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French R&Dialogue Council Vision Paper

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French R&Dialogue council

Vision Paper

07/05/2015

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Table of contents

1. Summary.....4

2. Energy transition and territorial governance.....5

3. Oil and dependence.....9

4. Wind power: social acceptability and obstacles to development. .15

5. Default vision of energy transition in the European Union.....20

6. Energy transition and European construction.....23

R&Dialogue related documents.....29

R&Dialogue French team and partners.....30

Abstract

This document is the R&Dialogue French national dialogue council vision paper. The French national dialogue started in July 2014 and ended in February 2015. The vision paper is the result of the discussions between the 47 council members organized by thematic groups: i. wind power: social acceptance and difficulties; ii. oil and dependence; iii. energy transition and European construction; iv. territorial organization of the energy transition. The final and plenary meeting of the French national council was the opportunity to present the thematic common visions to all its members. This manuscript – available in French and English – is the final and agreed version of these common visions of the energy transition.

About R&Dialogue Project

R&Dialogue is a consortium of 15 partners in the field of energy (scientists, NGOs, industry, consultants and policy advisors) in 10 European countries. The R&Dialogue project initiates a dialogue between research and civil society, including industry, NGOs and public authorities to build a low-carbon society. < http://www.rndialogue.eu >

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1. Summary

This is the vision paper of the R&Dialogue French national dialogue council.

Between July 2014 and February 2015 the French R&Dialogue team has been organizing groups of dialogue on different subjects linked to the energy transition: i. wind power: social acceptance and difficulties; ii. oil and dependence; iii. energy transition and European construction; iv. territorial organization of the energy transition. Each group has produced at least one common vision of the energy transition. The method used for these groups is based on the training provided by U. Roma during the R&Dialogue meetings, and was first tested in a pilot sharing group on "Energy transition and eco-citizenship" held internally with CIRED colleagues. Results of that pilot group are not reported here. The French national dialogue ended with a final and plenary meeting of the French national council. This event was the opportunity for a larger group of actors to comment the visions present in the discussion paper. This document is the final manuscript of the French national dialogue council Common Visions on the Energy Transition report.

The French national council defined a low carbon society as:

- a society with a reduced oil consumption especially in the transport sector and with better energy efficiency in housing;

- a society where decisions are taken at a more local level with real power given to the regions, to local communities and to citizen especially in energy planning and implementing renewable energy projects;

- a more united European society with a strong energy and climate change strategy;

- a society where the scientists are more connected to the industry and communicate more and better with the public;

- a society with more stable energy policies allowing industry to make long term investments.

According to the French national council, technology and innovation alone are not enough to make the energy transition happen. Through social dialogue, the members co-create common visions of a low carbon society. The energy transition is viewed as an opportunity to change European society and institutions towards more participatory and democratic processes of decision making.

2. Energy transition and territorial governance

2.1. The territory, an important factor in energy transition

A "territory" is not an enclosed, administrative or geographic land area. It is an area unified by usage, life-style/living conditions, resources and specialisation that has a distinctive culture and history and can be defined at several scales. One of these levels can be characterised by the minimum expressed need for energy, current or future, based on the available resources or linked externalities.

A territory evolves in symbiosis with neighbouring territories. Inter-territorial solidarity is essential in order to share value and not deplete one area to profit another. A territory that has plentiful resources (wood, geothermal energy, biogas, etc.) and produces renewable energy can pair up with a neighbouring territory that has fewer resources but invests in energy storage solutions.

Since future needs will not be the same as current needs, a territory must be able to evolve, adapt, and not be restricted by rules and regulations? that exclude tomorrow's actors. For this, the technologies involved must be intrinsically renewable or strongly reconvertable.

Furthermore, each territory is different (habits, consumption, resources, needs, energy models, etc.). There is not one, unique energy transition model, but rather several models that must be specifically adapted.

2.2. Energy transition models initiated by citizens with government backing

Behavioural changes are related primarily to sociology rather than to technology. The tenure of territorial politicians is short compared to the time-frame of energy transition. For these reasons, elected officials give citizens the means to be true participants so that the they can initiate energy transition projects that will outlive political tenures. Approaches have therefore been modified.

Communication campaigns incite citizens to question their own behaviour, which results in a voluntary change in behaviour. Instead of moralising, the message is engaging and empathetic: "Energy transition is easy to do, saves money, has an impact on employment, is profitable over the long term, etc.". The notion of "efficiency", which calls for responsible consumption, possibly aided by technology, is used rather than "sufficiency", which is more moralising.

Activities involving panels of citizens are developed and enable co-construction in

which experts, non-specialists and politicians all participate. The information provided is simpler, more accessible, and more suitable for the general public. It focuses on saving energy, "winning" initiatives, personal experiences, comparisons, positive initiatives etc. It enables everyone to feel concerned by clarifying the positions of all of the stakeholders, clearly explaining energy transition, and discussing the basic notions related to energy, consumption, energy bills, etc. in laymen's terms.

Local and participatory democracy has enabled citizens to familiarise themselves with the issues: "social" or "complementary" money, compulsory voting, citizens' involvement in tax revenue allocation, etc.

"Simplification shock" is effective. It makes it possible to reduce not only the number of stumbling blocks that daily impede innovation and the circular economy, but also the administrative delays that slow down global dynamism (e.g. it is no longer necessary to wait 12 to 18 months to obtain a permit for a biogas project).

The technical and financial means proposed are consistent with the stated commitment to energy transition. Subsidies for micro-cogeneration plants (below 2 MW) have increased in France (non-existent in 2015, as opposed to Switzerland, Germany, the UK, Italy, etc.). Another example is the simplification of the allocation of ANAH (French national housing improvement agency) grants for home renovation (in 2015, due to the complexity of the system, these grants had no takers).

National and European bodies encourage energy innovation in industrial production and coherently structure their strategic industrial-energy policy. This leads to a de-industrialisation of historical sectors while succeeding in job transition (green/environmentally sustainable growth, energy transition as a vector of re-industrialisation, etc.). Technological advances like 3D printers have made it possible to produce locally while increasing the number of jobs in the tertiary sector.

Territories have benefited from decentralisation and become more autonomous, similar to the German Länder. Political decisions are backed by two new tools: a CSR criterion in calls for tenders and public benchmarking databases (problem-solutions-criteria-return on experience...), etc.

In education, the focus continues to be on training in the new professions in continuing education programmes, and energy awareness-raising in primary and secondary schools.

2.3. Experimenting with energy transition at the territory scale

Between 2034 and 2050, the territory has evolved: +10% of inhabitants (European demographic projection). There is 40% less CO_2 emitted, 40% more renewable energy used, and 40% less energy consumed. The territory is where energy transition is being applied and experimenting is being done in several fields:

- Financial mechanisms and models: the following have become commonplace – third-party financing for energy renovation, which allows a third-party company to make the initial investment and draw revenue from the energy savings without any disadvantage for the property user, crowd-funding, cooperatives, etc. Democracy is more participatory: The allocation of 20% of tax revenues and the city budget are decided on by inhabitants organised in citizens' collective groups and neighbourhood committees. Fifty percent of buying and selling is done with complementary money, which supports shortened supply chains.

- The organisation of local production cooperatives. A single water-energy-treatment utility (citizen investment) manages energy production and use according to production costs (biogas, wood, photovoltaic panels, geothermal energy, etc.). This enables economies of scale and the implementation of circular economy projects (water treatment sludge is used to produce energy).

Other types of citizen-based functions are set up, from neighbourhood collective groups to associations responsible for maintaining a long-term outlook and advising political bodies.

- The decentralisation of energy production is effective and comes mainly from renewable sources. Agricultural biogas has developed thanks to co-construction efforts, to *Bilan Carbone*®-type studies that make it possible to choose, with a "life-cycle" approach, optimum installation capacities and site locations (those that reduce energy consumption generated by waste transport, to be as near as possible to centres of consumption, etc.).

Farmers have become energy producers and farm land is monetised as a function of its agronomical, energy, and ecosystem "potential" and "value".

- Technology: Energy innovations become common, e.g. smart grids (with individual privacy-protection features), biogas storage, home automation, etc. We consume energy more efficiently.

- Buildings: 40% of buildings have been renovated (funded by investment companies paid by energy savings capital, etc.). Each household produces and supplies energy. Energy autonomy is real in neighbourhoods: dense habitat, insulation, smart buildings, etc.

- Transportation: This is a strategic and high-priority area for improvement. By materialising (visible increase in fuel prices) the notion of energy transition, transportation has made it possible to raise the awareness of and involve citizens in the efforts to be made.

Commutes have been re-imagined depending on the territory characteristics. Shortened supply chains, increased population density in urban areas, urban pedestrian zones, car-pool lots, company mobility plans, low-impact transport (bikes, biogas/electric hybrid buses with space for bikes) are preferred.

Overall, people move around less as teleworking and co-working has increased, neighbourhoods are renovated to promote habitat/commerce/workplace mixing, collective housing units, etc.

Aided by technology, new "fuels" are used: electricity, biogas, hydrogen, algae-based fuel, etc.

- Waste: When managed within the framework of a circular economy, waste contributes to the energy transition. With less waste produced (due to eco-design, prevention, producer tax, recycling that prevents the extraction of raw materials, etc.), it is recovered more efficiently (micro-biogas units, new recovery processes, etc.).

This energy transition creates new problems such as, for example, the development of a certain territorial independence with the creation of shortened supply chains.

These problems have been limited by inter-territory dialogue, which takes place early in project and investment planning. Dialogue makes it possible, for example, to ensure the fair distribution of the value created as a function of the specific characteristics of each of the territories, maintain free trade, link up the new supply chains, etc.

3. Oil and dependence

3.1. Oil: reserves and consumption

How much oil do we have left? Following decades of cheap, abundant and "commercial" energy, predictions, over the last 30 years, are that it will soon run out. Technological advances enable us to explore and develop more deposits that were once considered to be impossible or too difficult to develop. However, we are now consuming more oil than we are discovering. And our entire society is dependent on oil: dependence, at the pump, of automobile owners in oil-consuming countries on oil-producing countries, of oil-producing countries on oil companies.

Maintaining world production is strongly bolstered by shale oil and gas. Production has sharply decreased in Europe's oil producing countries (Norway, the United Kingdom). The resource will steadily diminish as production costs and environmental risks increase. Do we really want to go as far as burning the last drop of oil and continuing to emit ever increasing amounts of CO_2 while using ever more polluting processes? Wouldn't it be better to eventually kick our "oil habit" and decrease our dependence.

In France, according to the French Ministry of the Environment, Sustainable Development and Energy, 30% of the energy consumed in 2012 came from oil and 21% from natural gas. Transportation is responsible for 70% of the French consumption of hydrocarbons to produce energy, followed by domestic (17%), industrial (8%) and agricultural (5%) uses. Road transport represents 90% of the consumption of the transportation sector. The cost of importing gas and oil accounted for 3% of France's GDP in 2012. The drop in the price of the barrel in recent months will have a strong impact, as yet difficult to measure, on the world economy.

3.2. Anticipating the energy transition and future mobility

The development of our present-day society and the considerable degree of mobility that we now enjoy (which is an essential element in our economy) were made possible during the 20th century by an abundance of cheap energy – oil in particular. The steady depletion of oil reserves jeopardises many aspects of our society/life, which is characterised by individualism as regards needs, consumer practices, and the search for solutions, centralised mass production and large-scale transport of merchandise, and the central place of the automobile in both our

economy and our life style. It is therefore very difficult to discuss oil independently of other energies and societal issues. Various aspects such as ethical values, the influence of the media, individual behaviour, and relationships between citizens, politicians and industrial players all play a large role.

Challenging the massive use of oil therefore challenges the organisation of our society, in particular its values (such as the consumer culture), the importance of immediate gain, and growth as an engine in our economy. It also entails, due to the importance of oil for transportation, redefining what mobility means. Where will we live? Where will we work? When will we work? How much of our mobility will be related to work and how much to our private lives? If we do not redefine all of these elements, the current model will impel us to use up all of the available cheap energy with no regard for any possible negative consequences. We must therefore reconsider our current vision of the mobility of people and goods before we can determine the position of a technology, of a means of transport. And if we reconsider mobility, we must also reconsider urban planning.

3.3. In 2050

The vision of 2050 is therefore that of a society that has been able to escape from the model of infinite growth and individual profit in order to build on other values that will take into account immaterial goods and future generations. Our consumer society will be replaced by a society that anticipates the consequences of its choices for future generations and will be based on sustainability and sharing. In particular:

- Industrial production will be maintained in the territories but will focus on recycling and a circular economy of materials, the reuse and production of durable products (as opposed to discardable "consumer" products or those designed with planned obsolescence), and the production of energy by biomass and biomaterials. People will prefer consuming local and seasonal farm products via short supply chains.

- Indicators of CO_2 emissions/energy for the production and transport of consumer products, along with better traceability, will be provided on products when they are sold so that the consumer can make informed decisions. Bulk sales (with a minimum of packaging) will be standard practice.

- Individuals will be conscious, thanks to smart meters, daily information received through the media, and better training, of their energy consumption even though this is immaterial and energy waste is invisible. Individuals will also have a certain understanding of the impact and consequences of their consumption.

- Certain problems/challenges will be resolved by citizens' groups: local energy production consortiums, sharing of automobiles, electrical appliances or tools, and housing. Most homes will be insulated and energy efficient.

- The consumption of hydrocarbons for transportation and housing will have decreased sharply and will be nil for electricity production in order, notably, to sharply reduce global warming caused by CO_2 emissions. They will have been replaced by NRE and energy storage.

- The organisation of our life and territory will no longer be centred necessarily on the automobile (which will no longer be a status symbol). In densely populated cities, there will be an overall decrease in the number of cars, a truly multi-modal offer of public transport, and restricted automobile access to urban centres. Bicycles will no longer be considered to be "low-impact" or "alternative", but rather a "full-fledged" transportation option. The organisation of work and the territory will make it possible to minimise commuter traffic (teleworking, office sharing).

This vision assumes that individuals will have truly assimilated the problems related to sustainable development and climate change. Politicians and the government must actively participate in this assimilation. The benchmarks of our value system must also change. If we keep those of the current consumer society, the individual will see nothing in the change but renouncement: being forced to renounce freedom of movement, access to cheap products, having a car as a status symbol, etc. This shift will be followed only if it is perceived as being positive, and therefore only if other values besides instant gratification and individualism become more important. This will involve educating younger generations and coherent and appropriate communication campaigns. The success of communication campaigns like those that encourage people to stop smoking or drive safely (accompanied by economic and regulatory measures) show that we can change the habits and behaviours of individuals if the messages are coherent and if the government helps those who "lose out" due to the changes. Today, the individual is torn between repeated messages to preserve the environment and reduce consumption on the one hand and, on the other hand, to continue to enjoy consuming and buy still more.

3.4. What should be done today?

3.4.1. Information channels to develop for the consumer

Every day, week or month we get weather reports or hear new unemployment figures. Why don't we periodically receive information concerning oil imports,

our consumption, etc.? These have an impact on all of our lives but we aren't consciously aware of them. These figures and trends should be highlighted. Individuals do not act only according to their ethical beliefs. Nor even according to economic factors alone. The surrounding context (which is difficult to apprehend) has an effect on our perception and understanding of phenomena and should therefore be taken into account so that there will be a change in behaviour. Making people feel guilty cannot be the driving force behind the transition. What is needed is a real awareness of what is at stake and of the risks involved. This is possible if the issue comes up periodically and concretely in the general debate.

3.4.2. Hydrocarbon traceability

As we move towards greater transparency and responsible consumption, it is still impossible to do this for oil. Where does the fuel oil that we use to heat our homes come from? And the petrol from this or that pump? The origin is important for questions of general environmental ethics and also for CO_2 emissions, and would help citizens who wish to "buy responsibly" target the products that are the most respectful of the environment and humans. Gas and petrol production can be highly polluting and the working conditions of employees vary enormously from one country to another. Moreover, depending on the origin (and the deposit, in particular), the production of hydrocarbons specifically for consumption requires more or less heavy processes and CO_2 emissions that vary depending on production.

3.4.3. Consumption visibility

Moreover, for the individual, the installation of tools that make it possible to visualise day-to-day consumption (like, for example, meters on radiators in Germany or smart electricity meters) should be generalised and be usable/understandable by all. We might, eventually, imagine the creation of a personal emission (/pollution) meter that would tally up each product bought, each trip taken, etc.

- This would enable people to make informed choices between similar products.

- It would enable the taxation of emissions created or the definition of industrial and personal quotas.

However, for various technical and commercial reasons, studies carried out by ANIA and AFNOR have not yet been able to create a "CO_2 quality" indicator for commercial products. No consensus could be reached on several points (CO_2 emitted throughout the production and transport (and generally speaking throughout the life cycle) of the product, calculation method, etc.). Research must

undoubtedly be carried out in order to propose solutions and identify who is capable of determining this type of indicator.

Moreover, the creation of individual meters raises difficult ethical issues. The gathering and storage of daily consumption data (water, electricity) provides many opportunities for improving management, but might also make it possible to intrude in people's private lives and eventually turn into "Big Brother"-type surveillance of individuals and employees.

Moreover, there are problems concerning data pirating for criminal purposes and the energy cost of storing data on servers.

3.4.4. Transportation in large cities

Measures like odd-even road-space rationing must be implemented, progressively and appropriately but firmly, and ultimately must not be used only during crisis situations (e.g. heavy air pollution). To diminish the number of cars on the road, more car-sharing schemes must be developed (joint ownership of automobiles, carpooling, etc.) and alternative means of transportation must be used (bicycles, aerial tramways, etc.). Automobiles consuming little or no petrol must become ubiquitous in places where they cannot be replaced by public transport.

3.5. Questions raised

A certain number of questions or problems that have arisen in group discussions remain unresolved. These include:

- How can we avoid slipping into "green fascism" and, for the sake of the common good and sustainable development, monitoring people right in their homes, with the risk of drifting towards "Big Brother"-type surveillance systems? What penalties would there be for people who do not obey the imposed rules?

- How do we ensure that those who suffer most from the changes are not always the same people – the poor? How do we ensure that the transition is a "win-win" operation? How can we avoid penalising consumers who are currently "forced" into rather highly energy-consuming habits (like the daily use of cars on long distances) because there is (and perhaps will be) hardly an alternative in their particular situation?

- How do we guarantee that the State, assuming that it plays a major role in the transition, will act credibly over the long term, with sufficient means and shielded from any sort of pressure, notably political or industrial? What influence will the public and private institutions, and the general "context" have? Behavioural changes are, in fact, greatly influenced by power structures, interests,

technologies, and finally the options available for the consumer (ease, accessibility, etc.).

- How much confidence can we have in scientific climate predictions that are hard to interpret for those not familiar with scientific tools? Moreover, some day, we will have to tackle the taboo associated with controlling population growth: Can we hope to live sustainably, on a global scale, if the world's population continues to increase at the current rate?

- For non-conventional energy resources (e.g. shale gas): Should the government be in charge of determining whether or not the resource exists?

- What will be the impact of future technological breakthroughs on public health risks (a greater impact than climate change for the individual)?

- What will be the geopolitical impacts of the vision?

- Is energy transition administrable? There are precedents in France for energy transition. They have occurred spontaneously based on price and availability. In the 19th century, the major transition from wood and animals to coal lead to the industrial revolution and was followed, in the 20th century, by the switch to oil. Today, is an administrated transition possible, or even desirable (an Energy Transition law)? Can we limit prices, like in 1945 (when electricity and transportation prices were the same for everyone), but within a framework that is much more liberal than right after the war? Today, except for coercive measures or tax incentives, the government has few tools for managing the transition.

- In order to foster radical change, would it be necessary to make electricity freely available for transportation needs ?

All of the options proposed here for the future raise vast social and economic issues that we have not been able, here, to investigate in detail, such as the relationship between transportation and work, urban planning, and quality of life. These complex problems raise new questions that must be considered in the future.

4. Wind power: social acceptability and obstacles to development

4.1. Acceptability of wind power projects

4.1.1. Acceptability or co-construction

"Acceptability" implies that there is no dialogue – only one-way communication. However, in a context where opposition to all types of projects has become systematic, a real effort to create dialogue and mutual understanding is necessary.

We no longer find ourselves in a situation where project initiators/government officials come along with a finalised project proposal that they present to citizens/local residents at meetings that are called "collaborative" but leave no room for project modifications or discussion, and move towards a co-construction process where the various stakeholders (defined as a function of the context) accept the fact that the initial project proposal might be very different from the one that will be retained, or might not even ever materialise.

Co-construction is therefore more consistent with a handling of energy issues by local governments, dialogue, and the participation and responsibilisation of local stakeholders, to be differentiated depending on how near they are to the project. Indeed, the needs and reactions of those who live next to a wind farm will be different from those who live elsewhere in the territory. In any case, co-construction makes it possible to resolve the duality of citizens who are <u>for</u> energy transition in Paris and <u>against</u> wind power outside of the capital.

A problem to be resolved within this framework: How do we include co-construction in the system of calls for tenders and government contracts.

4.1.2. Territorial planning of wind power projects

Territorial land-use planning has been extended to French *communautés de communes* (communities grouping several towns) and discussion of projects can now begin further upstream in the planning process. Projects are integrated in the territory and satisfy a local need or are included in a regional or national system. The communities define the best sites for developing wind power projects, jointly with the French Agency for the Environment and Energy Management (ADEME), for example. A system to select project promoters and to accompany the

development of onshore wind power projects by calls for tenders piloted by these communities (after sending out the selection procedures) with the help of public organisms and overseen by the government, gets local stakeholders, and citizens in particular, involved. This procedure makes it possible to identify possible opposition early on and to choose the best sites for projects. A project's Social and Environmental Responsibility (SER) is now a selection criterion for projects in calls for tenders. This criterion is positive for acceptance/co-construction and the circular economy. Involving citizens in planning when their personal opinions are motivated mainly by personal interest is, however, a major drawback that can be overcome in time by the measures listed below.

4.1.3. Global energy plans initiated by local governments

The communities develop energy plans that target various concrete projects in order to reach the greenhouse gas emission reduction objectives (energy saving projects) and to develop renewable energies consistent with those initiated by Europe and France. An example of this is the Mené *communauté de communes* whose objective was to reach ~70% of energy self-sufficiency by means of a project, launched in the 1980s, initiated by local elected officials and farmers. This involved carrying out five renewable energy projects (urban heating using wood from pruning, small furnaces), including citizen-based projects (solar water heater on the retirement home).

If the communities of towns become project operators, they will bear the risks associated with the projects and find funding.

The development of the projects is suited to the territory – a windy and wooded territory being better suited to the development of wind power and biomass, whereas a sunny and densely populated territory would focus on photovoltaic solar panels).

Local governments, managing both their territories and energy projects, are better able to develop these projects as tourist attractions.

4.1.4. An involvement of citizens by means of precise information concerning territorial energy projects that are coherent and positive

A survey conducted by EDF concerning the St Nazaire project found that 62% of the people questioned were interested in receiving more information, in particular concerning environmental issues and the financial cost. The fact that jobs created

by wind power projects cannot be relocated is largely unknown.

Information campaigns initiated by local governments and not by companies (a question of users' perception) are carried out on successive public targets (visits to secondary schools to present the project, distribution of teaching aids in local schools so that people can visualise the project, public meetings). Users, when better-informed, recognise that the territorial development is in keeping with the territory's values and its cultural and natural heritage.

Citizens familiarise themselves with energy issues in two ways: either they see electricity production plants (are informed) or they are offered the possibility of local participatory funding (which still must be developed).

4.1.5. Citizens profit from the tax revenues

Creation of a citizens' council to involve citizens in the allocation of revenue from the professional taxes that the towns collect. Part of the revenue from this tax is used to combat energy poverty at the local level (insulation, for example). The citizens feel they are benefiting from the tax and are better able to feel the positive effects (in addition to fiscal benefits) of wind power projects.

4.1.6. Perception of energy as public property

Wind power projects are above all and constantly perceived to be nuisances (for those living nearby and fishermen) and the fact that they are in the public interest is not enough to make them socially acceptable. A campaign is implemented to make people aware of the value of energy and its status as public property, focusing on consumers (different energy prices depending on hours, progressive rates, “the more you consume, the more you pay for”, accompanied by programmes for the renovation of housing for the most vulnerable families, smart meters, information sessions in schools). An example of this is Quimper, whose energy manager changed the city's electricity supplier and switched to Enercoop – a green energy supplier. This was accompanied by actions to get city employees to save energy. This serves as a model at the scale of a city that faces up to the true cost of NRE and sets up an energy saving policy. Energy becomes public property and sharing communities are common.

4.2. Development of wind power in France

4.2.1. The government has reviewed and simplified administrative procedures

Administrative procedures for wind power projects have been simplified and application processing times shortened. The project initiator submits a single document to a regional administration instead of filing numerous applications. At the same time, the regions and prefects have an obligation to achieve results in compliance with the European Directive on NRE (+23% by 2020). Without harming the environment!

Regulatory permanence is ensured in order to decrease the risks associated with wind power projects, which are currently high. Risk premiums and interest rates drop.

The government re-examines and clarifies all of the laws associated with NRE projects, the accumulation and ambiguity of which also weighs in the cost.

4.2.2. Sharing of environmental assessments by all of the parties involved in the project

In France, the contracting authority is responsible for all environmental assessments and the choice of techniques must be defined very early in the procedure, limiting their ability to technically and financially optimise projects. This is not the case in many other countries including Great Britain.

The preliminary studies are therefore done jointly by the contracting authority and the other parties involved and the contracting authority can propose different technologies, depending on scenarios, and can modify the project after it has been authorised in order to adapt to changes in the situation.

4.2.3. NRE, competitive strength, system and storage

NRE still have a reputation for being subsidised and costly, in spite of a decrease in costs compared to fossil fuels, because price comparisons are biased (include externalities, carbon footprint). To put an end to a system of constantly changing subsidies, set up a compensation fund, which means guaranteeing a purchase price only when the cost of electricity is lower than the predetermined purchase price. This will incite NRE producers to position themselves on a competitive market. Then, if they lose money, the government, as guarantor, compensates them at the end of the month.

The difficulties associated with storage and the inclusion of NRE in the electrical grid are real and will still be problematic 50 years from now. These problems are not well perceived/understood by the general public. Imagine linking intermittent consumption with intermittent production, e.g. electric automobiles.

5. Default vision of energy transition in the European Union

5.1. Summary

In this vision, which we could call "default vision" energy transition in the European Union, there are no major reforms of European institutions or mandates. We recognise the constraints and difficulties associated with the European framework and differences between Member States. Energy transition nevertheless continues and we move forward within the current framework using the tools that the EU has at its disposal.

5.2. Energy transition is a structural phenomenon that will occur

Energy transition is an economic and historical phenomenon that occurs each time a new energy source becomes more profitable and efficient than the one used previously (wood → coal → oil → renewable energies). It is, therefore, a mechanical phenomenon that has occurred before and will occur again regardless of the environmental or energy policies of European countries. The latter will, however, have an influence on the possibility of accelerating, controlling, taking advantage of, or enduring ET.

5.3. Moving forward within the current framework: "The Europe of small steps"

If we try to reform or change Europe's texts and mandates, we will lose 20 years. In this context, it would be better to move forward within the current framework, which means using the tools that the EU has at hand: the environment and growth. The EU therefore tackles green growth and coordinates the different institutions, objectives and tools.

5.4. Energy-dependent Member States

The States are not able to influence the economic sector and their conceptions of this role vary from one State to another due to historical, cultural contexts, etc. (e.g. the UK and France). The Member States depend on foreign resources (e.g. Russian gas and bilateral agreements). Nuclear power is still a sensitive defence and sovereignty issue. All of the countries, not only France and Great Britain, benefit from nuclear defence. Until we have settled the defence/sovereignty/

nuclear issue, the European Union can hardly do more than set objectives and delegate means.

Energy production from renewable resources continues to increase and the EU sets objectives.

5.5. European citizens faced with energy transition

Citizens are wary of renewable energies and large companies. Moreover, although they do not ask for energy transition, they do want to decrease pollution and prevent climate change (as long as their life-style is not affected).

5.6. Energy companies still powerful and obstructive

The potential losers of a coordinated energy transition at the European level, those who are most powerful, most visible, and capable of obstructing attempts to initiate a transition, are the large, historical energy companies that develop highly developed strategies to prevent them from losing their position. In theory, markets are free and monopolies have been abolished (even in France), but in fact, even in the United Kingdom, the markets are dominated by the "Big Six".

5.7. Faced with international competition, European Member States are divided

Chinese subsidies made prices fall and European photovoltaic panel companies fail.

European competition rules prohibit environmental protectionism.

5.8. Prices and regulation

Renewable energy costs have dropped so much that if the trend continues, hydrocarbons will soon be more expensive than renewables.

The carbon tax system was blocked because near-rural households "lost too much".

The ETS is a failure that must be admitted and abandoned so that we can move towards regulation, which works well in Europe (e.g. lightbulbs).

5.9. Promising research that faces implementation and industrialisation barriers

Difficult to turn research into industrial operations. For example, ULCOS, which attempted to innovate for energy transition and save jobs, was brought down by

basic economic principles. Cynicism (or the principles) of the business world, which accepts subsidies but refuses risk.

European research also erred when it chose to be prudent when confronted with climate sceptics, who were therefore able to communicate freely and became more visible.

5.10. The media and the negative image of energy transition

Energy transition's negative image. Interaction with journalists: They do not investigate subjects – they interview people they know. There is no analysis. New media make outdated educational efforts inefficient.

We need a vision, a common dream. People are motivated to take action to preserve their life-style, for their children, and their country. Energy transition is simply a tool for connecting with a vision of the future. There should be more information in newspapers about small, concrete actions and something said about how projects emerged and why they were successful. Lowering taxes is an issue that always comes up at the national level and therefore it is even harder to make the notion of solidarity and sharing at the European level acceptable.

The European space is very elitist because people must be multilingual in order to participate in the debate. Moving forward when there are only two partners involved makes language less of a problem than with 27.

Many regional projects are, in fact, funded by the EU but there is little communication done on this subject.

6. Energy transition and European construction

6.1. Energy transition is an opportunity for a more efficient and democratic European Union

In this vision, energy transition (ET) is an opportunity for large-scale institutional reform, for reconsidering the values of the European society. Energy transition(s) is/are coordinated at the supra-national level and carried out at the local level. The means allocated to the European Union are more consistent with its objectives and mandates. Local and regional authorities have more responsibilities and means of action for managing energy and fighting climate change. The EU is responsible for economic, commercial and industrial policies and benefits from a real fiscal striking force that enables greater efficiency at the European level. European industry produces (thanks to more unified research and adequate funding) and exports green technologies that comply with environmental and social standards and maintains the fairness and coherence of its environmental and social policies by taxing imported products. The problems associated with employment in fossil fuel sectors are also managed at the European Community level. ET is accompanied by a societal transition that begins with education, the involvement of European citizens in decision making, and on-going social dialogue.

The following pages illustrate the three basic proposals of this vision. A SWOT table on the last page summarises the strengths/weaknesses/opportunities/threats of this vision.

6.2. Energy transition is an opportunity for institutional reform and the setting up of a democratic process in the European Union

The aim is to make EU objectives more consistent with allotted means. An institutional review is done in order to re-examine the powers and means of the EU and examine or review the final results of concrete projects set up by the EU. The most important mandates or subjects to be re-examined at the European level are the budget, taxation, defence, energy, and its mineral/fossil resource development policy. There is a redistribution of responsibilities between national, European and local levels with an increased ability for local authorities to act locally. If the EU is in charge of coordinating ET, it should have the resources to do it. Therefore, in order to manage short- and medium-term ET sectoral reconversions and "winners and losers", the EU must have a taxing right.

This is done through negotiations, debates, and discussions within the EU and

with all of the stakeholders in a new European social contract, a fiscal pact, because ET is synonymous with transfers, winners and losers. Since ET implicates European values and involves a large-scale institutional reform, a European social debate will eventually be necessary in spite of linguistic and cultural difficulties, and a new branch will need to be created, drawing lessons from the past (better communication, transparency, involvement of European citizens upstream).

The role of the EU is to coordinate the setting up and carrying out of ET for more power and less redundancy at the European level. Creation of strategic frameworks by zone or region and more efficient arbitration tools, improved coordination in order to avoid location effects and provide more coherence.

A supranational institution is created and put in charge of energy, ET and the management of externalities associated with the energy policy, since all energies have externalities. However, we must remain vigilant as regards the mandates of this institution and consider the democratic process when appointing managers because European citizens feel disconnected from European institutions, which they consider to be too technocratic. How can we/Can we imagine, at the same time, investing more power in the European Parliament?

To bring Europe, ET and citizens closer together: develop partnerships between towns on energy issues/projects. Joint decision-making bodies, joint public policies, or simply exchanges are created. An example of a public policy would be to decrease the number of diesel powered automobiles in French and German cities. There might be joint assemblies of citizens and elected officials. This type of initiative already exists (http://www.energy-cities.eu), but it must be further developed and broadened. In general, these initiatives involve only elected officials who meet in Brussels. Citizens of towns in different European countries must be given the opportunity to become directly involved in the decision-making process, make laws together, and create joint and participatory governance. On this type of subject, in particular, since it raises the question of environmental fairness because many citizens have no choice but to use their automobile.

The triple "sovereignty/defence/nuclear" issue is discussed in the European Union and is resolved thanks to energy independence and by setting up a joint defence policy, which resolves, in particular, problems related to the opposition to nuclear power.

6.3. The European Union governs industrial, commercial and energy policies

6.3.1. Energy transition that applies to Europe and to imported products and services

Setting up an arsenal of protection, not by isolating Europe from the market but by imposing an environmental tax on imports, granting subsidies, and including life-cycle analysis, in order to guarantee fairness and compliance with European environmental and social regulations (in particular, in the job market). With the revenue from import taxes, the VAT on certain products and the tax burden on labour can be lowered.

6.3.2. The energy market and support of NRE

Government authorities provide means and re-examine market regulations so that small operators have a fair chance up against large, historical energy companies that benefit from assets and market distortions. By attacking the factors that prevent change rather than attacking the major energy companies head-on, a new economic model will emerge.

Member States continue to support renewable energies as public property. An assessment policy that includes life cycle analysis and takes into account externalities results in the suppression or modification of current subsidies (that are meant only to aid in the development of NRE and are therefore not permanent) for more transparency and coherence.

6.3.3. Incentives and funding of energy transition

Public funding is usually available and the biggest challenge is how to attract private investment in green projects.

Energy transition primarily entails redirecting part of the flow of financing, of investments. Some sectors will therefore suffer and there will be social costs that must be acknowledged, even if the benefits outweigh these costs. Accompanying measures at the European level (for greater efficiency and coordination) are therefore necessary. The macroeconomic weight of the European Union is, however, much smaller than that of the Member States. If we subtract most of the budget, which goes to the CAP, there is little left for energy transition.

The proposal is to transfer part of the ECB's funds for unconventional policies towards investments in energy transition.

This means associating economic recovery policies with energy transition. For example, instead of unconditional quantitative easing (the ECB buys securities

indifferently), the ECB can focus on buying securities of green projects.

Question concerning the inclusion of externalities in the price. Setting up of a signal price that is stable enough so that companies will modify their long-term investment decisions.

Use of a carbon tax system but with no emissions trading and with a fixed carbon price in order to prevent past errors: the ETS market is a failure and must be abandoned.

6.4. The European Union, Member States and civil society stakeholders work to create a new European society

6.4.1. European research

European research helps improve energy efficiency and sufficiency, create NRE that are consistent with European social and environmental conditions, and stimulate the third industrial revolution (see Jeremy Rifkin) / a new type of economic dynamism with modified economic performance indicators. Increase the budget allotted to European research, in particular for ET projects.

6.4.2. A board of innovation scientists that can act on its own initiative guides the decisions of politicians who are not experts

The objective is to include scientists in political decision making.

A board of scientists at the European level in charge of innovation in the broad sense. This is important because the real challenge is how to get scientific experts and citizen experts to work together, each providing their own know-how.

The board of experts is associated with the reform of the political circle. Encourage the circulation of talent between the political and private sectors in the broad sense? Politicians are usually civil servants or are self-employed (i.e. liberal professions) because it is difficult for people in the private sector to enter politics and then return to the private sector. This could attract more people with different backgrounds and motivations, though safeguards are needed to prevent the risk of conflict of interest.

6.4.3. Social dialogue

There is constant dialogue between stakeholders at the European level.

6.4.4. Education and teaching

Ensure that future generations are not consumers but "consum'actors" (or "prosumers").

In schools, study consumer behaviour in the economic machine and the values conveyed by economic growth (consumption = happiness). As long as people continue to desire to consume more products for less money, it will be hard to have a long-term vision and include externalities.

Re-examine the economic performance indicators (see final report of the *Pour une économie positive* think-tank headed by Jacques Attali).

Use marketing strategies to change how people usually think of sufficiency and make the message more attractive: "Consume better rather than consuming less", "Live better rather than consuming more".

We have to imagine a new way for Europe to communicate or rather to exchange information with citizens.

The text above describes, for the most part, opportunities for placing ET at the centre of European construction. These thoughts should be put in perspective by listing the EU's strengths in this area (ET), its weaknesses, the foreseeable risks or threats associated with a proactive policy (like the one described here), and a summary of the opportunities described in detail above.

Table 1. SWOT analysis of the vision

Strengths	**Weaknesses**
The EU is politically ahead in ET The EU is technologically well positioned, with leaders in many fields University/Industry and Research/Society partnerships are longstanding and efficient (differences depending on country) Citizens are aware of the need for ET Many associations are involved Involvement of social (and associative) networks	The EU has few fossil resources The EU has very few mineral resources Moreover, European power has been based on exploiting (in every sense of the word) the resources of other countries and continents The EU has no geopolitical coherence The EU is militarily dependent Visions of ET vary from one country to another The energy MIX is very different from one country to another
Opportunities	**Risks**
See text ET sets the calendar for reinforcing the Union and for its increase in influence: defence, budget, taxation, etc. become joint community responsibilities and levers ET makes it possible to redistribute responsibilities according to efficient levels (EU, national, local) The implementation of ET is an opportunity for strengthening European democracy because it must involve citizens, at the local scale ET governance will improve scientist/politician collaboration: creation of a board of experts	Emphasising of basic political differences between countries Fruitless confrontation of irreconcilable differences (logic and cultures): e.g. acceptance or rejection of nuclear power, particularly nuclear defence Potentially, an even greater rift between citizens and European officials Difficulty in accepting European administrative governance of energy (objection to a European DoE) Dissolution of old structures (or resistance) without any ability to create new ones: e.g. it might be difficult to make the French centralised government system evolve

- **R&Dialogue related documents**

• R&Dialogue related documents

- R&Dialogue position paper, R&Dialogue project, 2012
- Ciesielska, J., 2014, Energy Dialogue : the story so far, R&Dialogue report, February
- Ha-Duong, M., Cherbib, M., 2014, Panorama des positions et visions des acteurs sur le dialogue social sur la transition énergétique, CIRED/SMASH report, April
- Ha-Duong, M. & al, 2015, French national council vision paper, R&Dialogue project, May
- Ha-Duong, M., Finon, 2013, Transition énergétique, projets de société et tensions du présent: actes électroniques de la première journée de dialogue CNRS sur la transition énergétique en France.
- Ha-Duong, M., Finon, D., 2014, La recherche controversée d'énergies "propres" : actes électroniques de la deuxième journée de dialogue CNRS sur la transition énergétique en France.
- Ha-Duong, M., Finon, D., 2014, Maîtriser la demande d'énergie, une option consensuelle face à ses obstacles : actes électroniques de la troisième journée de dialogue CNRS sur la transition énergétique en France.

R&Dialogue French team and partners

BRGM: Bureau de Recherches Géologiques et Minières, France's leading public institution in the earth science field has three main activities: scientific research, support for government policy, and international cooperation and development assistance.

SMASH: Société de Mathématiques et de Sciences Humaines, a research organisation founded for the development of mathematical methods applied to the social sciences. SMASH extended its R&Dialogue position paper expertise to energy planning, energy economics, the rational use of energy, the development of renewable energy vectors and carbon capture and storage.

CIRED : Research programs conducted at Cired (international research center on environment and development) focus on the relationships between environment, natural resources and development, with focus on three key domains: energy, urban infrastructure, and agriculture and forestry---which imposes a constant dialogue between social sciences, natural sciences and engineering knowledge.

APESA : APESA is a technological center on enviromnent and risk management. Its objectives are to develop technological solutions, innovative methodologies, trainings to allow stakeholders to integrate the sustainable development challenges in their strategy.