006/67/EC with the aim of strengthening the European emergency oil stocks system.

technologies (including degasification plants and LNG terminals) over massive stocks, however, did stress that the EC should propose how to make better use of existing stocks[22].

3.1.2 Improving cooperation and solidarity mechanisms

In 2004 EU measures were introduced to establish a common framework within which Member States can define their general security-of-supply policies for the gas market, in a manner that is transparent, solidarity-based, non-discriminatory and consistent with the requirements of a single market[23]. Similarly, measures to safeguard security of electricity supply and infrastructure investment were adopted in 2005 aiming to ensure the proper functioning of the internal market for electricity, an adequate level of interconnection between Member States, an adequate level of generation capacity and balance between supply and demand[24].

To provide a European outlook on the possibilities to export and import electricity and gas in peak demand conditions, the third energy package proposes that the Network of European Transmission System Operators (TSOs) is given the task of making system adequacy forecasts for every summer and winter as well for the long term[25]. It also proposes that Member States cooperate to promote regional and bilateral solidarity, to tackle situations likely to result in severe disruptions of gas supply affecting a Member State. Cooperation measures are to include the streamlining of national measures to deal with emergencies, the identification, development or upgrading of electricity and natural gas interconnections and the elaboration of practical modalities for mutual assistance[26]. Furthermore, the creation of a European Agency for the Cooperation of Energy Regulators[27] with enhanced roles for regulation, coordination and supervision of Member States' gas and electricity TSOs[28], would be given a strong role in improving coordination and cooperation of Member States on security of supply issues.

The European Council in March 2007 called for an effective crisis response mechanism to build on mutual cooperation and existing mechanisms[29]. This was in October 2008 further reflected in a request for the EC to develop a crisis mechanism that may deal with temporary disruptions to supplies[30].

With regard to responding to security threats such as terrorist threats, a Green Paper on a European Programme for Critical Infrastructure Protection was presented by the EC in November 2005[31]. The adoption of a Directive on the identification and designation of European Critical Infrastructure and the assessment of the need to improve their protection is still under debate in the Council[32].

3.2 Promoting diversification

Having a diversified energy mix in the EU is desirable for ensuring energy security, as repeatedly advocated by the EC and EP. However the choice of energy mix remains a prerogative of Member States, and with no Lisbon treaty in place (and therefore no Energy Chapter[33]), the EU has limited power to sustain a strong common EU policy in the field of security of supply.

Achieving diversification in the energy mix requires identification of the sources of energy available in sufficient quantities to make a real impact on consumption and the EU energy imports and identification of the prices the EU is willing to pay for these secondary energy sources. But, it is also a question of reaching a certain level of coordination between Member States and of balancing the environmental consequences of changes in the energy mix.

IEA chief Nobuo Tanaka recently stressed that bilateral deals may threaten a common EU security[34], and the EP has suggested establishing a new 'High Official' ensuring better coordination as well as a

[22] INI/2007/2089
[23] Directive 2004/67/EC on measures to safeguard security of natural gas supply.
[24] Directive 2005/89/EC concerning measures to safeguard security of electricity supply and infrastructure investment.
[25] Revisions to Regulations (EC) No 1228/2003 and (EC) No 1775/2005 proposed in September 2007.
[26] COM(2007) 529 final, amending Directive 2003/55/EC concerning Common rules for the internal market in natural gas.
[27] COM(2007)0530 Proposal for a Regulation of the European Parliament and of the Council establishing an Agency for the Cooperation of Energy Regulators.
[28] EP's first reading from July 2008 proposes significant new decision-making powers and greater regulatory and financial independence (P6_TA-PROV(2008)0296).
[29] European Council Brussels 8-9 March 2007, Presidency Conclusions, 7224/1/07 Rev 1, Annex I.
[30] European Council Brussels 15-16 October 2008, Presidency Conclusions, 14368/08.
[31] Brussels, 17.11.2005, COM(2005) 576 final.
[32] Brussels, 12.12.2006 COM(2006) 787 final.
[33] Energy chapter introduced in the Lisbon Treaty under Title XX, Article 176 A.
[34] EUObserver, 05.09.2008.

treaty basis for a common foreign-energy policy[35]. Support for a more unified stance and diversification of energy supplies is also expressed in various EP resolutions on Russia and energy issues[36].

3.2.1 Diversification in energy sources

Diversification first of all means alternative energy sources. The central issue is to identify ways of obtaining a better and more versatile energy mix that may reduce exposure to geopolitical changes[37]. Today approximately 80% of our energy use is based on oil, gas and coal. The risks of climate change emphasises the importance of moving towards low-carbon energy sources.

In 1997 the EU set a target of 12% of (gross inland) energy consumption from renewables by 2010. Since then a EU27 20% renewables target by 2020 has been agreed and the target is an effort towards diversification. Today, the EU overall renewables share stands at approximately 9% of (gross final) energy consumption[38]. In 2006 18% of the *global* final energy consumption came from renewable energies (biofuels 0.3%)[39].

The EU Renewables Directive in place since 2001, aimed at increasing EU's share of *electricity* produced from renewables to 21% by 2010[40], thus contributing to reaching the overall target. However, it became clear that only 18-19%[41] would be achieved (effectively the share was 14.6% in 2006, down from 15.2% in 2001[42]). In January 2008, a revision of the Directive proposed, that to achieve the targets, every country will be required to increase its share of renewables by 5.5% from 2005 levels, with the remaining increase calculated on the basis of per capita GDP. EP's draft first reading report[43] (voted in ITRE in September) on the Directive, generally proposes mandatory interim targets to ensure targets are met.

In the transport sector, foreseen routes of diversification include biofuels. The transport sector is almost 98% dependent on oil, making it highly vulnerable to oil price fluctuations and supply disruptions, as amply illustrated by the suffering of air transport companies during the last price hike. The development of sustainable biofuels produced both in Europe or in tropical countries, can be a way of diversifying sources, while giving developing countries and European companies new investment opportunities while reducing the supply tensions in the oil markets. The use of biofuels from third countries in line with WTO agreements would naturally not reduce EU's dependency on import and their current co-use with traditional fuels also minimises their contribution to security of supply.

The newly proposed Renewables Directive includes an objective of 10% share in biofuels use in transport fuel consumption. The EP in its draft report advocates strict sustainability criteria and proposes to define a hierarchy of biomass origin & technology. The target of 10% biofuels is to be replaced by a target of EU final consumption of 5% in 2015, 10% in 2020 for renewable energy (not just biofuels) in transport in conjunction with a mandatory 20% improvement in energy efficiency. In 2005 the share of biofuels in total fuel consumption in transport was 1%[44].

Nuclear energy makes up 14% of the EU energy consumption and a substantial 30% of EU electricity consumption. As the use of nuclear energy remains a sensitive issue related to the energy mix of Member States, both the EC and EP have been cautious in their dealings with the subject. However, nuclear energy has come back into the political debate and in 2007 the European Nuclear Energy Forum and the High Level Group on Nuclear Safety and Waste Management were established[45]. The

[35] September 2007 EP resolution Towards a common European foreign policy on energy,
[36] EU economic and trade relations with Russia, 19 June 2007; The internal gas and electricity market, 10 July 2007; A European strategy for sustainable, competitive and secure energy, 14 December 2006.
[37] The issue is in part discussed in the Energy Green Paper key issue (6) on a better combination on the energy consumption.
[38] The share was in 2006 7.1% for EU27 as calculated by gross inland consumption, According to Eurostat the share of RES to final energy consumption (incl. branch for electricity and heat, with normalised hydro contribution) was 9.2% in 2006, EU Energy in figures 2007/2008, Eurostat, May 2008. The Commission refers to a figure of 8.5% in its communication 20-20 by 2020, likely to be the adjusted 2005 figure).
[39] Renewables global status report 2007 http://www.ren21.net/pdf/RE2007_Global_Status_Report.pdf
[40] Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market. The directive originally indicated 22%, but this was changed to 21% with the accession of Rumania and Bulgaria.
[41] EC Communication on The share of renewable energy in the EU, COM(2004) 366, of 26.5.2004.
[42] EU Energy in figures 2007/2008, Eurostat, May 2008.
[43] COD/2008/0016 Turmes (Greens/EFA, LU) for ITRE, based on COM(2008)19 of 23.1.2008.
[44] Eurostat, online energy data, from 7.11.2007.
[45] ENEF was proposed in the 10.01.2007 Communication "An energy policy for Europe,", endorsed by the European Council in March 2007 and inaugural meeting held in November 2007. The high level group was set up by Commission decision 2007/530/Euratom of 17.07.2007.

EC has recommended[46] that reductions in the level of nuclear energy should be offset by introduction of other low-carbon energy sources. Commissioner Piebalgs recently said that nuclear energy is a clear option because of its characteristics, namely that it is carbon free, has low price vulnerability, is a source of diversification, and the EU has strong technological leadership in the field[47]. The Commissioner also noted that more than 50% of the EU electricity generation capacity needs to be replaced by 2030, representing €900 billion of potential investments. Within the EU new plants are being built in Finland and France. There are further projects for units in Bulgaria, Slovakia and Romania. The UK and Italy have indicated new plans on nuclear power. A further security-related element in the development of nuclear applications in Europe are the challenges of adoption of common safety standards, management of radioactive waste and securing funding of long term costs.

3.2.2 Diversifications in origins and transit routes

Diversification also means finding alternative supplies, i.e. establishing agreements with and importing energy from new suppliers (diversification of origins) and building new infrastructure to accommodate these new suppliers as well as establishing new supply routes from traditional suppliers (diversification of transit routes). Having more suppliers will spread the risks, and could enhance competition in the internal energy market and, in consequence, create better prices for European consumers.

Currently the EU imports almost 80% of Russian gas through Ukrainian pipelines. This is why the Baltic pipeline North Stream[48] has been identified as a priority by the EU, and it is also why the EU does not oppose the Gazprom-Eni led pipeline in the Black Sea, South Stream[49], as it may reinforce the supply routes from the EU's main supplier. Commissioner Piebalgs has likewise indicated that if any investors would appear for the Yamal II[50] or Amber[51] pipelines, they would be given his support[52]. The Langeled pipeline opened in 2006/07 as the hitherto longest underwater gas pipeline feeding Norwegian gas to the UK[53].

Algerian gas is currently following the Magreb-Europe gas pipeline to Spain and the Trans-Mediterranean pipeline to Italy. As for Russia, the development of additional pipelines is important, such as the development of Galsi[54] or Medgas[55], which would be extended to France and Germany, and the Trans Saharan pipeline, between Nigeria and the Mediterranean coast, interconnected with the Algerian network (see also elaborating notes 'Les enjeux énergétiques en Méditerranée').

To limit EU's dependency on Russia, potential suppliers from the Caspian Sea region are being considered: Azerbaijan already supplied its first gas to Europe while Turkmenistan, Kazakhstan and Iraq have shown interest in selling gas to the EU, and Iran is further down the line another potential supplier. The new supply route for this gas would be the Nabucco pipeline. The pipeline will have capacity to supply a large quantity[56] of gas and has been backed by the EU with a grant for 50% of the cost of the feasibility study. Total development costs are now estimated at €7.9 billion[57]. This corridor has so far represented the most promising option for diversifying gas supply to the EU, avoiding Russia. However, the conflict in Georgia in August has made the Georgian section of a corridor considerably less secure (see also elaborating notes 'the EU's security of energy supply: the situation after the war in Georgia' and 'nucléaire iranien civil/militaire'). Naturally the different pipeline projects will help diversification but will to some degree also be in competition with each other.

A further potential source of supplies comes from terminals that can re-gasify liquid gas (LNG) in ports, so that tankers from other parties may supply the EU with gas. The role of LNG is becoming ever more important to the EU and several investments in LNG terminals are being planned or under way. Rules for third party access to LNG terminals still need to be made coherent and transparent, but the diverging application of those rules by Member States should be overcome by proposed new

[46] Communication Energy for a changing world, COM(2008)30, 23.1.2007,
[47] Piebalgs address to the European Nuclear Energy Forum, 3.11.2008, Bratislava, speech/08/576.
[48] Offshore pipeline through the Baltic sea between Vyborg, Russia, and Greifswald, Germany.
[49] Would transport Russian natural gas to Italy 31 (billion cubic meters (bcm) of gas annually) – seen as rival to the Nabucco.
[50] Connects natural gas fields on the Yamal peninsula, Russia, with Germany. Construction of second leg is under discussion.
[51] Gas supply route from Russia through Latvia and Lithuania.
[52] Blog of Piebalgs, http://blogs.ec.europa.eu/piebalgs/the-complex-meaning-of-diversification/, 26 September 2008.
[53] Partners in Ormane Lange License group are Hydro, Shell, Petoro, Statoil, BP and ExonMobil. The pipeline is 1,200 km long, and can deliver 20-25 billion cbm gas/year. The project cost £1.7bn. Opened 1 October 06 and full scale a year later. New pipeline to deliver a fifth of UK gas. 24.06.08, BBC news; New pipeline may stem gas fears, 11.09.06, BBC News.
[54] Running from Hassi R'mel in Algeria to mainland Italy, through Sardinia. It is expected to become operational by 2012.
[55] From Hassi R'mel, Algeria to Almeria, Spain. Construction is underway and line foreseen operational in 2009.
[56] Initially (2013) transmission deliveries are expected to be between 4.5 and 13 billion cubic meters (bcm) per annum. The transmission volume is expected to reach 31 bcm per annum around 2020.
[57] EU natural gas pipeline project gets first order, Herald Tribune, June 11, 2008.

measures for the functioning of the gas market[58]. The European Council recently stressed the need to reinforce and increase critical infrastructure such as LNG terminals as a priority area for reinforcing the Union's security of supply[59].

3.2.3 Impact of measures for EU market liberalisation and reciprocity clause

In the discussions of the "third energy package" from September 2007[60] ownership unbundling is under intense debate. The outcome will have an impact on management of transmission networks and investment policies not only for EU businesses but also for third-country owned companies active on the EU market. Indeed, the principle of reciprocity to third countries concerning market access requirements and ownership rules called for by the EP[61] has been proposed by the EC and confirmed by the Parliament in its first reading (the so-called 'Gazprom clause').

In the first reading of the proposed directive, Parliament finally rejected the Independent System Operator (ISO) option, but endorsed the creation of Independent Transmission System Operators (ITOs), allowing a gas supply company to retain the ownership of pipelines, if management of them is in the hands of a transmission system operator with "effective decision-making rights", for which there should be safeguards. The same EP resolution endorsed Article 7a, which excludes third-country parties from controlling transmission systems or transmission system operators, unless an agreement on a common framework is concluded. Clarification on the application of such clauses still needs to be provided as well as on their impact on the third country suppliers. Article 7a is controversial among EU Member States with bilateral deals with Russia to secure their long-term gas supplies.

3.3 Reducing energy consumption by promoting energy efficiency

Naturally a central element in reducing risks of energy supply is to reduce the overall level of energy consumption. The less we consume the less dependent the EU will be on foreign suppliers. On 22 June 2005, the EC published a Green Paper on Energy Efficiency[62] putting forward a series of ideas for discussion that could save Europe 20% in energy consumption by 2020 and save 60 billion euro per year on its energy bill. Housing and transport are the sectors highlighted as those where the saving potential is the greatest.

The Energy Efficiency Action Plan adopted in October 2007[63] outlines a framework of policies and measures to intensifying the process of realising the 20% estimated savings potential. The Plan lists a range of cost-effective measures to be initiated either immediately or gradually over the Plan's six year period, including energy efficiency labelling standards, building performance requirements, improving efficiency of power generation and distribution, cars fuel efficiency, facilitating financing of energy efficiency investments for SMEs and Energy Service Companies and a coherent use of taxation. Many of these measures are now in preparation[64] or have been proposed and are undergoing consideration in Council and EP[65].

4. Upcoming proposals & events

- The EC is expected to publish its 2nd Strategic Energy Review[66] on 12 November 2008, with a focus on energy security. The EP ITRE Committee will prepare an own-initiative report (Laperrouze, ALDE, FR) on the review. The review is expected to be accompanied by several

[58] Gas proposal of the third energy package: Common rules for the internal market in natural gas COM(2007)0529 and access conditions to the gas transmission network COM (2007)0532
[59] European Council Brussels 15-16 October 2008, Presidency Conclusions, 14368/08.
[60] See http://ec.europa.eu/energy/electricity/package_2007/doc/2007_09_19_explanatory_memorandum_en.pdf.
[61] September 2007 EP resolution Towards a common European foreign policy on energy, called for appropriate measures to prevent uncontrolled investment by state-owned foreign companies in the EU's energy sector, in particular the gas and electricity transmission networks and to closely monitor the observance of these measures.
[62] Green Paper on Energy Efficiency Doing more with Less, COM(2005) 265 final (June 2005).
[63] Communication from the Commission on an Action Plan for Energy Efficiency: Realising the Potential, Brussels, 19.10.2006 COM(2006)545 final.
[64] As indicated elsewhere in the note some proposals are foreseen for 12 November (Energy Building Performance Directive).
[65] COM(2007)0018 Specification of petrol, diesel and gas-oil: Directive introducing a mechanism to monitor and reduce greenhouse gas emissions from fuels (road transport and inland waterway vessels) EP first reading A6-0496/2007; COM(2007)0856 Reduction of CO2 emissions from light-duty vehicles: setting emission performance standards for new passenger cars; COM(2005)0634 Energy efficiency in transport: promotion of clean and energy efficient road transport vehicles. EP report: T6-0509/2008; COM(2008)0399 Ecodesign requirements for energy related products; COM(2006)0576 Energy efficiency products: office and communication technology equipment, labelling programme Energy Star (recast Reg. 2422/2001/EC).
[66] COM(2008)0312.

specific initiatives (review of the Energy Performance Building Directive, review of the Oil Stock Directive, update of Illustrative Nuclear Programme, etc.).

- A summit meeting between the EU and Russia will be held on 14 November. On 10 November the EU foreign ministers decided that the EU will resume negotiations for a new partnership agreement (Lithuania objecting to this)[67]. The talks were abandoned after the outbreak of the Georgia conflict. The agenda for the EU-Russia summit has not yet been finalised, but one of the topics will be energy security in the Baltic States, according to President Sarkozy[68]. The issue is particularly important for Lithuania, whose only nuclear power plan will be shut down at the end of 2009 on EU orders and which fears that it will almost entirely dependent on Russian energy supplies thereafter.
- The EP has planned for the energy and climate package[69] to be voted in the December I plenary - a very tight schedule. The Renewables Directive is to be voted in December II plenary. The European Council has requested the EC and Presidency to work intensively on the issue with a view to the European Council deciding responses in December 2008.
- OPEC will meet again in December to discuss oil production levels.
- The European Council has committed itself to take stock of progress on energy security in its spring meeting in March 2009, with a view to adopting decisions[70].
- It is expected, that that the 2nd Strategic Energy Review will go to the spring European Council in March 2009, and that the review will give the basis for a new Energy Action Plan (2010-2013). Elements of security of energy supply contained in the EC review spans inter alia international partnerships, 3rd country agreements, EU-Russia partnership, the Southern Gas Corridor, emergency oil stocks and infrastructures.
- The EU will be meeting the Caspian Sea countries and transit countries during the Czech Presidency in the spring of 2009[71].

[67] EU resumes Russia talks, isolating Lithuania, EUobserver, 11.11.2008.
[68] EU confirms Russia summit, EuropeanVoice 16.10.2008.
[69] Proposal on Renewable Energy Sources, the ETS proposal, Burden Sharing proposal (efforts to reduce their greenhouse gas emissions), emission performance on new passenger cars, geological storage of carbon dixoide, European Strategic Energy Technology plan.
[70] European Council Brussels 15-16 October 2008, Presidency conclusions, 14368/08.
[71] Idem note 70.

Annex I Les enjeux énergétiques en Méditerranée

Si le débat énergétique dans l'UE est généralement focalisé sur la sécurité des approvisionnements et la dépendance vis-à-vis des pays producteurs (36 % de ses importations en gaz naturel et 20 % des importations de pétrole viennent des pays producteurs méditerranéens), la réalité des relations énergétiques avec la Méditerranée se traduit plutôt par une forte interdépendance. En effet, 86 % de la production de gaz naturel et 49 % de celle de pétrole des pays du sud sont destinés à la rive nord.

En revanche, les besoins énergétiques du sud sont en pleine expansion. Aujourd'hui, neuf millions de Méditerranéens n'ont pas accès à l'électricité, et la demande totale en énergie de la région pourrait augmenter de 65 % d'ici à 2025. Elle serait alors satisfaite à 87 % par des énergies fossiles, avec les conséquences environnementales induites.

La question énergétique constitue également un volet important du projet d'Union pour la Méditerranée (UpM) lancé le 13 juillet 2008 à Paris. Elle s'inscrit dans le prolongement de l'objectif de Barcelone défini en 1995, qui prévoit la création d'un marché euro-méditerranéen de l'énergie d'ici 2010 dans le cadre de la mise en place d'une zone de libre-échange économique.

Un élément récurrent dans le débat dans différentes enceintes autour de la Méditerranée est, en effet, l'idée de voir émerger autour de l'énergie une coopération qui facilitera l'intégration de la région à l'instar de la CECA aux débuts de l'intégration européenne. Ainsi, l'Assemblée parlementaire euro-méditerranéenne (APEM) a-t-elle suggéré la création d'une Communauté de l'énergie euro méditerranéenne (CEEM), pour contribuer à la sécurité de l'approvisionnement énergétique, attirer les investissements et privilégier un mode de développement durable.

L'interconnexion des réseaux électriques est facteur historique de solidarité et de complémentarité des moyens de production qui devra désormais s'tendre à la Méditerranée. 28 pays européens sont aujourd'hui interconnectés de la péninsule balkanique jusqu'au Maghreb, grâce à un câble sous-marin qui relie l'Europe avec le Maroc, l'Algérie et la Tunisie. L'horizon de demain est d'aller encore plus loin et d'achever la construction des 8 000 kilomètres de la "boucle électrique méditerranéenne".

Le Sommet du 13 juillet 2008 à Paris a posé les fondements d'un partenariat euro- méditerranéen renforcé en matière d'énergies renouvelables, avec un projet ambitieux pour la création d'un « Plan Solaire Méditerranéen », la décision de renforcer les infrastructures énergétiques, et faire émerger un modèle commun de développement durable.

En effet, de part et d'autre de la Méditerranée, l'épuisement des ressources d'énergie fossiles commence à pousser les réflexions à « l'après hydrocarbures ». Or, les énergies renouvelables sont encore balbutiantes en Méditerranée, hormis l'hydraulique (Assouan, Turquie, Maghreb), le solaire en Israël qui joue un rôle de précurseur en la matière et dispose des technologies les plus avancées, ou quelques projets éoliens au Maroc. Des programmes ambitieux commencent à être lancés et nécessitent l'appui politique de l'Europe.

Cependant, l'engouement multilatéral pour les énergies renouvelables affiché lors du somment de lancement de l'UpM contraste avec la politique bilatérale de l'exportation du nucléaire menée par certains Etats-membres. De son côté, la Ligue arabe a également encouragé, dès 2006, le développement du nucléaire civil plutôt qu'une action collective en faveur des énergies renouvelables. En Jordanie et en Egypte, des programmes nucléaires civils sont déjà en voie de développement.

Stefan Krauss

Annex II: The EU's security of energy supply: the situation after the war in Georgia

The EU's problematic dependency on Russia...

The EU is currently getting 30 % of its gas from Russia[72]. This proportion will rise, as intra-EU gas production falls and imports from Norway and Algeria cannot keep up with growing demand. The heavy and further growing reliance on Russia is, however, deeply problematic, in particular since the Kremlin perceives Russia's energy resources as a key strategic asset in its foreign policy making. The Kremlin has in recent years used interruption of gas supply as a means to put pressure on Ukraine (with indirect effects on the EU) as well as Georgia.

...has been aggravated by the war in Georgia...

The war in Georgia has worsened the outlook for the EU's energy security. Firstly because this war provides new evidence that Russia is determined to firmly establish a sphere of influence and that it has few inhibitions when it comes to the choice of means. Secondly because the war made the Georgian section of a corridor for oil and gas transport from the Caspian region to the EU considerably less secure. This corridor has so far represented the most promising (or least unpromising) option for diversifying gas supply to the EU, avoiding Russia. Thirdly, it strongly appears that through the war, Russia has gained increased leverage on Azerbaijan, whose energy and other cooperation with the west therefore now looks less certain.

Much EU hope remains pinned on the Nabucco gas pipeline project...

In its most complete form, the fossil fuel transport corridor from the Caspian region to the EU passing south of Russia (and therefore sometimes referred to as the Southern Corridor) would include (see also the maps below):

- a trans-Caspian pipeline bringing Turkmen **gas** to Baku in Azerbaijan,
- the existing Baku - Tbilisi (Georgia) - Erzurum (Turkey) gas pipeline, complemented with a parallel gas pipeline increasing the capacity,
- a new pipeline from Turkey (Erzurum) via Bulgaria, Romania and Hungary to Austria (the Nabucco pipeline),
- a trans-Caspian pipeline bringing Kazakh **oil** to Baku,
- the existing Baku - Tbilisi - Ceyhan (Turkey) oil pipeline,
- expanded shipment of oil from Ceyhan to EU ports.

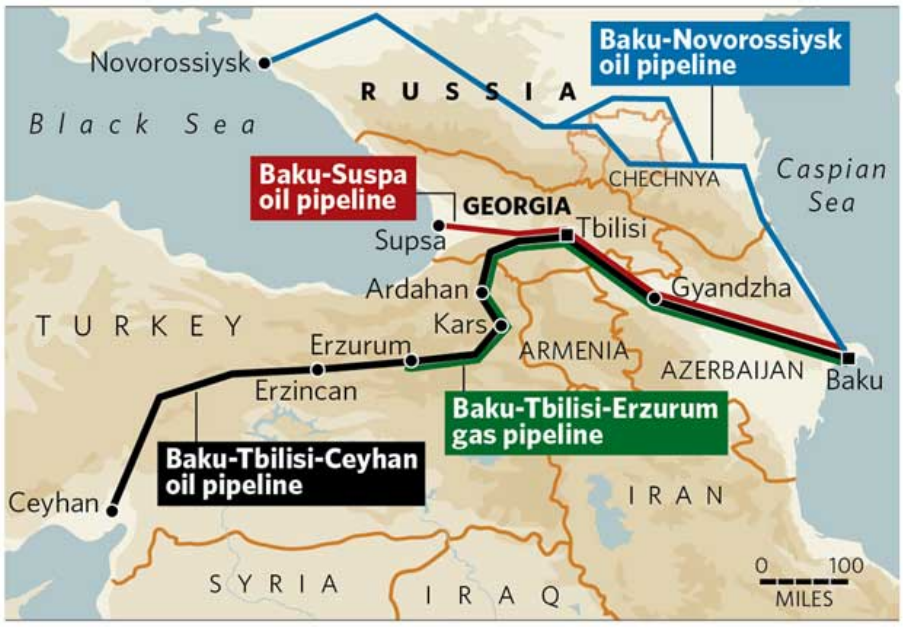
Nabucco's shareholders are the Austrian based OMV, Hungary's MOL, Romania's Transgaz, Bulgaria's Bulgargaz, Turkey's Botas and Germany's RWE. Nabucco is backed by the European Commission.

[72] The EU also gets much of its oil from Russia, but this is less sensitive. For oil, which is easy to transport in tankers, a world market exists. Gas can be transported in tankers as Liquefied Natural Gas (LNG), but this requires sophisticated infrastructure and is still costly. To a great extent, gas producer-consumer relations therefore remain defined by pipelines and characterised by strong interdependence.

...which is, however, fraught with difficulties...

Ensuring gas supply. Azerbaijani gas would hardly be sufficient even if the entire increase in Azerbaijani gas production that is expected in 2013 can be fed into Nabucco. Worse still, Russia's Gazprom is offering to buy all Azerbaijani gas at market price level. If Gazprom is allowed to do this, the whole idea of Russia-independent supplies is wrecked.

Nabucco would also need gas from Turkmenistan. A recent report on the size of its gas reserves is encouraging[73], the actual willingness to sell gas directly to western markets is moot. Turkmen gas is now almost exclusively supplied to Russia. There is, however, an agreement on the construction of a new pipeline to China.



Theoretically, gas to Nabucco could also come from Iraq or Iran. Energy companies are interested, but due inter alia to the conflict over Iran's nuclear programme, these options currently do not exist in practice.

Trusting demand, handling competition from South Stream. Gazprom and the Italian energy company ENI plan the South Stream pipeline. It would lead gas from Russia under the Black Sea, through Bulgaria, Romania and Hungary to Austria, with a Southern branch to Greece and Italy.

Some analysts doubt the realism of Nabucco and South Stream supplying the same market on a commercially viable basis. Furthermore, if Nabucco suffers delays, there is a risk that all available Caspian gas will already have been taken by South Stream.

Other analysts and stakeholders, including the governments of EU Member States participating in Nabucco, claim that the two projects can indeed be complementary.

South Stream will help Russia out of its dependence on Ukraine for gas transit to the EU. It will therefore make it easier for Russia to apply pressure on Ukraine through interruption of gas deliveries. South Stream is therefore dangerous for Ukraine.

...and so is the White Stream idea

An alternative, still Russia-independent route for gas transport from the Caspian to the EU has been suggested: the so called White Stream via Azerbaijan, Georgia, the Black Sea and Ukraine. The Ukrainian Prime Minister Yulia Tymoshenko has pushed for this, above all because it would ease Ukraine's own highly worrisome dependence on Russia for gas. The White Stream-idea is, however, confronted with several of the basic problems on which the Nabucco project may well founder: uncertain Turkmen commitment, obstacles to the construction of a trans-Caspian pipeline and question marks in relation to the safety of transit through Georgia.

Dag Sourander, PolDep, DG External Policies

[73] Turkmenistan Says Gasfield in World's Top Five

Annex III: EU's energy policy and security of supply: Iran's civilian nuclear programme

The European Union (EU) needs reliable, affordable and sustainable flows of energy. This is a key element for economic development and the achievement of the Lisbon goals, even if with high prices and high costs, risk factors are growing for the industry.

EU energy security can be enhanced by diversifying energy sources and geographical origin as well as transit routes[74]. As regards natural gas, for example, the EU is dependent on Russia is for nearly half of its imports.

Due to recent problems encountered in Russian gas exports to Europe, the European countries face a major challenge in diversifying energy supplies and Iran is an attractive option. Political and regional issues that affect Iran's economic ties with the EU should, yet, also be taken into consideration. Over the past two years, Iran's insistence on keeping its peaceful nuclear energy programme has made the country top of the list of global concerns.

Nevertheless, Europe still needs energy diversification and has relatively few options: **Iran is one of the primary choices**.

With the world's second-largest oil and natural gas reserves, Iran's importance to the global energy market is self-evident. Yet a variety of factors—mismanagement, sanctions, and political tension—have made Iran a perennial energy underperformer. Its oil output—around 4.2 million barrels per day—is far below the 6 million barrels it produced before the revolution, and though it has 15 percent of the world's natural gas reserves, it accounts for only 2 percent of world output.

Iran's first nuclear power plant at Bushehr, which may be completed in 2008 after years of delay, has received international criticism because of concerns that its enriched uranium and spent fuel can be diverted for the production of nuclear weapons.

❖ Iran's civilian nuclear programme

The announcement by Iranian Supreme Leader Ayatollah Khomenei a few months ago (July 2008) that Iran would not seek nuclear weapons highlights many critical issues regarding Iranian nuclear research. While renouncing nuclear weapons on both religious and practical grounds, Ayatollah Khomenei simultaneously staunchly reaffirmed his nation's right and intention to continue its civilian nuclear programme, in spite of pressure from the United States and Europe to suspend its uranium enrichment programme. **This enrichment programme could potentially be used for nuclear weapons as well as civilian nuclear energy**.

If on the one hand, Iran has the right to develop civilian nuclear power, as enshrined in the Non-proliferation Treaty (signed and ratified by Iran), on the other hand the international community[75] has a clear interest in preventing Iran from developing nuclear weapons, a process that can be largely concealed by a civilian nuclear programme.

Though there are ways to distinguish between the two, **the fact that Iran has not consistently cooperated with the International Atomic Energy Agency**'s inspectors has made it difficult to conclusively confirm or deny that Iran's nuclear research is entirely peaceful.

On 22 September last, the IAEA Director General Mohamed ElBaradei updated the Board members on the status of verification of Iran's nuclear programme. He said that the Agency has not been able to make substantive progress on the alleged studies and associated questions relevant to possible military dimensions to Iran´s nuclear programme. On 26 September 2008, the UN Security Council reaffirmed three earlier rounds of sanctions against Iran.

One solution to this dilemma that has been proposed is providing Iran with enriched uranium in return for a promise that Iran would not enrich uranium on its own. This would eliminate one of the major problems in distinguishing between civilian and military nuclear projects. However, Iran has insisted on self-sufficiency, refusing to rely on perceived enemies for nuclear fuel. Moreover, many in the West question the morality and wisdom of providing Iran with nuclear materials.

[74] On 10 January 2007, the European Commission proposed a comprehensive package of measures to establish a new Energy Policy for Europe to combat climate change and boost the EU's energy security and competitiveness.

[75] Mr Solana has led the diplomatic efforts of the EU-3 (France, Germany and the UK) and P5+1 {the five permanent members of the UN Security Council (China, France, Russia, UK and the USA) plus Germany}.

❖ **European role in developing the Iranian energy sector**

Many European countries remain reluctant to sacrifice economic interests in Iran to strengthen sanctions that they doubt will work in any case.

Germany is more reluctant to support economic sanctions – whether at the Security Council or outside it. This reluctance is mainly due to Germany's considerable economic interests in Iran, which include some $5.7 billion in exports to Iran in 2006 (compared to less than $1 billion for Britain and $2.6 billion for France) and exposure of over $5 billion dollars of export credit guarantees.

Some other European countries – **Italy** and **Austria**, for example – are even more reluctant to strengthen sanctions on Iran. Italy is one of Iran's largest trading partners, with bilateral trade last year totaling over $7 billion and over $4 billion in export credits at risk. It is also a major investor in Iran, notably through the energy company, Eni.

Although the European reluctance to pursue sanctions, the combination of rising American pressure, EU-3 leadership, and Iranian behaviour – both its refusal to cooperate on the nuclear issue and the provocations of its president – has led to an increase in the economic and political isolation of Iran.

Major investments in the Iranian energy sector – such as those planned by France's Total[76], Spain's Repsol, and the Anglo-Dutch group Royal Dutch Shell – have been repeatedly delayed. Iran will turn to Asian and other non-Western companies, as it is doing in other sectors, to fill the gap left by Western firms, but while they may be able to raise the finance from non-Western banks they cannot match the Western firms for technology. Iran is now unlikely to be able to increase significantly its gas exports for another ten years or so[77]. These new constraints are having an effect on Iran's already troubled economy and particularly on its ability to put badly needed investment into its energy sector.

Sandro D'Angelo
(with the M. Galubickaite's contribution)
PolDep, DG External Policies

[76] Last July, the French energy group Total announced that it will not invest in Iran because the political risk is too high. Total was the last Western company still interested in Iran's gas reserves after that in May, Shell and Repsol YPF, decided to abandon their involvement in the Persian LNG (liquefied natural gas) project.
[77] Oxford Analytica "IRAN: Total withdrawal adds to gas export woes", 10 July 2008