6. ENERGY AND EUROPEAN INSTITUTIONS

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1. Background

As was the case at the end of the 1950s, Europe today faces an extraordinarily difficult situation in the energy sector. The Rome Treaties had then provided a solution and long-term prospects to the energy supply problems of the previous decade. The European Atomic Energy Community Treaty entered into force on 1 January 1958, with the aim to guarantee a shared approach to energy security. These institutions not only provided Europe's civilian nuclear energy industry with a common strategy: they also contributed to the launching of the European Economic Community.[1]

Today, for the European Union, the energy issue is even more complex. Externally, the issue involves negotiating with primary-source producing countries 'with a single voice' and facing competition from high-growth countries that are currently the largest energy consumers. Between now and 2030, over 87% of the incremental demand for energy will be accounted for by emerging economies, and just over half of the increase

[1] Together with the Treaty establishing the European Economic Community, the participants in the Rome Conference also signed, on 25 March 1957, a Treaty establishing the European Atomic Energy Community (Euratom) which entered into force on 1 January 1958. Subsequently, at the Rome Summit convened for the 10th anniversary of the EEC and the EAEC (or Euratom), held 9-30 May 1967, a decision was reached to unify the bodies of the three communities: ECSC, EEC and EAEC (initially separate, with the exception of the Assembly and the Court of Justice); on 1 July 1967, the Treaty merging the executive bodies entered into force.

will be represented by China and India (International Energy Agency, 2008). A further difficulty is that of negotiating with countries and regions whose use of energy sources is basically political, as is the case with Russia, Venezuela and Nigeria.

Measures must also be taken internally. The EU countries' industrial development strategies require innovation; the huge investments needed to develop alternative energy sources have to be planned and implemented; the transmission infrastructure has to be developed and cross-border connections strengthened so as to broaden the spectrum of potential primary source supply, inter alia in terms of countries, and interconnect domestic markets. Policies are also needed to contain energy demand growth (European Commission, 2007).[2]

The role and mandate of European institutions remain crucial in this respect. Experience has shown that long-term European energy policies readily revert to wishful thinking when European institutions are not given a clear mandate.

True, the Lisbon Treaty is innovative. It stresses the need for European solutions regarding energy and environment, especially considering the urgent need for global strategies. But if we focus on the ability to implement a common energy policy, we see that unfortunately the Treaty is only innovative in terms of recommendations to national governments. Also, this is not enough to overcome the major contradiction between domestic policies and the European energy strategy – a contradiction that continues to jeopardise the emergence of a European market. And that explains the limited effectiveness of policies and the consequences described below. Before analysing policies in substantive terms, section 2 will however attempt to recall the main institutional phases that have led Europe from Euratom to the Lisbon Treaty.

2. European Institutions: A necessary but insufficient precondition. From Euratom to the Lisbon Treaties

With the 1958 Treaty establishing the European Atomic Energy Community (EAEC), the six founding countries, including Italy in a significant momentum-giving role, aimed to share – in the new nuclear

[2] Under a business as usual assumption, European energy demand is scheduled to increase at an annual rate of 1.7%.

industry – the definition of joint safeguard and security criteria, and the implementation of an investment policy no single state had ever contemplated. Furthermore, the Treaty aimed to "ensure that all users in the Community receive a regular and equitable supply of ores and nuclear fuels", to quote the fourth mission listed under Title I of the Treaty, and defined measures to this end.[3] The achievement of this goal was to be guaranteed through the newly set up International Atomic Energy Agency (IAEA). The IAEA was granted a right of option on ores, source materials and special fissile materials produced in the territories of member states and an exclusive right to conclude contracts relating to the supply of ores, source materials and special fissile materials coming from inside the Community or from outside.

In the face of this institutional architecture, the European energy policy outlined in the Lisbon Treaty appears to be a more or less ordered set of wishes and invitations to show goodwill towards member states.

Institutions, however, are only a precondition, necessary but not sufficient, for the development of a common energy policy strategy. Even then, in the wake of the original treaty, a contradiction had quickly appeared between the domestic policies of a number of member states, such as France and Italy, and the European strategy for a common nuclear policy. Interestingly, this contradiction inevitably ended up weakening not only Europe's energy policies but also its very institutions.

In particular, the European medium- and long-term strategy soon entered into conflict with the foreign policy of President De Gaulle, who by 1958 had significantly dampened the French push for European political integration. He opposed in fact the United Kingdom's entry in 1963 and refused to bind France to the pact on civilian uses of atomic energy. It was also De Gaulle who opted for the *'force de frappe'*: a nuclear arsenal aimed at granting French foreign policy the power of nuclear deterrence. France thus embarked on its nuclear testing programme: starting with Gerboise Bleue, tested in the Algerian Sahara in 1960, through to the first H bomb in 1968, and the explosion in the Polynesian atoll of Mururoa in 1995.[4] Euratom's role was thus made weaker.

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[3] Article 52 of the Treaty.

[4] This approach was reaffirmed in 2006, when President Jacques Chirac, addressing military staff stationed at a nuclear submarine base in Brittany, stated that France,

As we know, France's opposition was at the time compounded by Italy's difficulties. Italy was then at the vanguard of research and development work for the first facilities implementing the peaceful use of nuclear energy. Following projects launched in 1953 by the National Committee for Nuclear Research (Comitato nazionale per le ricerche nucleari – CNRN) with the United States and with World Bank funding, following the building of the first nuclear power plants in Garigliano, Latina and Trino Vercellese, in the early 1960s Italy was forced to scale down its role for domestic reasons[5] until the referendum eventually put a 'final' stop to Italy's nuclear policy. The dismantling in Italy of transatlantic nuclear research projects, together with France's attitude and De Gaulle's opposition, gradually led to a scaling down of Euratom. Having come into conflict with the domestic policy of two of the leading founding states, the Community's energy strategy shattered and since then has proved difficult to rebuild.

The oil crises of the 1970s, with the inflation, industrial restructuring and even lifestyle changes they brought in their wake, were contended with individually by the European countries. Given the lack of a common policy, industrialised countries found themselves singularly deprived of bargaining power when faced with the new primary energy producers' cartel, and were thus vulnerable to severe consequences for their economic growth. To this the Germans responded by adopting policies geared to major industrial restructuring and currency revaluation, while the Italians and the British conversely went for a set of competitive devaluations.

In other words, during the first energy crisis, Europe did not speak with one voice. Euratom's Agency was still there. But its history had already shown how difficult it is to set up institutions capable of giving Europe this one voice in terms of energy security, while avoiding conflict with member states' domestic strategies.

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if threatened with a terrorist attack, could resort to nuclear retaliation. According to Chirac, "the vital interests to be protected would include both the security of strategic supplies, such as energy, and the defence of allied nations".

[5] See Rigano (2002) for a review of the changes in Italy's strategy, which led it from front-line involvement in early civilian nuclear projects to their scrapping in the mid-1960s.

The issue was to arise again, albeit with different connotations, after signing the Maastricht Treaty. Europe decided to go for deregulation of both electricity and gas markets in order to develop a European energy market, contain energy prices and improve member states' security of supply. But European institutions were given no mandate regarding energy; the project of bringing together domestic energy policies in order to liberalise electricity and gas markets was ultimately watered down, yielding a general stance, sanctioned by directives as of the mid-1990s, and the hope that the Competition Authority would contribute to the *ex novo* emergence of competitive markets, thereby making up for other institutional deficiencies.

At the institutional level, Directives on the liberalisation of domestic power and gas markets[6] focused on promoting national mechanisms to ease liberalisation in diluting the market power of dominant operators and introducing elements of competition. In particular, they called for the setting up of independent domestic sectoral supervisory authorities to support the liberalisation process; the creation of wholesale electricity exchanges to provide markets with transparent pricing and a platform accessible to new producers; and finally – underpinning the whole process – they required that natural monopoly activities (managing the electricity transmission grid and gas transport) be unbundled from the potentially competitive activities both upstream and downstream of the grid (energy production and sale). This entailed a fragmentation of activities pertaining to the production, transmission, distribution and retail sale of electricity and gas, which had traditionally been carried out in an integrated fashion by major public utilities with national monopoly powers in these sectors.

Europe's stance carried on in the decade following 1996, the year of the first Directive; new targets were added – liberalising consumption, promoting energy conservation, suggesting improvements in energy efficiency and compliance with new environmental criteria – but the European energy policy remained unchanged, anchored to the role of

[6] Directive 96/92/CE of the European Parliament and the Council of 19 December 1996 concerning common rules for the internal market in electricity, Italian Gazzetta ufficiale n. L 027 del 30/01/1997; Directive 98/30/CE of the European Parliament and the Council of 22 June 1998 concerning common rules for the internal market in natural gas, Italian GU L 204 del 21.7.1998.

existing European institutions and the setting up of national mechanisms to promote energy market liberalisation, against a backdrop of considerable diversification.[7]

A break in the institutional set-up only occurred in 2007: environmental issues were directly introduced in the stance, goals and mechanisms of European energy policy through the 'third energy package' and the signing of the Lisbon Treaty which modified segments of the Rome Treaties relating to energy and the environment.

With the Lisbon Treaty,[8] European institutions did not actually make any significant step forward to develop the instruments required for a common European energy strategy.

The Lisbon Treaty includes new articles concerning energy and climate change, in both the revision of the Treaty on European Union and in the Treaty on the Functioning of the European Union. The Euratom Treaty is added thereto, in a partly revised version that had not been added to the Constitution. Energy is introduced through the solidarity provisions, by which states agree to support one another in case of need.[9] The need to fight climate change through international action is also specified. Competition, however, is no longer included in the Union's fundamental goals, and is mentioned instead in an additional protocol. This latter provision meets a request put by France, which had asked for the elimination of references to a common market subject to free competition.[10]

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[7] The institutional architecture gained an additional dimension with the establishment of the EU emissions trading scheme or ETS, which is part of the EU's commitment to comply with agreed targets under the Kyoto Protocol (see Directive 2003/87/CE of the European Parliament and the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community).

[8] Signed by Heads of State and Government, 13 December 2007.

[9] See Article 122 of the Treaty on the Functioning of the European Union.

[10] Title XX has been replaced by a new title and by a new Article 176A on energy, which reads: "1. In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to: (a) ensure the functioning of the energy market; (b) ensure security of energy supply in the Union; (c) promote energy efficiency and energy saving and the

Despite these provisions, the authority and ability to act effectively in the field of both energy and the environment remain quite modest.[11] There is still no mandate and no authority conferred to Council regarding energy.

Furthermore, on the institutional structure, discussions still focus on the need to provide the European Union with a regulatory authority entrusted with supporting liberalisation in the energy sector. Some have claimed that the institutional vacuum could be filled by assigning a more extensive and incisive role to the antitrust authority, but this step would not help resolve a glaring contradiction between market liberalisation policies and energy security policies, to be analysed in greater detail in section 3 below. Realistically, in order to overcome this contradiction, what is needed is an explicit mandate regarding energy policy that would allow the European Union to negotiate supply contracts on behalf of all member states. Moving forward with liberalisation is indeed difficult without the support of a European sectoral authority or a board of national regulators with a European mandate and the right authority. What is at stake is both the institutional dimension defining the relationship between the Union and the member states in the field of energy, and the ability to stimulate and coordinate member states' industrial strategies regarding energy; but a significant factor is the spectrum of possible mechanisms.[12]

Integrating national markets into a European energy market does indeed require adaptation to common rules on the part of countries or

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development of new and renewable forms of energy; and (d) promote the interconnection of energy networks."

[11] Article 4 of the Treaty thus reads: "The Union shall share competence with the Member States in energy, as in the following principal areas (…)e) environment, f) consumer protection, g) transport, h) trans-European networks."

[12] These range from the definition of concerted strategies in the guise of Council recommendations, directives or regulations, to the activation of the enhanced cooperation modes taken up and redefined in Title IV of the Lisbon Treaty on the Functioning of the European Union regarding energy and the environment (see contribution by Giacinto della Cananea elsewhere in this volume). Title IV takes over the heading of Title VII, "Provisions on Enhanced Cooperation" and Articles 27A to 27E, 40 to 40B and 43 to 45 are replaced by Article 20, which also replaces Articles 11 and 11A of the Treaty establishing the European Community. The same articles are also replaced by Articles 326 to 334 of the Treaty on the Functioning of the European Union.

governments starting off from starkly different positions. As regards primary source availability, for instance, some countries have access to considerable supply: either because they have nuclear power plants, as do France and Finland, or because they have oil, as does Norway and to a lesser extent the UK, or because they have coal, as does Poland, or yet again because they have opted for renewable sources of energy, as have Germany, Denmark and the Netherlands. But other countries, such as Italy or Spain, are conversely far more dependent on external supply. From another point of view, that of market openness, the reality shows large differences, which translate into highly asymmetric public policies and corporate strategies.

The issues raised in Ferdinando Salleo's contribution to this volume regarding European identity in connection with enlargement policies are quite relevant here as well. Is the Union in the process of building a model that will feature a variety of different levels and densities? Will Europe end up having a variable geometry, based on enhanced cooperation schemes? Or in an attempt to break the standstill on institutions and authority that is currently jeopardising the construction of a European energy market, will we witness in the field of energy and environment the same granting of opting-out rights that the UK and Ireland have insisted upon in justice and home affairs?

In all these issues, European policy has to deal with a genuine conflict between the definition of its own energy strategy and the national demands that undermine its effectiveness. Brussels has been calling for liberalisation and market openness as a first step in the construction of a common European energy market. But national states, which have to bear the burden of singly ensuring security of supply, cannot sign on to this in the required fashion. This induces divergence among domestic policies, as they are necessarily involved in more or less explicit support of their national champions. This leads to free-rider behaviour in negotiations with producers. Which in turn generates a vicious circle that weakens both the Union and all its member states in international negotiations – as we will see in the following section.

3. European strategy and domestic policies: Goals, conflicts and proposals

The starting point is that the European Union has never had a mandate to implement a common energy policy. It has therefore from the very onset

been forced to adopt a gradual and indirect strategy, at times resorting to general policy statements, at others to the definition of shared rules.[13]

And precisely because both instruments and institutions were indirect and inappropriate, the path ended up being unnecessarily tortuous. As mentioned above, an initial approach was outlined by the 1996 and 1998 Directives on domestic market liberalisation, which aimed to reduce internal barriers within the Union's markets for electricity and gas in order to develop a European market. But the European Commissioner for energy did not have an explicit mandate to do anything more than indicate a general stance and address recommendations to member states.

Member state responses have proved quite asymmetrical. At one extreme, France, with its very strong state sector, was keen on defending its national champions, with their vertically integrated production structure. At the other extreme, the UK and to some extent Italy as well, from 1999 to 2007, subjected their electricity markets to significant change, involving unbundling, production break-up, market liberalisation and supervision by a sectoral authority.

On the other hand, in the absence of a European regulator empowered to impose unbundling rules, in order to dissociate upstream monopolies from downstream distribution and sales of gas and electricity, the only way forward was to suggest that governments and if applicable, industry-level authorities, consider separating grids from service provision: in terms of ownership, functions, corporate structure or simply from an accounting standpoint.[14]

In reality, at the beginning of the process, there was indeed a strong liberalisation push: electricity exchanges were set up by most member states, although unevenly and with quite varied fortunes. The UK's 'Pool' was thus highly liberalised, with initial guidelines in 1990 making it mandatory for all wholesale electricity contracts to be brought to the

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[13] See Article 249 (former Article 189) of the EC Treaty.

[14] Of the two modalities set forth once again in the Commission's recent Recommendation (2007) – namely the corporate separation of companies owning the grid/network from those entrusted with operations, or the setting up of an Independent System Operator or ISO (under which the vertically integrated utility retains grid/network ownership and receives an administered return rate, but is not responsible for grid/network management or development).

exchange; ten years later, in 2001, it was closed down and replaced by a number of platforms for the bilateral exchange of energy contracts (Neta).[15] The Spanish Exchange has conversely retained largely administered pricing for wholesale transactions. And finally Italy complied completely and relatively quickly to all the European directives, but it then reverted to unified management and ownership of the national electricity grid with distinctly unsatisfactory governance.

The unfavourable international context at the beginning of the new millennium – such as the Enron failure in 2002 and the Californian electricity crisis of 2001, even if caused by bad management and/or control and regulatory mistakes – increased government reluctance to renounce tried and tested practices such as entrusting security of energy supply to major public monopolies. Support for the European single market development strategy, to be achieved through domestic market liberalisation, thus dwindled to a bare minimum. And gas market development experienced even more difficulties, inter alia because of Europe's notable dependence on Russian gas fields.

This push to liberalisation occurred at the end of the 1990s, at a time when fossil fuel prices appeared to be contained – notwithstanding the fact that 53.8% of Europe's consumption is met by fossil fuel imports (see European Environment Agency, 2008).[16]

The contradiction between liberalisation policies and energy security strategy has eventually blown up. It has blown up with the rise in oil prices; it has blown up with the Russian gas crisis, triggered by Putin both for reasons of domestic politics and to raise his bargaining power internationally. By this token, the Russia-Ukraine dispute regarding natural gas provision in January 2006, and the further dispute involving Russia and Belarus in January 2007 are just the tip of an iceberg that could in the end dramatically highlight Europe's vulnerability (Stern, 2006 and 2007).

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[15] Neta was introduced in March 2001, and Betta (British Electricity Trading and Transmission Arrangements) on 1 April 2005.

[16] Europe's dependence on hydrocarbon imports is growing. Under a business-as-usual assumption, primary source imports are forecast to rise from 50% of current consumption to 65% in 2030; more specifically as regards gas, imports are scheduled to increase from 57% of total gas consumption today to 84% in 2030; for oil, the rise will be from 82% to 93%.

It was only then that the contradictory nature of asking member states to break up their major public utilities appeared for what it was worth. Or rather, the contradictory nature of asking them to do so prior to having set up the institutions, authorities and mandates needed to ensure the European Union's security of supply through unified negotiation. A process, the incompleteness of which became obvious with the gas crisis and even before that, with the fallout from the 9/11 attacks and the subsequent increase in oil prices, heralding ever more uncertain trends.

It has become terribly obvious that neither Brussels' incentives nor its recommendations ever yielded the desired outcomes. But hoping they would was unreasonable. And the outcome of a number of policies introduced by the European Commission shows that it wasn't only the instruments that proved inadequate, but the general strategy.[17] A few examples suffice to highlight the consequences of this contradiction between European strategy and domestic policies, as in the case of the plans for the Trans-European Networks (TEN-E) – those cross-border networks designed to facilitate the interconnection of domestic markets.[18] And the strategy aimed at improving gas supply by building liquid gas vaporisers highlights similar problems in the gas sector.

The TEN-E has a complex procedural architecture: it involves an incentive policy aimed at strengthening cross-border connections between electricity transmission grids on the European continent, so as to broaden the benchmark electricity market. Ten years after inception, it has yielded one-tenth of its expected outcome. And attempts at importing liquid gas via sea, supported by the widespread building of vaporisers, with a view to freeing gas-importing countries from their dependence vis-à-vis a small

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[17] The reference framework is provided by amendments to Directives 54/03 and 55/03, amendments to the Electricity and Gas Regulations (1228/03 and 1775/05) and by the European Council decisions of March and December 2006. Currently, Directive 2005/89/CE requires that national regulatory authorities report annually to the Commission on security of supply in electricity; Directive 2004/67/CE introduces this same reporting requirement for gas supplies as well as for legal frameworks aimed at developing investment in infrastructure.

[18] Trans-European Networks (TEN-Energy) concern projects of common interest defined and regulated in 1996 with subsequent updates in 1997, 1999 through to 2003. See "Trans-European Energy Networks. Policy and Action", Lux. 1997 and http: //europa.eu.int/comm/ten/energy/legislation/index_en.html.

number of producers – in particular Russia – and transportation systems have yielded equally minimal results.

Setting utopia aside, it is clearly difficult to convince utilities to invest in cross-border transmission infrastructure with a view to broadening the domestic markets from which they currently derive significant oligopoly profits. The only way to do this would be to involve these very same utilities and national governments by having them espouse the medium-term advantages they stand to derive from a unified European energy market: in terms of security strategy, joint bargaining power, more competitively priced supply, increased growth opportunities, corporate synergies beneficial to innovation, research and transfer of cutting-edge technology. All in all, these are all long-term benefits that would accrue to Europe's industry, upon completion of the liberalisation process, including in terms of competitiveness.

However, the real difficulties concern Europe's energy security policy and the lack of a corresponding mandate. If responsibility for ensuring gas supply – an essential tenet of energy security – rests exclusively with national governments, which in recent economic history, since the end of World War II, have shifted this responsibility to domestic utilities (the former public monopoly incumbents), the utilities end up representing citizens in the negotiation of contracts with non-EU producer countries such as Russia, Nigeria, Algeria, Turkmenistan and Azerbaijan. And governments must then, together with their utilities, assume the full risks of political uses of primary sources and political instability in transit countries. Add to this the absence of supranational rules and guarantees regarding network/grid access. Even the Energy Charter, designed to guarantee state reciprocity and third-party access to networks/grids, is pending ratification by Russia. And Russia can thus decide to not tie itself down in its bilateral negotiations with European countries' utilities. So far these utilities' strategy has been to enter into bilateral contracts with the gas monopolies in the upstream segment of the production stream, especially in Russia. And this is a strategy shared, more or less openly, by their governments.

The political insecurity is now compounded by economic insecurity regarding supply availability. Faced with Putin's new programme to diversify exports by increasing Asia's share, one is beginning to wonder whether Russia will be able to deal with growing internal demand while continuing to export the amounts of gas required by Europe. One also

wonders whether Putin's strategy, which involves nationalising and using energy as a priority foreign policy instrument, is compatible with the investment policy required to develop this sector. The low level of gas prices, strictly correlated to those of oil, in the 1990s has not encouraged any significant investment to improve the extraction efficiency and network infrastructure functionality. Similarly, even when prices were high, the additional profits accrued by the gas industry were used to offset low-income growth (Gaddy & Ickes, 2002).[19]

Faced with these difficulties, European governments and their utilities have attempted to negotiate an increase in supply contract duration. Putin has in fact granted European countries 10- to 15-year extensions, thereby ensuring in 2006 additional profits of about €39 billion.[20] However, as these contracts have a *take or pay* structure, they require rigid long-term buyer programming: the amounts acquired will in any event have to be paid for, regardless of whether they are actually taken.

For this reason too, the opening up of the gas market that can be activated through the building of vaporisers does represent, in the long run, an alternative programming model, that may introduce supply flexibility and competition, by diversifying both sources and suppliers. But in the short run, by introducing demand flexibility, it would go against national energy security policies, weakening the bargaining power of major utilities – having to pay in any case the predetermined offer – compared to a small number of producers, the leader of which is Gazprom.

In this context, the way in which vaporisers fit into a highly sophisticated process requires further thinking to devise a comprehensive strategy covering all the phases of player and country involvement in the gas industry. Initially devised to make gas supply more flexible, vaporisers have in fact yielded quite disappointing results in terms of unifying the European energy market through virtuous and incentive-driven processes, as has been the case with TEN-E. In this case as well, the problem was not

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[19] The situation is similar with respect to oil, where Russia ranks second in terms of global output after Saudi Arabia, with a 2007 average output of about 9.5 million barrels a day.

[20] While it has maintained a policy of annual contracting with CIS states, at significantly lower price levels.

only inadequate funding. What really emerged was a radical conflict between Europe's medium- and long-term vision on the one hand, and the goals pursued by players assumed to orient their corporate strategies to the achievement of common objectives, on the other.

4. Europe's relationship with the rest of the world: Energy security and climate change

A third crisis dimension – that of environmental sustainability – has latched on to the above-mentioned difficulties, which may nevertheless open up new prospects. This is an issue where Europe has conquered a leadership role even though so far results have been more significant in political terms, with the driving role taken on by Europe in the Kyoto Protocal process, than in strictly environmental terms, i.e. that of containing emissions levels globally.[21]

It is therefore essential that we now reflect on the EU's interests, but without losing track of the role it may play in the emerging multipolar scenario and the promotion of multilateral negotiations.

At the international level, as well, the issue of which institutions to empower with responsibility for process support is crucial. Clearly there is a need to move beyond the 'divide and conquer' policies that often characterise US bilateral negotiations with primary source producers in Latin America and Asia, or its strategic and military approach to Middle Eastern producer countries.

It is equally essential to further the development of the world's poorest countries. It is a known fact that today 2.5 billion people produce energy by burning wood, plant waste and dung, in a very damaging use of biomass, while another billion is totally deprived of any access to energy.

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[21] The United Nations Fourth Report on Climate Change, a reference for policies aimed at improving climate conditions, indicates that by mid-century global emissions of gas pollutants will need to be reduced by at least half as compared to 1990 levels in order to halt the increase in global warming. The contemplated 20% unilateral reduction in European emissions by 2020 corresponds to less than 4% of the reduction called for globally. According to computations, by 2020 CO_2 emissions will exceed the 1990 levels by over 60%, especially as a result of rising energy – and in particular fossil fuel – demand, with China, the United States and India coming in first, second and third (Skinner, 2006).

Not even towards Africa does the EU have a unitary strategy capable of standing up to China's new aggressive policy (consider for instance the close political connection to Angola, thanks to which China has acquired offshore exploration rights in exchange for loans; or to Nigeria, which has granted off-shore exploration rights to the Chinese state utility in exchange for roads and infrastructure).

Even the flexible mechanisms provided for in the Kyoto Agreements (Joint Implementation and Clean Development Mechanisms), which aim to promote investment in clean energy production and use through partnerships between businesses based in the industrialised countries that have ratified the Kyoto Protocol (and that are therefore listed in Annex I), and in developing countries (not in Annex I), would require dedicated structures and institutions, in addition to a far more active and coordinated European Strategy.

According to the World Energy Outlook 2008, investments totalling $22,000 billion, nearly $4,000 billion in China alone, will be required by 2030 (see IEA, 2008). Clearly, this raises the issue of where the money is to come from, considering that major uncertainties regarding both political context and primary source rules and prices are likely to distort very long-term decisions. International financial institutions will obviously have to be the first to provide answers.

In this field as well Europe tends to put forth the multilateral approach it embodies. This was clear in Bali where for the first time Finance Ministers had been invited to take part in negotiations aimed at defining financial rules and instruments for the post-Kyoto period. This was equally clear in the agreement signed last October in Lisbon by a subset of European countries that has given rise to the International Carbon Partnership (Icap). The idea underpinning the agreement is precisely that of setting up a joint fund on the basis of a broader emissions market than the one we currently have, so as to gain access to significant funding for both technology transfers and climate change mitigation and adaptation measures for the least developed countries. That said, it also reflects economic principles according to which the negative externalities of emissions generation must be priced and factored in so as to reduce industrial free-riding. The multilateral approach has been well received: significantly, the agreement was also signed by a number of US states (in particular New York, New Jersey and California) that have been exerting pressure on the US Administration to participate in the new multilateral

agreements launched by Europe, and thereby correct its refusal to participate in the Kyoko Protocol.

By its very nature the energy/environment problem calls for concerted global solutions. This method, supporting multilateralism and the United Nations' role for the management and direction provided to global negotiations for the post-Kyoto period, has proved positive; it has inter alia allowed for the participation in the negotiations of industrialised countries that had not signed on to the Kyoto Agreements, such as the United States and Canada,[22] and the active involvement of China and India, countries that are contributing the most to emissions growth globally, as well as that of Indonesia, Malaysia and African and Latin American countries. It was the latter in actual fact that forced industrialised countries to give serious attention to the slotting into the negotiations of programmes, in particular financial, for adaptation and mitigation in the face of climate change, and support for the transfer of low-emissions technology and combating deforestation.

The European Union has therefore scored points in terms of methodological process and leadership, but it is proving to be much weaker in terms of content and policy efficiency. As a result it is unclear whether it will manage to preserve its 'multilateralist' leadership position vis-à-vis countries such as Japan and Canada, or vis-à-vis Asia.

The US administration for its part is currently involved in developing various alliances, based on a corporate approach, through bilateral agreements and pragmatic action, the development of public-private partnerships to support the feasibility of investment in new technology and the promotion of environmentally-compatible industrial development, directly activated by private sector businesses.

The issue of process governance is clearly highlighted by the comparison between the US bottom-up and Europe's top-down approach to the ongoing adjustment process. Will the post-Kyoto process elicit interest in the United States, the Asian countries and the poorest countries for a multilateral agreement approach, by way of a strategy shared with the United Nations (through the UNFCCC – United Nations Framework Convention on Climate Change) that aims to define a joint responsibility

[22] And Australia, which ratified the Kyoto Protocol at just about the time of the Bali meeting.

with differentiated obligations and burdens? If so, Europe will have contributed to significant change. The adjustment process can indeed not be separated from the role played by dedicated institutions, even internationally. But it is precisely internationally that Europe risks in the meantime losing credibility, for not having managed to restore order within its own borders and for not having figured out how to put an industrial development spin on environmental issues.

In other words, the European Union has to contend with two issues at one and the same time, while not remaining anchored to old paradigms. It must, first, put its own institutional house in order. That is, provide Council with powers and a mandate regarding energy; set up a European regulators coordination mechanism; and develop the control instruments required to make a single market possible. Secondly, it must define not only the role to be played by Europe in international negotiations but also the basic tenets of an industrial strategy involving businesses and investors in post-Kyoto developments. Time has really run out on unilateral, EU-wide commitments to reduce GHG emissions, and this last aspect warrants some further words of analysis.

Using its own unilateral commitment to promote the design of joint responsibility and differentiated burdens, Europe has shown its leadership capability in its very best light, with its wish to promote sustainable development in the poorest countries. This vision, underpinned by the need to promote integrated policies with respect to energy and the environment has filled the vacuum created by the US administration's lack of interest in pollution issues; it has helped overcome the divide and conquer policy in the US security of energy supply strategy, based on the one hand on the ramping up of military relationships in the Middle East, and on the other on bilateral negotiations, in Latin America and the Pacific, with primary-source producer countries.

It is important that this action continue, strengthening the role of international institutions, including financial ones, in order to launch both the technology transfer process and coordinated support for the development of the poorest countries. But once these political outcomes are achieved, Europe will still have to contend with the issue of policy efficacy. It is a known fact that the Kyoto Agreements' contribution on this is quasi-nil. As regards instruments and policies, Europe risks making a serious mistake if it does not broaden the spectrum of what it considers acceptable

action along the lines of what the US administration, for example, has done to develop cooperation among businesses.

Technological innovation appears to be the keystone in terms of addressing and solving the problems of energy and environmental security now facing the industrialised economies. Businesses' contributions will prove essential. Market instruments such as emissions trading, especially if extended on a global scale, will no doubt prove important in the short and medium term to price carbon emissions and force businesses to internalise these negative externalities. But this approach has to be implemented in conjunction with strategies to promote and facilitate long-term investment, in order to activate the engine of industrial transformation and development. This will require huge funds and cooperation between enterprises, public and private sector and European and developing countries. And it involves much more than the cap-and-tax mechanisms devised by the Commission.

Environment, calling for focused technological development, is a growth opportunity that Europe cannot neglect. And this is a road that industrialised economies could in part travel together, cooperating in order to allow countries such as China and India to accomplish the technological shift demanded by the protection of our planet, and to help move the poorest countries out of poverty. But to date there have been but occasional signs of a shared awareness of these issues.

The crucial problem is that a rigorous and for the time being unilateral (in terms of content) European strategy, neglectful of its impact on corporate competitiveness, opens the door to industrial relocation solutions favouring countries that do not yet have binding environmental targets, such as China or India, and are far less efficient in complying with environmental criteria. Their industrial processes, for the same goods, generate more emissions than Europe's. Consequently, taking the global view that environmental issues necessarily require, this policy – very costly for a number of European industries – may well lead to no progress whatsoever in terms of goal attainment, and no containment of global emissions.

In other words, the energy/environment package just launched by the Commission, however careful in using objective and unchallengeable indicators such as per capita GDP in computing national commitments, seems to stem more from an administrative logic than from efforts aimed at activating the engines of technological innovation in energy and industrial

renewal in Europe, by fostering partnerships for research, transfers of technology, and the testing of new industrial models likely to get a boost from environmental challenges.

Finally, in terms of policy efficiency, even if this costly and unilateral effort on the part of the European Union were to be on target in 2020, and assuming improbable zero growth for the rest of the world's emissions, its impact on global targets aimed at stabilising environmental pollution growth and global warming, as uniformly computed by international agencies and the United Nations' experts, would be under 4%.

5. Conclusions

The issue of European energy policy governance has become ever more central, as a result of the emergency affecting security of supply of primary energy sources and the environmental emergency of global warming deriving from excessive GHG emissions. Speaking with one voice, the European Union has managed to exercise leadership in sensitising the planet to the Kyoto Agreements and in suggesting a method and a vision based on multilateral agreements. But this has not been matched by corresponding effectiveness and results at the policy level. For these to materialise, the Union still requires institutions with powers regarding energy.

The Union will have to strengthen its institutions if it wishes to move beyond the contradictions that currently plague it and are in practice jeopardising the construction of a single market. As a first stage in a security of supply strategy, the Union has pushed market liberalisation and opening, so as to construct a European energy market. But this liberalisation and this opening up cannot elicit sufficient support from those states that have had to bear the full burden of ensuring security of energy supply for their citizens. This has led to diverging national policies, as governments became involved in supporting, more or less explicitly, their national champions. And this has also led to free-riding in negotiations with producers. In short, this is a vicious circle that is weakening the European Union's international bargaining power.

On the other hand, only the awareness that a single market will provide value added is likely to convince governments they should sign on wholeheartedly to a European plan to open energy markets, convinced that this single market will represent a positive externality for domestic markets in terms of increased security. But to reach this point, Europe needs

institutions to support and coordinate domestic market liberalisation, to provide guarantees as to rules and stances to those utilities that will be called upon to face up to competition and invest in the market.

Recent years have shown quite clearly how disappointing it is to think that one can offset the institutional vacuum of a mandate-less Council and a European regulator that is simply not there, simply by extending inappropriately the missions and functions of the antitrust authority.

The second message is that the European Union, however significant the role it has played in promoting and supporting internationally a multilateral vision of energy policies and climate change, will not be able to continue playing this role, if it hasn't beforehand put its own house in order. Nor will member states be in a position singly and separately to face up to Asian competition, the growing demand of which is putting pressure on the very same primary sources they use. European institutions will therefore have to play an essential role over the next few years if they wish to avoid having piecemeal interests prevail in energy policy.

However, institutions are a necessary but not sufficient precondition for cooperation in the field of energy. The outcome so far shown by the European Commission's policies demonstrates that their focus remains far removed from one target: that of starting up the engine of industrial development, inter alia in the energy sector.

Technological innovation, and this is the third conclusion, appears to be the keystone to address the issues of energy and environmental security with which industrialised and developing countries alike now have to contend. Business contributions will prove essential. Such is the approach that underpins the bilateral negotiations between governments and businesses that are at the heart of US policy. But it is also a road that industrialised countries could travel under the aegis of a necessary form of multilateralism, cooperating to allow countries such as China and India to accomplish the technological shift required for the protection of our planet, and to help the poorest countries pull out of poverty.

This is also a growth opportunity for industrialised countries – and one that Europe can ill-afford to ignore.

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