

# THE EUROPEAN FILES

## SECURITY OF ENERGY SUPPLY IN EUROPE:



## CONTINUOUS ADAPTATION



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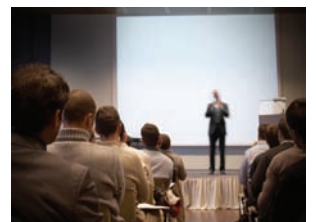
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# EDITORIAL



Energy is at the heart of European construction and was also behind its origins with the signature in the 1950s of two texts (EURATOM and ECSC) from among the three founding treaties.

The 1973 oil crisis gave rise to the beginning of an energy policy at the European level. Then, the internal market, launched by Jacques Delors in 1992<sup>1</sup>, initially excluded three sectors: water, telecommunications and energy. However, the liberalisation of the other sectors and the series of legislative measures undertaken by the Union carried the three excluded sectors in their wake. The establishment of the internal energy market was carried out in an accelerated manner in three decisive stages for the gas and electricity sector (1st package 1996-97, 2nd package 2003 and 3rd package 2009<sup>2</sup>), thus reinforcing member states economical interdependences.

At the same time, various concerns of a transverse order and those connected to the vicissitudes of the energy sector highlighted the necessity of handling energy in all of its aspects at the Community level and also at the global level.

Thus, at the beginning of the 21st century, the fight against climate change, the vagaries of geopolitics, the terrorist threat and the necessary reinforcement of institutions emerged with acuteness. In the energy sector, uncertainties and weaknesses appeared in a more alarming light, like the continuous rise of energy prices on the world market and the unavoidable strengthening of the European Union's energy dependency, mainly on the Russian Federation and the Persian Gulf.

These factors worked in favour of a clearly defined at last energy policy at the European Union level. The Lisbon Treaty<sup>3</sup> gave concrete expression in legal terms to the three fundamental pillars of the energy policy: security of supply, environment and competition. It also established a flagship value of European construction: solidarity between the Member States<sup>4</sup>.

One year after the coming into force of the new Treaty on European Union, it is possible to make a partial assessment, to which the contributors to this edition of The European Files bring their analyses, whether on the functioning of the internal energy market, the necessary investments in energy infrastructures (a trillion euros by 2020!), solidarity, energy dependence or the role of Science and Innovation etc.

**Laurent Ulmann**  
Editor-in-chief, The European Files

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1. Single European Act adopted in 1987

2. Came into force on 3rd March 2011

3. Came into force on 1st December 2009

4. Treaty on the Functioning of the European Union, Title XXI, article 194.

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## Developments in European governance and European energy policy



**Herman VAN ROMPUY**

President of the European Council

**E**nergy issues will define the politics of the 21st century. Knowing that energy could become a really scarce good in a growing world economy, the battle for energy may even become a matter of survival, of war and peace. However, history is not a fate, but man made. The art of politics is to deal with such challenges. That is why it is so important to reflect upon the subject, as in this issue of *Les Dossiers Européens*. Europe is in a vulnerable position, due to our huge energy import dependency. If nothing changes, our import dependency in 2030 will be 70 percent. However, we are not the only ones on the world stage in that position. And moreover, we are working hard on different fronts to change it!

The Treaty on European Union and the Treaty on the Functioning of the European Union have provided some clarity as regards the external representation of the Union and its coherence and consistency. The Treaties also define the Union's competencies for energy, with four priorities, namely the functioning of the internal market, security of supply, renewable energy and energy efficiency, and the interconnection of networks. This is quite a list.

And yet, the Treaties allow the Member States a great deal of discretion both on their choice of energy mix and on the conduct of their external relations.

The challenge for European governance is

therefore to be consistent, both within the EU and in relations with the outside world. The internal challenge: how to plan, finance and construct energy networks which allow the 27 Member States to benefit from the most effective use of production capacities and of European or imported resources (from coal to wind power, via nuclear power and gas), when national energy priorities are different? The external challenge: how to reconcile the freedom to conclude bilateral supply contracts with third countries with membership of one single energy market?

Now, just as the Union is not just a single market, but is based on a set of values (the rule of law, multilateralism, human rights, and so on), energy policy must also reflect those values, and especially solidarity.

Facing these questions it is natural that the European Council on 4 February when defining its energy policy guidelines for the decade, emphasised solidarity and consistency: solidarity in deciding that no Member State should remain isolated from European energy networks after 2015, solidarity in the financing of projects which market forces alone would not facilitate, solidarity through cooperation on renewable energy, consistency in defining gas and electricity networks, and consistency in external action.

Beyond the European Council, these guidelines identify the actors involved in governance: regulators, network managers, Member States. To those one must add the final consumer, on two grounds. First, in due course consumers will play a major role in managing energy flows (by the deployment of smart meters and smart grids). Also, they determine the public's acceptance both of energy infrastructure and of the new technologies (for example carbon capture and storage) which will have to be implemented

to achieve the Union's energy security and climate change objectives of.

However, energy policy also entails governance by the Union, in three respects. The first is by the widening of the scope of the rules of the internal market to the countries of the Energy Community in the Western Balkans, recently joined by Ukraine. The second is by the whole set of its relations with producer, consumer and transit countries, where the Union and its Member States are working to convince their partners that applying the principles of energy security (market rules, regulation, good governance and so on) allow the more effective or more equitable use of resources. Thus on 4 February the European Council decided to accelerate the establishment of such a partnership with Russia in the energy sector. Finally, by their action within international organisations such as the International Energy Agency, the Union and its Member States are promoting governance in a form which favours greater energy security. It is clear that a European governance model will be credible only if the Union and its Member States establish consistent positions. The Southern Gas Corridor is a case in point: only action at a European level can lead to operational consistency between the different projects which may come to supply the Union with gas from the Caspian and Central Asia.

European governance therefore appears as the whole set of mechanisms and actors who, within the European area, show consistency and solidarity in addressing energy questions, so as to ensure a safe and affordable energy supply.

# The security of Europe's energy supply: continuous adaptation



**José Manuel BARROSO**

President of the European Commission

**T**he aim of the energy-supply strategy for the European Union must be to ensure the well-being of its citizens and the optimal functioning of its economy, providing a continuous supply of energy at prices that are as low as possible for citizens and companies and in a way that is compatible with our sustainable-development objectives.

What is more, the European Union is faced with a profound period of transition. In the decades to come, massive investments will be necessary in the field of energy and in energy infrastructure in particular. This should put the European economy on a new path, towards growth with low emission of greenhouse gases.

The objectives of the energy-climate package adopted in 2008 for renewable energies are essential in this regard. Not only are renewable energies low in carbon but above all, they are mostly produced locally, in Europe, and therefore strengthen our security of supply in circumstances that would otherwise see the share of primary energy imported into Europe increase.

Two lines of development are necessary so that Europe can securely access energy resources to nourish intelligent future growth that is sustainable and inclusive according to the terms of the "Europe 2020" strategy.

Primarily, it is advisable to go further in implementing the internal market for energy. The

markets for electricity and gas are still far from functioning as integrated markets at the European level. For example, it is striking that only 3% of the electricity produced in Europe is traded beyond the borders of a member state. We are now in a situation where national and regional markets are juxtaposed rather than having a real integrated market at the European Union level.

We also need to complete the functioning of the integrated market in this field. This is the only way of being physically able to ensure that all citizens and companies will have access to natural gas under the best conditions, even in case of sudden shocks to one of the sources of supply on entry to the European Union. Following the gas crisis of 2009, Regulation 994/2010 on the security of gas supply came into force on 2 December 2010. The implementation of measures covering mechanisms for handling crises, particularly concerning the standard on infrastructure (N-1) and bidirectional flows, is of primary importance.

Secondly, the necessary physical infrastructure should be put in place to allow the conceptual, legislative and regulatory development of integrated markets to provide optimal security of supply. This is true in the field of electricity, gas and other sources or transmitters of energy.

On 17 November 2010, the European Commission adopted a strategy on priority infrastructure for 2020 and beyond for the development of our European networks, which identified 10 priority corridors in the electricity, gas and oil sectors and for the installation of intelligent networks. Major investments will be necessary over the next 10 years, particularly in transport and storage. The investments will almost certainly not be entirely covered by the pricing mechanisms and market incentives that are currently in place.

The European Council meeting on energy of 4 February 2011 and the Energy Council meeting of 28 February 2011 gave a strong mandate to the Commission to propose, again in 2011, concrete legislative measures to implement its new strategy, within the framework of a revision of guidelines and financial regulations for trans-European energy networks (RTE-E). These measures aim to make possible the implementation of projects in the European interest within the framework of identified priorities, through measures improving and accelerating the procedures for authorising new infrastructure, by better regulation of cross-border investment and the implementation of appropriate financial incentives for mobilising the private capital that will be necessary.

At a time when both national budgets and private lending are in difficult situations, this immediately raises the problem of knowing which player will make such massive investments in infrastructure. This is why I have introduced the idea of "project bonds", which would allow everyone to play a direct role as investors in this issue.

I believe that this is an important condition for the success of the proposed transition towards the new model of intelligent, sustainable and inclusive growth that we have for Europe: citizens must be and feel directly involved in it.



## The necessity of ensuring the security of Europe's energy supply



**Günther OETTINGER**

European Commissioner for Energy

In the past, energy security was understood as defence against supply disruption and price instability. Maintaining stability and predictability was paramount. Today, energy security policy is no longer only a question of protecting existing energy supplies. The past weeks of unrest in Libya and disaster in Japan are the most recent indicators for radical changes currently occurring in global energy markets. This calls for a strategy for managing global energy market dynamics without jeopardizing energy security concerns. In fact, we know that a safe, secure, sustainable and affordable energy supply is crucial to Europe's economic and strategic interests as a global player.

The Libyan case shows that political turmoil in some important oil and gas producing countries could lead to supply shortages in Europe. Nevertheless, security of supply issues have so far been addressed mostly on national level. While security of supply is ultimately the responsibility of Member States, at a time of crisis, with events in Libya putting the world on alert, our energy security calls for quick and decisive political leadership by the EU. The EU must come together to defend its energy security in a strategy based on political consensus, mutual solidarity and full market integration.

The internal energy market today is our fundamental and most effective tool to provide security of supply. Only a fully functioning market is able to take adequate

corrective measures in case of a disruption. Our experience is that during the gas crisis in January 2009, there was enough gas on the European market. But because of market anomalies and lack of interconnections it could not flow to those places where demand for it was the highest. Through the transposition of the Third Package of measures to further liberalise the EU's energy market the situation shall further improve in the next years. Also substantial investments are planned to increase connections between EU Member States, including investments funded by the European Energy Programme for Recovery (EEPR). The need for an improved and modern infrastructure network has become a major issue and will condition the success of the EU energy integration.

This has an impact which goes beyond the sole «internal market»: indeed it has consequences on the relations with third countries, in particular with producers. By «Europeanising» our internal energy affairs, we are making ourselves stronger to negotiate with one voice externally. Today, the EU has the world's largest regional energy market of 500 million people. It accounts for one fifth of the world's energy use. It is also the world's biggest economic trading block. We must exploit this geopolitical weight in the world. Every time that the EU has spoken with one voice, results followed as shown by the gas supply crisis of 2009. Europe needs a mechanism to coordinate its efforts and send coherent messages to our main partners. The integration of energy markets with our neighbours is an important step, but our international relations must go further and should aim at establishing strategic partnerships with key partners. A common European policy is a strong leverage to strengthen our position in difficult negotiations and secure our international leadership.

This is also crucial if we want to be a reference in terms of safety. I am committed to ensure

that the EU meets the best standards. The recent events have shown the importance of creating trust between EU countries and contribute to the improvement and full application of international standards. This is true for the whole oil and gas off-shore industry. And this is crucial for nuclear energy. Following the tragic events in Japan, the Commission has agreed with all Member States to jointly assess the consequences as well as the lessons to be drawn, together with national nuclear safety authorities, nuclear power plant manufacturers and operators. In particular it has been decided to organise in the coming months specific stress tests in all Member States.

But the events in Japan also prove that the global energy system is entering a phase of unpredictable transition with potentially far-reaching implications for the next decades. Our energy system must therefore go through a deep transformation in the way we generate, transport, distribute and consume energy, in particular electricity.

With our conventional energy resources becoming scarcer, we should therefore use this critical momentum to gradually shift to a low-carbon society. Our initiatives for the development of new and renewable energy sources and for reaching a high level of energy efficiency serve this objective. Europe has currently some of the world's best renewable energy companies and research institutes and we undertake numerous research activities to find new, more efficient ways of producing and using energy. The main challenge today is to accelerate market uptake of technologies. We need to demonstrate that sustainable energy technologies which contribute to ensuring the security of our energy supply are viable, cost-effective and good for the environment and our economy. Hence, the debate on energy and in particular, on the security of our energy supply, matters now more than ever. And will require strong action in the coming years.



# Security of energy supply: public and / or private responsibilities?



**Eric BESSON**

French Minister in charge of Industry, Energy and Digital Economy

**G**lobal growth is leading to long-standing tension regarding energy demand. In the long term, the best solutions consist in investing in energy efficiency and diversifying France's energy mix in order to reduce dependence on imported fossil fuels. Regarding these imports, it is necessary to provide diversified infrastructures and supplies.

Security of supply is also a major short-term issue, as underlined by a large number of recent events. The gas crisis of January 2009 led to the interruption of 30% of European gas imports for a period of over two weeks. At the beginning of this year, disturbances in North Africa and in the Middle East have been fuelling tensions on the oil markets.

State action needs to be adapted to an evolving context. With the construction of the European single market, and ownership unbundling, security of supply henceforth comes within the competence of a large number of actors.

**Historically French energy policy has been focussed on reducing fossil fuel dependence by developing low carbon energies, but also by encouraging demand reduction**

France's historical choice in favour of nuclear energy has led to an important reduction of the oil import bill and has increased the country's independence: the share of oil in

French final consumption went down from around 65 to 45 % between 1973 and today. This choice means that electricity is on average 40% more expensive for consumers in other European countries.

The confirmation of this policy requires large investments in France's nuclear energy infrastructure. Government action is decisive in this respect. The security audits to be conducted on nuclear infrastructure will make it possible to define the essential investments for ensuring the continuation and expansion of the operation of French nuclear power stations. In addition, the State has to make sure that these investments are properly financed. This concern is at the heart of the law on the new organisation of the electricity market promulgated in December 2010. Moreover, the investment planning exercises that are regularly conducted in the gas and electricity sectors make wide-ranging cooperation possible, with all concerned actors.

We also need to reduce the use of hydrocarbons by developing renewable energies in an ambitious manner. The incentive mechanisms that France has put in place have thus made it possible to increase wind power generation fivefold for the last 4 years and photovoltaic energy generation fiftyfold within the last 2 years. But the stress should not be put on electricity only. French policy encourages renewable heat generation, through biomass or biogas which can reduce more than 50% of fossil fuel consumption. Demand reduction is another pillar of the French strategy, through the deployment of smart grids, with smart metering experiments taking place currently.

**Security of supply and dialogue with fossil fuels producers is another energy policy priority**

In a context of crisis, public authorities intervene according to a principle of subsidiarity, when market mechanisms do not make it possible to guarantee security of supply. In order to prevent crises, the European recovery plan provides for more than 2.3 billion euros in support for energy infrastructures; particular, this should make it possible to overcome bottlenecks.

Security of supply is not merely a national issue: the gas crisis of January 2009, which affected more than half of European countries, demonstrated the pertinence of a regional approach, in particular with regard to relations with non-EU countries. This vision is at the heart of the new regulation on security of gas supply, adopted last October by the European Union.

It is impossible to separate the issue of security of supply from that of energy prices. In the course of recent months, raw materials, for energy production in particular, have indeed been subject to great volatility, which does not always reflect market fundamentals and discourages investors from developing new infrastructures, which are nevertheless vital for diversifying Europe's energy supply. For this reason, France has put this topic at the heart of the G-20's priorities.

With our partners in the International Energy Forum, France is committed to organising and deepening the dialogue between producers and consumers, in order to improve the predictability of supply and demand in particular. Beyond this, it is, more generally, a matter of guaranteeing proper operation of the energy markets, through increasing openness and adaptation of the regulatory framework to the profound changes that these markets have experienced.



## The best energy is the energy we don't consume



**Rainer BRÜDERLE**

German Minister of Economics and Technology

**T**oday the EU depends on imports for 55 percent of its energy supply. Because of increasing demand on world markets, rising energy prices, and repeated occurrences of political instability in major energy-producing regions, the question of how we can meet Europe's energy needs both reliably and affordably is more urgent than ever. Diversifying our suppliers and establishing energy partnerships with oil - and gas - producing countries is one key side of the equation. The other crucial side is this: we have to focus more intensively on new ways to improve the alignment between supply and demand within Europe itself. Among other things, this means accelerating our efforts to expand the use of renewable energy and to upgrade power grids. But most of all, this means: We have to boost energy savings and energy efficiency.

This is no easy task, but it's necessary, and it's worth it! If we use energy efficiently and establish smart framework conditions at both the European and national level, we can achieve all of our primary energy policy goals: economic viability, security of supply, and environmental compatibility. In this way, we can succeed in our efforts to further decouple economic growth from energy consumption – and this is a key precondition for maintaining

and enhancing the dynamism of European industry.

The path toward greater energy efficiency involves major challenges, but there is also major potential for improvement in this area, particularly in the building and transport sectors. But Europe isn't starting from scratch here. Already in 2007, we set ourselves the target of improving EU-wide energy efficiency by 20 percent by the year 2020. The European Council reaffirmed this ambitious target in 2010. Furthermore, we've been making substantial headway toward greater energy efficiency for many years now, thanks to our systems for setting minimum standards and labelling products, and thanks to our demanding regulations to enforce energy efficiency in buildings and in the energy services sector. One of our main priorities now must be to fine-tune and further develop these instruments, using balanced concepts and keeping in mind the importance of market mechanisms and fair competition.

There's no time to delay. If we want to achieve our 20 percent reduction target by 2020, we have to get businesses and private households on board as well. To do this, though, we should place a priority on economic incentives, not on compulsory measures. Our task is to convince, not to prescribe. We're counting on businesses and citizens to take their own responsibility and initiative, because there are powerful arguments for investing in energy efficiency. Such investments normally pay for themselves quickly through reduced energy consumption. We have to make this clearer to the public. For this reason, it is crucial for the member states and EU institutions to provide information on energy consumption that is both easy to understand and readily

available. One good example of a market-oriented and non-bureaucratic measure is the European Commission's proposal – contained in its 2011 Energy Efficiency Plan – to enhance the transparency of the energy services market by publishing market analyses and by providing end users with information on available services and offers. Compulsory rules must remain the exception and must always stay within the boundaries of what is economically feasible. In any case, it is absolutely necessary to avoid the adoption of overly rigid energy consumption rules that slow down growth and investment in Europe.

We will achieve greater energy efficiency only on the basis of efficient individual measures. For this reason, it should be a matter of course that we regularly review such measures at the European level and critically examine their effectiveness.

Right now, the 27 member states are at highly divergent stages of development when it comes to energy efficiency, and this in my view is one of the biggest challenges we face in our efforts to adopt European rules to improve energy efficiency. And the differences are not just between old and new member states: rather, there are major differences in the priorities and intensity of existing national energy efficiency policies, in national legal frameworks, in funding and support programmes, in the awareness levels and energy consumption habits of businesses and private households, and not least in construction methods and climatic conditions. Some member states can point to decades of experience in this policy field, while others are now just starting to catch up. We have to take these differences into account as we move forward. Furthermore, these differences



provide clear proof that it is essential to divide tasks and responsibilities between the EU and the member states in a way that makes sense and is truly workable. The member states must retain the necessary flexibility to shape policy.

Some investments in energy efficiency pay for themselves within a relatively short period of time. For example, turning off appliances and equipment instead of leaving them in stand-by mode can save the average household 100 euros per year in electricity costs. In addition, replacing older household appliances with new ones can generate substantial energy savings. However, other investments – such as energy-efficiency building retrofits – will rarely be undertaken if no financial incentives are provided. So it's clear that we won't be able to achieve our energy efficiency targets in the total absence of government funding and support measures. We have to

overcome the financial hurdle of costly initial investments and set targeted incentives to get citizens and businesses on board for higher energy savings. In turn, their investments will help other branches of the economy, such as plant construction, the skilled crafts and installation services.

In my view, the member states are called upon first and foremost to establish financial incentive systems. They are “closer to the field” when it comes to knowing the specific needs and conditions in their countries, and they can better assess which financial support mechanisms are required and will be most effective. For example, in recent years Germany has gained positive experience with programmes that offer energy-related advisory services to small and medium-sized businesses and that provide support for energy efficiency building retrofits. We can build on this experience. To this end, we

have established an Energy Efficiency Fund in Germany. This Fund finances support measures for consumers and businesses, such as programmes to promote the market deployment of energy-efficient generic technologies and to foster the implementation of energy management systems. It also provides funding for cutting-edge power plant technologies as well as smart power lines. In addition to programmes like these, we should also look at existing EU financing schemes – such as the structural funds – to determine whether they can also be put into action toward our goal of improving energy efficiency.

One thing is clear: top-down energy efficiency policies will not succeed. The task of boosting energy efficiency must be tackled at all levels – by the European Union, the member states, and society at large.



## Preparing the Union to cope with the new energy crisis - what strategies?



**Waldemar PAWLAK**

Polish Vice-prime Minister and Minister of Economy

Europe is faced with new challenges related to the unstable situation in the global energy market. The EU needs a well-prepared and long-term power industry development strategy. In order to achieve the objectives of the European energy policies specified in the Treaty of Lisbon, the member states have to cooperate. As a country holding the EU Council Presidency from 1 July, we will be supporting the European states and institutions in their attempts at implementing the solutions binding within the existing scope of the EU energy policy.

The external energy policy of the EU is going to be one of our top priorities. Poland is of the opinion that the Union will not be capable of maintaining its position in the global market or cooperating effectively with its global partners if it does not manage to fully implement a strong and coherent external energy policy.

We would like the UE led by Poland to strengthen its position towards the key producers, consumers, and transit countries through which energy raw materials are transported. We should take up measures aimed at streamlining, coordinating and improving the effectiveness of the EU institutions specialized in that area. At the beginning of March 2011, the European Commission received our recommendations in regard to reinforcing the EU external energy policy.

Moreover, we will be organizing debates on this policy development and mechanisms which could make the EU more vocal in

the global energy dialogue. The results of discussions conducted by the member states will be utilized by the Polish Presidency to prepare draft conclusions which will hopefully be approved by the TTE Council in November 2011. The project should feature a clearly presented set of actions and instruments the implementation of which will reinforce the Union's significance in the global energy dialogue.

In our opinion, further expansion of the Energy Community (in particular, the accession of the EU's neighbors) would contribute greatly to Europe's energy safety. It should become a priority for the next 10 years. The Energy Community Treaty has proved its suitability and effectiveness and it should be treated in terms of a basis for the EU's dialogue with its partners. All the Union's actions leading to the full accession of Turkey and Georgia to the Energy Union should be sped up.

According to us, the UE should initiate talks with other countries whose membership in the Energy Community would improve stability in the European energy market. Such proposals should be presented to Armenia, Azerbaijan, and other third countries which are significant from the perspective of the EU's energy interests. A strategy of integrating North Africa and the Middle East with the EC should also be drawn up.

Our Presidency will concentrate on the energy infrastructure development. We are completely in favor of creating legal grounds for a speedy and effective realization of this initiative in the EU. A motion related to a relevant regulation in this regard will probably be put forth during our Presidency. A comprehensive legal act is being prepared, which covers the financial issues, project selection criteria, decisions on speeding up and facilitating the process of obtaining permits and

certificates by the investors, and matters related to intelligent networks.

We think that the main financial support for the energy infrastructure should originate from the existing community instruments (mainly the cohesion policy). Such an approach would be beneficial for consumers as it would allow for the minimization of energy prices for ordinary households. According to Poland, it will be extremely difficult to fill up such a huge financial gap (approx. EUR 100 billion – as presented by the Commission) without any market incentives and using only private funds.

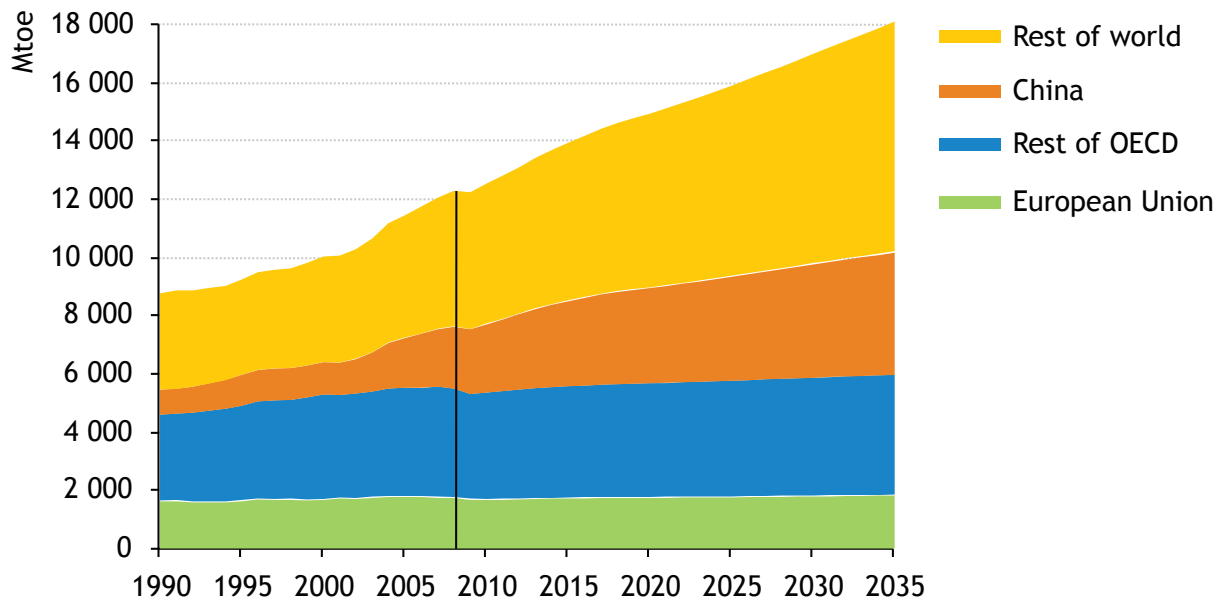
Investments aimed at completing the construction of the natural gas internal market should be seen as the basic requirement for the EU's energy safety. Both the conclusions stemming from the 2009 gas crisis and our later experiences show that it really pays off to develop natural gas grids linking the EU member states.

Let us also not forget that the structure of energy production raw materials in the Union is not going to change drastically in the near future. Coal will not stop being the basis of the Community's energy safety, and that is why we think that the EU regulations should also take into consideration the development of technologies deployed to extract energy from our own sources.

Holding the EU Council Presidency, we will uphold the efforts initiated by Hungary, on the regulation pertaining to the cohesion and transparency of the energy market. The proper functioning of the market and the minimization of risks caused by key decisions in regard to the EU's energy safety may be secured only by full access to information about all the transactions being carried out.



## World energy demand is on the rise

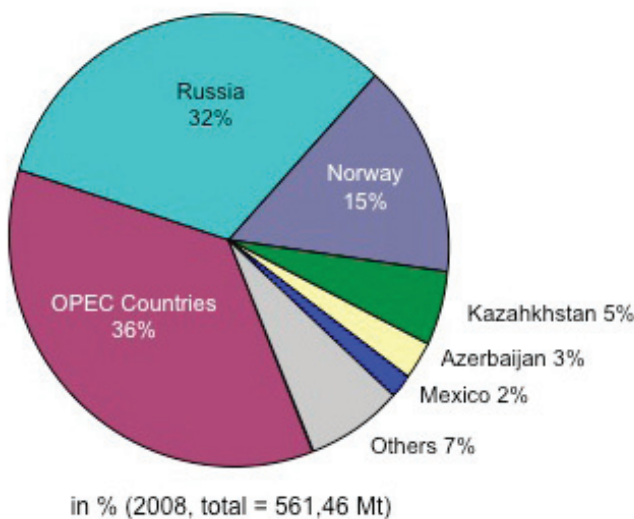


EU energy consumption is expected to level out in future but world energy consumption will continue to grow due to global population growth and economic catching up. Overall, world energy demand may grow by 45 % between 2006 and 2030. In China and India, demand will nearly double.

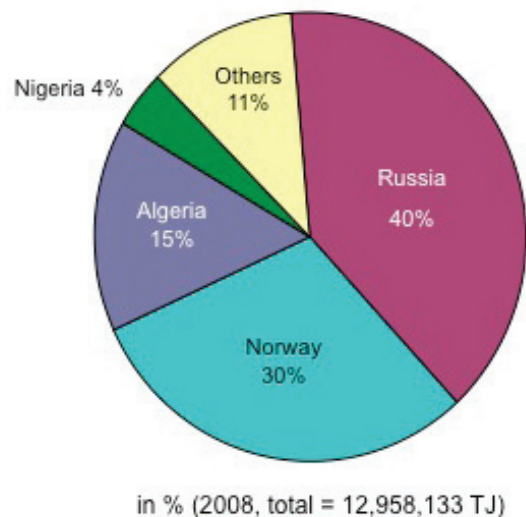
Source: : IEA, World Energy Outlook 2010

## The EU depends on a few suppliers

**EU imports of crude oil**



**EU imports of natural gas**



Today, the EU is very reliant on a few partners for its oil and gas supplies. Diversification of routes and sources is a strategic priority for the EU.

Source: Eurostat 2010



## Energy, a factor of peace and prosperity in an unstable world



**Philip LOWE**

Director-General DG ENERGY, European Commission

Europe has been living in peace for the past 60 years. For the founding fathers of the European integration process, there was no doubt of the geopolitical role of European energy cooperation to foster enduring peace. As the Schuman Declaration stated in May 1950: «The solidarity in (energy) production thus established will make it plain that any war between France and Germany becomes not merely unthinkable, but materially impossible. The setting up of this powerful productive unit, open to all countries willing to take part and bound ultimately to provide all the member countries with the basic elements of industrial production on the same terms, will lay a true foundation for their economic unification.»

60 years later, in times in which the global energy system entered a phase of rapid transition with potentially far-reaching implications for the next decades, this spirit must continue to guide us. Energy policy should – once again, one might say – be the next great European integration project. A safe, secure, sustainable and affordable energy supply is key to our economic stability and our strategic interests as a global player.

Today, after the economic and financial crisis over the last few years, we have to overcome its effects and steer Europe onto a path towards sustainable growth. Energy is one of the decisive factors to attain this goal. Nevertheless, providing secure, low-carbon and affordable energy while securing peace, is one of the greatest challenges of our time.

It calls for a pan-European response, going beyond issues of energy supply. Climate change, trade and development, social and environmental issues, including population growth, inequality and poverty, as well as global political stability are now all part of the global energy challenge.

A series of disputes over recent years and the economic crisis have reminded us of the need for further integration. The 2009 Russia-Ukrainian dispute was the most enduring and therefore had the most impact. But more recent developments in North Africa, the Caucasus and Belarus are also reasons for continuing to be alert. Major oil and gas consumers are more dependent than ever on politically volatile regions of the world. Political upheaval in some important oil and gas producing countries has a direct impact on our energy security, while rising energy demand is increasing the risks of major climate change, desertification, water shortages and social upheaval.

Energy security policies of the past were driven by bilateral dialogue between oil and gas suppliers and individual Member States. As the EU energy market becomes more integrated, national protectionism is an anachronism. It is time to pave the way for another European integration project of vast potential: a «Europeanisation» of energy policy, based on political consensus, market integration and mutual solidarity, which ensures secure social and economic development both in the EU and globally.

Progress on common internal policies should enable the EU to speak with one voice externally. However, it remains an unfulfilled objective. Member States must take into account the wider EU interest when they discuss energy issues with third countries. Divided we achieve less results than acting all

together, without compromising the expected benefits of the Single European Energy market. In February 2011, the European Council gave us a considerable impetus in the right direction. For the first time a clear deadline for completing the common energy market has been set up: by 2014, power and gas should be transported as easily throughout Europe as goods and services, providing a real European marketplace in energy and thereby ensuring affordable prices for consumers and industry alike.

Last but not least, a clear energy strategy has been defined and received the unanimous support of all 27 Heads of State and Governments. Beyond the remarkable progress made over the last years, notably the headline 20-20-20 targets (for greenhouse gas emissions, renewable energy and energy efficiency), it is crucial to build on the foundations for a European energy system equipped to face global competition, to support sustainable growth and prosperity and to achieve a smooth transition towards a low carbon future. Five priorities have been highlighted for the next decade: boost energy efficiency within the EU, finalise the single EU energy market, secure the benefits for the consumers and ensure the highest level of safety, invest in new technologies and strengthen the role of EU in international energy relations.

This is all the more urgent that the financial crisis, as well as the recent tragic events in Japan and Libya, have demonstrated that energy challenges are still among the greatest challenges we currently have to face. These events show once again that a reliable and safe energy supply and the physical availability of energy products and services at the most affordable price are therefore essential for peace and prosperity and, more generally, to our way of life.



# The energy economy: industry and competitiveness



**Herbert REUL**

MEP, EPP Group, Chair of the ITRE Commission

**E**nergy is the vital element of our economy. Even in times of climate change, we still need a safer, more affordable energy supply. This is even more important in the context of globalisation which is today much more widespread than it was 40 or 50 years ago since energy is an important cost factor, not only for energy-intensive industries but increasingly for other industries such as information technologies.

The EU was aware of this from the outset. The solution was the liberalisation of the energy markets, which was to, on the one hand, increase the competitiveness of the energy markets, thus reducing costs, and on the other hand, strengthen the security of supply through the increasing integration of the networks. The infraction procedures opened against the majority of Member States for the incorrect or incomplete implementation of the 2nd legislative package on the internal electricity and gas market and the failure to implement the 3rd package adopted in 2008, cannot conceal the fact that we have made much progress in the field. The last gas crisis in January 2009 would have had much more serious consequences if the markets had not been much more progressive than national policy.

The fact that energy prices continue to grow despite progress in liberalisation is predominantly due to three reasons: a) purchase prices are rising due to growing global demand, b) national policies such as the German Renewable Energy Sources Act (EEG) or eco-taxes and c) European policy, particularly the recent reform of the emissions trading system or the proposal to reform the energy taxation directive.

The last two points illustrate the conflict between climate protection and a sustainable energy policy. Thus, the massive expansion in renewable energies naturally leads to increases in energy prices: first of all, the production of electricity is more expensive compared, for example, to nuclear or coal energy, and furthermore it requires the construction of new infrastructures.

In Germany alone, by 2020, more than 3,400 km of new electricity transmission lines will have to be built. And as for the EU as a whole, it will need to build some 35,000 km. The cost amounts to almost €30 billion by 2015. Without storing electricity we will furthermore not be able to integrate more renewable energies, as those which have the greatest potential (wind and photovoltaic energy) can only produce electricity intermittently. Additional costs amounting to billions of euros will be borne by the end consumer, should major projects such as Desertec or the Super Grid (a Europe-wide network of CCHT transmission lines) materialise.

It is evident that the decisions on climate policy for the year 2020 and now also for 2050 will have a huge impact on energy prices. They will also have an impact on the competitiveness of industry if we do not manage to considerably reduce the development cost of renewable energies or other sources of low-carbon energy.

It is here that research plays a key role. The SET plan represents an important first step. But its financing must be ensured. Furthermore, certain key technologies such as electricity storage are absent in the SET plan. To security of supply, it is essential to retain a large mix of energy sources also in the future. Consequently, the financing of the research for the ITER project must also be ensured in the immediate and more distant future. At present, the EU runs the risk, above all, of losing credibility in the eyes of international partners.

If we want to succeed in conserving a strong industrial base within the European Union, we

must at all costs ensure a safe and affordable energy supply in the future. Of course, we could also question whether we will still be needing a strong industrial base – given the structural changes currently underway. The answer has to be a resounding YES!

This is due to the simple fact that industry is the engine behind innovation and growth. 80% of funds for research and development come from the industrial sector. Manufacturing industry increased its productivity between 1995 and 2007 by almost 46%. Industrial goods represent around 75% of EU exports. The products which contribute to reducing energy consumption represent an increasingly large share of these exports. More precisely, the energy-intensive chemical industry is that which develops plastic materials used to reduce the weight of trains, cars or planes. It also develops insulation materials which help save energy. Even modern fertilizers which help reduce greenhouse gas emissions are developed by the energy intensive chemical industry.

In short, we cannot reach our energy and climate policy objectives without industry. This also signifies that we should provide it with the capacity to continue to exist faced with international competition. This also includes factors such as the EU's energy costs which, on average, exceed those of the USA by 40% - not to mention China!

The balance within the "security of supply, sustainability and competitiveness" triangle is threatened today. Climate policy dominates the debate. Within the European Parliament there are even calls to prohibit any funding which does not contribute to promoting the climate protection objectives for 2020. Such an absolute priority would be extremely dangerous not only for the economy but also for research in other fields than energy and should therefore be avoided. It is time that the interaction between energy and the economy once more receives our full attention. Otherwise, we will run the risk of wasting billions of euros and deprive ourselves of the basis of our prosperity.



# Energy geopolitics, an assessment of the EU's external relations - Managing resources and geography



**Coby VAN DER LINDE**

Director of the Clingendael International Energy Programme, Professor of Geopolitics and Energy at the University of Groningen and a member of the Dutch energy council

## Moscow

In the past ten years the security of supply eyes have been firmly focussed eastwards. Many of the communications from Brussels were solely directed at security of gas supplies, trying to find a political solution for the economic logic of dependency on Russian supplies and the divergence in market organisation. The restructuring of the organisation of the gas value chain as a result of EU gas market liberalisation, the EU eastern enlargement, the break up of the integrated pipeline system along new national boundaries, and the concentration of gas exports were among the many changes that resulted from the political and economic transformation that both West and East Europe experienced since 1990. These changes were not without tension in the relations between the countries involved in managing these changes along the value chain. At the same time, these countries were also involved in reorienting their energy policies. In the EU, the transition to a lower carbon economy also gathered steam. The dash for gas, in the 1990s seen as a logical route towards lower carbon emissions, became caught up in the political transformation of the European continent in the last decade when oil and gas markets became tight. A few years on, substantial new supplies from North American unconventional resources and LNG have changed the international gas market from a sellers' into a buyers market. Not that these recent market developments will change much to the economic logic of Russian supplies, but the prospect of unconventional gas in Eastern Europe and the ability of LNG to penetrate deeper into the European market are enough

to raise the level of comfort. Thus surprisingly, it was a combination of technology and market developments rather than politics that reduced the EU security of supply concerns. Perhaps that in the wake of the market developments, relations with Russia can be lifted to a more cooperative plane, making sure that a future switch in market circumstances can be handled in a more structured atmosphere.

## Riyadh

While the EU SoS eyes were firmly fixed on Moscow, developments in the international oil market deserved some attention. Strong growth of oil demand in Asia and a declining production outlook in the OECD countries, was suggesting that the security of oil supply deserved some more attention. With oil prices rising more rapidly in 2008, expressing the increasing tension between demand and supply growth, the SoS message from Brussels did not change in geographical nor resource focus. While other (energy) institutions, such as OPEC, IEA and IEF, but also the US, China, India and some individual EU member states were increasingly busy with the mounting tension on both physical and paper oil markets, the Commission appeared absorbed by Moscow and Copenhagen, and not by Vienna or Riyadh. The current unrest in North African countries and in the Middle East and the potential impact it has on international oil markets is a big reminder that security of energy supply policy should always include all the fuels relevant to the EU energy mix and, due to the international markets, cover the four corners of the world.

## Single what ...?

Security of oil supply is traditionally the forte of the International Energy Agency. Attempts

by the Commission to raise the strategic oil reserves above the IEA requirements and create its own oil security policy space has repeatedly fallen on deaf ears with the member states. The main argumentation for such a policy, to influence pricing, was unsurmountable for most member states, largely because the intentions were misunderstood. Now also the US is contemplating using the strategic reserves to prevent prices from spiking, not so much to impact the physical balance in the market but to manage speculation among the non-commercial traders. Here the EU appears to have been ahead of its time. Supply disruptions can be handled within the IEA framework. Nevertheless, the impact of higher oil prices on economic growth could become an issue. But also here the EU must act with caution if it wants to bring the member states under a single approach. In many member states oil pricing is also a fiscal issue, because of the generous excise taxes and levies on oil-end-user prices. Moreover, the policy to a cleaner and more sustainable energy mix is based on a political choice for more expensive energy. The current oil price increase could come untimely for the fragile among the EU economies, but in general it is the direction of where the EU wants the fuel mix to go.

Rather than gaze in another floodlight of concern, energy security is best served with our eyes firmly focussed on each and every country where we import energy from, both fossil fuels and renewables, East, West, North and South, in the full realization that our energy dependency also creates externalities that need addressing.



# Nord Stream: widening Europe's gas supply



**Matthias WARNIG**

Managing Director of Nord Stream AG

**T**he last few years have shown that energy policy needs to adapt if it is to provide citizens with long-term reliable sources of energy supply. From the effects of the financial crisis to recent events in Libya and Japan, several landmark developments have confirmed that the global energy landscape is dynamic and in constant change, with several factors influencing both energy demand and supply flows globally. In addition, increased awareness to combat CO<sub>2</sub> emissions and climate change continues to play a crucial role in shaping energy policies globally and at EU level.

This is the context in which European energy security of supply should be examined. European energy policy ranks security of supply as one of its most important goals, alongside CO<sub>2</sub> emission reduction objectives and European competitiveness. The promotion of energy infrastructure projects that ensure long-term reliable energy supplies is therefore a vital tool in achieving the EU's energy aims, particularly for gas supply.

Europe's long-term energy mix is rightfully being considered in the context of security of supply, and here too the role of natural gas is important. As Europe looks to developing further renewable energy supplies, gas pipelines can act as a foundation on which to build tomorrow's energy capacity. Natural gas is a versatile fuel that can bridge the supply gap caused by intermittent renewable energy supply much more easily than other fossil fuels or nuclear power. In addition, natural

gas generation today has an efficiency of 60%, compared to 45% for modern coal power plants, with 50% lower CO<sub>2</sub> emissions. It is for this reason that the important role that gas will play in achieving Europe's ambitious CO<sub>2</sub> emissions reduction targets has been recognised by policy makers across the EU and also by NGOs such as Greenpeace.

The Nord Stream Pipeline has been designed specifically with this policy scenario in mind. EU policy makers recognise this, and Nord Stream has been considered a European priority project under the EU's TEN-E guidelines since 2006. Consisting of two parallel offshore natural gas pipelines of 1,224 km through the Baltic Sea, Nord Stream will bring 55 bcm of gas per year to Europe, enough to supply 26 million European households.

Once implemented, Nord Stream will transport gas directly from Russia, home to some of the world's largest gas reserves, to those European countries where demand is growing most quickly: Germany, the UK, Denmark, the Netherlands, Belgium, France and the Czech Republic, with supply also reaching other Member States of the EU. As Europe's domestic gas supply is depleting, Nord Stream will fill a crucial gap in the market, whilst also providing an additional supply route to increase security of supply and ensure long-term access to Russian reserves for European consumers.

At the same time, Nord Stream is a significant step forward in the strategic EU-Russia partnership. Russia has been a reliable energy supplier to Europe for 40 years, and the construction of a new transport route will build on that relationship to secure additional supplies for Europe when they are most needed. It is often forgotten, though, that Russia needs reliable customers for its gas

as much as Europe requires long-term supply security. And whilst other sources of gas are available, unconventional gas is unproven in Europe and may be prohibitively difficult and expensive to extract on a densely populated continent, whereas LNG is flexible but is easily diverted to other countries or regions that are prepared to pay higher prices. In contrast, the certainty of pipeline delivery and the resulting European-Russian interdependence benefits both parties.

The implementation of Nord Stream is well under way. The first of two parallel pipelines has almost been completely laid, with around 90% of the pipeline, making up 1,075 km, in place and gas deliveries are due in autumn. The construction of the second line is to start in May. Despite the current situation in the financial markets, which has made accessing capital for many major infrastructure projects difficult, Nord Stream has successfully completed its financing, demonstrating the confidence the markets have in the economic soundness of the project.

I firmly believe that the EU's energy security goals will only be achieved by mechanisms that enable facilitated long-term access to natural resources. Russia will remain Europe's main partner due to its vast natural gas reserves and Europe's growing gas consumption, combined with the potential for gas to contribute to CO<sub>2</sub> emission reduction targets. By building a new connection to natural gas reserves, Nord Stream is an integral part of this effort, bringing consumers and suppliers closer together.



# Security of supply in stormy weather – steady as she goes



**Jürgen GROSSMANN**

Chief Executive Officer RWE AG

by 2030, with a further “significant increase” in the period from 2030 to 2060.

And this is only one aspect of the challenge, exacerbated by the fact that our expectations for a more efficient use of energy are not backed by reality. With a “business as usual” policy the EU will get only half way to fulfilling the efficiency objective set for 2020. This makes the path set by the energy challenge even more complicated. At the same time, the EU can not look for a “one size fits all” solution to our challenge.

Member States are not only physically different but, importantly, politically different. And the choice for the energy mix – enshrined in the Lisbon Treaty – is a prerogative of national politics. A clear example is to be found in the German decision to withdraw from nuclear energy as fast as possible. A decision, we believe, that is based on the illusion that it will cost nothing; that it could happen over night, and that it is possible without importing (nuclear) electricity from our neighbours.

Nevertheless, putting aside national characteristics, the shape of a European answer becomes clearer. Notwithstanding the constraints in the various treaties the EU Commission is completely right to pursue the Europeanisation of energy policy with vigour. The liberalisation of the energy market across national borders has to become reality across Europe. The growing role of renewables does not only need clear market rules, but, new techniques and technologies and, significantly, a huge upgrade of the grids. The European “Copper Plate” to shift surplus wind power from the North Sea to the South, and to charge electric vehicles, or to use electricity from solar installation on both sides of the Mediterranean, and to fill pump storage facilities in Scandinavia is also part of

a master plan like smart grids, smart meters and smart homes.

Of course, this all has to be paid for. The EU Commission estimated in its Communication on energy infrastructure priorities that “around one trillion Euros” is needed between today and 2020 in order to meet energy policy objectives and climate goals. About half of it would be required for networks, storage and smart grids. Figures which really do not fit with the constrained budgets of most Member States.

And money is certainly not the only challenge. Nowadays if you read anything in your local newspaper about infrastructure projects you will inevitably come across the abbreviation: NIMBY – not in my backyard. The construction of new high tension power lines, pump storage facilities or biogas plants almost always encounter local opposition. This delays the already time-consuming realisation of such projects and adds to the costs. Advocates of a rapid conversion of our energy supply presume that the huge costs can be financed “more or less” with money saved elsewhere, e.g. with lower import bills for fossil fuel and lower energy demand. A recent poll in Germany, for example, shows that Germans would be ready to pay for this conversion, but 60 per cent of them would not pay more than 10 Euros a month. I leave you to judge if this would be enough!

RWE has accepted the challenge of restructuring our energy supplies. Since we founded RWE Innogy in 2008, we have invested nearly €3 billion in the expansion of renewables. Furthermore, we have invested almost €3 billion in expanding low carbon generation capacity. In the same period, over €3 billion were spent on our electricity and gas networks. In addition, we have modernised the German extra-high voltage network since 2004, with

Europe’s energy challenge – sometimes referred to as the “trilemma”<sup>1</sup> – is well defined: securing our energy supply while protecting the environment and keeping the competitiveness of our economy. Finding the right balance between these three objectives has preoccupied industry and politicians for years. The issues are even more complex now in the aftermath of the accident at the Fukushima nuclear power plant. Political solutions should never be taken when emotions run high, as is currently the case, while the solutions sought are, by their nature, long-term. Perhaps a better approach in these difficult times would be to turn to our technical experts for guidance as they can advise us not simply about what is desirable but what is actually possible. One piece of good advice for today’s “global energy challenge” can be found in the “Call from Geneva”. It was launched in preparation for the World Engineers’ Convention in September 2011 by the World Federation of Engineering Organisations (WFEO) and includes a thesis for the upcoming discussion in the Swiss town. The WFEO put it very clearly: energy consumption will increase further over the next 50 years unless major breakthroughs are achieved and/or the cost of energy increases substantially. The engineers are forecasting an increase in demand of around 40 percent

investments totalling over €1 billion.

We are the German company with the greatest investment in renewables in Europe. Renewable plants already in operation, or under construction, will grow by at least 4.5 Gigawatts by 2014. We are making progress in forward thinking areas of energy efficiency and electric vehicles. With "RWE Autostrom" we offer green power at our charging points in many German towns, with "Smart Home" we have developed automated systems for private households to bring down their energy bills. In research and development we have more than 350 people in our R&D teams looking at innovative concepts like new

technologies to enhance the CO2 efficiency of our fossil plants, or to convert green house gases into valuable raw materials. We are planning a highly-efficient compressed-air storage system which will fit with intermittent wind power. RWE is member of the Desertec project to invest in renewables in North Africa and the Middle East. And with our participation in the Nabucco project, we are fully in line with the proposals of the EU Commission to develop a southern corridor to the gas resources in the Caspian Region.

Defining the future energy mix is challenging. RWE, as well as many other utilities, is already working hard to meet the challenge

for sustainable energy supplies. Some of the measures are not yet seen by the public and other steps will require compromises along the way. For this we need not only the ideas of our engineers. Politicians in Europe are called upon to ensure a stable investment environment for our industry and to help engender the necessary public support needed if we are to deliver the transformation of our energy infrastructure across Europe.

1. Note: "Trilemma" was originally used in the UK by Paul Golby





# How to guarantee the security of energy supply in Europe?



**Silvia-Adriana Țicău**  
MEP (S&D)

**T**he EU energy policy has to securely supply energy to all 500 million European citizens. To complete the internal energy market, the EU has to enhance security of supply, to enable the integration of renewable energy sources, to upgrade and modernize electricity grids and to ensure the interconnection and interoperability between Member States' (MS) energy infrastructure as well as the integration between trans-European energy network with the energy infrastructure of the neighbouring countries.

The third energy package established the framework to develop the Pan-European energy infrastructure. The ten year investments plan should not only provide flexibility to the internal energy market and increase the security of supply, but will identify the needs for further investments in order to remove the energy islands.

The EU's dependency on gas imported from third countries is about 60%. The consumption of gas imported from Russia is three times higher in the EU-12 than in the EU-15. Therefore, a diversified portfolio of physical gas sources and routes, a fully interconnected and bi-directional gas network as well as enhanced storage capacities and enhanced infrastructure for liquefied (LNG) and compressed natural gas (CNG) within EU are needed. In this context, the Black Sea Region (BSR) is of geostrategic importance, in particular for energy security and the diversification of EU energy sources and of energy supply routes, given its proximity

to the Caspian Sea, the Middle East and Central Asia. Therefore, we stress the European added value and the importance of the Southern Gas Corridor as a means of enhancing the EU's security of supply. Projects such as the Nabucco pipeline, a key priority project for the EU, along with smaller projects, such as the Trans-Adriatic Pipeline (TAP), the Pan-European Oil Pipeline (PEOP), the Turkey-Greece-Italy (ITGI) or the Azerbaijan-Georgia-Romania (AGRI) Interconnectors should be sped up and supported. Furthermore, new gas pipelines should be built between Bulgaria and Romania, between Greece and Bulgaria, Germany and Austria, Hungary and Slovakia, North-Eastern and South-Eastern Germany (OPAL). In addition, reverse flow capacity is needed to be built between Greece, Turkey and Bulgaria, between Hungary and Romania, Hungary and Bosnia and Herzegovina, Germany, Czech Republic, Slovakia and Hungary, Adriatic Sea and Austria, Italy and Austria, Italy and Slovenia, Austria and Slovenia.

In addition to this, the Eastern Baltic Sea region requires urgent action to ensure security of supply through connection to the rest of the EU. Projects like PL-LT, LNG terminals and a pipeline connecting Norway and Denmark, Sweden and Poland are envisaged. The North-South corridor in Western Europe should remove the bottlenecks in the internal market and should in particular improve the interconnection between France and Spain. The interconnections between Member States' national gas infrastructures should not only include projects which are pure «reverse flow projects», but also ones which contribute to the improvement of European security of supply.

Related to the security of oil supply, EU should improve the connection between the Western European pipeline network and the Eastern infrastructure. Therefore, a new pipeline between Austria and Slovakia, the upgrade of the Adriatic pipeline and of the Odessa-Brody pipeline, including its extension to Poland, are also considered as EU priorities.

The EU should urgently develop a Pan-European smart grid, able to use the electricity produced locally or regionally from renewable sources and integrated within the required infrastructure for the use of electric or hybrid-vehicles. This requires better interconnections between the national electricity grids of the Member States, especially the interconnections between France and Spain, the Baltic Energy Market Interconnection Plan and between Poland and Lithuania.

A special importance should be attached to the development of the cross-border sections of the European energy infrastructure, which should be better supported by European funds.

In order to reduce EU's dependency on energy products imported from third countries which are traditional partners, the EU should be more focused and should invest more in energy efficiency measures. The improvement of energy efficiency of the building sector as well as of the transport sector will reduce primary energy consumption and CO<sub>2</sub> emissions. Therefore, the upgrade of urban district heating and cooling networks as well as the introduction of smart metering should be part of EU priorities and should be properly reflected and supported by the current and future financial perspectives.

# MEDGRID, an industrial initiative to develop electrical interconnections between Europe and the countries of the southern and eastern Mediterranean



**André MERLIN**

President of MEDGRID

The electrical interconnection between Europe and the countries of the southern and eastern perimeter of the Mediterranean is an old idea of a large electrical ring around the Mediterranean Sea. MEDGRID is taking up this project by extending and amplifying it through extra high voltage under-water electrical connections between the North and South shores.

Why is this project enjoying renewed interest? The countries of North Africa and the Near East have seen a sharp rise in their electricity consumption (of around 7% p.a.) as a result of their economic and demographic growth. To cope with this fast increase in demand, some of these countries would like to limit their dependence on imported fossil fuels and others, which have oil and gas reserves, aim to develop these energy resources on the global markets. Thus, the majority have plans to develop alternative energy and in particular solar energy.

As this energy is more expensive than conventional energy, it would seem wise to export part of it to Europe, which has set itself very ambitious objectives in terms of reducing CO2 emissions and increasing the percentage of renewable in its energy mix (20% in 2020 compared to less than 10% today). EU is prepared to buy this green electricity at the

same prices as those practised in each of the Member States (article 9 of the third energy package).

Furthermore, the structure of electricity demand is very different in Europe than that of the countries in the south and east; the consumption peak is generally in winter to the north of the Mediterranean and in summer in the south and east, due to fast growth in air-conditioning.

There are therefore clear advantages in exchanging electricity in both directions, depending on the periods of the year, to better secure the electricity supply for all of the Mediterranean area and to reduce production costs, always with recourse to the cheapest conventional electric power stations, which are often the best performers in environmental terms.

MEDGRID therefore aims to promote electrical interconnections to carry out such exchanges. Its priority objective will be to draw up a blueprint of the Euro-Mediterranean electrical system by 2020 and to establish the feasibility and profitability of these projects.

This consortium, which brings together the main European industrials in the construction of major electrical networks, also aims to favour the development of new technologies for the transport of extra high and ultra high voltage electricity in direct current, an area in which Europe is already the world leader.

To conclude, MEDGRID is positioning itself in

a co-development initiative between Europe and the countries of North Africa and the Near East, with shared ideas, thoughts as well as economic and industrial consequences between the two shores of the Mediterranean. This consortium may thus become the spearhead of a strengthened partnership between Europe and the countries of the South and East, in the field of energy, and thus foreshadow the beginning of a Mediterranean Energy Community. Given the changes in the geopolitical context of these countries, such an initiative could not take place at a better time.



## Will solidarity be there when we need it?



**Professor Lena KOLARSKA-BOBINSKA**

MEP (EPP)

**E**uropeans are agreed on energy solidarity - they just don't know how to get there. This is what the latest Eurobarometer poll on energy tells us.

A overwhelming majority of Europeans (79%) now endorse the principle and practice of solidarity in the face of a crisis. The promotion of this principle by the European Parliament and other EU institutions has turned the idea of solidarity into much more than a mere slogan when it comes to energy. The current thinking is like NATO's famed article 5 - an attack on one member state is an attack on all. This would suggest that in case of supply cuts, we can count on each other.

Europeans have also come to understand that energy is an issue where coordinating actions is better than going it alone. As many as 60 per cent want more European policy on energy, not less. The Commission, therefore, should have no problems in pushing through strong, common energy proposals.

But the figures I have quoted reflect an EU average. Indeed it is true that people in most member states want to see a common energy policy. But some big countries like Italy, Germany, Poland and the UK are less enthusiastic. Here the 'go it alone' reflex is

still strong (with an EU average of 32%). And while their citizens might favour more coordination, the truth of the matter is that these states are likely to opt for intergovernmental cooperation over the coordination by the Commission through the community method.

The fact that Europeans agree on the principles but differ on concrete actions reflects that national interests are still strong. Price stability is far more of a concern for public opinion in Central and Eastern Europe than in the West. On renewables, we generally see the Scandinavian states and Benelux wanting Europe to do more. While for Germany and Poland security of energy supply is paramount. Indeed the figures for the EU average give the false impression our Union has a clear hierarchy of goals.

This is why we need to see more leadership on energy issues from our own governments. We should agree a limited number of priorities and must work to make sure that the average citizens understand those priorities. National priorities will differ in member states at various times. But must all work to make sure that those which are in our mutual interest remain at top of the agenda and are seen as such by our citizens.

This is why efforts to encourage an EU-wide dialogue on energy issues to better align our goals should be re-doubled.

I believe this is especially true of relations between Germany and Poland. The survey shows that here

concern about security of supply goes hand-in-hand with the views of a significant group of citizen who oppose European cooperation on energy. These citizens, who don't believe help will come from abroad in a crisis, want to secure national interests above all. Only then will they consider the plight of others.

The lack of appreciation by some big Member States that an EU wide energy policy will enhance their security puts a question mark over our ability to implement true solidarity in Europe. Otherwise there are well founded grounds for doubt that public declarations of solidarity and mutual support will turn into reality when a crisis looms.





# Guaranteeing the security of gas supply



**Alejo VIDAL-QUADRAS**

Vice-President of the European Parliament,  
Group of the European People's Party (Christian Democrats)

**T**he European Union gas import dependency is a well-known reality, having caused in the past serious harm to those countries relying exclusively of this source of energy. Moreover, not only has this dependency increased on a constant rate, having even trebled in the past fifteen years, but also has the EU barely increased its diversification of gas imports through additional interconnections or LNG terminals. Europe still primarily depends on 3 States for its gas supply, being Russia, Algeria and Norway, in which Russia holds the pole position, accounting for 30 per cent of our total import.

In such dependency, our foreign policy is forced to be mainly of commercial character and our diplomatic response in times of crisis through bilateral efforts, and not through EU centralised dialogue, has proven inefficient. Recent talks at EU level between Vladimir Putin and José Manuel Durão Barroso have again put at light our vulnerability, when the Russian Prime Minister warned for price frenzy in case unbundling would be applied to Gazprom.

That is why the EU Energy Policy has concentrated its efforts on securing its energy supply from within its market. The recently adopted Regulation on the Security of Gas Supply, of which I was Rapporteur, is a good example

of how internal coordinated EU action proves to be the best solution to an external political threat. Indeed, this crucial piece of legislation establishes a set of binding obligations for Member States, compelling gas undertakings to respect, on the one hand, well-defined infrastructure standards, which lead them to building new infrastructures or refurbishing their old ones, within and across borders, and on the other hand, precise supply standards obliging gas undertakings to supply European households in priority in case of crisis or disruption. The Member States have accordingly accepted a true solidarity obligation in regard to citizens, now officially named as "protected customers". Moreover, Member States will from now on adopt Preventive and Emergency Plans, which will enhance EU joint action on the basis of available gas resources in times of crises. Finally, the Commission has been attributed a decisive role without precedent: it has been granted a veto right for the Preventive Plans of Member State and a consultation right for the Emergency Plans, as well as a significant coordination role in case of a crisis, so that, together with the Gas Coordination Group, it will from now on take the lead of the management of such extreme situations.

Surely it makes no doubt that in order for these obligations to be respected, another vital piece of legislation is urgently needed, being the so-called Infrastructure Package. In this file, the Commission identified the needed new infrastructure projects to be built in order to interconnect the Union. It also looked at the need for old infrastructures to be refurbished, at making the different sources of energy interoperable, especially with the growing and decentralised production of renewable sources of energy that are of intermittent

nature. In this sense, the upcoming legislation will need to leverage the switch from a traditional one-way infrastructure grid to a bi-directional smart and flexible network, in which the consumers can more easily manage their consumption patterns and choices on the market. Vivid debates are currently being held on the way to boost private investment, as those projects will majorly be paid for through the operating companies and recuperated through tariffs. A certain public funding could be considered for urgent projects that do not attract enough investment. This dossier is a challenge, since it is urgently needed in order to respect our legal obligations in terms of Energy Policy, but also because it demonstrates how different Member States, having different energy resources and technology, have to connect on an EU level. As such, this file is an excellent example of what it means to make good legislation at EU level: it is a case of rationally steering the different realities of all the Member States into a coherent and workable EU solution.

In the precise case of constructing an EU Energy Policy, "European" means working with different natural resources, with different levels of energy diversification, and with particularly sensitive political situations. Indeed, a constant balance needs to be struck between political objective of a policy, natural resources at hand, technological potential of a sector, as well as economic benefits for the EU's competitiveness. I am convinced that these debates can only culminate in a true success if and when serenely and rationally based, avoiding panic that can only blur our lucid judgement.



## Increase the priority for scientific support in the energy field



**Dominique RISTORI**

Director-General of the Joint Research Centre,  
European Commission

**E**nergy is one of the greatest challenges faced by Europe and the world. At the same time, the need for scientific and research support has never been so great, given the need to combine the supply, transport and efficiency of clean energy.

The Heads of State and Government have recognised this close link between energy and scientific support, focusing their debates in the European Council on 4 February 2011 on the subjects of energy and innovation.

Beyond establishing an appropriate regulatory framework with a view to promoting efforts in energy efficiency and encouraging a more balanced energy mix focused on low-carbon energies, it is also important to provide the necessary means to implement an efficient energy policy on a European level.

In this context, the role played by technology is essential for meeting the challenges of climate change and the security of energy supply in the European Union and for ensuring the competitiveness of the economy.

It is clear that technology and the efficient use of resources are at the heart of this challenge. We have to break down the boundaries of

science in the fields of materials, chemistry and physics, nanotechnology and biotechnology, with a view to finding new, better means of producing and consuming energy.

However, we cannot remain inactive and wait for potentially significant technological progress to emerge from the laboratories and then be marketed after a long and often difficult journey. We need to act now and accelerate the development of technologies which provide the greatest potential. The scientific and technological sectors should help find solutions which meet this new context.

There are different possible paths to a low-carbon economy. It is evident that no single measure or technology will be sufficient and that the precise energy mix of each country will be determined by the specific combination of political choices, market forces, the availability of resources and a favourable reception by the public.

Public policy and the combination of public and private investments are the only credible way to achieve our objectives. An individual Member State cannot accelerate the development of a sufficiently large range of technologies alone.

That is why the European strategic energy technology plan (SET), launched in 2007, is the EU solution for accelerating the development of low-carbon technologies, leading to their widespread launch on the market. This plan recommends the adoption of a diversified portfolio of non-polluting,

efficient and low-carbon energy technologies as an engine for prosperity and a key factor in terms of growth and employment. It puts forward joint strategic planning and a more efficient implementation of the programmes.

The implementation of the SET plan is based on three priorities:

- European industrial initiatives (wind energy; solar energy; the electricity grid, capture, transport and storage of CO<sub>2</sub>; bio-energy and sustainable nuclear fission);
- joint research programmes with the European Energy Research Alliance (EERA);
- the online information system SETIS (Strategic Energy Technology Information System) managed by the Joint Research Centre.

In 2009, the European Commission called upon the authorities, companies and researchers to join forces to develop the necessary technologies by the year 2020 to meet the energy and climate challenges. The Commission estimated that an additional 50 billion euros need to be invested in research over the next ten years. This amounts to almost tripling the annual investment in the European Union, from 3 to 8 billion euros. This is a step forward in the implementation of the SET plan. Different sources of financing, both public and private, are envisaged on the national and EU level. Used together, they will help a growing industrial sector and will contribute to job creation.



During the European Summit of 4 February 2011, the EU and its Member States undertook to encourage investment in renewable energies and safe, sustainable technologies with low CO<sub>2</sub> emissions and to implement the technological priorities defined in the SET plan.

Within this framework, the Heads of State and Government invite the Commission to present new initiatives on intelligent energy

networks, including initiatives related to the development of clean vehicles, energy storage and sustainable bio-fuels as well as energy-saving solutions in towns.

This demonstrates the political will, at the highest level, to meet the real need to increase efforts to exploit the potential of science and research in the field of energy on a European scale. This implies that, against a delicate budget environment, the European Union

and the Member States should increase the priority given to scientific support in the energy field.





## Reflections on the energy policy



**Jean-Marie CHEVALIER**

Professor Paris-Dauphine University

**T**he major challenge of the next 20 years, both on a global level and in the European Union, is to provide the energy necessary for the well-being of the world's population whilst producing the smallest possible quantity of polluting greenhouse gas emissions. The ideal situation, according to the various reports of the European Commission, would be to reach a decarbonised society by the year 2050. Of course, this depends on political decisions.

I have noticed that the IEA's discourse has recently become firmer. The World Energy Outlook 2010, published in November, made efforts to educate and convince its readers of the necessity of taking drastic measures in all sectors, from energy savings to new energies, in order to respect the limit of an increase in climate change of 2°C compared to the level of the pre-industrial era, in accordance with the declarations of the Copenhagen Accord (December 2009, COP 16). Four scenarios are used to support this reasoning. Between the first "business as usual" scenario and that which allows us to respect the target, the divide is significant and the result is difficult to reach without the pro-active commitment of us all.

For the IEA, the cost of inaction regarding

the Copenhagen commitments amounts to 1 trillion dollars. This evaluation was made following the same logic as that of the Stern report. It is an astounding sum, a terrifying indicator of the difficulties that the global economy will be confronted with in addition to those which we are already aware of today.

And yet, the vicissitudes of the world today are complex, and the future appears obscure: the events in the Middle East and North Africa are the very expression of these uncertainties.

We must accelerate and combine our actions on a global, regional, national and local level:

### On a global level

Over the next five decades, the planet will be faced with an increase of 2.5 billion additional inhabitants. The majority of these 2.5 billion people will be from Asia (predominantly China and India). Food, water and energy will consequently be the key issues for the future of humanity. The increase in oil prices on the international market and the repercussions on the level of energy prices in general is dramatic for the non-producing countries of the third world.

In successive negotiations in Copenhagen, Cancun and Durban in South Africa (COP 17) and all those which will follow, the Chinese issue needs to be resolved. The western world has a climatic debt in terms of Chinese development, which it contracted without its knowledge. Lobbies have delayed the awareness of this section of the talks. The result of the negotiations is considerably crippled by this element, the importance of which must by no means be neglected.

### On a regional level

The European Union is in the vanguard of pro-active policies in favour of the fight against climate change. The so-called 3x20 targets, although not realistic or attainable in the period of time under consideration, reflect the European Union's commitment and its sense of global responsibilities. The performance of the EU's energy sector in meeting the need of a sustainable economy will act as an example for the rest of the world, even though the EU (irrespective of the number of member states it will have in the future) will have decreasing importance in the global economy and geopolitical equilibrium in the future.

Non-conventional gas could play a key role in a transitional energy economy. The future of nuclear – which has emerged as a contender to contribute to the fight against climate change – is uncertain due to the consequences of the political decisions of the Fukushima accident in Japan (11 March 2011), which are still difficult to evaluate.

The third internal energy market package (adopted in 2009 and which came into force on 3 March 2011) will enable the pooling

*1. The Stern report (published on 30 October 2006) pointed out that climate change is the result of the greatest market failure the world has ever seen. The cost of inaction which amounts to between 5% and 20% of global GDP, according to N. Stern, will have a disproportionate effect on the poorest countries, which have the lowest capacity to adapt, thus exacerbating the social impacts of climate change. However, the cost of action, i.e. reducing greenhouse gas emissions to avoid the worst consequences of climate change, may be limited at around 1% of global GDP per annum.*

of electricity thanks to the new central role allocated to ENTSO. This will develop the complementary energy features between the member states and favour the security of energy supply. The breakdown in 2006, which was triggered in Germany, would probably not have spread to neighbouring countries if ENTSO had been well-coordinated.

### On a national level

Key actions have been undertaken and tangible results have been highlighted.

In France, the “Grenelle de l’environnement” has marked a real turning point in building and construction.

In Germany, certain towns have been the pioneers of the use of sustainable energies. To give just one example, the installation of mini domestic co-generators (electricity/heat) has enabled substantial savings to be made in housing.

### On a local authority level

Positive initiatives have been carried out almost everywhere. I have observed a clear desire on the part of the citizens to participate in the definition of the environment in which they live, whether it be transport, noise or type of housing. It is important to note that in 2008, the “Covenant of Mayors”<sup>2</sup> programme was launched with the participation of some 400 cities in Europe; it now counts over 2000 signatories. We see that such dynamics strengthen the importance of the decentralisation of energy production.

Similarly, the IEA’s study entitled “Town, and cities and renewables; yes in my front yard.”

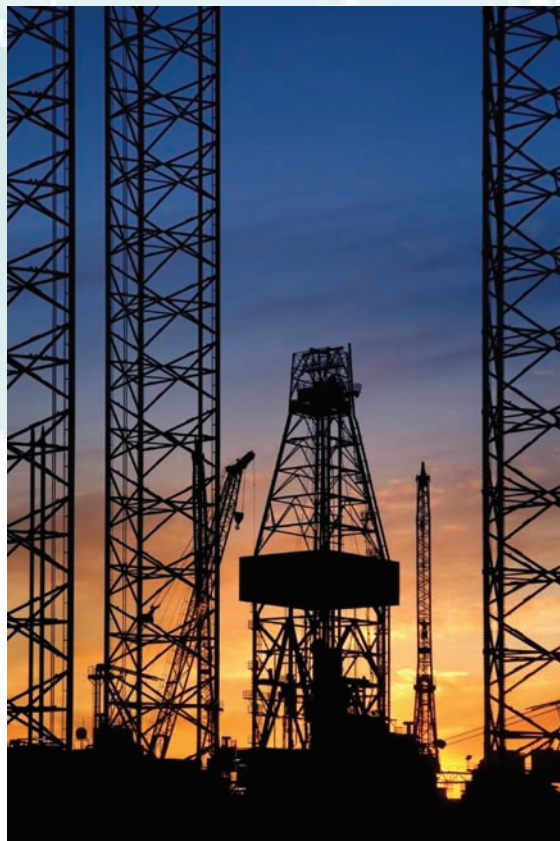
(2009) is also significant. It shows that concrete initiatives have been undertaken by the local authorities for living in responsible towns. This is a very important phenomenon which will not stop, regardless of the commitments decided on in global negotiations.

However, there is a less optimistic point in the picture. All the indicators are up – oil, gas and electricity. The domestic consumer, protected by the operator, a state monopoly, is no longer in a liberalised market. Neither did he get on the bandwagon in order to become an active economic actor. For the time being, his only issue is to save energy and to invest in energy efficiency. It should be noted that the

consumers are not equally affected by the price increases. As an economist, I am hostile to a price freeze, the level of which does not lead the consumer towards a change in behaviour, but I am in favour of the social treatment of energy poverty.

**Interview taken by N. Commeau-Yannoussis, Advisor to the Deputy Director General at the European Commission’s Directorate-General for Energy.**

2. *Covenant of Mayors Committed to local sustainable energy.*



# Energy security, a real issue for establishing European leadership



**Jean-Jacques MIRASSOU**

French Senator for the Haute-Garonne and member of the Committee for the Economy, Sustainable Development and town and country Planning (Commission de l'Economie, du Développement durable, et de l'Aménagement du territoire)

Strategies for security of access to energy need to be jointly thought out and implemented, both internally and internationally, a fact which clearly highlights the necessity of a strong and concerted European approach to the question. It is a major issue since our countries spend some 270 billion euros each year on their oil supplies and 40 billion on gas. This represents 2.5 % of the EU's GDP.

The third "internal energy market" package (2009) on conditions of access to the network for cross-border exchanges of electricity, the directive on the promotion of renewable sources of energy (2009), the directive on minimum stocks of oil and petroleum products (2009) and the regulations on security of gas supply (2010) are all illustrations of the various approaches intended to solve this seemingly intractable problem.

They show that the regulation and organisation of energy markets, firstly within the Member countries and secondly within the European market, is a complex undertaking. However, the implementation of such measures contributes to determining the European Union's policy with regard to its suppliers, in an extremely competitive international context, characterised by strong geopolitical tensions, which has been profoundly changed by the crisis of 2008.

Within the Member States, the share that subcontracting should take in energy generation, for example, is necessarily a matter that gives rise to debate. Indeed, it raises questions about the nature of national economic models, while, in particular, accelerating loss of control by local operators and public authorities in a sector that not only comes within the domain of the public interest, but is also a concern of national security.

This aspect of the problem is particularly sensitive in a country like France and amongst

other reasons for this fact, two can be identified. The French public authorities are indeed characterised by a strong tradition of state intervention. Moreover, France's very large infrastructure of nuclear power stations - some of which are ageing - would benefit from more rigorous control of their procedures, operation and, of course, of the training of the professionals who work on them.

Germany, which is planning to abandon nuclear energy over the next 10 years, moreover provides a radical response to this problem, in accordance with its tradition as a country that is sensitive to ecological issues. Its position is diametrically opposed to the line of reasoning that emphasises that nuclear energy is a "carbon-free" energy, able to provide an answer within the framework of the fight against global warming. Between two dangers, it is to be observed that energy security and environmental security issues overlap.

Although the wide-ranging nature of these debates is valuable, it makes it difficult to reach a consensus and to establish a clear line of policy for working out a European strategy in energy security matters. This heterogeneity can only be increased when, for example, the question is raised of the investments to be granted for energy production infrastructures and for the development of renewable energies. While it is a major issue to prevent the differences between countries from becoming too marked, it is interesting to note that the European Union has nevertheless succeeded in adopting an action plan aimed at ensuring its energy security.

In any case, the emergence of a real European leadership is a crucial issue, as the maintenance and reinforcement of the Member States' energy security perfectly illustrates. It raises the thorny question of the balance that needs to be struck between the commercial approach of an industry that produces an item whose value is constantly increasing - energy - and a more political approach.

Certain European observers emphasise, for example, that the share of gas in the generation of electrical energy within the European Union has increased threefold over the last fifteen

years or so. It is significant that our principal suppliers, and therefore the main countries with which we have dealings in energy matters, are Russia, Norway and Algeria. The diplomatic and trade relations that we maintain with two of these countries require particularly close attention.

Indeed, energy is a resource whose value is constantly increasing, while world oil and gas reserves are becoming rarer. This constitutes a powerful lever for foreign policy which our trade partners could be tempted to use. This was particularly evident at the time when the prices at which Russia supplies its gas to the Ukraine were revised.

This resource cannot therefore be considered as an ordinary consumer good. The preservation of energy security is by definition a matter of State security. Indeed, without even considering the vital infrastructures whose operation must be guaranteed, the continuation of day-to-day activities is dependent upon it.

Moreover, in economic matters, the upheavals caused by the crisis of 2008 have made it clear how essential it is for our countries to build up their industrial base again. This makes reasonable conditions of accessibility to energy all the more crucial. We have learned the bitter lesson of the impossibility of contenting ourselves with a service economy. The Lisbon strategy, promoting a knowledge-based economy, should take us towards the development of high-tech industries based in European territory.

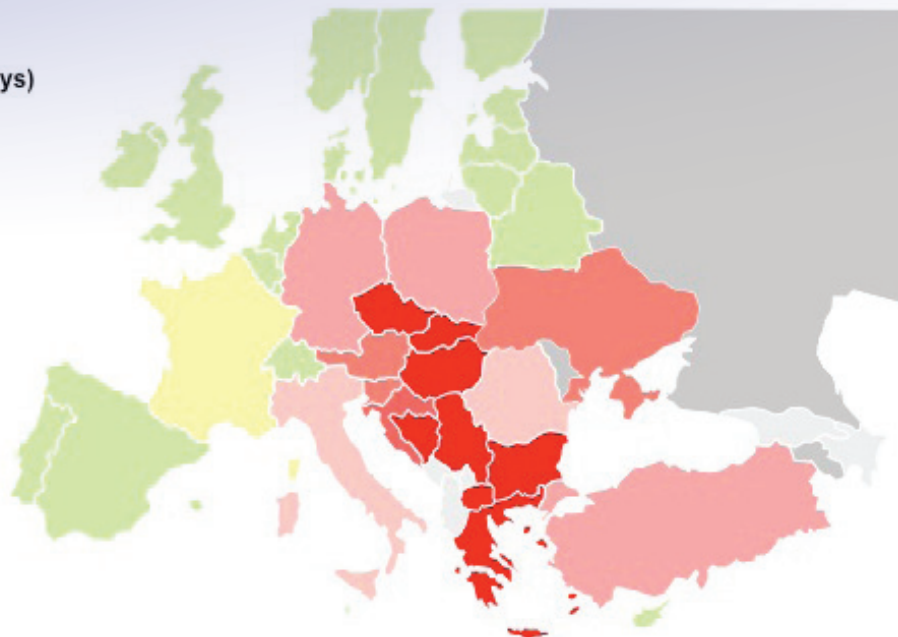
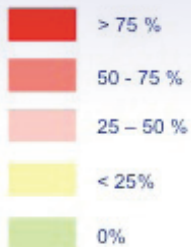
The development of renewable energies is a major issue in this respect. It heralds the establishment of security of supplies and is dependent upon the development of attractive high-technology industry and the production of solar panels and wind turbines in particular, as well as the design of ever more high-performance geothermal energy and tidal power plants.

In the same way as the conception of European defence, the issues of energy security, which are directly related to those of the economic and environmental security of the State, require the putting in place of true European leadership.



## Recent gas crises are illustrative

% of missing gas supply  
from 6 to 20 January 2009  
(- 300 million m<sup>3</sup>/day for 14 days)

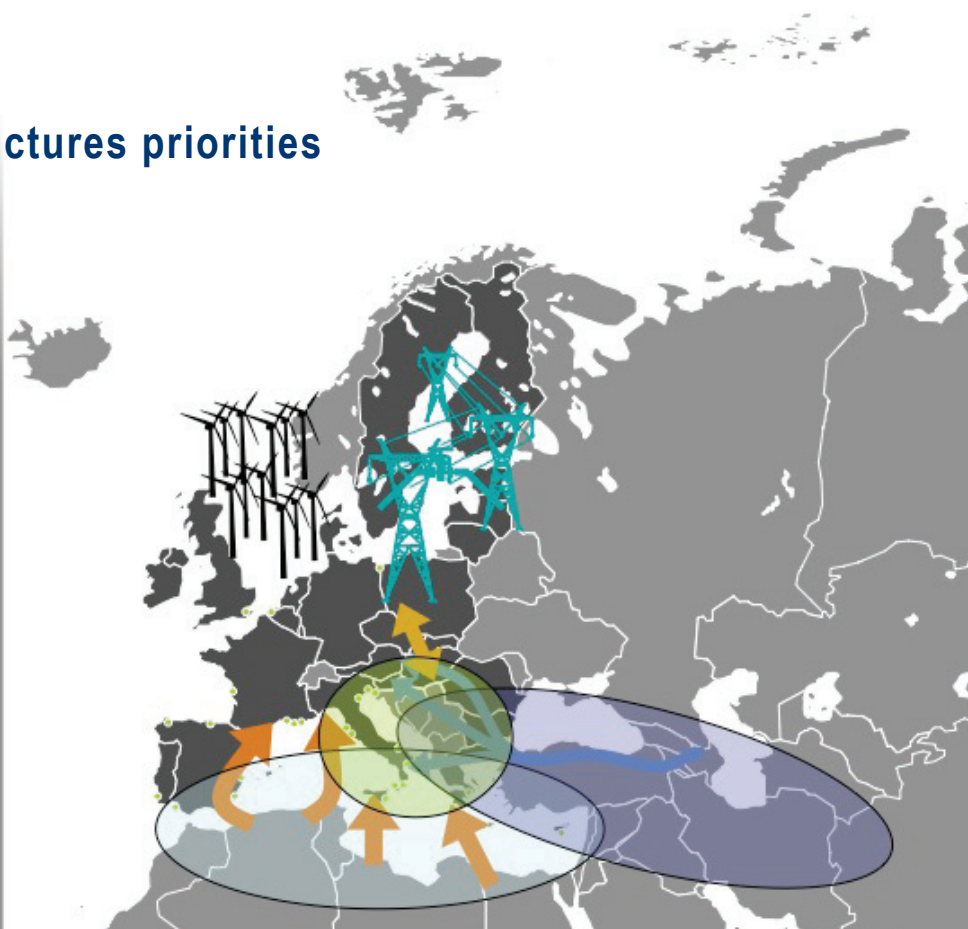


The January 2009 gas crisis showed the lack of physical interconnections and the poor functioning of the EU internal market, with several Member States facing severe energy shortages for several days.

Source: European Commission

## European infrastructures priorities

- Southern gas corridor
- LNG terminals
- Baltic inter-connection plan
- Mediterranean energy ring
- North south electricity & gas interconnections in central-south Europe
- North Sea offshore grid



## Providing safe and secure low-carbon energy for a competitive Europe



Anne LAUVERGEON

Chief Executive Officer of AREVA

**Energy issues have rightly come to the fore-front of European policy making. It is high-time the European Union tackles this global issue, as our prosperity, competitiveness and standards of living are at stake.**

### Global challenges

How to produce twice as much as energy with twice as less CO<sub>2</sub> emissions in 2030? Resolving this "Johannesburg equation" is incompatible with a "business as usual" scenario. Indeed, in such a scenario, increased energy consumption could create tensions on fossil fuel markets, with a knock-over effect on European growth and competitiveness and a blow for European consumers.

Energy, however, is not only about "how much"; it is also about "where from". European energy dependency is expected to increase over the next decades. The geopolitical consequences of increased dependency are unpredictable but could come at a high cost, if we are to judge by past events in Eastern Europe or more recent ones in North Africa and the Middle East.

Energy security has always been put forward, but the recent experiences of the Macondo off-shore drilling accident in the Gulf of Mexico and the Fukushima Daiichi accident in Japan have also stressed that security and safety had to work together. Such events are clear reminders that safety must always come first. In nuclear, as in energy in general, there is no room for a low-standards policy.

The EU therefore rightly identified the need for safe, sustainable, affordable and secure energy. In meeting these challenges, Europe needs to keep a steady course. It has every reason to seek an ambitious outcome at the XVIIth UN Conference of Parties on climate change in Durban.

### Inclusive energy choices

**In order to move towards a low CO<sub>2</sub> economy, Europe will need the full spectrum of low-CO<sub>2</sub> energies.** While energy efficiency is of course a priority, wind, solar and biomass, as well as other renewable energy sources are bound to become important elements of the European energy mix. With nuclear energy, they offer the secure supply of low-CO<sub>2</sub> electricity Europe needs.

The development of renewables will require important investments in grid infrastructure as well as in electricity storage -when the technology will have been developed-, so as to balance the natural intermittency of solar and wind energy.

Nuclear energy will also remain an important part of Europe's energy mix, with a share in 2050 roughly equivalent to today's. Let us not

forget that nuclear energy already contributes to avoiding the production of 630 million tons of CO<sub>2</sub> every year in Europe.

### Safety first

**When making energy choices, the issue of safety is, rightly, first and foremost on the European energy agenda.**

The European Council at its first ever special meeting on energy, on the 4th February 2011, called for promoting "the highest nuclear safety standards" internationally. This was by no means a first step. The EU has a commendable history in international cooperation in favour of nuclear safety. It created the European Nuclear Safety Regulators Group in 2007. In 2009, the Council adopted a directive on nuclear safety.

On the 25th March 2011, the heads of state and government requested a safety review of all European nuclear power plants, inviting neighbouring countries to do so too. The results of these tests will be made public and conclusions will have to be drawn, plant by plant. **By undertaking this extensive review, the EU will continue to lead the way internationally for safe and sustainable nuclear energy.**

This nevertheless needs to be a collective effort. The EU needs to develop a shared understanding with its neighbours on nuclear safety and implement common standards. Nuclear safety and transparency are global concerns which cannot stop at the EU's borders. Initiatives under consideration in the G8/ G20 and in the IAEA are essential.

I should add that the lessons from Fukushima will be important to plan the security of many other industrial assets and critical infrastructure, from transport to telecommunications to waterworks. Here too, the EU has an important role to play to make sure civil protection resources are fully in place.

For our part, we, at AREVA, have always put safety at the core of our corporate values. My firm conviction is that “safety first” is not only an ethical imperative but also a sound business approach as safety and efficiency naturally go hand-in-hand.

### European industrial competitiveness

The European Commission rightly underlined in its 2020 Energy strategy that the EU needs to maintain and develop its leadership in low-CO2 technologies. This means strengthening Europe’s industrial base and its supply chain. Europe’s global competitors are for their part actively promoting inclusive low-CO2 technology policies. As the Commission has indicated “Europe’s lead is challenged”.

For Europe to lead, it must inspire the hearts

and minds. This will not be achieved by turning to a policy of slow or negative growth. Smart, sustainable and inclusive growth is achievable and must remain Europe’s guiding principle. The EU’s competitors will not wait for us: it is high time to act.





## Safe management of nuclear waste



**Bernard BIGOT**

High Commissioner of the CEA (Commission for Atomic and Alternative Energies)

**T**he search for the safest means of managing nuclear waste – in particular the most highly radioactive, known as "HLW-LL" – High Level Waste Long Life – is a constant feature of French nuclear policy. This was restated by the 28th June 2006 Act, which recalls two key, yet simple principles:

- reduce the volume and harmfulness of the ultimate waste through reprocessing-recycling of spent nuclear fuels;
- followed by packaging of the ultimate waste for reversible geological disposal in deep geological layers.

### Reducing the volume and harmfulness of ultimate waste

In the facilities at La Hague, France today uses reprocessing technologies that could well be considered the most advanced in the world: virtually all of the enriched uranium fuel (UOX) is reprocessed, the recovered uranium is then to a large extent re-enriched and the plutonium is recycled in the form of MOX fuel (strict application of the "flow balance" rule means that only the amount of fuel to be actually recycled is reprocessed, to avoid any build-up in the quantity of separated plutonium). The MOX fuel unloaded from the reactors is stored for subsequent reprocessing. The deployment of fast neutron reactors would enable the depleted uranium

not presently reusable to be consumed, by recycling this MOX fuel a large number of times and, if so wished, would allow more complete consumption of the plutonium it contains.

CEA is also pursuing research into the "separation and transmutation" of certain long-lived radionuclides (primarily americium), in order to explore the possibility of further reducing the harmfulness of the ultimate waste. Real progress has recently been made in the laboratory, holding out hope for the potential use of such options, although this is more for the long term and much still needs to be done before the possible industrial deployment stage could be reached. A summary of achievements and prospects will be produced in 2012 (this is the deadline set by the 2006 Act), and experiments will continue on a quite different scale in the ASTRID prototype, which is scheduled to enter service by 2020.

### Packaging ultimate waste for reversible geological disposal

It should be recalled that, at present, ultimate waste chiefly consists of fission products and minor actinides, which are immobilised in a glass matrix, for which the formulation was designed to facilitate the incorporation (about 15% by mass) of various radionuclides, while ensuring excellent durability on the part of the final package. This "nuclear glass" produced in the La Hague plant (10 to 15 containers of about 150 litres, per reactor, per year), is an international benchmark for the confinement of nuclear waste, and its durability is the subject of intensive research. It would seem that the corrosion it suffers in a disposal situation

should remain extremely slight (about one micron per century, or less!): this figure was obtained by cross-checking the models against yardsticks both archaeological (glass from the Roman period) and geological (study of the evolution of basalt rock). However, even if prudence is required, owing to the time scales being considered, glass can be considered to offer very safe confinement of radioactive waste for the long term. The vitrified package production technologies are being constantly improved and the recently developed "cold crucible" method opens up new avenues.

After a period of storage in the "decay pit", the duration of which is yet to be optimised to ensure the best possible management of the residual thermal power at the time of final disposal, these packages are designed for disposal in deep geological formations. The concept studied by ANDRA (and experimented in the BURE underground laboratory in Meuse / Haute-Marne), consists in placing them inside drifts excavated from a layer of clay at a depth of about 500 metres (drifts that would be eventually sealed). After a public inquiry in 2013, a creation authorisation application should be submitted in 2015 with a view to commissioning the repository in about 2025.

It is important to note that all of the options concerning the management of ultimate waste have been developed over nearly 20 years through a process of constant progress, avoiding the temptation to cut corners and, for each option, attempting to bring public opinion on-board, to the greatest extent possible, on the basis of clear information and sustained consultation. In our view, this is one of the keys to the success of the approach.

# European energy prospects for 2030



**Pantelis CAPROS**

Professor of Energy Economics at the National Technical University of Athens

**A**fter a long period without common energy policy, the European Union has at present a binding legal framework which sets the agenda and the targets for the energy policy of the Member-States. The energy choices of national governments and market participants will be strongly influenced by the EU Directives and Regulations which are already in place.

The national renewable energy action plans, which were submitted in the context of the Renewables Directive, describe a pathway to 2020 with ambitious investment for applying renewables in power generation, in direct energy uses and in the transport sector.

If implemented, renewables would deliver 35% of electricity by 2020, significantly up from a 19% share in 2010. The share of non dispatchable renewables (wind and solar) in power generation will increase, from 5.5% in 2010, to a level between 18% and 20% in 2020. Renewables would generate more electricity than nuclear in 2020 and they would generate more electricity than all fossil fuels together by 2030. The power sector of Europe and the internal market of electricity will have to undergo significant changes for implementing the national renewables plans: higher investment for the grids, more balancing and reserve services, new market arrangements for the renewables support bill and broader multi-country market couplings.

The power sector will also be strongly

influenced by the Emission Trading Scheme, which will include full auctioning of emission allowances from 2013 onwards. The carbon price will become a major price signal for power generation investment and unit commitment decisions. As the volume of allowances will continuously decrease over time under the ETS Directive, the market participants will have to anticipate rising carbon prices in the future. At present, the major carbon-free investment choices, apart renewables, are uncertain: carbon capture and storage faces difficulties in finding storage areas, while nuclear investment plans may be downscaled after the accident in Japan. It is then more likely that investment in gas-fired units will increase, as they are less capital intensive and a good source for ancillary services needed by renewables.

Today it seems unlikely that carbon prices in ETS auctions reach high levels until 2020, because the total volume of allowances correspond to the pre-crisis emissions and because renewables and energy efficiency improving policies reduce the demand for allowances. Some therefore advocate in favour of tightening the ETS cap by 2020, in order to shape carbon price expectations of investors. It is true that the carbon prices risk being low in the period before 2020 (close to 20 EUR per ton of CO<sub>2</sub> in constant prices of today), if all planned renewable and energy efficiency developments succeed until 2020. It is also true that in the short time-lapse until 2020, CCS and nuclear cannot develop and renewables plans are already ambitious.

The policy debate has to focus on the period 2020-2030, which is characterised by high uncertainty. Just in order to preserve the present operational level of nuclear by 2030, around 75 GW of new nuclear (new or retrofitted plants) must be commissioned in the period 2016-2030, which represents

roughly 60% of present capacity in the EU. If half of this new capacity fails to develop, carbon prices will rise to levels above 45 EUR per ton of CO<sub>2</sub>, which are comfortable for CCS, provided that a system of storage facilities and transportation is in place in a timely manner. Otherwise, only renewables can fill the gap so as to stay in a trajectory of emissions compatible with climate friendly targets. In such a case, the EU power system will generate 55% from renewables with 35% from non dispatchable renewables in 2030. This is technically feasible, but it requires considerable market adjustments, operational arrangements and investment in grids at early stages during the 2020-2030 decade.

The energy efficiency improving actions should not be disregarded, as energy savings in buildings and transport sectors will be the cornerstone of the desired future state of the energy system in the EU. The European Commission has adopted a long list of Directives and Regulations aiming at energy efficiency improvement, but the enforcement mechanisms are rather weak in most cases. Under conservative assumptions about the pace of implementation of these measures, total primary energy requirements of the EU could stabilise, instead of increasing, from 2010 until 2030. More aggressive implementation could lead to 10% savings by 2030, compared to present levels.

The transport sector deserves special attention from policy makers. The trend towards electrification in road mobility is certainly beneficial for the environment and the long-term decarbonisation targets. Timely and adequate incentives, as well as investment in recharging infrastructure, have to be in place early enough to enable this development and to grasp the benefits in the period 2020 - 2030.



## Electricity: facing the challenge of the right mix



**Fulvio CONTI**

Chief Executive Officer ENEL

**A**s CEO of one of the largest utilities in the world, I am aware of the responsibility of our sector towards a modern, sustainable and competitive Europe. Keeping this in mind, I would like to comment on what our strategic priorities in this context should be. Basically, in the ideal energy mix, all types of technology and energy sources play a role, contributing to the three pillars of European energy policy: security of supply, sustainability and competitiveness.

Europe needs to further diversify its generation mix, in order to increase its energy security and in order to sustainably reduce carbon dioxide emissions. In 2009, Europe generated 53%<sup>1</sup> of its electricity from fossil fuels – just a 3% down from the figure of 10 years earlier. In this context, we need to develop and deploy a wide spectrum of low carbon technology, ranging from nuclear, to carbon capture and storage (CCS), renewable energies, energy efficiency and smart grids.

Within the integrated European energy market, we have decided to further develop renewable energy sources. To this end, it is necessary to harmonise incentives at EU level to boost in each country the best available sources. Alongside every installed

MW of renewable energy, such as wind and solar, conventional generation, such as clean coal and gas, will be required as back-up capacity in order to ensure grid security. Hence, if the cost of conventional investments in back-up capacity is not integrated in the overall development cost of renewable energy sources, we will not be able to develop security of supply and sustainability.

According to the International Energy Agency, it is expected that coal along with other fossil fuels will continue to supply the bulk of global energy consumption, though their share will fall from 81% in 2008 to 74% in 2035<sup>2</sup>. Coal reserves are spread across the world and coal consumption is steadily increasing, specifically in China and India. The only sustainable approach to this fact is to invest in the most promising cleaner fossil fuels systems, coupling them with energy efficiency initiatives.

European and national R&D spending should be substantially boosted and refocused on a new smart energy economy. Energy R&D should receive priority in overall R&D budgets and public funding should be devoted to technology which can result in the highest carbon reductions, like CCS, unconventional and intermittent renewable energy, smart grids and electric transport, implementing these technologies in the framework established in the European Strategic Energy Technology plan (SET-Plan).

Investing in energy efficiency throughout the entire value chain – generation, distribution and supply – is essential to increase energy security while reducing emissions. To this end, large scale development of energy efficiency will require proper regulatory

mechanisms, providing incentives to energy companies committed to developing and deploying energy efficient technology and a more rational use of energy.

Likewise, the Emissions Trading Scheme, together with the implementation of consistent policies to accelerate the development of the most promising low-carbon technology are the enablers to meet emissions reduction targets.

In this perspective, nuclear power plants have been seen as complement both to renewables and to conventional capacity, playing an indispensable part within the European generation mix, as an abundant, reliable and substantially carbon free energy source. With 28%<sup>3</sup> of today's electricity production covered by nuclear power production, Europe is well-positioned to achieve its 2020 targets. In order to maintain this competitive advantage, a vision of the future would involve further development of this industry.

Following the Fukushima events, I believe we all have the responsibility to support the European approach for a comprehensive safety and risk assessment of nuclear power plants, since nuclear based electricity production remains of utmost importance in the European energy mix and to guarantee security of supply. Along this, it will continue to play a decisive role in meeting the Climate and Energy Package targets and the new

1. Source: *Enerdata*

2. Source: *World Energy Outlook 2010 – International Energy Agency*

3. Source: *Enerdata*





ambitious objectives set by the Roadmap for a low carbon economy by 2050.

Also, security of energy supply cannot be achieved without improving the high voltage network capacity within the EU, such as along the North-South axis, essential to supporting market integration and the development of large-scale renewable production. In order to integrate growing amounts of distributed generation, reduce grid losses, deploy smart meters and integrate electric vehicles, there is a growing necessity to develop and modernise distribution networks as well as storage facilities. Accordingly, to promote further investments in infrastructure, authorisation

and permits procedures need to be facilitated and streamlined.

Market integration, market liberalisation and harmonisation of the regulatory framework across Europe, play an important role in sharing energy resources and in handling the security of energy supply. To succeed, we need to focus on integration and we need to define technical rules that ensure the interoperability of the markets. We must progress together with an effective and harmonised liberalisation process inside all Member States. The recipe is more interconnectivity for power and gas.

In view of guaranteeing the EU's energy independency for the long term, we all need to cooperate on a common road map that will deliver the high standards that Europe has set in order to secure its energy supply in a sustainable manner.



## Energy infrastructures: does the European Union have the means to fulfil its ambitions?



**Françoise GROSSETÊTE**

MEP (EPP)

**A**t a time of economic crisis, when each investment has to be carefully weighed up and spending carefully monitored, it is essential to succeed in correctly determining which sectors we should support in priority in order to diversify our supplies. Moreover, it is unquestionable that the European Union requires a coordinated energy policy: whether one thinks of renewable energies or the security of our supply, energy questions transcend borders. Isolated national solutions clearly do not provide an answer to the issues we are currently facing; this is a European question, which is both economic and strategic.

In this particular situation, what is the correct course of action? How far can and should the European Union, bound by its budgetary austerity obligations, choose to invest large amounts of money in its energy infrastructures?

It is obvious that large-scale investments are necessary for putting real European energy networks in place, for example with regard to our energy efficiency, the diversification of our energy mix and the transmission of new types of energy. It is absolutely necessary for us to replace our capacities before they become obsolete (which, in some cases, they have already become).

However, this requires funds. Last November, in its communication "Priorities for 2020 and beyond - a blueprint for an integrated European energy network", the Commission estimated the needs of the coming decade at 200 billion euros, of which half is to be

provided by Member States. In order to finance these investments, a new financial instrument will, in particular, be put forward, in June 2011, to provide support for priority projects for the 2014-2020 period.

In a crisis period, it is obvious that we need to ensure that our investments are profitable and that there is a real return on investments! Rather than making direct public investments, the priority is therefore to find innovative market-based solutions, aimed at stimulating private investments. In order to top up the financing gaps, the Commission suggests an improvement of the rules of cost allocation and optimisation of the leverage of private funds, by means of risk mitigation. As the MEP Francisco Sosa Wagner emphasises in his working document, we need to guarantee a stable and regulated investment environment and put various finance options in place, such as loans, guarantee funds, risk sharing, public-private partnerships and partnerships with the European Investment Bank (EIB). The option of financing by means of revenue derived from the Emissions Trading Scheme (ETS) or an EU carbon tax should also be examined.

However, even under these favourable conditions, certain private investments will not be commercially viable, generally for reasons of yield. Nevertheless, the whole of the EU, even its outlying regions, has to be served, at equitable prices: Europe's "energy islands" should be made to disappear, through the establishment of real cross-border interconnections. For this reason, a certain amount of public investment is inevitable. Since it is difficult to make such projects profitable, joint financing is possible in these types of cases, making use of existing instruments (cohesion policy for example) and other innovative instruments if necessary.

Apart from investments, it is absolutely necessary to take other measures, in particular with regard to the granting of authorisations and permits for initiating new projects of European dimensions. The

existing timescales, in these domains, hinder any vague desires for innovation on the part of private investors. These procedures need to be simpler and faster: European coordination in this area would allow us to make investments more dynamic, while restricting public expenditure.

We should not lose sight of the fact that the crisis is also an opportunity to be seized: it allows us to search for alternatives to the status quo and to stimulate our spirit of innovation. The development of new ideas could constitute the dawn of a new industrial revolution. We should always think with a long-term perspective. Thus, we are now entering the new phase of "energy highways", which, for example, are set to establish the best possible integration of the specific transport requirements of solar energy and gas.

An integrated and intelligent smart grid network, combining the European corridors of interest, will create growth and hundreds of thousands of jobs, with optimal integration of the innovations arising from distributed generation. It will support our economy, and our SMEs, while promoting the most innovative European technologies. All of these initiatives will ensure our energy security at the external level and a more sustainable, low-carbon economy. In addition, these measures will allow us real control over the use of our reserves, with better allocation in case of crisis.

We therefore have every reason to be optimistic with regard to the future of our energy infrastructures, even in this period of forced austerity. We need to act quickly, making the right decisions in terms of investment and creation of financial instruments: an appropriate combination of these policies will enable us to ensure the durability of our system.

# What investments in infrastructure?



**Lord John MOGG**

President, Council of European Energy Regulators – CEER

**T**he challenges of climate change and security of energy supplies are global. Europe's politicians have made it plain that the Union will play a leading role in meeting them. At the heart of any solution will be new investments – investment on a huge scale and at a pace not seen before in Europe's energy markets. Exactly how much, and where, capital is needed is being studied assiduously by governments, energy companies and regulators across Europe. All agree that the number is very large indeed. The question that remains is whether the investment needed in the energy sector by 2020 (and beyond) is deliverable in time without significant changes to the 'business as usual' approach that has served us well until now.

Central to understanding such issues is one simple fact - capital markets will provide most of this new capital funding. They will need a stable regulatory framework to reinforce the confidence that they will earn a fair return on capital invested. For this ratio, energy regulatory authorities have a centrally important role in that they provide the ground rules under which network companies operate and make the investments in order to safeguard energy supply. Energy regulators also oversee the wholesale markets through which energy prices are set and incentivise energy companies to provide more efficient, secure and competitive services for the greatest overall social benefit.

The EU's Third energy liberalisation Package, which comes into force this month, will provide the framework for Europe's future energy market. The stronger independence it provides to national regulators is key to reinforcing that predictable and robust framework. For their part, national regulators will need to take into account the impact of their decisions on the EU's internal energy market. The Third Package regulatory tools are central to establishing the foundation for the future framework for infrastructure investments recently identified in the recent Commission's Infrastructure Communication.

The new Agency for the Cooperation of Energy Regulators (ACER) established by the Third Package will, through the development of framework guidelines, provide the foundation stones for the comprehensive cross-border regulatory framework. The national, regional and Community-wide ten-year network development plans (TYNDPs) will similarly provide the blueprint for the European grid to help integrate our national energy markets. But we must be very clear what we want the TYNDP to achieve - hard information on our targets and ambitions which the ENTSOs can translate into projects and hardware.

Regulators have some expertise to ensure that investments are made efficiently, to avoid unnecessary price rises and, therefore, I can confirm that regulators are ready to play their full part in helping to deliver the necessary infrastructure on time, and at a cost which represents good value for money.

There are quick wins possible even before new investment comes on stream. Speedy action may be possible before new investment comes on stream. Much of our current activity, both through framework guidelines and through regional integration, is targeting gains from smarter grids on a cross-border

basis. Whilst building new infrastructure is important, making full use of existing networks can equally contribute to additional flexibility as well as optimal transparency. Regulators have a further role, establishing incentives or requirements on TSOs to invest, that reflect the future environment and a massive expansion of renewables. Indeed there is a welcome and growing recognition among policy-makers of the obstacles that the application of multiple and different permitting procedures for infrastructure projects present at national level. Regulators have long underlined the importance of addressing this key issue.

The win-win strategy of energy efficiency is a further major area we must exploit to the full. Smart meters, smart grids and consumer education programmes are now beginning to be rolled out across Europe. Here too, regulators are, within their powers, fully committed to enabling these changes in the interests of consumers across Europe.

In short, energy regulators are responsible for 1) developing a framework to enable essential investments; 2) ensuring that the money is spent efficiently to minimise the impact on customer bills; and 3) ensuring that the risks which are inherent in the coming network and technology changes are properly managed. Energy regulation can help to create the necessary incentives and stable framework to encourage new energy sector investments to come online, while at the same time safeguarding the public interest. None the less, at the end of the day, the political commitment by governments to a strong and independent framework of energy regulation with independent regulators will remain the driving force for change.





## If a new energy policy is the answer - what is the question?



**Bendt BENDTSEN**

MEP (EPP)

A lot of authors contribute to the different parts of this volume and they will all have different goals in their involvement in energy policy. My personal ambition is for the EU to become less dependent on fossil fuels. The benefits of a transition to domestic production is obvious. It will be beneficial to the environment, help promote new industries and create jobs in these, and secure a more stable economic environment in the energy market due to the elimination of the consequences of the highly unreliable fluctuation of the oil prices.

The way we get there is through energy savings, the further development of renewables and the necessary expansion of energy infrastructure.

Technologically and politically we are on the right track but the economic situation holds us back. Political decisions are not being taken because of the economy, and our businesses move abroad and do not have capital to invest in R&D. It is well-known that Europe still suffers from the financial crisis but we have to see energy policy as a means of creating growth and jobs in industry and SMEs.

Energy policy in the EU is a result of an evolution over decades. Therefore, we should not strive to start all over, but rather continue to develop our existing approach.

The well-known two-way approach with overall targets for climate reductions, energy efficiency and renewables on the one hand, and concrete policy initiatives on the other. In between these two there should be enough room from the Member States to develop their own approach.

EU is more than the sum of the Member States but for the European Parliament or the European Commission to have influence they should be better at speaking with one voice. My personal view is that the almost religious approach to binding targets in energy efficiency heavily damaged the negotiations on the Parliament's own-initiative report on energy efficiency. The EPP Group tried a new and innovative approach which was to give the Commission more powers and actively use the National Energy Efficiency Action Plans as a policy instrument. The Commission would be able to reject national action plans should they not correspond to the overall EU target - de facto binding targets. My hope was that with this approach we could discuss policy instead of discussing the overall targets.

I prefer to focus on concrete policy instruments. These are the ones that will deliver results. With the initiatives we have at hand and is in the working programme of eco-design we will by 2020 reach annual savings worth the consumption of Italy or the UK. The effect of eco-design in terms of savings can easily be measured while it is hard to really say what effect the 20-20-20 targets have had.

The main question right now is: how do EU avoid ending up like a museum, and start competing at the global scene again? I think

part of this answer lies in energy policy. Many decision-makers in business and politics need to be given insight into the potential.

While we should focus on key areas, there is a clear lack of understanding that other policy areas also contribute to the technological development. It is also about improving the framework conditions for our industries. Our SMEs are the ones who create the new necessary technologies. Wages is the main expense of any business, and as wages are much lower outside Europe we need to compete on other parameters. We have a tremendous responsibility if we are to foster growth in Europe.

# Shaping the future of gas transmission



**Philippe BOUCLY**

General Director of GRTgaz

**T**he integration of the energy markets in Europe is a major part of the process of European construction, which requires strong infrastructures and the reinforcement of the interconnections between Member States in order to guarantee diversity and security of gas supply. GRTgaz invests on a daily basis in transmission of natural gas under the best conditions of safety and fluidity and in increasing the security of supply for France and Europe. The company's objective is to be the leading transmission operator in Europe, allowing France to become a real crossroads for trade in natural gas.

## 1. Natural gas, an energy for Europe's future

Natural gas causes little pollution, is flexible and effective in use and possesses all of the qualities required for meeting the challenge of security of supply in France and Europe. In particular, the flexibility provided by this "triple A" energy (abundant, affordable and acceptable for the environment) makes it possible to rapidly adapt electricity generation to fluctuations in demand. Natural gas is the fossil energy that is most respectful to the environment and has the advantage of being storable. It thus has a high level of complementarity with renewable energies, whose production is sporadic and uncertain by nature. In France today, electricity production from natural gas represents an installed power capacity of 5,000 MW in its own right.

Natural gas constitutes a reliable resource for Europe since world reserves are plentiful and are set to grow still further with the advance of progress in the field of exploration. Shippers are well aware of this, and furthermore they are becoming involved in the wholesale markets in increasing numbers.

As a transmission operator, GRTgaz contributes to strengthening the diversity and security of supply in France and Europe, whilst endeavouring to simplify access and flow of natural gas within its grid. In order to offer ever more practical and effective conditions at the commercial level, it makes its services evolve in consultation and maintains a permanent ambition for the development and improvement of its operations.

## 2. Towards a single trade market in France

The GRTgaz transmission system is over 32,000 km long with 8 entry points and is the largest gas grid in Europe. Connected by gas pipelines to the markets of the North, East and South of Europe, with coastlines that are remarkably well located for receiving liquefied natural gas (LNG) from the Persian Gulf and the Mediterranean and Atlantic areas, France is situated at the heart of the gas flows from the world's principal areas of production to Europe's consumer countries. GRTgaz thus simultaneously possesses a large national market and a high-capacity transit market (688 TWh transported in 2010).

GRTgaz actively cooperates with the neighbouring operators and the competent European authorities for the removal of the technical and commercial barriers likely to impede cross-border trade and in order to promote the construction of an ever more reliable integrated market for natural gas at the European level.

There is still a great deal of congestion impeding gas flows in the European gas transmission systems. From this point of view, GRTgaz's recent decision to invest in doubling the Rhône artery (Eridan project), which has just been approved by the French regulator (the CRE), constitutes a major step forward in reducing congestion in the French gas grid. This investment, of a sum total of €484 M, has the benefit of decisive support from the European Union with the granting of a maximum subsidy of €74 M.

Apart from this decision, the construction of a major West-East artery in the North of France (Arc de Dierrey) would make it possible put a single area in place in France. The creation of such an artery could well be prompted by the decision to build a liquefied natural gas terminal at Dunkirk. Finally, in order to deal with congestion at the junction between the North and South PEG's of GRTgaz, a market coupling mechanism will be tried out from July 2011 to March 2012. This constitutes a first in Europe.

These developments are all good news for the attractiveness of the French market, and more broadly for the integration of the markets in Europe. In an uncertain environment, investing in a pertinent manner in gas infrastructures is a continuous challenge that necessitates collective responses bringing authorities, industrial actors and regulators together around a shared objective: equipping Europe with a reliable, high-performance tool for the coming decades, in the service of consumers.



## The role of transmission system operators (TSOs) for secure and reliable electricity supply



**Daniel DOBBENI**

President of the European Network of Transmission System Operators for Electricity (ENTSO-E)

**A**s TSOs, the 41 ENTSO-E members from 34 countries are well placed to observe the material impact of European policy debates on security of supply. On the face of it, a TSO's job may appear as unobtrusive, technical, administrative and unexciting! Our infrastructure - made of lines, cables, transformers, switches - connect generation to load (demand) and we manage - European wide - the power system in real time to ensure the lights stay on. But policy demands much more from TSOs today as demonstrated by the reaction to ENTSO-E's (pilot) Ten-Year Network Development Plan (TYNDP). Based on sound power systems engineering and century-old experience the TYNDP shows how much infrastructure will be required to ensure security of supply across Europe and to meet energy and climate change policy objectives: 42,000 km of new lines are required to support the changing generation mix (fast growing renewable energy sources often far from the loads), and to help integrate the energy market.

The TYNDP helped focus European debate on energy policy objectives, to marry the future of carbon reduction and Renewable Energy Sources, and place differing political directions in some alignment. I have not seen any commentator from left or right, centre

or green disagree with the need to develop our transmission infrastructure, although they may place different weightings on other initiatives (e.g. smart grids / energy efficiency) to go alongside the development of transmission infrastructure.

So why does ENTSO-E remain worried that this infrastructure will not be built? We have agreement at Council, European Commission and the European Parliament that Europe needs this infrastructure to meet our energy objectives. But, major hurdles must be overcome. The first is public acceptance. I hear awful stories from my fellow CEOs about the permitting in their countries. Tales of transmission lines being delayed or abandoned due to permitting processes that become endless, or decisions that do not reflect adequately general interest compared to local interest.

The lack of a developed and implemented public acceptance model is the most urgent challenge facing Europe 2020 energy policy objectives. The Commission has announced its intention to bring forward proposals for public acceptance processes for energy infrastructure projects of 'European interest' but this is only half the answer. The TYNDP identified infrastructure reinforcement required to enable the single integrated energy market and support security of supply and renewable energy integration. Of the 42,000 km of new lines needed until 2020 most of them lie within the boundaries of Member States. These lines are just as important for energy security, market and renewables integration though less eye-catching than pan-European corridors. Therefore Member

States must urgently address development of their own processes for public acceptance of transmission infrastructure otherwise the EU 2020 energy objectives will not be met. We need to move beyond the principles of public acceptance to identify common features of any system such as transparency of benefits and costs and consistent assessment of alternatives so that authorisation processes do not repeatedly revisit the question of need but concentrate on the unique features of a particular proposal.

The second significant barrier relates to the cost and who will pay for this infrastructure? At the end of the day customers will pay the bill for sustainable electricity, including networks needed to deliver energy to their door. Therefore, our role is to ensure, as much as possible, that only the needed infrastructure is built. TSOs will fund this investment, equity and debt from the capital markets, but capital will only flow towards transmission infrastructure if there are stable and attractive regulatory returns. There is no doubt in my mind that there is sufficient money available on the market today, and tomorrow. However TSOs, despite their monopoly status, compete for investors in a global market place where the winner delivers stable returns which are proportionate to the perceived risks. Creating the conditions to attract the 100 to 140 billion EUR of investment in electricity transmission needed until 2020 will require developing an approach which incentivizes efficient and timely investment as well as funding innovation and R&D.



So how does it look overall for Europe's security of energy supply? Considerable progress has been made despite the recent financial and economic crisis. The 3rd Package will help with the future network codes, the framework for the TYNDP and the definition of ENTSO-E and ACER. With the Infrastructure Package, the difficult permitting and public acceptance problems are finally reaching the top of the agenda of

political decision makers. Now politicians on all levels, regulators, TSOs, and all who want climate protection, integrated energy markets and security of supply need to work together with concerned citizens on the best solution for each of the 500 needed new transmission lines. However, the political debate should not forget that achieving the 20-20-20 targets imply building 42,000 km of new lines in due time... and only 9 years and 9 months to go!



## Energy security: a two way street



**Abdalla S. EL-BADRI**

OPEC Secretary General

**W**e live in an ever more interdependent world. Trade, technology and travel are bringing us all closer together. Thus, it is essential to better understand the needs and requirements of those we have increasingly become connected to.

From the energy perspective, this means an appreciation of the reciprocal nature of energy security. It is a two-way street. Security of demand is as important to producers, as security of supply is to consumers. Moreover, energy security cannot only be viewed as a short-term conundrum. It needs to cover all foreseeable time-horizons. Security tomorrow is as important as security today.

For European nations, it is crucial that there is adequate energy supply to fuel the needs of their populations. OPEC, whose Member Countries supply a considerable amount of Europe's oil requirements, has, and remains extremely vigilant in ensuring the needs of all consumers are met. In addition to day-to-day supply, its Members make known well in advance plans for expansion in production capacity and look to maintain adequate levels of spare capacity, which has been around 6 mb/d over the past year. This level has recently fallen due to the absence of Libyan

capacity, which we hope will only be for a short time.

There are also enough resources to meet future oil demand. In both OPEC and non-OPEC countries, reserve estimates have increased as improved technology has offered up new way of unlocking both conventional and unconventional resources. Estimates from the US Geological Survey of ultimately recoverable reserves have practically doubled since the early 1980s – to 3.4 trillion barrels. Cumulative production to date represents only one-third of this figure.

In terms of the overall energy mix, OPEC welcomes diversity and understands the European Union's (EU) push to develop renewables and other technologies as it advances towards a more decarbonised economy. Indeed, many OPEC Member Countries have considerable renewable development potential themselves, which can help to meet ever-expanding electricity needs and allow them to diversify their energy portfolio.

There has also been much talk of new nuclear build, which of course remains an option. Though recent events in Japan have brought to the fore some of the major challenges facing the nuclear energy industry, particularly in terms of safety. There are also many questions that remain unanswered with regards to nuclear waste and decommissioning.

When looking at diversity and the range of energies and technologies available, however, the goal must be a level playing field where no bias towards any specific energy or technology exists.

Looking ahead, it is important to recognize that fossil fuels will continue to satisfy the overwhelming share of the world's commercial energy needs for the foreseeable future. Thus, the challenge is making sure emphasis is placed on how to develop, produce, transport, refine and deliver oil to end-users in an efficient, timely, sustainable, economic, reliable and environmentally-sound manner.

Central to this is technological innovation. OPEC is an advocate of developing and deploying cleaner fossil fuel technologies, notably carbon capture and storage (CCS), for which the EU has also shown its support. It is a proven technology, with projects already sited in Europe (Norway), an OPEC Member Country (Algeria) and elsewhere. CCS can help to reduce emissions from conventional fossil fuels without disrupting the current energy supply system.

In this regard, it is important to emphasize that developed countries, having the technological and financial capabilities, should take the lead in the development and deployment of these technologies.

With the future role of fossil fuels in mind, it is essential to underscore the issue of security of demand. It is essential to have the clearest possible picture in relation to future oil demand. The issue is particularly relevant when looking at some policies that offer up uncertainties in regards to their impact on future oil consumption levels and overall energy demand. Every country has the right to initiate their own policies, but is important to appreciate how a lack of transparent and reliable market signals can impact the oil market.



For producers, on the one hand it might mean wasting precious resources on capacity that may not be needed. And on the other, without the confidence that additional demand for oil will emerge, the incentive to invest can be reduced. This may lead to under investment and a situation where consumers' needs are not met.

It all underlines the fact security of supply and security of demand cannot be decoupled.

In today's world none of us can act alone. And with energy central to each and every one of us, it is critical that all stakeholders work together for market stability. For the EU and OPEC, dialogue and cooperation has been ongoing for many years with the two parties undertaking ministerial-level meetings, industry-focused roundtables and reports on various topical areas.

Those of us who are in the energy business have a responsibility to do everything we

can to maintain and enhance security and confidence in the sustainability of the energy system on which we all depend.





## Energy savings: a new political impetus is possible



**Yannick JADOT**

MEP, Europe Ecology – The Greens, EFA at the European Parliament

Every winter, France rediscovers that 3.5 million households have precarious access to energy: they are struggling to meet their basic energy needs such as heating their homes. Winter also provides the occasion for inquiring into electricity consumption records. Social anxiety goes side by side with productivist pride and a fear of cataclysm: shortages and the collapse of our electricity transmission network. In this situation, the authorities give priority to the solution of continuously increasing production. More power stations for increased electricity production. More networks for increased transmission of energy.

There is no “French exception” in this respect. This is the favoured solution throughout Europe for ensuring the security of our electricity supply, and of our energy more generally. Thus, in order to meet their gas requirements and guard against gas crises, Europeans are working on an increasing number of gas pipelines projects, sometimes even at the price of maintaining our dependence with Russia, or looking towards the exploration of gases which, although admittedly “unconventional”, are even more polluting.

However, a new approach is emerging: that of energy savings. In 2007, the European Heads of State undertook to reduce energy

consumption by 20% by 2020. Although, unfortunately, this commitment is not binding, it represents a winning approach in numerous respects. From the point of view of our energy dependence: the European Union’s imports – including nuclear imports – currently represent three quarters of its primary energy; this figure could well be divided by 2.5 by the middle of the century. With regard to the cost of energy for our businesses and our fellow citizens: European households waste €1,000 of energy every year, despite the fact that between 50 and 125 million Europeans have precarious access to energy. With regard to unemployment: this commitment has the potential to create at least two million jobs.

Throughout France and Europe, companies of all sizes, associations and elected representatives are engaging in the fight in favour of energy conservation, both on the ground and within political institutions. In January

this year, the CEOs of more than 30 major companies, including Saint-Gobain and Whirlpool, called upon Heads of State to make the objective of 20% energy conservation into a binding obligation.

But victories are difficult to achieve. Saving energy goes against our productivist logic. Each unconsumed unit of energy equals less profit for the European oligopoly of energy producers. As a result: without any additional political effort, the EU will fall far short of reaching its energy-saving objectives. Today, certain sectors are left behind such as the renovation of buildings. Other sectors are suffering from a lack of ambition in the implementation of the policies, for example the eco-design directive for energy-related products such as boilers and computers.

In 2011, Europe needs a new political impetus in favour of energy savings. At the EU Energy Summit on 4th February this year, the Heads of State did not measure up to the hopes created by this high-level meeting. Although the European Commission is preparing various initiatives, its low ambition might not go further than its Action Plan for Energy Efficiency, which moreover has lost the “A” for Action in its title. It therefore falls to the European Parliament to push for ambitious objectives in this respect, and to make the voices of citizens and businesses heard, who have so much to gain from this energy revolution. There are good grounds for optimism in this respect: a few weeks ago, in a plenary vote, the European Parliament demanded that the 20% energy reduction objective should be made binding.



# Securing access to oil and oil products



**Isabelle MULLER**

Secretary General of EUROPIA (European Petroleum Industry Association)

Europe is now at the eve of an essential debate on Europe's energy strategy towards 2050. The European Union has subscribed to the objective of limiting temperature rise to 2 °C, which would translate for Europe into an ambitious objective to reduce greenhouse gases by 80-95% reduction in 2050 compared to 1990 level, and the myriad of roadmaps published or to be published by the Commission aim at setting the foundation for implementing measures which are intended to enable meeting this overall objective.

Surprisingly, whereas all independent consultants forecast the continued leading position of oil as energy source in the decades to come, with a market share of 30% of primary energy demand and 80% of fuels for transport by 2035 according to the IEA, oil is featured as a dawning energy source in the various roadmaps.

The European Refining and Marketing industry warns against the potential adverse consequences of this lack of awareness and recognition of the role that oil plays in European economies and social welfare. Despite the welcome recognition by the Commission and the Council of the strategic role of EU Refining in the supply chain for vital oil products, no clear signals are given by the Commission on the acknowledgement of the

strategic role that oil and oil products will continue to play during the transition to a low carbon competitive economy. This transition will be gradual and lengthy and will require relying on secure, reliable and affordable energy supply, which oil has provided in the past decades, and will provide until a viable cost-competitive replacement exists.

Undeniably, oil will play that key role during the transition by fuelling mobility and industry to ensure EU's competitiveness and growth. Oil fuels mobility and more importantly ensures affordable mobility which supports the competitiveness of EU economy. Similarly, oil as a raw material, plays a key role in EU industry's competitiveness, in particular in the petrochemical sector which is closely integrated with the refining sector. The existence of a thriving Europe-based refining sector is therefore of critical importance.

Europe does not live in isolation and the global context cannot be ignored. The growing demand for energy in emerging and developing countries will create a fierce competition for affordable energy. Therefore, securing access to oil and domestically oil refined products is vital for Europe to secure its energy supply, limit dependence on imports of products from a limited number of third countries and maintain the competitiveness and viability of the entire value chain from oil to plastics.

It must be recognized that a robust domestic refining industry has a vital role to play in ensuring secure access to oil refined products. The EU refining industry needs therefore to operate within a framework that ensures its viability and competitiveness. The policy framework should allow the industry

to adapt to the decreasing demand for oil products and the growing diesel/gasoline imbalance, by ensuring that the cost of EU environmental and climate legislation does not put the EU refining industry at a competitive disadvantage vis à vis non-EU refiners. The EU has recognized the major challenges that the European Refining Industry faces in terms of competitiveness, and should commit to address them.

Refining investment cycles are long, 20 to 30 years, and can only be achieved if predictable policy strategies are implemented through legislation based on comprehensive and rigorous impact assessments, sound scientific basis and clearly established objectives. Legislation should furthermore avoid duplication and contradiction and should be considered in an international and competitive perspective.

Major changes in the global economic, politic, social and technical world are foreseeable. Today's decisions will have long lasting implications, and poor choices today may close down paths to the most appropriate solutions. It is therefore essential to make decisions on a sound basis and to leave opportunities opened for the future.

The European refining industry believes it has a key role to play in the transition the EU is starting to shape now, and wishes to contribute to shaping the future and to pro-actively contribute to the development of EU policies and legislation.



## Industrial Consumers need an effective energy policy



**David GILLETT**

Director of Coordination, IFIEC Europe

Opening the electricity market to greater competition and transparency has been a long term objective of the Commission and has been supported by industrial consumers. In particular, those industrial sectors represented by IFIEC Europe, which need assurance about long term security of supply and pricing structures as they face international competition.

A number of different studies carried out both by the Commission and independently have questioned the manner in which energy is delivered to the European final consumer and the opaque pricing structures. Most have concluded that there is considerable scope for providing the consumer with better information and more competitive supply options. The 3rd energy package set out to improve the measures already in place and highlighted that fully integrated trans-EU energy supply structures and the related markets had still to be achieved.

IFIEC supports the concept of an EU energy market, but stresses that different customer groups have different needs in that market. Gas and electricity are different commodities. The fact that storing electricity is not realistic is the clearest pointer that specific market rules are required. Governments need assurance of security of supply to maintain public services and institutions continuously throughout the year and IFIEC's members' efficiency depends on similarly maintaining competitive supply for the continuous processes they employ over the long term. Decisions about the large scale industrial

investments in the sectors represented in IFIEC Europe depend on assurances of returns over long periods. Energy costs are as major part of that decision process. Unlike domestic and commercial demand, which varies considerably between day and night and across weekends and holidays, continuous processes provide a base load certainty for generators over 24 hour terms.

An integrated EU market is necessary for both effective competition and security of supply and should benefit consumers in both respects. IFIEC Europe recognises that this will not be achieved in the short term, with regional arrangements being needed in the interim. It is important to ensure that these are installed in such a way that they can be transferred simply to the wider structure when the time is right. Even so, removing all potential congestion points is unrealistic. The emphasis should be on a prioritisation programme of change, with regulation procedures to oversee how all these points are managed. This will be an important role for ACER, the regulatory body that was formed as part of the changes introduced with the 3rd energy package and which will build on the early work done by CEER.

IFIEC Europe supports the proposed infrastructure upgrades in both gas and electricity supply. These are needed to create integrated and liquid markets and to bring competitive and affordable solutions to the end customer. The important factor is to remove system constraints such as cross border bottlenecks. In many instances it is these that have produced competition arguments, rather than actual supply shortages and have led to consumers being penalised when trying to optimise costs and efficiencies.

The 3rd energy package is not the only component in the market formation debate. EU policy is for increasing quantities of

renewable energy. Since the means of generating this is heavily slanted towards wind and solar based technology, there will be increasing unpredictability in supplies entering the EU transmission system, even with better forecasting. To keep the system balanced against the unpredictability risks, power will need to be transported, potentially to any point in Europe. This poses a major challenge for policy makers as apart from the efficiency losses, as it means constructing an EU electricity distribution system based on maximum potential inputs. Financial support is also given to these otherwise unprofitable generating technologies. How such an imposed arrangement based on support systems is constructed within the concept of an open and competitive market will require innovative thinking by regulators.

IFIEC understands the drive towards renewables, but points to the dilemma of requiring an expensive, overdeveloped infrastructure, of the high costs for subsidizing unprofitable generation technologies along with their low standard of reliability. Requiring consumers to finance these arrangements immediately affects industrial global competitiveness. Whilst international leadership in carbon reduction may be an EU vision, the current economic crisis shows the importance of a diverse economy. When non-EU countries show little enthusiasm for following this lead, there is no overall benefit in reducing manufacturing's competitiveness if all that does is to benefit non-EU suppliers working to lower emission standards.



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