

**The Coming Energy Crash
and its Impact on the European Union**

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AND ITS IMPACT ON THE EUROPEAN UNION**

Franklin DEHOUSSE



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Introduction

The energy markets have undergone fundamental changes during the last years: the rise of oil and gas prices, the progressive liberalization in many western countries, various forms of re-nationalization in some producing countries, the implementation of greenhouse gas reduction programmes, the multiplication of geopolitical worries. This new context obviously requires a new approach.

At the beginning of 2007, the Commission proposed a new strategy, which was broadly approved a little bit later by the European Council¹. To make a proper evaluation of this strategy, it is necessary to analyze first the constraints of this new context. This is the objective of the present paper. It will thus deal, most simply, with the evolution of energy demand (§ 1), of energy offer (§ 2), and of the constraints linked to climate warming (§ 3). After a quick perusal of the possibility of a crash (§ 4), it will then examine the adequacy of the new European strategy (§ 5). In synthesis, the conclusion is that the strategy is quite valid, but the means of implementation remain obscure in some aspects.

Franklin DEHOUSSE²

1. http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/93135.pdf (§§ 27-40).
2. Franklin Dehousse is professor at the University of Liège and judge at the Court of first instance of the European Communities. This comment is strictly personal and does not represent the view of the institutions to which he belongs.
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1. The Demand

1.1. The increasing weight of non triad countries in the world economy

From a long term perspective, one of the most striking evolutions of the world economy is the growing weight of non triad countries during the last 30 years. Triad countries (USA, Europe and Japan) represent a decreasing part of world GNP, going from 70 % to 50 %³. On the other side, the part of some emergent economies, (China, Russia, India, Brazil), is steadily increasing. More strikingly yet, from 2001 to 2006, the whole OECD countries represented only 34 % of GDP growth, while developing Asia alone accounted for nearly 50 % (China alone for 30 %).

At first sight this could appear as a simple repetition of the past. Nonetheless, such an analysis is strongly mistaken. The growth of the so-called Asian tigers (Singapore, Taiwan, South Korea, Thailand) has been impressive in the last decades. But it concerned only small (or sometimes micro) states. On the other side, the growth of China and India, taken together, concerns at least two billions people, who represent more or less a third of all living mankind. Such a massive evolution is bound to have a tremendous impact on the world economy's balance. This is evident for global world growth, commodities' prices, and obviously the energy market.

1.2. The accelerating growth of energy demand

The energy demand has grown moderately but steadily in the world during the last decades. From 1973 to 2005, global TPES (representing the demand of primary energy) went from 6.128 to 11.435 Mtoc⁴. One could thus say that the global energy demand doubled more or less in 32 years.

The same could happen during the next 25 years. At least this is the main point of the IEA projections from 2005 to 2030. Energy demand grows thus a little bit more sharply. After going approximately from 6.000 to 12.000 in 32 years, the forecast is from 12.000 to 18.000 in 25 years. The growth of energy demand is then increasing. Retrospectively, one can thus see on the IEA graphs that

3. A. MADISSON, *The World Economy: a Millennial Perspective*, OECD, 2001.

4. IEA, *World energy outlook*, 2006.

something happened in that domain around 2000. From this moment, the growth of global energy demand becomes slightly sharper. This is largely linked to the evolution of newly industrialising states, and primarily China.

1.3. The paradigm of China

Since 2000, China's economic growth has got a heavy impact on the evolution of world energy consumption. It is noteworthy that this impact has been so strong that it has imposed the IEA to modify in a drastic way its global projections in its 2006 outlook⁵. The IEA raised its China 2030 forecast by 1.2 billion tons of oil equivalent, which represents no less than a 63 percent upward revision.

It is important to observe the causes of this evolution and the repartition of various energy sources⁶. The main cause of the consumption's growth in China lies in the incredible rise of heavy industrial production. One could believe that it is linked to the rise of individual consumption or the rise of transport, but this is not the case – yet. Personal transports provide a good example. The level of car ownership in China today is the same as it was in the United States in 1910. One can thus see that the Chinese car market is still at the infancy level. On the other side, the rise of energy consumption linked to the growth of industrial production has been phenomenal. For example, China is producing now more or less a third of all world steel. This is a tremendous percentage. More generally, all industries, and especially heavy ones, have been growing outstandingly in China. This is the main explanation for the rocketing increase of energy demand – until now. Nonetheless, if individual revenues go on growing, additional sources of energy demand will inevitably appear during the next years and decades.

1.4. First conclusion: the growth of energy demand is a worrying trend

As a first conclusion, the growth of energy demand has accelerated in the world since the beginning of the 21st century. It is difficult not to perceive that evolution as a threat, or at least as a huge challenge. A part of this phenomenon could be explained by conjectural factors. The economic (take-off) of countries as big

5. IEA, World outlook 2006, reference scenario.

6. On this topic, an essential reading is D. ROSEN and T. HAUSER, *China energy – A guide for the perplexed*, Washington: IIE, 2007.

and populated as China and India is bound to generate new imbalances in the world economy. A part of this boom could thus be unsustainable, but another part most likely is not. After all, China has been enjoying a more or less 10% GNP yearly growth since the 1980s. Developed countries will most likely have to live with this growth of demand during the next decades.

2. The Offer

Demand growth is not in itself a problem in a market economy. Market mechanisms allow the economy to adapt. Nonetheless, the offer must be able to grow. Otherwise prices are bound to rise. Some of the consequences of the growth of energy demand are thus inescapable. The world economy will need to find new sources of energy. But where are they?

2.1. Long time lags and heavy capital requirements

Energy adjustment requires time and money. At the risk of simplifying, one must emphasize that energy markets are generally characterized by a very long time frame for investment, a great importance of sunk costs, and very heavy investments. Pipelines, power plants, tankers and LNG terminals cost much, constitute fixed outlays and require many years to reach pay-off⁷. Any adaptation of the energy offer requires thus plenty of time. As the examples of the 1973 and 1980 oil shocks reveal, a sudden reduction of the existing offer cannot be quickly compensated. This explains, by the way, the need that exists in the energy market to benefit from a surplus capacity. Any break in the provisioning of oil, gas or electricity can generate a tremendous amount of damage, price spikes and irrational reactions⁸.

The increase of energy offer also requires a lot of money. Energy production and distribution are highly capitalistic sectors. Infrastructures may function during decades but they require a huge volume of up-front investment. From this perspective, the world economy enters a new phase of high capital requirements. A lot of production units and infrastructures have been established during the period of the oil shocks and their thereafter repercussions (1973-1981). These production units and infrastructures are now quite old and need reinvestment or replacement. For example, power plants in Europe are quite old. According to the IEA, half current capacity – mostly coal-fired – could be retired by 2030. Nuclear plants are also aging.

In 2005, the IEA estimated the required cumulative infrastructure investment for 2004 – 2030 to 17 trillion dollars. This amount was increased to 20 trillion the following year. Most interestingly, the IEA considered in 2006 that the level

7. For a long term perspective, see F. BANKS, *Political Economy of Energy: An Introductory Textbook*, World Scientific Publishing, 2007.

8. Market forces do not tend to build spontaneously this surplus capacity. Consequently, this is an essential objective of any regulatory system.

of investment in the Middle East and North Africa countries was highly insufficient⁹.

The problem is aggravated by the return of price fluctuations in the oil market, which has a collateral impact in the gas market. The stability mechanisms that existed between 1935-1970 and 1986-2002 have disappeared. This acts as an added brake on investments¹⁰.

In such a context, the adjustment of the offer to the increase of demand is clearly not easy. This first problem is compounded, as we are going to see, by the rise of new difficulties.

2.2. Less accessible sources

Firstly, it is important to realize that the biggest and easiest oil and gas fields have already been discovered and exploited. This means that the discoveries are now more difficult and more limited. On the oil market, the world now discovers one barrel when three are consumed. On many fields, enterprises need now more technology, more energy and more investments to keep oil and gas flowing. This will make it more difficult to increase the production to respond to the increase of demand.

Secondly, the production of oil and gas is generally peaking in most of the OECD countries. This means that the external dependency of the OECD countries is growing, and that oil and gas must come from further countries. This makes them costlier, and also makes the investment process more complex. Dependency in itself is not a malediction, as long as it is reciprocal. Nonetheless, it can become a problem when it is unbalanced, and implicates regions where geopolitical problems and dictatorships abound. This is precisely the way the European Union is going.

9. "Most of the reserves being there, these countries will be absolutely necessary to satisfy the growing demand. About \$1.5 trillion, or \$56 billion per year, of investment are needed to expand capacity and replace facilities that are retired. The reference IEA scenario would require a doubling of the present rate of investment in these countries" (F. BIROL, *World energy prospects and challenges*, IEA, 2006, p. 3).

10. J. MITCHELL, *A new era for oil prices*, Chatham House, 2006, pp. 13-14.

2.3. Increasing geopolitical uncertainties

Another growing difficulty comes as a matter of fact from the domain of geopolitics. As we have seen, the primary energy reserves (especially oil and gas) are dwindling in the OECD countries (USA, Europe and Japan), and more generally in the non OPEC countries. The peak of oil production in the USA happened in 1970. The UK turned oil dependent again in 2005.

In itself, this phenomenon does not necessarily reduce the level of global energy production. But it means that a growing compensation must be found in other countries, and most of these countries present suffer from various forms of instability. The most important oil and gas reserves are possessed by the Middle East countries and after them by Russia. The general instability of the Middle East is then a great source of worry, as is the growing tendency of Russia to use the threat of energy cuts for political reasons in its dialog with the Western countries.

These uncertainties do not only create a disincentive for investment. They also increase the costs of investment. In an uncertain context, investors – when they invest – tend to ask for a better risk cover. They thus raise their required minimal rate of return. These factors thus make more difficult the increase in production that should respond to the increase of demand.

2.4. Increasing regulatory uncertainties

Another factor of uncertainty in the energy market may come from the opening to competition of gas and electricity launched in Europe. On the one hand, competition opens new ways of providing infrastructure and services. It increases the pressure to increase productivity, and to reduce prices. But, on the other hand, investors in huge projects have less guarantees to get their money back. This observation is especially valid for traditional dominant operators. As the European example shows, deregulation of the national market can diminish strongly their tendency to invest at home, and increase it marginally in other countries. Deregulation in the energy sector is thus a very complex task, which must be implemented with great care, permanent observation of market evolutions, and which often supposes the creation of incentives or obligations to invest. This always requires an effective regulatory system.

Regulatory uncertainties can thus become also a disincentive to invest, or a factor increasing the financial charges of investment. It can furthermore incite

investors to prefer costlier solutions when they require higher functioning outlays but lower initial capital investment. These factors must be especially taken into consideration in the present period because, as we have seen, the need for renewal of plants and infrastructures becomes steadily more important.

One needs anyway to be careful about the benefits of a full deregulation in this domain. Energy and telecommunications are fundamentally different. In 2001, A. Kahn himself was expressing doubts about the impact of deregulation in this sector¹¹. As many previous experiences in various countries reveal, important precautions must at least be taken¹².

The present situation in the European Union, in any case, is not satisfactory. The single market in gas and electricity does not really exist. The weight of dominant operators is quite obvious. The quality of national regulations is highly variable. After a transitory period, prices have risen, and this rise does not always seem connected to objective factors (price of fossil sources or investments). The increase of investments has not been obvious until now¹³. The functioning of the futures' market is not very impressive in the field of energy. The need for a review of the existing EU regulatory framework is obvious.

2.5. The threat of the oil peak

During the last ten years, an increasing attention has been given to the state of the oil (and gas) reserves, and their future perspectives. A progressive consensus has emerged to warn about the dwindling of new discoveries, the exhaustion of existing fields, and the probability of an oil (and later gas) peak. According to most estimates, the oil peak is likely to happen between 2005 and 2020¹⁴. According to some, it has even already begun¹⁵.

11. "I am worried about the uniqueness of electricity markets. I've always been uncertain about eliminating vertical integration. It may be one industry in which it works reasonably well." (IHT, 2001).

12. See J. HENNINGSEN, *Rising to the energy challenge: key elements for an effective EU strategy*, EPC, 2007.

<http://www.epc.eu/en/pub.asp?TYP=TEWN&LV=187&see=y&t=13&PG=TEWN/EN/detailpub&l=12&AI=553>

13. It becomes strategically important for the EU to assess the volume of investments and the future capacity of production. Regrettably, this preoccupation does not appear enough yet in the numerous reports of the European Commission.

14. See <http://www.peakoil.net/> and references.

15. From this perspective, one must observe the graphs of the supply outlook of oil published by the Energy watch group: http://www.energywatchgroup.org/fileadmin/global/pdf/EWG_Oilreport_10-2007.pdf

The notion of oil peak must not be seen as an abrupt end of oil use. It simply means that the world will not be able to produce more and that the volume of oil delivered on the market will progressively diminish. This will not necessarily – if properly managed – bring an immediate revolution but, taken in a medium term perspective, it will certainly amount to one. This would already have been the case in a market where energy consumption grows on a regular basis. It will be more the case if the present acceleration of consumption goes on¹⁶.

A long debate about the precise moment of the oil peak is not very useful. Most analysts consider now that the peak is a certainty, and that it is going to occur in a foreseeable future. Consequently, immediate initiatives are absolutely necessary. As we have seen before, energy is by definition a long term sector. Modifying the production or the consumption patterns requires much time.

From this point of view, an interesting study has analyzed the costs and delays of a possible mitigation strategy in the United States¹⁷. It indicated that a switch towards less consuming and more environmental car models would require at least 15 years. It would also require a staggering amount of 175 billions dollars.

2.6. Second conclusion: the energy offer will most likely not be able to balance the growth of energy demand

Far from being comforting, the analysis of the various parameters of the energy offer indicates that it will be far from easy to compensate the increase of demand. In fact, problems on the demand side will be compounded in the next decades by additional problems on the offer side. Two facts are especially worrisome. Firstly, there are too many problems; secondly, some of them present a structural nature. Energy investments require time and money, but both can be found. The two most important zones for the future, i.e. the Middle East and Russia, suffer from important geopolitical uncertainties, but these could be corrected (though diplomats can certainly testify that it will not be easy). On the other side, the fossil energy sources are diminishing now in the OECD countries. This cannot be changed. Oil production will begin to diminish in the world during the next 20 years. This also cannot be changed. Furthermore, a generally

16. See R. HIRSCH, *The inevitable peaking of world oil production*, Bulletin of the Atlantic Council of the United States, October 2005. http://www.acus.org/docs/051007-Hirsch_World_Oil_Production.pdf

17. See R. BEZDEK, R. WENDLING and R. HIRSCH, *Economic impact of US liquid fuel mitigation option*, 2006. <http://www.scag.ca.gov/rcp/ewg/documents/EconomicImpactsofUSLiquidFuelMitigationOptions.pdf>

tighter relationship between energy demand and offer generates price instability. This has been apparent since 2000 on the oil and the gas markets. This instability is costly in itself, as it impedes the investment process.

In conclusion, if it is difficult to satisfy the increase of energy demand, prices will have to increase. Naturally, a tremendous technological progress could modify radically this situation, but technological progress in energy also requires much time. The intensity and the speed of the price increases remain difficult to anticipate, but it would be worthwhile to begin to prepare ourselves for this challenge.

3. Climate Warming

3.1. Climate warming is a reality

Since 1997, the UNEP (United Nations Environment Programme) has produced increasingly affirmative reports about the warming of the climate. According to the IPCC 2007 reports, it is now absolutely clear – and undeniable – that human activities are at the source of important present evolution of the world climate. The temperature is rising more or less everywhere. The North Pole ice is slowing melting (giving unprecedented access to ground resources). The probability of strong weather accidents and rise of the seas along the coasts is increasing strongly¹⁸.

In spite of a few remaining resistances, a quasi consensus reigns now in the scientific circles to acknowledge the reality of climate warming and the importance of its potential consequences on the human way of life¹⁹. In a significant change, many important enterprises, though this would increase their constraints, are now calling the governments to take substantial measures against climate change²⁰.

3.2. Climate change is accelerating

According to the IPCC fourth assessment report published in 2007, the world anthropogenic GHG emissions went from 39 to 49,0 GtCO₂/year from 1990 to 2004²¹. There has thus been no stabilisation at all, on the contrary. According to several reports presented in 2007, climate warming seems to happen even quicker than foreseen. The latest reports are thus worst than the worst case scenario of the IPCC. “The emissions growth rate since 2000 was greater than for the most fossil-fuel intensive of the Intergovernmental Panel on Climate Change emissions scenarios developed in the late 1990s”²².

18. See the IPCC fourth assessment report, released in 2007.

19. <http://www.ipcc.ch/ipccreports/ar4-syr.htm>

Against the general consensus, see B. LOMBORG, *The skeptical environmentalist*, 2007.

20. See the declaration “Caring for Climate: The Business Leadership Platform”, released in 2007. http://www.unglobalcompact.org/docs/issues_doc/Environment/CLIMATESTATEMENT_revised_postsummit.pdf.

21. General summary for policymakers, p. 4.

22. M. RAUPACH et alii, *Global and regional drivers of accelerating CO₂ emissions*, PNAS, 2007, p. 1.

This evolution could be linked to various elements, for example the fact that oceans absorb less of new greenhouse gases that had been initially anticipated, or that there can be cumulative accelerations in the process of warming. However, at least a part of this evolution is certainly linked to the changes in the energy market. As we have seen, the price of oil and gas has begun to rise around 2000. Coal has thus become comparatively more competitive. A growing use of coal has thus happened, especially in the new emerging economies, and most especially in China²³. The acceleration of energy consumption has consequently provoked a more than proportional acceleration of the emission of greenhouse gases.

3.3. The role of non triad countries is increasing

Another important lesson of the last years is that the role of new industrialised states in the emissions of greenhouse gases is quickly increasing. China, here too, is a very impressive illustration²⁴. Its emissions are already higher than those of all Europe (OECD members) and they will quickly become higher than those of the USA²⁵. According to the IEA, the world emission of greenhouse gases, linked to energy, if they follow the present trends, should double purely and simply between 1990 and 2030²⁶. “Half of the projected increase in emissions comes from new power stations, mainly using coal and mainly located in China and India”.

Following this evolution, the threat of climate change is growing, but it is also becoming more difficult to solve. There are as a consequence more parties, with more different levels of development, which must reach an agreement. From that perspective, it is also important to notice that though the new industrialising countries increase strongly their emissions, their per capita emissions remain much lower. Even on the basis of the (very strong) present trends, the per capita emissions of China will only reach 60% of those of the OECD in 2030.

23. According to the US sources, between 2000 and 2004, the world coal consumption went from 5100 to 6098 million short tons (<http://www.eia.doe.gov/emeu/aer/txt/ptb1115.html>). “Coal provides about 70 percent of China’s energy needs: the country consumed some 2.4 billion tons in 2006 – more than the United States, Japan, and the United Kingdom combined. In 2000, China anticipated doubling its coal consumption by 2020; it is now expected to have done so by the end of this year (E. Economy, *The great leap backward?*, *Foreign Affairs*, 2007).

24. See generally, OECD, *Environmental Performance Review of China*, 2007.

25. D. ROSEN and T. HAUSER, *China energy*, IIE, 2007. According to the Netherlands Environmental Assessment Agency, China has even already overtaken the USA as the world biggest emitter in 2006: see <http://www.mnp.nl/en/dossiers/Climatechange/moreinfo/Chinanowno1inCO2emissionsUSAinsecondposition.html>

26. IEA, *Energy outlook*, 2006.

3.4. The Kyoto system is not sufficient

The previously mentioned evolutions bring easily the conclusion that the system established in 1997 in the Kyoto protocol, though useful, is not sufficient yet. One can discuss the political, technical or economic reasons of this insufficiency, but the insufficiency itself cannot be denied. Global emissions are not going down, though the reality and the extent of the threat is now widely acknowledged. How unlikely or impossible that may seem, the only solution seems to increase the constraints in a new internationally negotiated framework, hopefully as quickly as possible.

Defining a post-Kyoto regime – hopefully much before 2012 – will be difficult. Reaching an agreement between developed countries has already been difficult, so difficult that the United States does not participate to the system yet. Reaching an agreement between developed and developing countries will be more difficult. Establishing a balance of duties between societies enjoying a highly different level of development will be a very tall order indeed. This tall order will be compounded by the progressive acknowledgement that there are two problems. Firstly, the Kyoto objectives will not be reached. On the contrary, the world has seen an acceleration of the GHG emissions. Secondly, these targets are most probably insufficient.

It is important to realize the scope of the required effort. Very approximately, the planet has the ability to capture around 3,2 billion tons CO₂ per year. The present volume of the emissions of CO₂ is more or less the double, and they are growing at 3 % per year. Carbon is thus stocked in the atmosphere in increasing quantities, currently around 370 ppm. Most climate scientists consider 450 ppm as the relatively safe barrier. Above that, uncertainties become greater and 550 ppm indicates the real danger zone. Stabilizing at 550 ppm would already require enormous reforms. The world emissions should in that hypothesis peak at 11 billion tons around 2030. This would represent a per capita emission of 1,2 ton of carbon per year. In Europe, this would require a 65 % reduction of the present per capita emissions. When such an objective will be integrated in the energy price – and it will be inevitable one day –, this will engender a tremendous change in the energy market.

3.5. Third conclusion: climate warming will make any response to the growth of energy demand more difficult

Climate change imposes to reduce drastically the world greenhouse gases emissions during the next decade. After this, the evolution will be much more difficult to correct, due to the accumulation of gases. In such a short term framework, it is difficult to contemplate another solution than a much reduced use of carbon fossil energy sources. Energy consumption is the essential cause of greenhouse gases. Mainly, there is thus a need to reduce the use of oil, gas and coal (nuclear energy does not present, from the point of view of climate warming, the same problems).

Far from offering solutions, the evolution of the oil and gas sectors risks aggravating the problem of climate warming. Oil has to be found deeper and further. Gas comes from increasingly distant sources. This requires more money – and energy. Oil shale and ethanol also presently require a huge volume of energy to be produced.

One simple (and agreeable) path would be to reduce the GHG emissions without reducing the energy consumption. This explains the present high interest for various experiments of carbon capture and sequestration (CCS), essentially in the use of coal. Nonetheless, until now, this process remains at the experimental phase. This is at best a medium term solution, but the problem is now unfortunately urgent.

Clearly, the growing threat of climate warming will aggravate the problems of the adjustment of energy offer to demand. The offer of energy could be increased but, most of the time, this increase will produce a strong collateral damage on the climate. The world does not only need new energy sources, but these new sources must also imperatively be sustainable. In synthesis, the options are already very limited, but climate warming still reduces them. The conjunction of the two threats explains the popularity of the clean forms of renewable energy. It also explains the need to reexamine the necessity of nuclear energy²⁷.

Finally, the difficulty of defining a new post-Kyoto regime adds a new layer of uncertainty around the adaptation of the energy market to the growth of demand. Investment is more difficult for the enterprises if they do not know the price and the volume of the authorized GHG emissions.

27. One must see in that perspective the decision of the UK government to modify its policy to close the British nuclear plants.

4. The Probability of a Crash

It may seem curious at first sight to consider a crash likely in the new worldwide energy context. Nevertheless, such possibility must be contemplated. Energy demand is growing for structural reasons which could go on for a long time. The growth of energy offer, which would be an easy answer, seems to encounter structural obstacles. During the next decades, these obstacles will be compounded by the increasing constraints of climate warming. Most energy sources rely on fossil fuels, and most of them produce greenhouse gases.

The adaptability of market forces must of course not be underestimated. One can always hope that market forces will naturally find a solution. However, at the top of the three cumulative constraints already mentioned, one must still take two other factors into consideration, which are two fundamental characteristics of the energy market.

Firstly, the time frame of the energy market is abnormally long. Before the decision to build a power plant or a pipeline and their opening, many years can be spent. In the short term, the offer is quite inelastic. Secondly, energy markets are often quite imperfect. They are characterized by strong network effects, dominant positions, non assumed collective costs, and high security requirements. These factors make public intervention inevitable, in a way or another, direct or indirect. This generates a constant pressure in favour of public intervention. So, to adapt to a new structural context, the energy markets need a very efficient regulatory system. Various experiences indicate how difficult it is to establish an efficient synergy between public and private actors in a complex domain.

There are thus many conditions to fulfil if we want to prevent an energy shock. One can always hope that they will all simultaneously be fulfilled. Nonetheless, this does not appear as the most likely outcome. Consequently, if the world energy demand keeps on growing and the offer is unable to adapt smoothly, some investments will reveal themselves inadequate. Presently, factories, skyscrapers, homes, cars, roads, airplanes and holidays resorts are built on a promise of accessible energy that could not be fulfilled.

Considering the cumulative constraints imposed by the energy market and the climate warming, this could produce quite a shock indeed. One just needs to remember the macroeconomic consequences of the 1973 and 1980 shocks, but as a permanent blow this time and no more as a provisional one. Due to the inflexibility of demand and the tendency to panic in various corners, there will be a general feeling of impoverishment, a sudden rise of prices, and popular

pressure for quite brutal administrative measures. All this will create a tide of disorientation in the enterprises²⁸.

28. Considering the importance of the macroeconomic impact, such an episode would quickly become a huge challenge for the Eurozone, where it could introduce more divergence between the Member States. From this point of view, the European Central Bank would be well inspired to invite the participating Member states to guarantee a strong surplus margin in their energy production and to integrate more the management of their strategic reserves. It should also prepare some contingency planning.

5. The EU Strategy: A Good Approach that Needs More Means

5.1. The implications of the climate/energy threat for the European Union

Before examining the recent strategy adopted by the European Council, it is necessary to ponder on its impact on the European Union's policies.

The threat will likely bring a new legitimacy to the EU

Environment is naturally a domain where interdependency is high between the States. Consequently, the international coordination of their action presents a strong added value. This remark is still more valid for the threat of climate warming, which has already provoked an unusual level of international cooperation. This also applies at the level of EU, of course.

This line of reasoning is equally valid in the domain of energy. A common EU approach in energy research can bring both more means and more efficiency in their use. A common approach in the building of networks can reduce bottlenecks, external dependency, risks of breakdowns, and finally costs. A common approach of the market regulation increases efficiency and offers a stable framework to the required investments.

One can thus safely conclude that climate warming and energy will be the new strategic priority of the EU integration during the next decade.

The threat will likely bring a new balance in the competition framework

Most likely, the threat will constrain the EU institutions to develop new rules, where the role of public targets (both at the EU and national levels) will be important. For this reason, it is important to anticipate. This anticipation will allow the protection of market mechanisms as much as possible. Otherwise, in a period of acute crisis, there will be clamours to adopt blunt administrative mechanisms very quickly.

The energy markets are already characterized by imperfect competition. Environmental problems are generally connected to public goods which are not

properly taken into consideration by the markets. The combination of energy and climate problems will thus provoke a pressure for more public regulation.

This is already quite apparent in the strategy adopted by the European Council in March 2007. Defining targets of 20 % renewable energy and 10 % of biofuels for 2020 looks a lot like a public planning exercise. The same can perfectly be said for a target of 20% unilateral reduction of greenhouse gases for 2020. If the markets could spontaneously provide this result, it would not be necessary to establish it as a norm.

In such a context, the balance between competition principles and public interests will sometimes require subtle adjustments. Those familiar with the implementation of competition rules in the energy sector already know that the security of provision can justify the conclusion of long term agreements that would be unjustifiable in other sectors, or that the need for tremendous investments in new networks can justify the attribution of exclusive rights²⁹. If energy security and massive investments in renewable energy become essential objectives during the near future, one can also expect that public subsidies aiming at these results will increase.

5.2. The 2007 European strategy is adapted to the new challenger but it still lacks means

Considering this new context, the European Council has adopted a strategy in March 2007. On one side, this strategy certainly represents a substantial progress in diverse aspects. On the other side, nonetheless, the means of this strategy have not been identified with the same precision than its objectives. The persistence or disappearance of this discrepancy during the next years, will condition the final success of the strategy.

Progresses

Five advantages at least are obvious.

(1) This is the first time that the environment and the energy policies have been so strongly integrated in a single and substantial program of action. (2) The primacy of environmental consideration has been acknowledged. Improving the

29. One must be sure nonetheless that such agreements or rights bring added investments and not higher monopoly profits. This is another fundamental objective of any regulatory system.

energy situation by aggravating the climate situation (which is alas simple and even sometimes tempting) is not considered as an option. (3) The energy policy is no more limited to the establishment of the single market. Other forms of public measures, as research and networks, have been integrated. (4) A few ambitious targets have been defined. They encompass: a unilateral reduction of greenhouse gases of 20% (30% in the context of an international agreement) from their 1990 level in 2020, 20% renewable energy in 2020, 10% biofuels in 2020. (5) The synergy between the internal energy problem and the EU foreign policy has finally got the attention it deserves.

Remaining uncertainties

Some uncertainties, though, remain.

(1) One can wonder whether it would not be better to put less emphasis on renewable energy and more on energy efficiency. The targets concerning renewable energy have been difficult to reach until now and the new ones are very ambitious (concrete measures will be discussed for the first time in 2008 and must bring results in 2020). On the other side, previous experiences teach us that the potential of energy efficiency has generally been underestimated. One can also worry whether there are not too many targets, which will make them more difficult to reach. Furthermore, the added value of biofuels regarding climate warming is far from been proven.

(2) In the targets become serious, they will inevitably, as the repartition of ETS, provoke intense conflicts about the repartition of charges between the Member States. One huge simplification would be to prepare a system based at least on an equal level of GHG emissions per capita, and from that point introduce as many market mechanisms as possible between Member States, and even in a second phase between persons.

(3) There is a need to invest more at the EU level, at least in two domains. The first one is research. Energy research costs a lot and it is essential to regroup more the national initiatives and gather a critical mass. For the same reason, an audit of previous achievements should be made. Increasing spending without taking care of its return has no meaning. The Commission has already proposed substantial changes, but more integration is required. The second domain is European energy networks, because markets and investments still remain primarily national. One can but hope that the beginning reflection of the EU budget will bring positive results here.

(4) In any framework, it is essential to encourage a better price system. This has different implications. Except for acute social problems, the governments must not try to compensate in various ways the rise of energy prices. This would be a disincentive to invest in energy efficiency, renewable energy, and also an incentive to aggravate climate warming. A real price for GHG must also be established. Otherwise, the competitiveness of renewable and nuclear energy is artificially reduced. Finally, the taxation systems must be more discriminative between renewable and non renewable energy, light and heavy consumption products.

(5) The most essential point, however, remains that the growth of energy demand must be braked if we want to reduce the probability and/or depth of future economic crises. During the next 10 years, there will be many obstacles on the path of any stable and sustainable increase of the energy offer. There are – maybe – some technological solutions for the medium term or the long term but they do not exist in the short term (and they will require a huge mobilization of money). Each price rise that we accept, or even provoke in a steady and predictable way, is an insurance that we take for the stability of our climate and our economic system in the medium term.