Energy

In the past, a pioneering factor in the building of Europe, now a driving force in its reconstruction

A mandate to negotiate a competitive, climate-based and solidarity-linked European energy strategy for 2030

France's energy policy is closely linked to the European policy designed to give Europe greater security and stability as its Member States grow and prosper. The European Union has set objectives for 2020 known as the "Triple 20": a 20% decrease in greenhouse gas emissions compared to 1990 levels, a 20% increase in energy efficiency compared to the 2007 forecast, and a 20% share of total energy consumption for renewable energies (including 10% in the transport sector). Like the 27 Member States, France has made the corresponding commitments and is expected to meet them. On the other hand, Europe has not defined a strategy for the post-2020 period, beginning with an objective for 2030. The democratic and participative process designed to lead to the definition of this strategy began with the publication of the European Commission's Green Paper entitled, "*A 2030 Framework for Climate and Energy Policies*". The European Parliament expressed its initial opinion in March. The Council has begun to consider the issue. However, a final decision will probably not be made until after the European elections in 2014. The national debate on energy transition should, of course, result in laws that ensure compliance with France's commitments for 2020 but, more importantly, it should also express an opinion on European policy for 2030. This is an opportunity to give the French government and MEPs a real mandate for future debates in the European Council and Parliament.

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Energy

In the past, a pioneering factor in the building of Europe, now a driving force in its reconstruction

Europe is undergoing a profound crisis. The global financial crisis of 2008 revealed the full extent of Europe's industrial weakness and it has led, five years later, to crises in public funding and the euro, threatening the European unity that has been so patiently built up over the last sixty years. Societies are in debate, seeking answers to their questions. Policies have been implemented to avoid collapse but the crises can only be overcome in the long term by a new type of economic and political revival that has yet to be invented. What is needed is a "European Reconstruction Contract"[1] (cf. the on "Shock Groups").

Energy is central to this reconstruction. It was a pioneering factor in post-war reconciliation when strategic resources were pooled within the European Coal and Steel Community (ECSC) in 1951 and a "founding father" of its construction through the latest technology of the day and the European Atomic Energy Community (Euratom) in 1957. Energy can play the same role again in the present situation. Electricity, gas and transport are "network industries" which contributed in the past to the formation of social cohesion and national industries. In the future, they will be part of the basic structure of European unity and competitiveness. After fifteen years spent creating the single market for electricity, gas and transport, dominated by the deregulation of national markets, it is time to introduce integration, solidarity and energy-based union, drawing on a much wider technological spectrum than coal alone, or the atomic energy of the past. This union will be accessible and affordable for all Europeans. It will integrate values and interests that are common to all (the combat against climate change and resources-led economic growth) while at the same time setting up a new "foundation" for renewed industrial growth within the framework of global competition. And just as it did sixty years ago, energy-based union can act as a precursor to European reconstruction as a whole.

After fifteen years of deregulated national markets, it is time for integration, solidarity and energy-based union

"SHOCK TROOPS" FOR A RECONSTRUCTION CONTRACT

Confrontations Europe has set up a group of "shock troops" involving European corporate bosses, trade unions, regional leaders and representatives of national and EU institutions to draft a reconstruction agreement that will be submitted for public debate in the run-up to the European elections. The core feature of the contract will be a competitive European industry, full use of human capabilities and funding for investments.

[1] Cf. the article by Philippe Herzog in *Confrontations Europe, La Revue,* no. 101.

I. 2050: Steering the correct course for the climate without making hasty technological choices

Europe's strategy for 2030 is part of a longer-term view (up to 2050) with a global dimension. Without this, a European strategy would be impossible. The infrastructures have aged and should be replaced but they should also be redeployed to leave room for new energy technologies and create interconnected European grids. Vast new investment is required with projects completed within ten years but designed to last for six decades or even a century. Whatever the available financial resources, **there can be no efficient public or private investments without a clear, stable framework.** The framework should constitute an incentive for investments that meet three fundamental objectives – environmental protection, competitiveness and security. Added to this is solidarity, a factor without which union is not feasible. Since these objectives are contradictory in nature, any policy must consist of a fine balance between global climatic imperatives and the search for a new competitiveness that will allow European industry to recover. Any new European industrial policy must also be linked to its Single Market and its commercial policy.

I.1 Steering the correct course for the climate: a global responsibility in the interests of Europeans

Global development based essentially on fossil fuels is a dead end. We have to extricate ourselves from this situation, but how quickly can we do so? The decarbonation of the energy mix has two driving forces – the fight against climate change and the increasing cost of fossil fuels. Reducing the emissions from the most highly polluting fossil fuels in terms of GGE and reducing the cost of energy in the national budget are convergent objectives for countries that are energy consumers but not for exporting countries (*cf.* 1). Consumer countries, whether emerging or established, do not give the same priority to the two aspects and the "move away from fossil fuels" in one group of countries frees up resources for the "staying with fossil fuels" of the others. New low-carbon industries are developing all over the world and they are seeking access to the markets in countries engaged in fighting climate change. The reverse, however, is not necessarily true. The energy world is still largely free of commercial multilateralism, as it is of WTO or UN policy. The "double cartel" created by the oil crises of the 1970s still exists. Faced with the OPEC cartel, the "rich consumers' club" (the International Energy Agency, IEA) is still excluding emerging countries. As a result, they are seeking to establish their own club.

In addition to these political obstacles, there are technological hurdles. Low-carbon technologies are still expensive. They may not have reached their full potential and they are not accessible to all. There may be an expectation that, with technology maturity and the gradual spread of these technologies, the political obstacles could be erased by 2050. In this case, we would reach a critical mass as regards commitments to reduce emissions, but probably not in time to

avoid the 2° rise in global warming. Moreover, although the volume of fossil fuels used will inevitably decrease, it will not disappear altogether by 2050.

1. NATIONAL AND REGIONAL CARBON INTENSITY								
	Kg CO_2/pop.	t CO_2/GDP		Kg CO_2/pop.	t CO_2/GDP		Kg CO_2/pop.	t CO_2/GDP
World	4.44	0.44	Luxembourg	20.98	0.3	Greece	7.45	0.31
OECD	10.1	0.34	Estonia	13.79	0.83	Italy	6.54	0.24
Africa	0.91	0.34	Finland	11.73	0.37	Slovakia	6.45	0.32
Qatar	37.57	0.49	Netherlands	11.26	0.3	Malta	5.99	0.26
Kuwait	31.93	0.71	Czech Rep.	10.89	0.46	Spain	5.82	0.22
USA	17.31	0.41	Belgium	9.78	0.3	Bulgaria	5.81	0.51
Arabia	16.25	0.8	Germany	9.32	0.28	France	5.52	0.19
Russia	11.16	0.79	Cyprus	8.99	0.35	Sweden	5.07	0.15
Japan	8.97	0.29	Ireland	8.64	0.24	Hungary	4.89	0.29
China	5.43	0.78	Denmark	8.48	0.26	Portugal	4.53	0.21
Brazil	1.99	0.2	Austria	8.27	0.23	Croatia	4.3	0.27
India	1.39	0.43	Poland	7.99	0.46	Lithuania	4.02	0.26
Haiti	0.21	0.21	UK	7.78	0.24	Latvia	3.61	0.28
Ethiopia	0.06	0.07	Slovenia	7.48	0.3	Romania	3.52	0.32

Source: IEA figures for 2010. Emissions per head of population and emissions per unit of GDP.

Worldwide, it is the oil-producing countries that create the highest greenhouse gas emissions per head of population. In Europe, Luxembourg's results are worse than those of Saudi Arabia because of its fiscal dumping policy as regards fuel. The results of the countries that claim to be the "greenest" (Austria and Denmark) are worse than those from the coal-producing Poland and their emissions are 50% higher than those from the country with the largest number of nuclear power stations (France) and from the country that combines nuclear and hydro-electricity, Sweden.

The EU must encourage third countries to follow its lead in the fight against climate change while preserving and developing its industrial sector.

The European Union's resolve to fight climate change reflects its values and interests as a major importer of fossil fuel based energy[2]. We can also support a target objective of an 80% to 95% reduction in CO_2 emissions compared to 1990, which has already been accepted by the European Parliament. Yet if there is no ambitious international policy on the part of Europe, there is no chance of advancing this planetary cause because there is no other power in the world that can replace it as the driving force. Furthermore, this "altruistic" commitment must be compatible with its model of growth and competitiveness in the face of global competition. Without such compatibility, it will not receive the political and social support such a commitment needs. Europe must reduce its internal deficits and imbalances and build up a stronger industrial sector. It must not only place itself in the forefront of commitment but

[2] *Cf.* Part 3 and Part 5 of the Consolidated Treaty: "*It is working to ensure the sustainable development of Europe based on balanced economic growth and price stability.*" "*In its relations with the rest of the world, the Union confirms and promotes its values and interests [...] It contributes to peace, security, and the sustainable development of the planet [...]*".

do so in a manner that encourages third countries to follow its lead, while preserving and developing its industry against global competition in a playing field that is far from level.

2. COMMERCIAL BALANCES AND ENERGY CONSUMPTION

G	2001		2008		2012	
	Total	Fuel	Total	Fuel	Total	Fuel
France	- 5.8	- 23.2	- 68.4	-.56.5	- 81.5	- 67.4
Germany	95.5	- 41	177.5	-87.7	186.7	- 103.5
UK	- 79.3	8.8	- 126.2	- 12.8	- 164.3	- 21.7
Poland	- 15.8	- 3.4	- 26.1	- 11.1	-9.8	- 13.3
Denmark	7.1	1.1	5.1	3.9	9.6	1.3
EU 27	- 94.4	- 132.8	-265.4	- 374.4	- 105.1	- 422.5

Source: Eurostat, international trade, commercial balances in billions of current euros for total commercial balance and fossil fuels, lubricants and related products (CTCI3)

The EU's energy bill has constantly increased since 2001, despite the GFC. It has risen threefold in eleven years. All the Member States except Denmark have a negative net balance. The United Kingdom fell into the red in 2006 and costs have quadrupled since then. Without this energy bill, the EU's total commercial balance would be positive. Yet it does not prevent a positive balance in Germany. It even accentuates it in Denmark. Without it, Poland's balance would be positive but the same cannot be said of France or the UK. In 2012, the energy bill accounted for 3.27% of the EU's GDP compared to 1.29% in 2003. Over the same period, the bill rose, in percentage terms, from 1.4% to 3.3% of French GDP, 1.7% to 3.9% of German GDP and 1.80% to 3.5% of GDP in Poland. In the UK, energy was still bringing in 0.4% of GDP in 2003 but it was costing 1.14% of GDP by 2012. In Denmark, energy's contribution to national wealth fell by 0.4% over the same period, down to 0.5% of GDP in 2012.

The EU is a massive importer of fossil fuel based energy (*Cf.* 2) yet it has far from negligible domestic reserves, especially as regards coal (coal, peat, shale) and lignite[3]. It has to make an explicit political decision on the management of these resources. These domestic fossil fuels emit as much CO_2 as imported fossil fuels but they are not equivalent from the point of view of development and security. Reducing emissions from fossil fuels by first decreasing the level of imports may be a means of reconciling climate change and internal development. On the other hand, we would use up reserves more quickly and they may be useful if there is world tension as a result of stronger competition for access to resources in the future. Sparing domestic resources to turn them into long-term strategic reserves and importing cheaper fossil fuels may be a better way of reconciling development and security, especially as long as there are no successful international negotiations on a global climate change agreement.

[3] Coal is mined in seven Member States; lignite in nine. Peat is used in Ireland and Finland while Estonia draws on its reserves of oil-bearing shale. According to Eurocoal, in 2010 there were 176,800 coalminers in Poland, Germany, the Czech Republic, Bulgaria, Romania, Spain and the UK and 81,400 lignite miners in Poland, Germany, the Czech Republic, Bulgaria, Romania, Slovakia, Greece, Hungary and Slovenia.

I.2 Network-systems for a renewed Europe

Of the three largest energy sectors (electricity, transport and heating/cooling), the first two obviously have a European dimension and this should provide the basis for unity. It is not unreasonable to think that, after two or three decades of innovation and experiment, the e-revolution already at work in the ITC field will have spread throughout these sectors, particularly the electricity and transport markets, between 2030 and 2050.

- **The electrification of energy** will continue to progress as it has over the past one hundred years, leading to a rise in the consumption of primary energy, despite progress in the energy efficiency of power stations and end users. Electricity production is already the most low-carbon of all the sectors and it will become the primary vector for the general decarbonation of energy consumption in Europe. After the decisive step towards the creation of a European market-network-system by 2014/2015, it is not unreasonable to foresee a truly unified and "smart" market-network-system in the long term with "dispatching" centres operated in a coordinated manner and the establishment of a European electricity price. The rule on universal affordable access to electricity, currently a national requirement, should become a European one. With the e-revolution, the European electricity network-system will not mean a mere unification of the existing national systems. A "smart" system will allow for better, two-way adjustment of production and consumption, better management of intermittence, and economies in production capacities.

In the long term, a unified "smart" European market-network-system may be a viable option.

- **In the transport sector,** decarbonation is still in its early stages. The move towards electric-powered cars is progressing and is expected to gain momentum but merely changing car engines will not be sufficient. Low-carbon transport will imply a very real change in system – and in society. In the 1950s and 1960s, we thought we were just making cars when we were actually building a society[4]. Nowadays, low-carbon requirements mean a return to updated pre-automobile modes of transport (river and rail) and it is far from certain that the automobile will remain the real symbol of a liberty and "right to mobility" that is almost enshrined in the constitution. Are we heading for the total removal of automobiles from urban areas, as recommended by the Commission[5]? Decarbonation of this sector presupposes clean cars and, more importantly, their integration into multimodal networks that are interconnected on a European scale since electric or hydrogen-powered cars could be used to balance the new electricity networks-systems (battery storage or storage by means of hydrogen).

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[4] *Cf.* Bernard Charbonneau, L'Hommauto, 1967. *Les Entretiens Européens* of 14 and 15 April 2010 on clean cars and the *Lettre des EE* No. 10: In favour of sustainable energy and mobility (www.confrontations.org).
[5] *Cf.* White Paper on Transport of 28/03/2011 (Com (2011) 144 final).

Low-carbon mobility will imply a real social change and multimodal networks interconnected at a European level

- **The heating/cooling sector** can be networked (heat networks linking cogeneration production and storage units, with or without thermal-electric-chemical conversion). However, such networks would be local or infra-regional. It should also be remembered that needs and resources vary greatly in North and South. The European dimension may involve the renovation of heating/cooling in accordance with stringent standards applied to housing across the board (combined with innovative funding models for the considerable investments required, which would be authorised, promoted and increased by mechanisms used in the EU as a whole). It may also refer to the use of the transport and distribution network for gas heating only, as and when gas power stations become less necessary in the production of electricity.

I.3 No hasty choice of low-carbon European mix for 2050

The main question is the choice of a mix that will reduce greenhouse gas emissions in a way that is compatible with balanced, competitive growth. It is reasonable to assume that, by 2050, the market-network-system will allow intermittent renewable energies to be integrated satisfactorily into the mix and that CCS technology[6] will be mature enough to allow for the production of electricity using a large-scale thermal process, not only from coal and lignite but also from gas and biomass. Should we be choosing the target mix for 2050 at this juncture? Many people, but they are in the minority, want to impose a European mix almost totally based on renewable sources of energy. Yet how can we claim, thirty-five years in advance, to know the best method of decarbonation using renewable energy, nuclear power or CCS? How can we claim that CCS technology is going nowhere when it is only in its very earliest stages? Are we certain that we are not going to need any nuclear power and that we will be able to meet demand (even a decreased demand) solely from biomass, water, wind and sun? Should we reject nuclear power, in the name of ethics, when climate change is threatening humanity? If we want to avoid unbearable climate change, we will need all available technologies and nuclear power is the objective ally of such an enterprise. Our duty today is to aim for the widest possible spectrum of technologies available (reducing it only as and when experience and new discoveries allow). Moreover, diversity in the mix is an advantage *per se* alleviating problems arising from breakdowns and providing a means of using the range of regional potential for energy production as efficiently as possible. "***Not putting all our eggs in one basket***" **enables us to overcome the failure of one type of technology by switching to another.** Is there a single technology in the world that is totally free from risk of failure within its core process, its supply chain, its operating environment or its economic model?

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[6] Carbon capture and storage: Separation of carbon gas from smoke, transport and geological storage. There are also projects aimed at "recycling" the carbon gas, for example by combining it with hydrogen to produce a fuel.

To avoid unbearable climate change, we will need all available technologies, including nuclear power

Going solely for wind turbines or solar power poses problems that are at least as frightening as going solely with nuclear or CCS. If there are no trains, at least there are still coaches, cars and planes – thank goodness!

II. 2030: A single target objective for climate and a diversified mix for competitiveness

The strategy for 2030 will not be a clone of the strategy for 2020 because it has to give greater priority to the need for competitiveness. Given the failure of the Triple 20 strategy, for several different reasons[7], it has already been extensively modified in the Commission's Green Paper.

For 2020, the target objectives have been maintained (except with regard to energy efficiency where there is a slight fall from 20% to 17% in return for more restrictive measures) but the means implemented to reach the emission and renewable energy objectives are currently being extensively reviewed.

The 2030 strategy should give greater priority to the need for competitiveness

For 2030, we have to take things further. The restrictive triple objective should be abandoned and replaced by a single target objective – a reduction in emissions should be the main regulatory factor for investments and the competitiveness objective should be based on a diversified mix.

- The crisis automatically leads to a significant drop in emissions but it also dries up grants for renewable energies and energy efficiency, especially in the countries within the euro zone currently experiencing difficulties (25% of consumption with the EU27, 35% of consumption in the euro zone).

- The European emission trading scheme (ETS) is in crisis. With a price remaining at less than 10 euros per tonne of CO_2, there is almost no justification for further investment in decarbonation. Reform has been launched. Major corrections have already been made to achieve a lower objective in terms of energy efficiency. New financial supports are being implemented to try and offset the effects of the crisis[8] but this will not be sufficient.

- Usage has also highlighted design faults in the Triple 20 strategy. The three objectives are not independent; there are "interactions", not to say "contradictions". The ETS is designed to achieve a less costly reduction in

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[7] *Cf.* Pierre Deschamps' article in *Confrontations Europe, La Revue* No. 101.

[8] After the upturn in 2009, the EIB's new plan to relaunch Europe's economies and the other new instruments introduced (Connecting Facility, NER 300) will increase financial support from 2 billion to 25 billion for networks and from 0.6 billion to 23 billion for renewable energies. The 2014-2121 budget will set aside 20% for expenditure on energy and climate.

GGEs while leaving countries free to select the means of achieving it but, at the same time, the other two objectives impose two preferred methods – energy efficiency and renewable energies. **The Triple 20 strategy is incompatible with the ETS!**

- Likewise, the electricity market is supposed to be sending the right signals to encourage investment in the most competitive technologies but public financial support given solely to renewable energies coupled with their priority access to the network is driving investment away from the technologies most prone to market risks and even from regulation given the likely return on investment (thermal power plants). Instead, investment favours the only risk-free technologies (renewable energies where there is guaranteed profitability in terms of capital). Yet intermittent renewables (wind, solar) need higher-risk technologies to offset the lack of wind and sun and enable operators to provide a guaranteed ongoing and peak supply of electricity! By leaving the responsibility for balance solely to network managers, the 2020 strategy under-estimated the "*external factors*" of investment in renewable energies, mainly the needs for the development and "*smart*" transformation of transport and distribution networks and energy storage systems. Their operating rate is obviously incompatible with a massive increase in the injection of kW. It would be fatal and there would be no guarantees.

None of these problems will be solved by 2020 but reforms of support systems for renewable energies are already being implemented nationally and will be implemented Europe-wide in the future.

The most significant correction concerns competitiveness. In the traditional trifecta of energy policies (sustainable development, competitiveness and security), the "*competitiveness*" factor has clearly been reconsidered. **The Green Paper states, "*Energy prices must be competitive internationally*** *(the USA's gas is becoming four times cheaper than EU gas and is allowing for an industrial upturn)* ***and affordable for end users".***

There can be no energy policy without an industrial policy and no industrial policy without an energy policy

The Green Paper contains a proposal to moderate European price rises in several ways i.e. by relaunching competition and by a more effective use of energy infrastructures following the unification currently underway (network codes); by lifting current obstacles to the future exploitation of conventional and unconventional local oil and gas resources and to the diversification of energy supply channels; by accentuating the efforts made to increase energy efficiency, which would compensate for higher prices by decreasing consumption per head of population; and by reducing the direct and indirect costs of renewable energies. Nor is growth forgotten, beginning with industrial growth. The "*Europe 2020*" Plan sets an "*industrial upturn*" objective, to raise industry's contribution to European GDP from its current 16% to 20% in 2020. The European Energy Commissioner, Günther Öttinger, even suggested, speaking from a purely personal viewpoint, that there was a need for a fourth objective viz. energy

policy, since there cannot be energy policy without an industrial policy or an industrial policy without an energy policy.

II.1 A restrictive single target objective for climate with provisos

On a global level, progress has been made since the Copenhagen Climate Conference in 2009. More than 90 countries have drafted declarations of intent, with varying levels of ambition. The international community has also agreed to the objective of limiting planetary warming to less than 2° C. The ETS could also be extended to include Switzerland, Australia, New Zealand, South Korea, China and several States within the USA. At the same time, however, the trend towards a rise in temperature lies at 4° to 6° C or more[9] , and is still hovering around 3° to 5° on the basis of current commitments. The number of supporters for the continuation of the Kyoto Protocol is decreasing (it has been abandoned by Japan, Russia, Canada and New Zealand, and the GGEs proposed by the Kyoto Club have been reduced from 26% to 15% of the world's total emissions). The international agreement was not deemed sufficient to raise the European objective from 20% to 30% by 2020.

The next crucial step for climate and the European climate policy is to achieve an agreement on the post-2020 period by 2015, within the limits suggested in the Durban Platform. However, it is fairly unlikely that this meeting will have the hoped-for results given the current crisis and weakness in Europe.

The restrictive 40% target objective should be supported but with three provisos – an international agreement by a critical mass of countries, the availability of funding, and better interconnection with the EU's economic and industrial policy

Voices are being raised all over Europe, demanding that any restrictive emission reduction objective should be abandoned until there is global agreement. Avoiding global warming in fifty years' time is no longer a priority when people are being facing difficulties and unemployment on a daily basis in countries undergoing major crisis. Internally, political consensus on fighting climate change in Europe still exists, but it has become more fragile. The European Parliament has already approved a restrictive objective – a 40% reduction in emissions compared to 1990. Poland, which is the highest coal-producing Member State in the EU, was initially the first to oppose the measure but it went

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[9] The concentration threshold of 400 ppm (parts per million) of CO_2 in the atmosphere was recently reached in Hawai. Taken as an annual average, this threshold is the one that should be attained again in 2050 if we are to have a good chance of holding the average temperature rise at below 2° C. Given the inertia of ecosystems, this means that the world has a budget of 1,000 to 1,400 Gt of CO_2 to emit into the atmosphere between 2000 and 2050 and that global carbon emissions should be stabilised by 2020 before falling by 3% to 4% per annum until 2050. This budget has actually been decreased by 300 Gt and consumption is rising by approximately 3% per annum. At this rate, we will have used up our credit balance by 2030 and the mean rise in temperature could reach 10° C.

on to establish successful alliances with five other Member States that also have significant coal resources[10]. **It is true that 40% is an ambitious target objective[11]. It presupposes that the rate of reduction will at least double compared to the present day.**

The objective could be set as a mere indication in both sectors i.e. transport which is expected to cross a significant threshold in 2030, and electricity. To achieve an overall reduction of 25% by 2030 compared to 2020, the electricity sector could reduce its emissions by something in the order of 35% to 40% by 2030 compared to 2020 while the emissions from the transport sector could decrease by approximately 15%.

The restrictive target objective of 40% must be supported. Indeed, the French government has already expressed its support, but subject to three conditions:

- An international agreement signed by a critical mass of countries accounting for at least 50% of emissions worldwide;

- As expressed in the Green Paper, "*the mobilisation of the funds required to cover the necessary capital costs for the significant initial investments*" (*Cf.* III-2 Funds for European industry);

- Closer interconnection with the EU's economic and industrial policy, especially in the euro zone.

In the absence of an international agreement or an accord involving a critical mass of countries before 2020, the objective should be reduced to a lower level defined in terms of available technologies and our ability to defend our markets in the face of global competition. There is also a need for a foreign policy which would both protect European industry in an uneven global competitive market and encourage third countries to become engaged in the struggle.

For the moment, foreign policy is caught between two stools – should it align the charges of European industry with the charges of third countries or impose its own charges on third countries (*Cf.* 3).

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[10] *Cf.* the joint communiqué at the end of a meeting, in Warsaw, of Environment Ministers from Poland, the Czech Republic, Slovakia, Hungary, Bulgaria and Romania in preparation for the Environment Council meeting of 22 and 23 April dealing with this issue (Source: Enerpresse 23/04/13).

[11] The scientific requirement summarised by the IPCC can be used to define a framework for a commitment that can be seen as an intermediate objective per category of country – 25% to 40% reduction in GGE by 2020 then 80% to 95% by 2050 compared to 1990 for developed countries, and 15% to 30% reductions in GGE compared to a Business As Usual (BAU) scenario by 2020 in developing countries.

3. FOREIGN CLIMATE POLICY: IMPOSING OUR CHARGES ON THIRD COUNTRIES BY SECTOR

In the ETS, energy-intensive industries exposed to international competition are exonerated from the payment of quotas if their results are on a par with the best in each sector. This principle certainly requires an initial effort for most companies but it is designed to align the "charges" of European industry with those of third countries that are not engaged in the fight against climate change. It protects Europe but does not encourage third countries to follow its example.

With regard to air transport, on the other hand, the "charges" of third country airlines are aligned with those of European companies by obliging them to purchase quotas in order to access the European market. This protects European air transport by encouraging third countries to follow its example. A similar method is applied to imports of oil for refining in Europe ("Fuel Quality" directive). Imported unrefined oil is classified in categories, each with a predefined carbon level that is taken into account for the reduction in GGE by European refineries. The same applies to biofuels – the European rules applicable in Europe are also applied to third country importers. In air transport, resistance on the part of third countries has already led to a freeze on the European system and the search for a global agreement in the sector within ICAO, the "UN" of air transport. In other sectors, complaints and counter-complaints are being filed with the WTO in increasing numbers. The question is whether the EU will be more capable of acting as a driving force at a sectoral level than it is on a global level.

Of the two possibilities, it is the second one that corresponds most closely to the EU's objectives – protection for the European Union while encouraging third countries to follow its lead. However, it has to be capable of defending this policy in the current global tug-of-war.

Instituting a general CO_2 tax at borders is one way of imposing, on third countries which are against the necessary measures, what we impose on ourselves but, quite apart from the practical difficulties (how to calculate the CO_2 contents of imported goods), this is not politically feasible under the terms of current treaties, which have set in place a unanimity requirement. By 2030, the European Union should be implementing its policy on two fronts. It should be seeking global agreement on climate change while developing sectoral agreements like the ones used for air transport in as many relevant sectors as possible, beginning with shipping[12] but including sectors acknowledged by the EU to be of strategic interest e.g. steelmaking.

By 2030, the European Union should be implementing its policy on two fronts i.e. seeking a global agreement on climate change while developing sectoral agreements of the air transport type in as many relevant sectors as possible.

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[12] An energy efficiency index was agreed by the International Maritime Organisation and brought into effect in 2013.

A restrictive target objective encourages technological change among our industries but such transition must be assisted as far as the consequent restructuring is concerned and supported on the research and innovation front. Moreover, internal development must be rebalanced, especially in the euro zone. There may be convergence between the fights to combat climate change implemented by Member States and, at the same time, divergence between European countries in the foreign deficits and in dealings with third countries. Such a situation should be avoided. The coordination of economic policies, notably in the euro zone, should follow closely upon another indicator ("energy costs") and the necessary measures should be implemented to provide balanced growth.

II.2 The mix: diversity to ensure security, competitiveness and solidarity

As far as the energy mix is concerned, it now centres solely on renewable energies (restrictive target of a 20% reduction by 2020) and it is this objective that is arousing the greatest debate. The European Parliament and Council are equally divided between those who defend a mandatory 45% objective for renewable energies by 2030 (the Greens and S&D in the Parliament) and those who defend technological neutrality i.e. a free choice for Member States as regards their energy mix with a view to reaching the climate objective by using renewable energies, nuclear power, CCS etc. In the Council, the "Club of 12" (France with eleven other Member States viz. Bulgaria, the Czech Republic, Finland, Hungary, Lithuania, the Netherlands, Poland, Romania, Slovakia, Spain and the UK) has already taken a position[13] in favour of technological neutrality. In the transport sector, the Commission is also in favour of technological neutrality, refusing to choose between electric vehicles and hydrogen-powered vehicles in particular, even if this means building two European distribution networks. The Parliament has already sketched out a compromise[14] indicating support for all low-carbon energy sources and adding the transition between coal and gas with a 30% objective for renewable energies by 2030.

The technological neutrality option must be consolidated and completed to allow for a more viable compromise in the interests of all parties and of the European Union as a whole. Neutrality is, in fact, a non-choice and we prefer to opt for the choice of diversity. Neutrality corresponds to the EU's need to respect the free choice of Member States (and free competition) with regard to their energy mix, a free choice that is guaranteed by European treaties. However, such freedom is illusory when operated in a European Single Market in which national choices are interdependent and the rules give preference to renewable sources of energy to the detriment of other low-carbon technologies. It would be better to accept a diversified European mix resulting, not from the addition of independent national free choices, but from negotiations between Member States and with the European Parliament leading to a veritable European energy solidarity pact (*Cf.* III). Aiming at such a diversified European mix has a large number of advantages compared to a mix which would, in fact, lead to a

[13] Joint Ministerial Communiqué on Nuclear Energy in Europe, 12 March 2013.
[14] Resolutions of 14 March on the Energy 2050 Roadmap, Tzavela Report.

monopoly for one particular technology. Firstly, it allows for political agreement because, unlike a monopoly of renewable energies that prohibits any other choices, **diversity allows for the choice of renewable energies without excluding other choices.** Secondly, it gives greater security because the breakdown of one technology can be offset by the others. And thirdly, it establishes the bases of true competition between technologies by not excluding long-established low-carbon technologies such as nuclear power.

We should opt for a diversified European mix leading to a European energy solidarity pact

Since energy is central to the revival of a competitive industry that includes a solidarity dimension, **such diversity would probably allow for much stronger growth of European industry as a whole** instead of being limited, as is sometimes suggested, to "green industries" in the form of house insulation, the production of wind turbines and the establishment of solar power plants (*Cf.* 4, overleaf).

As regards the intermediate goods industry, which is a significant energy consumer, the only way of containing the rise in electricity prices by 2030 is to maintain, or develop, nuclear energy as a significant portion of the energy mix. This has already been realised by Scandinavia's papermaking sector. There are no quotas to purchase and the electricity is less expensive. To contain the gas price rise, the solution lies in the deregulation of the production of unconventional gases but this will not be effective for ten years at best and will undoubtedly cost more than it has in the USA. Meanwhile, the development of a European gas market-network-system that encourages gas-gas competition (network with LNG terminal hubs in harbours) without abandoning imports via gas pipelines should help to avoid an excessively high price rise.

4. AN ENERGY POLICY IS AN INDUSTRIAL POLICY

In addition to heat insulation materials and SMEs in the building sector, two major sectors are concerned:

1. **The high-energy intermediate goods sector** which, in Europe, includes the following: chemicals, chlorine and soda (CEFIC, Euro Chlor), cement, ceramics, limes and limestones, clays and bricks (Cembureau, Céramie-Unie, EULA, EXCA), paper (CEPI), glass (CPIV), metals, ferrous alloys and steelmaking (Eurométaux, Euro Alliages, Eurofer). All these sectors have been brought together within an "Alliance of Energy-Intensive Industries" with IFIEC Europe (International Federation of Industrial Energy Consumers). They claim to represent three million employees throughout the EU. **Their competitiveness lies first and foremost in prices:** the separation of gas prices and oil prices through gas-gas competition or unconventional gas; the nuclear power sector which has long-term contracts and moderate, stable prices.

2. The energy equipment sector: coal-fired power plants with or without sequestration, nuclear power plants, turbines, wind turbines, photovoltaic panels, methane production plants etc. and the wide-ranging introduction of ICTs into networks, industry and housing with European groups operating on

a global scale such as Siemens, Areva, Alstom, ABB and Schneider activating a vast network of specialist SMEs. **The cost of supplies affects their competitiveness, of course, but it is first and foremost their ability to innovate and open up to new national, European and global markets that give them their strength.** National policy can give preference to the national nuclear power or wind turbine industry by developing its national market for nuclear or wind power but it is always worthwhile seeking a large European nuclear or wind power market. This would create a real ability to take the goods and services developed within the policy out onto the global stage. A national market also serves as the first experimental step for new technologies (offshore wind farms, concentrated solar power, sequestration, smart networks etc.), followed by the European market before seeking to conquer the global marketplace. **Moreover, since the global market is diversified, the European market cannot limit itself to a single technology or narrow family of technologies without imposing a significant handicap on European industry** in the face of global competition as it would then have to "jump" directly from a national to a global dimension for technologies excluded from the European market, without a critical mass and at the risk of lacking an adequately flexible technological and economic model. Only the industries in the largest national markets would achieve this; those in small markets would not. To maximise the chances of the entire industrial sector in Europe in its attempts to add global value to its, the European market must be as diverse as the rest of the world.

As far as capital goods in the energy sector are concerned, the EU must aim at a European mix that is as diverse as its global counterpart. If it aims at a European mix based solely on renewable energies (a concept which is dominated by wind and solar power), the development of these sectors will not compensate for the reduction in the European market for power plant industries using non-renewable energy and the corresponding jobs. A domestic market limited to renewable energies would deprive European industry of outlets on the world market, even though we lead the way in a number of technologies e.g. nuclear power. We have to create a European "base camp" on which our companies can build in the face of global competition. Limiting ourselves to a European market consisting solely of niches will only pave the way for niches in the global market since the domestic market concentrates all the technologies we have available for the world market as a whole. The national markets of Member States, even the most powerful of these States, cannot provide a full range of technologies on their own but they can if they are united and if they complement each other on the European market. Indeed, this is one of the strengths and justifications for the great Single Market!

A domestic market concentrating all technologies will give access to the world market as a whole

Furthermore, we need diversity in the renewable sources of energy themselves. The European market is currently focussing too much on two renewable

technologies (wind turbines and photovoltaic cells) to produce electricity. There is a lack of suitable support for concentrated solar power, marine renewables, biomass, deep geothermal energy etc. **This diversity would not only be useful for the significant global development of European industry but for development based on solidarity**, paving the way for renewed industrial balance instead of a concentration in the countries that are already the most highly industrialised, notably in the euro zone. The development of concentrated solar power would allow for the establishment of a strong industrial sector in Spain, Portugal, Greece (Helios) and even Cyprus, all of which lack industrial sectors.

The development of marine renewable energies is of interest mainly to France and the UK which, together, account for 80% of European potential in floating wind turbines. For their part, coal-producing countries such as Poland, Bulgaria, the Czech Republic, Slovakia and Romania may develop a new high-tech industry in the field of CCS power plants.

Setting a mandatory target objective for renewable energies is not a good idea. It was not a mandatory target objective that brought about the boom in renewable energies; it was the support systems that came in their wake. The reduction in GGE should be the only objective regulating low-carbon investments. No restrictive objective regarding the mix should be set for either renewable energies or for other technologies. If we do want a guideline objective, it should be set within the framework of negotiations on the Pact (*Cf.* III).

The reduction in GGE should be the only regulator of low-carbon investments

The role of gas in the transition towards CCS maturity

By 2030, while CCS and e-network-systems intermeshed with storage points manage the problem of intermittence and new nuclear power plants currently in the project stage are actually being built, natural gas should be used to lower the carbon content of the electricity mix. It can provide a means of "holding" emissions until 2030 while providing an adequate supply and balancing the networks. After 2030, it will also have to look into the use of CCS if it is to maintain its position at a further stage of GGE reduction. Until CCS allows for the widescale use of clean coal, after 2030, the use of gas as a substitute for coal will halve emissions but will not totally eliminate them. **This transitional period can improve energy security if shale gas is used, especially if we diversify supply** by means of new gas pipelines and methane terminals, and new suppliers.

Increased use of gas should not counter the right of coal-producing States to exploit their resources (via bonus schemes conditional upon export within the EU as a substitute for supplies from non-EU countries, and strategic European storage, *Cf.* 8, p. 22). Nor should it prevent the use of coal produced within the EU in its clean form after 2030. If European coalmines are closed indiscriminately between 2020 and 2030, the coal will be lost. Instead, measures

should be taken to conserve the industry (mothballing the best mines, building up stocks) so that mining can be restarted after 2030.

II.3 Energy efficiency: an incentive for industrial competitiveness

The EU framework for its energy efficiency policy has recently been updated. It will be looked at again in 2014, with a view to the 2020 objective. Not until 2014, or even later, will there be a review of the system's current performance levels and a decision on the path forward in the run-up to 2030. There are those who would like to see a restrictive objective for 2030.

Given energy's global carbon footprint, energy efficiency is one way of reducing CO_2 emissions. It may be more or less significant depending on the national mix but it is also an objective in its own right, aimed at decreasing the power bills of companies and families alike. Energy efficiency reduces the cost of fuels and plays an essential role in industrial competitiveness. However companies do not generally need rules to reduce their costs and improve their competitive edge if the costs are significant. Hence the importance of providing energy-intensive companies with an effective method of controlling carbon costs on the basis of energy consumption. This would produce a pricing signal that would encourage them to reduce the carbon intensity of their production lines (*Cf.* III.1-a).

We have to set different, restrictive objectives for energy efficiency for a small number of sectors, beginning with the building industry

In individual sectors, the methods applied to meet the energy efficiency objective are based on a complex set of standards and labels linked to the "ecodesign" of consumer goods (vehicles and tyres, insulation, lighting, domestic appliances etc.) and to the obligation upon energy suppliers to help their customers reduce their energy use (this is equivalent to the issuing of white certificates). These methods encourage or oblige companies to increase the energy efficiency of the goods being marketed but the possibility of achieving a global, well-defined objective will depend on distribution and replacement rates.

Distribution presupposes a socio-economic calculation of investment opportunities for families and companies, a calculation which depends on a range of factors. We have to encourage and maintain the efforts at standardisation and labelling and gradually raise the emission objectives for white certificates but we have to leave families and companies to judge the viability of their investment. Although "natural" distribution is too slow compared to the overall restrictive objective applied to all sectors, it is partially concealed by a range of public financial incentives that quickly prove to be very costly for national budgets as soon as they are comprehensively protected. Instead of setting a general objective, therefore, it would be preferable to set distinct sectoral objectives that are restrictive for a small number of individual sectors that do not affect the ETS and are not subject to a carbon tax, beginning with the strategic building sector. In national action plans, these strategic sectors would be subject to financial penalties for delays in completion and these penalties would increase the public investment fund. In return, limited public funds would be concentrated on the strategic priorities selected (tax credits

and/or bonus-penalty schemes, payment into third party investment funds for housing insulation, which might be linked to the sale of quotas, and funding for R&D in the sector of energy-saving information and regulation systems).

The other sectors would be subject to guideline objectives. A monitoring and review clause (based on national energy efficiency plans) would highlight sectoral plans and would gradually lead to the inclusion of new sectors in the list of strategic sectors subject to restrictive objectives.

Finally, since gains in energy efficiency do not always directly correlate with the reduction in GGE, we must continue to promote standards and labels that comply with the principle of lowering the carbon intensity and energy consumption of products so that energy efficiency objectives always result in CO_2 reductions.

We must continue to promote standards and labels that comply with the principle of lowering the carbon intensity and energy consumption of products

5. ENERGY EFFICIENCY IS AN INDUSTRY IN ITS OWN RIGHT

France's Economic, Social and Environment Council published an opinion on 15 January 2013 that considered energy efficiency as an economic resource and a priority objective, stating that "*Energy efficiency, which is too often considered to be a constraint, is actually the first potential source of domestic energy in the run-up to 2030.*"

It also has the potential for job creation according to ESC unions, estimated by the European Commission to reach two million by 2020 (European Commission COM 2012/173 *Towards a job- rich recovery*).

The necessary investments can be facilitated by solutions with short returns on investment (two to five years) that already exist (active energy efficiency in the building industry thanks to automation and regulation technology, control and command systems for electric-powered drives in industry, for example). Once depreciated, these solutions can produce resources that can then be used in new investments as part of permanent, ongoing improvements.

Likewise, models such as energy performance contracts may make it easier to fund initial investments.

The European market should be developed, building up European leaders in the energy efficiency sector. If we are not champions at home, we will never be champions of the world in this sector and it has a bright future ahead of it. Energy saving is one of the major issues for new economies (e.g. five-year plan and massive investments in "clean technologies" in China or the "green growth" being championed by South Korea). The countries that succeed in producing the highest levels of technology and skill will be the ones that lead the way in the marketplace over the next twenty years.

III. Reforming the market framework and negotiating a European Agreement on energy solidarity

The main means of achieving the objectives for climate, industrial competitiveness, security and solidarity lie in the "market framework" for which the EU is responsible and in the negotiation of a Pact between the 27 Member States. The "market framework" consists of the ETS (European Emissions Trading Scheme) and the Single Market rules on gas and electricity. The first of these should be reformulated for major emission producers and completed for minor emission producers. The Single Market rules should cover all low-carbon technologies indiscriminately based on a single criterion, their technological and commercial maturity. For electricity, in addition to the spot system of pricing suitable for thermal power plants which have high fuel costs, a new system should be created for low-carbon power plants with high fixed costs, based on the signature of long-term contracts. The European energy solidarity pact should make it possible to reconcile national choices of energy mixes with solidarity and shared methods of maximising competitiveness. It will create mandatory, ongoing discussion on the European mix and long-term funding suitable for low-carbon technologies with high overheads. Both instruments are essential. The freedom of choice for Member States when building up their energy mixes is recognised on a daily basis by the Commission but such freedom remains a platitude if it cannot be exercised on the European market. The market framework structures healthy competition for investment with a common aim, but not the discussions on a European mix and solidarity without which only the stronger countries could exercise a national choice, to the detriment of weaker nations.

III.1. Reforming the European market framework

a) ETS, a system requiring reform and completion

The ETS must be retained but it requires extensive reform. It is in crisis but the Commission has not yet completed its diagnosis of the reasons. Emission reductions are higher and the requests for investment-related quotas lower than expected because of the drop-off in activity. Quota prices are tumbling. The Commission deduced that the emission ceiling should be lowered to increase prices again and redirect investment towards good technologies but how could investment take off again at a price that is higher than it was before the crisis? The current ETS has only one aim – to reduce emissions when there is growth. This is useless when a recession is reducing emissions. To avoid an excessive fall in prices in the ETS, the problem has to be dealt with directly. A minimum price must be set rather than decreasing maximum emissions. If we do not want a threshold price, which has faults similar to those encountered in reducing the emission ceiling (it is a rigid method that is difficult to adapt to economic variations), there is a need for a steering system like the one implemented by the Central Bank in the USA. **A central carbon bank would aim to contain emissions by adjusting the available volume of quotas during growth without restricting it, and even by supporting it if necessary.** The current ETS is actually reflecting all the criticisms made of the "German orthodox" BCE in

the past i.e. it concerns itself with inflation without considering growth. The main problem of the ETS is that it only covers one-half of European emissions at best, those produced by the 11,000 largest emission producers. Diffuse emissions from households and SMEs are left to a purely national tax system.

It is impossible to obtain fiscal agreement on all products from the outset but we should at least make progress on taxation in the transport sector by 2030, especially with regard to automobiles. The latest draft directive along these lines from the Commission[15] was unanimously rejected. With regard to fuels, the rejection was linked to the proposal to align the taxation of diesel fuel and petrol. This would lead to a rebalancing of fuel sales with preference given to petrol over diesel, bringing the sales structure closer to that of refineries. However, we cannot complain about the closure of Europe's refineries and, at the same time, express satisfaction with tax advantages for diesel. Would greater cooperation such as the cooperation implemented for the tax on financial transactions be a feasible solution? It's difficult to know. "Tanktourism"[16] is a reality. We should be increasing the sanctions for non-compliance with emission objectives in the transport sector. The determination to promote biofuels as well as electric and hydrogen-powered vehicles also includes a fiscal dimension. In addition to paying for roads, taxation should encourage clean fuels and the sale of clean cars. We should be considering a "fiscal package for vehicles" with a wider scope that would allow for better negotiations with reticent States. Its main principle would be the indexing of taxes based on the carbon intensity of products and the final energy load of fuels.

We should envisage a central carbon bank and a "fiscal package for vehicles"

b) A neutral market-network-system replaced by long-term contracts

Networks that respect technological neutrality

In the electricity, gas and transport sectors, the market and network are becoming European with rules on network access and system management etc. common to all 27 Member States. The national mixes, however, vary as a result of national resources and choices. **The European market-network-system should leave room for all types of energy and all types of low-carbon technology indiscriminately.** It is relatively easy to do in the gas sector where the coexistence of natural gas, unconventional gas and biogas within the sale market-network-system should not pose any particular problems. In the transport sector, the addition of new distribution networks for electricity and hydrogen to the existing distribution networks for fossil fuels and biofuels is problematical in terms of cost but several supply outlets can coexist without impinging on each other. It is much more difficult when it comes to electricity

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[15] Draft directive (COM(2011) 169/3) amending Directive 2003/96/CE from the Council restructuring the Community framework of taxation for energy products and electricity.

[16] The term used in Luxembourg to describe fiscal dumping of fuels, which encourages drivers from neighbouring countries to cross borders to fill their tanks.

grids until such time as "smart grids" come into general use. They have to balance electricity input and output in real time and, because of this, they are much more sensitive to the conditions of supply from power plants. All the work linked to the way in which the various electricity production methods will coexist within the same electricity grid and the conditions under which they will be remunerated, takes place within the development phase for the twelve European "network codes", a phase scheduled to be completed in 2014. We can claim an absence of legal discrimination between the various production methods and a technological neutrality *urbi et orbi* but if it is not formally included in the common rules allowing for the neutrality of the market-network-system itself, discrimination will play a major role in the electricity sector.

6. ELECTRICITY HIGHWAYS AND SMART GRIDS

As production mixes change and development, the adaptation of the main trans-European transport network is essential. It is a vector of integration for European and national networks and, as such, it will be required to link zones of consumption and production that are increasingly far from each other in geographical terms, thereby maximising the complementary nature of European territories in terms of renewable energies while managing their intermittence. This will lead to the setting up of Electricity Highways capable of carrying vast quantities of electricity over long distances, a concept supported by ENTSO-E and the European Commission. It is a very long-term project based on a modular development plan with a view to 2050, and it will provide a means of adapting to the still significant uncertainties about the developments in the European energy mix by that date. Quite apart from the purely technical aspects of the project, notably the development of offshore grids, there are challenges ahead in terms of organisation and European cooperation, especially on topics such as the standardisation of equipment, operating conditions, the consequences for the electricity market, the standardisation of administrative procedures and authorisation, technical and technical/economic studies and, of course, funding. The electricity distribution sector, which is specific to each country and represented in Europe by DSOs, will also be required to make a major contribution to maintain the balance between supply and demand at local level and withstand new constraints linked to intermittent, random supplies from renewable energy sources. Moreover, the massive development of new uses generating strong demands for supply e.g. electric cars or heat pumps will also introduce constraints. Thanks to the extensive development of smart grids (whose cornerstone is the rapid deployment of communicating metering systems since they provide more precise information on the energy consumed), it will be possible to maximise the distribution network and it will have advantages for players in the electricity system sector (suppliers, aggregation management, demand side management and distributors etc.) and for consumers. The development of new services benefitting consumers (made possible notably by the widespread use of NICTs within the grids but also downstream from the metering systems on internal installations in residential and/or tertiary environments) will be the preferred way of achieving the objectives on the reduction of CO_2 emissions and controlling

use among end consumers.

Indiscriminate treatment of all low-carbon sources

The restrictive objective on delaying the promotion of renewable energies until 2020 justified priority for renewable electricity. This priority is only controversial as regards the promotion of national resources (generally coal) and for reasons of safety or network security. It also provides a means of ranking renewable electricity in the sales queue (merit order). A renewable energy precedes all other sources whatever its price and it is always sold unless it presents a risk for network security. This means that there is, in fact, positive discrimination in favour of electricity from renewable sources compared to other low-carbon technologies, mainly nuclear power. The removal of any restrictive objective for renewable energies in 2030 has led, as a corollary, to a need for a review of positive discrimination in favour of renewable energies and indiscriminate treatment for the other low-carbon sources i.e. nuclear power and CCS. **Instead of distinguishing between technologies, we should be differentiating on the basis of the grants required for research and popularity i.e. based on the maturity of the technologies.** In their "infancy", they could all be entitled to the same public support. In their "teenage" years, when they have reached the industrialisation stage, they would receive the same grants for investment as for production[17]. In "adulthood", however, when both technology and the market have reached maturity, they would all have sufficient means to operate independently. There are also market rules that promote the same level of responsibility for all mature technologies in terms of balancing the grid.

Non-discrimination should be guaranteed for all technologies during the industrial launch phase as regards access to support systems

The nature of contracts should be adapted not only to the level of maturity of the technologies but also to the cost structure and supply conditions

A spot market and a market of long-term contracts

Non-discrimination between mature low-carbon technologies does not necessarily mean that they are treated equally; it means that treatment is

[17] For example, concentrated solar power plants are considered to supply renewable energy if they are able to use less than 20% of fossil fuel to provide a seamless electricity supply at night or on sunless days. This is not yet a mature technology and the plants therefore are only give priority and financial assistance on this condition. Photovoltaic power plants are not subject to this constraint. In that case, the responsibility is shifted along on to the grid manager who, without any consequence for the photovoltaic plant, can make use of gas or even coal-powered power stations for however long is necessary.

adapted to their specific aspects, allowing "their personalities to express themselves" one might say. Wind farms are not differentiated by allowing spot pricing every fifteen minutes. Instead, the system is adapted to take account of their characteristics. This does not affect other technologies.

However, **such "adapted non-discrimination" should also be introduced for nuclear power.** The market-network-system rules must not be used solely for production once the power plant has been built; it must also provide a framework within which investment funding can be included. When fuel costs account for a far from significant portion of the sale price of electricity, as in the case of gas, coal and biomass fired plants, costs and prices fall and the financial packages adapt to the spot price. When fuel costs are non-existent (wind, water, sun) or low (fissile material), most of the costs lie in the investment depreciated over a long life cycle. Prices may then fall but costs will not. This being so, long-term sales contracts are welcome since they stabilise prices and reduce financial risks. To achieve this, a distinction must be made between stable production technologies with a high level of guaranteed supply and intermittent technologies which are unable to provide the predictable supply that long-term contracts require on a standalone basis.

Non-discrimination requires an extensive review of the current rules

Non-discrimination, then, demands an extensive review of the current market rules. The type of contract must be adapted not only to the level of technological maturity but also the cost structure and conditions of supply. Long-term contracts, which are the rule for renewable technologies deemed to be not yet mature (including thermal power), are still very much the exception for mature technologies such as nuclear power, and they are subject to agreement from the European Commission's DG Competition. It is feared that these long-term contracts will "dry up" interconnected electricity supply but what use are prices established for interconnected supplies when the organisation of the supply does not reflect the economic realities and cannot provide a relevant pricing signal for significant investment? By 2030, we must have created a long-term contract market in addition to the current spot market. Before this, we can legalise existing national packages on a European level (by moving from ad hoc exemptions granted by DG Competition to category-based exemptions). Packages combining investment and long-term contracts are already operating in Finland (Mankala) and France (Exeltium). Or we could seek inspiration in the system suggested in the reform for the UK (CfD) (*Cf.* 7).

7. HOW TO FUND NEW NUCLEAR POWER PLANTS

1. **The Finnish solution: a production "cooperative"** (the so-called "Mankala" system).

TVO, the future operator of the EPR currently under construction has shareholders who are paper producers, large electricity consumers (STORA Enso, UPM etc.) who will use the electricity produced.

2. **The French solution: funding vs. long-term contracts** (Exeltium)

The Exeltium consortium consists of 26 energy-intensive companies (Air

Liquide, Arkema, ArcelorMittal, Rio Tinto etc.). The consortium advances funds to EDF in return for supply contracts for 148 TWh over twenty-four years at a price index-linked to the price of nuclear investments. These contracts can be transferred after a certain time, subject to a number of conditions.

3. **The British solution: Long-term contracts at guaranteed prices** (FiT with CfD)

This solution extends the current system of support for renewable energy sources to include nuclear and CCS and it treats all low-carbon technologies in the same way. An agency purchases the electricity over twenty years at an agreed average price which is calculated in such a way as to leave room for investment (a "strike price"). If the market wholesale price is lower than the strike price, the agency pays the difference to the power plant; if it is greater, the power plant pays the difference to the agency ("Feed in Tariff with Contract for Difference, FiT with CfD). The agency then passes on the costs or profits through its electricity bills. The Czech Republic has a British-style solution for its power plant. Poland, which is new to the nuclear sector, is still looking for a model to implement.

All the solutions are national and there is a suspicion, *a priori*, that they infringe the common market rules as a result of agreements, State funding and reduced trading on the electricity market, all of which will probably give a false result for the pricing signal that they are supposed to provide. All of them are subject to authorisation by the European Commission's DG Competition on an ad hoc basis. The Finnish solution was given the green light without any problem. The French solution was accepted with certain provisos, in particular that the electricity being marketed does not exceed 30% of the national market. The British solution is currently being put in place and the strike price has not yet been set. The system is scheduled to be brought before DG Competition towards the end of 2013.

The system has to be submitted to DG Competition every time, and this increases uncertainty and the already long waiting periods in the nuclear sector:

- A first step towards a common European framework to facilitate funding would be a "category-based exemption": DG Competition would indicate the mandatory conditions ensuring that the various systems, or any new models that the DG itself develops, do not fall foul of the law. The operator and its financiers would know in advance whether their system was legal.
- The second step would be to create a new compartment in electricity trading. In addition to the spot market, there would be a market for the exchange of long-term contracts. With the sudden rise in the integration of national markets expected after 2014, stock exchanges will merge (by means of takeovers) and the subsequent long-term contract market could immediately become European, allowing for a much higher volume and a degree of competition. It could also include electricity production from mature terrestrial wind turbines after 2025, followed by other

production methods with high fixed costs, which have the same need for long-term outlets for funding purposes.

III.2 Negotiating a European energy solidarity pact

a) Maximising the electricity mix: political cooperation

Maximisation of diversified European low-carbon electricity production facilities at the lowest possible cost, while providing solidarity between Member States, should be the subject of high-level political negotiations. The most efficient facilities operating at the lowest cost cannot be achieved by market forces alone given that the market is shrinking as off-market renewable energies are being promoted. In the main, the market is limited to competition between gas and coal-fired power stations. We have to reconcile "the right of people to exploit their own resources" and the common good, i.e. low-carbon electricity at the best possible price. The 27 Member States must negotiate an agreement. Poland (*Cf.* 8, overleaf) cannot burn all its coal as it sees fit and Germany will not be able to totally abandon its own coal-fired power stations. France will be able to reduce the number of nuclear power plants but will then have to help Poland to enter the nuclear market. Austria is willing to make its dams available to Germany for wind farms but what will it be offered in return? **At the same time, "affinities", or even "comparative advantages" may be brought together to create closer cooperation or projects with variable structures.** The Club to which the twelve nuclear countries belong may agree on a common nuclear licence, or a common package for their energy-intensive industries. The Club formed by the six coal-producing countries may invest in clean coal with the help of Norway while the sunny countries in Southern Europe could cooperate on concentrated solar energy as France and the UK have done for offshore wind farms. The Agreement would not be a treaty, nor even form the groundwork for a future treaty. It would be a "gentleman's agreement", necessary if we are to live together within the same market-network-system and achieve common competitiveness on the electricity market.

We have to reconcile the "right of people to exploit their own resources" with the common good i.e. low-carbon electricity at the best possible price

The Agreement could lead to guideline target objectives for each technology and source. If a group of countries wants to set an overall guideline target objective of 30% for renewable energy by 2030, it must agree to set an objective for nuclear energy and CCS. Maintaining nuclear power would require a guideline objective of 15%, an increase of 25% or 30%. By 2030, CCS will still only be in the launch phase but a guideline objective of 5% or even 10% could still be set to stimulate this launch[18]. These guideline objectives could also be set by sector. "Europe 2020" describes an energy mix that is 66% low-carbon by 2020 and we could envisage 80% by 2030. In the electricity sector, we must also

[18] In the USA, the State of Illinois is going much further with 5% for electricity by 2015, 25% by 2025 and 90% for power plants brought into use after 2017.

differentiate between intermittent and "stable" renewable energies, as the European Parliament has already done. Before the electricity e-market-network-system is able to take up the slack from wind farms and solar panels, intermittent production should be limited to no more than 20% to 25% of the total. In the transport sector, which has a restrictive objective of 10% of renewables by 2020, the objective should include all low-carbon solutions, adding clean electricity and hydrogen to biofuels[19], with a view to achieving an objective of 20% to 25% low-carbon energy by 2030.

One of the most significant aspects of the negotiation is its "social dimension". The integration and coupling of national markets will lead to price convergence or even the establishment of a European wholesale price. This integration has already taken place for fuels which are now differentiated mainly through taxation, but not for gas and especially not for electricity, an essential asset and a public utility which has been the topic of a "universal service" accessible to all and affordable. The integration of electricity in a diverse European mix will lead to increases here and decreases there. Sensitivity to such rises is of far from negligible importance. It could lead to social revolt and the fall of a government, as it did in Bulgaria. This is a hot topic for any negotiations on the European energy mix. The search for a diverse optimum mix aims to minimise price rises but European solidarity also comes into play when such a price rise constitutes an unbearable shock for a Member State. For the moment, the "social dimension" of the market comes within a nation's own responsibility. Each Member State has the right, or even the duty, to fight energy precarity as it thinks fit within the framework of common European rules, some by extending consumer rights, some by helping with energy savings, some via a universal service and regulated tariffs and some via financial aid for so-called "vulnerable" consumers. In the medium term, it would appear inconceivable to develop a common European approach to this fight but we should advance through common definitions and assistance by one national system for another to the benefit of those most affected by the new price convergence. This is an essential condition if we are to make progress in any negotiations on energy mix.

European solidarity must come into play when such a rise becomes unbearable for any Member State

8. A DIVERSIFIED MIX WITH COAL FOR POLAND

How can we persuade Poland, whose electricity mix includes 90% coal and lignite, to support a climate objective? Poland is no longer alone (*Cf.* footnote on page 10). How, then, can coal be integrated into a diversified European mix?

There are those who may want to negotiate a temporary exemption from common charges but this is not advisable. It is preferable to negotiate a special place for European coal within the EU system. If CCS does not take off

[19] In this respect, France and the EU are supporting the European solution for sustainable biofuels without changing it, to encourage the emergence of future generations of biofuels without dismantling the first generation biofuel sector.

until after 2030, we could negotiate European assistance for the mothballing of national mines, or for the build-up of strategic stocks pending the launch of the new method. The six coal-producing countries could lead the way in CCS research with European backing, with a view to promoting CCS more rapidly. They could reduce their own national consumption of coal by diversifying (Poland is looking into a mix including nuclear power) and increase their exports within the EU, replacing imports from third countries, on condition that they offer competitive prices with no internal grants and no customs duties and on condition that they receive EU support. European law differentiates between imports and "indigenous fuel sources" as regards priority access to the network[20] but it must be clearly stated that any fuel source within a Member State can be treated as "indigenous" by any other Member State in the EU. Like Spain[21], coal from Poland or another EU country could then be used to provide a "public security of supply service" (especially to overcome the problem of intermittence from renewable energy sources throughout the EU.

b) Funds for Europe's low-carbon industry

The question of mobilising long-term funding for the energy infrastructures of the future, based on a lower financial yield but long duration, is crucial. National budgets, the European Investment Bank (EIB) and other European budgetary instruments will not be sufficient. We have to increase our strength by recycling a portion of European savings in networks and clean power plants. The savings set aside by the current generation and, more importantly, what it enables in terms of construction, will then be passed down to future generation.

We are not starting from scratch. Faced with a budgetary shortfall in Europe, the EU was forced to innovate. The EU's current budget allows for a certain number of European financial instruments managed jointly by the Commission, the EIB and the European Investment Fund (EIF) in partnership with the Member States. These instruments are designed to remedy a number of shortfalls in the market and facilitate access to funding, including funding for the longer term. In the future, the EU's multiannual financial framework (MFF) will make increasing use of these financial instruments. This should contribute substantially to an increased effect for EU expenses, by increasing and catalysing long-term private funding. Thus for most of the MFF, including the EU's structural instruments, the use of financial instruments is permitted. This innovation also applies in the sectors of energy and transport, with the introduction of "Connecting Facilities", "Project Bonds" and the funding of quotas (NER 300).

The recent Green Paper on "Long-term Financing of the European Economy" opens a new, promising way forward. It describes greater cooperation between national and multilateral development banks under the aegis of the Commission and the EIB. It could take the form of "European

[20] Article 15 of the Electricity Directive 2009/72/CE
[21] Com. 2010.4499 of 29/09/2010

Economic Interest Groups" (EEIG) for the funding of cross-border projects. The Commission is due to table proposals on the possible forms of long-term investment funds (LTIF), which might release capital throughout the EU, for example by helping medium-sized and large institutional investors to invest in a range of infrastructure projects.

Long-term investment funds could mainly offer loans over 30 to 40 years to low-carbon networks and production projects at very low interest rates

Long-term investment funds could mainly offer loans over 30 to 40 years to low-carbon networks and production projects at very low interest rates when most of the project costs are linked to investment and when fuel costs are non-existent or negligible. The level of support would depend on the degree of maturity. It would be at its maximum, with public grants, for projects in the research and prototype stages (particularly those identified by the SET-Plan, notably CCS, smart grids, 4th-generation nuclear power and concentrated solar power). It would be lower and exclude any public grants for projects in the launch stage (offshore wind farms) and even lower, although still existing, for mature projects (terrestrial wind farms, 3rd-generation nuclear power). This form of funding would be adequate for long-term sales contracts, which already reduce risks, and it would increase the reduction in financial costs.

The funding currently focussed on two renewable technologies (wind and solar power) in the form of a purchasing tariff and a parafiscal tax on invoices should be reduced or abandoned, thereby freeing up funding for other objectives including assistance for consumers affected by energy precarity. It would also help to re-establish a balance by giving priority to Member States that have lower levels of development or that have been more greatly affected by the current crisis.

c) An annual participatory summit on European energy transition

Political debate on the mix, like the discussions between stakeholders and civil societies, remains fragmented between nations and as regards various types of energy. Electricity hosts a Forum in Florence, gas in Madrid, fossil fuels in Bonn, renewable energies in Amsterdam and nuclear in Prague and Bratislava but nowhere is anybody discussing all types of energy or the maximum complementarity between them, which is an essential factor. After the Gas Coordination Group set up in response to the cuts in the supply of Russian gas, an Electricity Coordination Group was set up last year in response to Germany's unilateral decision to abandon nuclear power but its mandate lies mainly in crisis management. It is not paving the way for a long-term future. The Observatory idea included in the Energy-Climate Package has been abandoned. The EESC is putting forward the idea of a European Dialogue on Energy to involve civil society.

An annual meeting could be arranged **with the European Council and Parliament and all the energy forums. This could be combined with the EESC's Dialogue.** Together, they could monitor the diversified European mix and draw up a list of outstanding problems which the Commission could then use in

its programme of work. **It would be preceded by European conferences in each Member State, involving national parliaments and players from civil society.** Such a meeting would have at least three precise tasks: to set a guideline for research and innovation, to determine the degree of maturity of the technologies and to assess desirable changes in the mix in the run-up to 2030 and 2050.

Supporting this work, there would be **a new energy-climate "measure"[22] to assess the progress made** and give a real generally-agreed basis for the necessary socio-political discussions.

IV. The nuclear advantage and diversification: France should implement a successful change and encourage the Europeans to establish a historic compromise

France must put a stop to its industrial decline. This means that it has to maintain its advantages and redeploy a competitive industry on international markets. Its leading advantage in the energy sector is its electricity and its nuclear industry. This advantage makes it one of the lowest carbon countries in the world. It supplies electricity at a competitive price for energy-intensive companies, is a net exporter and, potentially, could be one of the world's leading exporters of nuclear power plants and their components. It would be madness to sacrifice this unique advantage, for France itself and for the countries looking to access nuclear power. France has expertise in every aspect of the nuclear power industry, from the fuel cycle to waste storage (*Cf.* 9), from the supply to operation of power plants, from technical engineering to a safety culture, and from research to training. This enables it to assist new arrivals in the nuclear sector such as Poland or Turkey throughout the process of building up an operational nuclear power industry. We also have experience in the risks inherent to a focus on single industries e.g. coal in the Nord-Pas-de-Calais region and steelmaking in Lorraine, and we know that we have to diversify our advantages by becoming involved in the development of new sectors. The considerable research and innovation resources made available by the CEA and IFPEN in new and renewable energies show that this is a work in progress but we are still far from real, strong industrial diversification. We have to draw as much benefit as possible from our nuclear advantage while diversifying our sectors to increase capacity. This means that we can only shut down nuclear power plants for reasons of safety or cost. **The arbitrary closures of nuclear power plants**, based on symbolic "cut-off" figures such as 50% in 2025 issued unilaterally, **are of no interest, either from the point of view of our climate commitments** since they do not help to reduce CO_2 emissions, **or from the**

[22] Faced with a falling carbon price, which is compromising low-carbon investments and threatening to increase the cost of decarbonation, it might be feasible, as suggested by EDF, to base ETS measurements primarily on tonnes of CO_2 instead of the current measurements of renewable energies and energy efficiency based on kWh consumed or saved.

economic point of view since they place a burden on our competitiveness, **or from the political point of view** since they deprive us of our strengths in future European negotiations.

We have to draw as much benefit as possible from our nuclear advantage while diversifying our sectors to increase capacity

The French strategy to increase the use of electricity in the transport sector must be developed further. It will be added to the electrification of uses and an increase in needs in an integrated Europe. This marked trend should lead us to build new power plants in France using non-nuclear electricity technologies, going beyond the commitment made by France within the framework of the European "Triple 20". We must give priority to renewable energies where there is not yet any strongly held commercial position e.g. marine energy (offshore wind farms with the UK) or deep geothermal (with Italy and Iceland).

9. MANAGEMENT OF NUCLEAR WASTE: AN ADVANTAGE FOR SAFETY

The central question of the storage of high-level long-lived nuclear waste has been the subject of a gradual process in France with the main stages being organised by laws passed in 1991 and 2006. The first of these laws allowed for the setting up of a research centre in Bure; the second established 2015 as the date on which an application would be filed for authorisation to operate a deep underground storage facility, with a view to its becoming operational in 2025. ANDRA, the project owner for the Cigéo project (an industrial reversible deep storage facility for radioactive waste in Bure) contacted the National Commission for Public Debate and asked it to organise **public discussions** prior to the application. **The discussions began on May 15, 2013 and Confrontations Europe was involved in them, producing a stakeholder paper in favour of Cigéo** based on the opinion that the process which led to the selection of Bure as a site for deep geological storage using a sequential reversible process provides the best guarantees for the safety of the population. The expertise acquired through Cigéo should lead France to export its know-how and offer Europe (and the world as a whole) unrivalled access to resources and expertise. This would enable those countries which so wish to develop their own nuclear power sector in the very best conditions of safety and sustainability.

Promote cooperation to consolidate the mix

Even though the development of the nuclear industry has slowed in France, it must develop elsewhere in Europe and worldwide and France must look for allies to promote such development. It must be involved in the initiatives launched by the Club of Twelve, with the United Kingdom and the Czech Republic, to promote real cooperation throughout the nuclear sector. It must also make its research and training potential available to others to circulate the new skills and expertise required for safe, competitive nuclear power.

Only a European climate strategy supported by a diversified mix corresponds to France's interest as regards industrial diversification. This interest is echoed by members of the Club and it must be expressed if a future European plan is to be an integral part of decision making.

Energy diversification in France provides an opportunity for the country to work towards a "historic compromise" between nuclear Europe and a-nuclear (or even anti-nuclear) Europe!

Energy diversification in France provides an opportunity for the country to bring others together, especially when considering a "historic compromise" between nuclear Europe and a-nuclear (or even anti-nuclear) Europe! It can cooperate on both sides – with Poland to help it access nuclear power, with the UK to develop offshore wind farms more quickly, with Spain and Portugal for concentrated solar, with Italy for geothermal energy, or even with agricultural Member States for methane or Germany[23] for renewable energies.

As to gas, it is irreplaceable in France after the total abandonment of domestic coal, quite apart from its preponderant use in domestic heating, which is ongoing despite progress in the insulation of housing. Without it, we could no longer manage the peaks in electricity consumption specific to France or cope with new requirements as regards the management of intermittence resulting from our renewable energy objectives for 2020. As far as shale or coal seam gas[24] is concerned, France would be wrong to abandon it out of hand. It may well be the only country maintaining this position in Europe and pressure may cause it to jump onto an existing bandwagon but, in doing so, France would lose an opportunity for industrial development in the petro-gas exploration and production sector in which it holds a number of far from negligent advantages. There is nothing, in principle, to suggest that the extraction of coal seam gas in an environmentally-friendly manner is impossible, so why could France not invent it?

By 2020, France must meet its commitments (23% renewable energies overall, 27% in electricity and 10.5% in the transport sector) but must reduce their cost. **The Gallois Report is already emphasising the fact that the price of nuclear electricity is one of our few competitive advantages and, as such, must be maintained.** However, the earlier closure of Fessenheim may not support this view. It must be justified by a study of the impact on French domestic electricity bills. **For energy-intensive companies, France must seek exemptions from quotas, as Germany has already done.** It can also extend its Exeltium

[23] France has announced its membership of the Klub des Energiewendestaaten proposed by the German Minister of the Environment, Peter Altmaier. This cooperation, however, should not lead to market rules that discriminate against nuclear power.

[24] It is already partially recovered in the "after-mine management" in the Nord-Pas-de-Calais region and injected at two points in the gas network to avoid its emission into the atmosphere and for safety reasons (danger of firedamp in cellars). Recovery could be extended to seams that were not mined in the 19th century because of excess firedamp.

experience to its energy-intensive customers and offer German industries a chance to become involved. **It must set up a reform of its support system for renewable energies** as envisaged by Germany after its legislative elections next September. Such simultaneous reforms could make a contribution to the European standardisation of the 27 national systems of support due to be implemented by 2020. It would put an end to "one-stop shop" funding and the "unfair distribution" of costs between electricity consumers by the CSPE (contribution to the public electricity utility in proportion to consumption), an "unnamed tax" according to the Court of Accounts and, what's more, a non-redistributable tax since households that do not have investment capacity finance the silicon-covered roofs of the most well-off house owners for a period of twenty years.

In this paper, Confrontations Europe is not claiming to establish an energy policy for France but it is inviting the country to play its role in Europe and join other Member States and societies in building a competitive energy policy based on solidarity, a policy that is both environmentally friendly and user-friendly. A policy central to the new growth of Europe.

May 2013

The "Energy / Environment" Group: Active, reactive, inventive and more

Confrontations Europe is first and foremost a community of men and women who come together to discuss issues precisely because they hold differing views. It is this unique feature that makes us what we are. Far from agreeing on everything, we put our unity of action to the test as we participate in the life of the European Union, help to achieve a successful transformation and bring Europeans closer together. Following on from the GFC in 2008 and the global changes resulting from the emergence of major regions, climate issues, environmental challenges and the development of digital and other technologies, Confrontations Europe proposes:

- **a new two-ringed structure for the European Union,** enabling it to withstand the threat of explosion and achieve consolidation;
- **a "rebuilding contract"** focusing on a competitive industrial strategy. Energy is one of the driving forces in this respect and the association has taken a close look at the subject through its Energy / Environment Group.

Based on the two Roadmaps for 2050 put forward by the European Commission, one for Climate and the other for Energy, the Energy / Environment Group made up of representatives from the corporate sector, trade unions, economists and national and European politics has explored the pathways to a new strategy built on a "European Energy Solidarity Agreement" presented by Philippe Herzog at the University of Paris-Dauphine at the end of 2011.

Throughout 2012 and 2013, we systematically reviewed the full range of technologies – renewable energies, gas, nuclear, fuel, European electricity grids, energy efficiency etc. Meetings and seminars were held in Paris and Brussels, and a trip to Warsaw reminded us of the importance of coal. "Triple 20", Germany's policy and the British reform were all examined closely with the help of experts (see column, *left*).

The debates and voting in the ITRE Committee and in the Commission prior to the European Parliament's decision on the Energy Roadmap 2050 in March 2013 were monitored very closely, revealing that the European Parliament's tectonic plates seemed to be shifting along national rather than partisan lines. Europe is divided – and overcoming this division is a major problem. The Commission's Green Paper debated in April provided the basis for democratic discussions of the choice of an Energy / Climate strategy for 2030. It noted the divisions and declared itself open to change. We are playing a significant part in this and, **in our determination to find a viable compromise, we are now publishing our contribution in the form of 30 proposals and giving France a mandate** to negotiate a competitive climate policy that shows solidarity between all Member States, since France has instigated a debate on its energy transition.

Our very grateful thanks to all the members of the group who have been involved in this intense round of meetings, discussions and seminars, and to its steering committee which I have the pleasure of chairing with Christophe Bonnery,

Georges Chabert, Michel Cruciani, André Ferron, Hervé Fischer, Michel Matheu, François Perniola, Denis Simonneau and Catherine Véglio-Boileau.

Thank you to André Ferron who made skilful use of the mass of work we carried out to draft this original contribution as part of the national debate on energy transition. It will also be the subject of public talks in Paris and Brussels.

Last but not least, our thanks go to all the companies in the energy sector that are partners in Confrontations Europe, particularly ERDF which has enabled us to publish this document in several thousand copies in French and English.

Claude Fischer, President of Confrontations Europe

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2012 – 2103: Two years of consideration and discussion with institutions

For a European Energy Solidarity Agreement

- 9 February 2012 in Paris with André Ferron, Philippe Herzog, Jean-Jacaues Urvoas and Denis Simonneau.
- 15 February 2013 in Paris with Pierre Dechamps, Jacques Percebois and Louis Mathieu Perrin

2050 and the energy mix

- 9 March 2012 in Paris with Robert Durdilly, Giacomo Luciani and Dominique Finon
- 26 April 2012 in Brussels with Helen DOnoghue, Hans Ten Berge, Edit Herczog and Georg Lachman
- 3 May 2013 in Paris with Denis Simmoneau, Vincent Dufour and André Ferron

Energy efficiency

- 11 May 2012 in Paris with Michel Cruciani and Michel Matheu

Renewable energies

- 31 May 2012 with Damien Borot, Dominique Finon, Michel Matheu and Xavier Votron
- 22 March 2013 with Michel Matheu and Michel Cruciani

The new role of networks

- 14 September 2012 with Patrick Corral and Michel Bena
- 17 October 2012 in Brussels with Philip Lowe, Vera Brenzel, Pilar del Castillo, Jean-Baptiste Galland and Jean Verseille

The future of the nuclear industry

- 12 October 2012 in Paris with Marie-Pierre Comets, Yves Giraud, Anne Guichard, Emmanuel Mignot and Gérald Ouzounian
- 7 November 2012 in Brussels with Luc Oursel, Giles Chichester, Dominique Ristori, Paul Spence and Hans Wanner
- 11 April 2013 in Brussels with Peter Faros, Kirill Komarov, Dainus Kamaitus and Edit Herczog on EU/Russian relations
- 24 May 2013 in Paris on the global nuclear industry with Michel Cruciani, and on Poland's nuclear future with Barbara Niecak, Nathalie Beauzemont and Claude Fischer

The role of gas in energy transition

- 5 December 2012 in Paris with Christophe Bonnery, Catherine Locatelli and Denis Simonneau

- 19 December 2012 in Brussels with Bruno Bensasson, Robert Goebbels, François-Régis Mouton and Barbara Sellier

Transport – Climate

- 5 June 2012 in Brussels with Ivan Hodac, Bernd Lange, François Michaux, Patrick Ozoux, Gilles Pargeneaux and Matthias Ruette
- 13 May 2013 in Brussels with François Michaux, Philippe Jean, Kristian Hedderg, Marie-France Van der Valk and Jean Winbaut

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