

**OUR 9**  
**COMMITMENTS**  
~~~~~ IN FAVOUR OF ~~~~~  
**ENERGY**  
**TRANSITION**  
~~~~~ AND THE ~~~~~  
**CLIMATE**  
~~~~~ AND OUR CONTRIBUTIONS ~~~~~  
**TO THE CLIMATE &**  
**TERRITORIES SUMMIT**  
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## LEADER IN RENEWABLE ENERGIES AND ACTOR IN REGIONAL DEVELOPMENT

France's leading producer of 100% renewable energy (water, wind, sun), CNR has conceived a model for producing green electricity in the service of regional development based on the Rhone concession.

In a period marked by major energy and climatic challenges, it proposes a new relationship with energy that relies on the balance between economic efficiency and the general interest, electricity production and preservation of the environment, and public and private capital.

A highly specialised enterprise, it integrates the entire value creation chain (study, design, the operation of installations, marketing its production, prospecting for and developing assets) and it positions itself as an innovator for a more sustainable world.

A mostly public owned joint stock company in the general interest, the ownership of CNR's share capital is balanced between local authorities, the Caisse des Dépôts and ENGIE, one of the world's largest energy producers.

**15.8 TWh**  
of total production

**3,429 MW**  
of total installed capacity

**1,367**  
employees

**81**  
hydro, wind  
and solar power  
production facilities

**18**  
industrial and port sites

**330 km**  
of navigable waterway  
for wide gauge vessels

**1.157 Bn€**  
turnover

**27,000 ha**  
of land under concession  
(14,000 ha of river, 13,000 ha of  
land including 836 ha farmed out)

# EDITORIAL

**ÉLISABETH AYRAULT** CHAIRMAN & CEO

## CNR: A MODEL AND EXPERTISE FOR ENERGY TRANSITION



Since it was founded 80 years ago, CNR has benefitted from a long-term vision and a unique model that now places it at the heart of major environmental and territorial challenges. CNR's balanced model makes it more than a producer of green electricity and gives it a strategic position for making a strong contribution to energy transition, by associating the territories while continuing its missions for their sustainable development, transport and agriculture. It shares with them the wealth created and for ten years has performed missions in the general interest in the Rhone Valley in the form of long-term action plans in support of local development projects in relation with the company's historic missions. More than 500 actions have already been devoted to energy, sustainable mobility, water resources, biodiversity, and economic and tourism development.

Energy transition should be experienced as a fascinating period, with the creation of industrial opportunities, new sectors and jobs. Our expertise as a producer of exclusively renewable electricity in the service of territories gives us strong credibility, and no less considerable responsibility, for speaking

out and participating in building tomorrow's world of energy. That is why CNR is positioned as a laboratory of the energies of the future. We must continue to transpose our capacity to harness the energy of water to other natural, carbonless and free energies: wind, sun, marine energies, etc. At present, 13% of our installed capacity is already generated from sources other than the Rhone, a proportion destined to increase. On a still wider level, our competences in intermittent energies are references acknowledged around the world.

CNR is innovating and growing to assert itself as a European leader in renewable energies at the heart of territories. Our 9 commitments in favour of energy transition and our contributions to the workgroups of the World Summit on Climate & Territories demonstrate our capacity to support all the stakeholders involved in these challenges.

**Élisabeth Ayrault,**  
Chairman & CEO

# OUR GOAL: SHARE REFLECTIONS AND ACTIONS

WHETHER TO FAVOUR RENEWABLE ENERGIES, PROMOTE THE CIRCULAR ECONOMY OR TO COMBAT WASTE, THE FUTURE LAW ON ENERGY TRANSITION STAKES ON THE INVOLVEMENT OF THE COMMUNITY, THE MOBILISATION OF LOCAL AUTHORITIES AND THE RESPONSIBILITY OF ENTERPRISES. CONSEQUENTLY, CNR IS COMMITTED TO DEVELOPING PEDAGOGIC INITIATIVES, SETTING UP PROCEDURES FOR THE PARTICIPATORY FUNDING OF CERTAIN PROJECTS, IMPROVING SYSTEMS FOR LOCAL CONSULTATION AND BEING EXEMPLARY IN TERMS OF RESPONSIBLE CONDUCT.

## OUR COMMITMENT No. 1

### Participate in educating tomorrow's consumers

Energy transition also requires individual action. New behaviours must emerge and this requires preparing the youngest of us. A leader in REN, we intend to play our role to the full by participating in the education of the future consumers and actors of a new world of energy.

Thus, as from 2016, we will launch a call for pedagogic projects focused on the stakes of energy transition, to be dispensed in schools.

## OUR COMMITMENT No. 2

### Associate the community and local authorities with certain of our REN projects

From now to 2016, we are committed to studying the procedures for the participatory funding of certain of our projects. The investment solutions will be adapted according to the local expectations of the stakeholders: participation, subscription of bonds, loans, etc.

Likewise, a "collective energy" programme dedicated to our employees will allow them to invest in the company's projects.

## OUR COMMITMENT No. 3

### Strengthen public consultation

To facilitate the acquisition of the administrative authorisations required for our developments, we associate all the stakeholders concerned from the earliest phases. Our local monitoring committees gather elected representatives, members of the local population and associations. Setting them up systematically before submitting requests for building permits will forge the conditions for ensuring the success of projects together.

Aware that the mechanisms of public consultation must evolve further, CNR is committed to strengthening and professionalising this approach which underlines the objectives of energy transition and associates all the stakeholders of the regions.

## OUR COMMITMENT No. 4

### Increase the number of actions of our CSR strategy

In 2014, CNR was awarded the Lucie label in the framework of the international standard ISO 26000 relating to CSR, with the level confirmed for all its sites. Proud of this certification attesting our commitment in favour of sustainable development, we are committed to increasing the number of our actions and encouraging the individual and collective involvement of CNR's employees. To achieve this we aim to develop, among other things:

- company mobility plans in favour of public transport and car-sharing;
- a fleet of electric cars and bicycles available to the employees and a fleet of electric vehicles for professional trips;
- an eco-design approach for our buildings and energy efficiency;
- make the employees aware of energy consumption issues (eco-gestures and eco-friendly behaviours);
- a responsible purchasing and supply policy.

# ANDREAS RÜDINGER

researcher at the Energy-Climate Department of the Institute of Sustainable Development and International Relations

## Do the French people know about the stakes of energy transition?

**ANDREAS RÜDINGER** Their general knowledge is good, especially on climatic change. Polls show considerable agreement with the development of RENs and the need to consume less energy for the same services. However, as for putting things into practice, France lags behind other countries. For example, in Germany, following Fukushima, the green electricity market flourished while nuclear power became the subject of intense public debate. The French appear to be waiting more for the State to decide.

## What should be done so that they grasp this issue?

The Community Days of 2013 on energy transition showed that they are ready to act the moment they are given tools to help them. Everyone must assess the extent of this collective responsibility. To do that, it would be better to drop messages of urgency – expressed in a large number of areas – since they lead to a feeling of powerlessness. The community has to be associated with local projects, with participatory debates such those at Rennes and Strasbourg, and be able to initiate them on their own.

## Do such initiatives exist?

In Denmark, 50% of the funds for a large offshore wind farm (an investment of €45 million) was provided by the community. In Germany, nearly half the country's REN capacity is in the hands of the community. In France, the ADEME has already identified 160 projects in an ongoing study, though it is important to develop this culture of initiative more at the local level.

## Is the centralism of France an obstacle?

People are too quick to link decentralisation and energy transition. It could be orchestrated very well by a single actor. But when taking into account the objectives of the new law, one can see that it involves 30 million dwell-

ings and as many cars.

That means as

many actors to be

mobilised. What can be

done to be efficient? This is the angle from which the question of decentralisation and what it includes must be asked. Beyond a simple issue of technological change, a change of governance can spur community initiatives, while preserving the necessary independence of energy grids. On a more general level, we have to find a way out of the confrontation between local actors and big industrial corporations. The massive deployment of these projects can only be achieved by the creation of new networks of stakeholders (public, private, community), managed horizontally.

## What is your opinion of CNR's commitments?

I think it's necessary to make the young aware, to prepare them to be not only tomorrow's consumers, but also its actors. Co-funding projects by the community is necessary, but the model can be driven further by associating it from the design phase. CNR can play the role of facilitator. What local development project do we want? Defining it together presents a wonderful opportunity for creating awareness, getting the project to be accepted and encouraging community funding.



IN ADDITION TO JOINT FUNDING OF PROJECTS BY THE COMMUNITY, ITS PARTICIPATION, ITS CONCEPTION AND ITS GOVERNANCE ARE REQUIRED TO CATCH UP IN THE DEVELOPMENT OF RENS.

## OUR GOAL: CONTRIBUTE TO A NEW WORLD OF ENERGY

TO MEET THE AMBITIOUS OBJECTIVES OF THE LAW ON ENERGY TRANSITION FOR A MORE ENERGY THRIFTY WORLD, MORE RESPECTFUL OF THE PLANET, IT IS THE COMBINED ACTION OF THE COMMUNITY, ENTERPRISES, THE REGIONS AND THE STATE THAT WILL BE CAPABLE OF FINDING AND IMPLEMENTING SOLUTIONS EFFICIENTLY FOR TOMORROW. CNR IS FULLY INVOLVED IN THIS MOVEMENT THROUGH ITS COMMITMENT TO A CONTINUOUS PROCESS OF INNOVATION, TO INCREASING ITS PRODUCTION CAPACITY AND TO DISSEMINATING ITS MODEL TO THE REGIONS.

### OUR COMMITMENT No. 5



## Be a laboratory of the energies of the future

We invest in the future by innovating for energy transition. Exploring other fields of the possible, imagining change as an opportunity for creating new sectors, that is our objective in harmony with French and European orientations. Thus we participate in the Call for Expressions of Interest launched by the public authorities (marine

current turbines, an electric corridor along the Rhone). By forging original partnerships, we are engaged in contributing to an array of breakthroughs: renewable energies, green chemistry, the mobility of the future, smart electric grids, the potential of hydrogen as a fuel, storage, and more.

### OUR COMMITMENT No. 6



## Triple our solar and wind power production in 5 years

France's no. 1 producer of exclusively renewable energy, we are pursuing our strategy for zero emission with a mix of water, wind and solar energy generated from natural local resources. This approach is fully engaged in the

combat against climatic warming. From now to 2020, we are committed to reaching an installed capacity in Europe of at least 4.3 GW, with an additional 900 MW.

### OUR COMMITMENT No. 7



## Share our model in France and abroad

Holder of the Rhone concession, we develop a model of electricity production in the service of the regions by reconciling the different uses of the river. We intend to promote this decentralised and participatory model elsewhere in France and beyond our borders. In particular,

we are behind the initiative to set up an international observatory of great rivers in 2015. It will serve as an arena of exchanges between river managers, institutional representatives and international experts.



# BERNARD LAPONCHE

PhD in nuclear physics, and in energy economics, former director of the AFME (now the ADEME), international consultant, joint founder and member of the associations Global Chance and Énergie Partagée

## What is the state of the places where energy is produced and consumed in the world?

**BERNARD LAPONCHE** Apart from a few rare exceptions, production mostly relies on stored energy: coal, oil, gas, uranium. Consumption is stabilising in the rich countries, while it is increasing in emerging ones. However, disparities remain strong. A single person in the United States consumes 20 times more than one in India. This global system is running up against major obstacles: the depletion of resources, risks of conflicts linked to their unequal distribution and damage to the environment.

## Can these problems be solved?

Not with the present model. The International Energy Agency has acknowledged its failure in the long term. This can be demonstrated using a simple calculation. If consumption remains stable in the rich countries and the emerging countries catch up with them, four planets will be necessary to produce the energy required.

## What model could be imagined for tomorrow?

The basis of current reflections stems from the first oil crisis. A conceptual switch occurred: the formulation of an energy system based on needs prevailed over policy based on supply. To reduce its dependence on fossil fuels to produce electricity, France based its model on nuclear energy, but this has made it dependent on uranium and incurred risks (accidents, waste). Two orientations emerged at the same time: consume less and better, and develop renewable energies. In other words, this means increasing energy efficiency and privileging flux energies: hydraulic, wind, solar, biomass, geothermal energy, marine energy.

This provides a remarkable array of energies available everywhere around the world.

## Can these new modes of production be deployed rapidly?

Some countries have already resolutely embarked on the road to flux energies: Germany, Denmark, and others. Several emerging countries have initiated this transition: China is the world's largest producer of wind generated electricity; Morocco is developing its own electricity from the wind power, photovoltaics and thermodynamics. France has a considerable potential in nearly all the renewable energies – and it exploits hydropower substantially. The future law on energy transition sets targets for energy efficiency and renewable energy production which should lead to the achievement of this transition in the coming decades.

## How can this transition be achieved?

In addition to being available everywhere, flux energies can be exploited in small quantities on the scale of regions, likewise with energy savings. This characteristic makes it possible to consider a decentralised system in which the consumer has a role to play. Local community projects should be encouraged, which is what Énergie Partagée does, regarding the legal, technological and financial aspects, with an investment fund fuelled by public savings. On its side, CNR can play a major role, by increasing its renewable energy production capacities and by strengthening its association with local authorities and the community. Its contribution to research on smart grids and storage is very positive. It could also develop its role as consultant and promoter to help reducing energy consumption. This condition is indissociable from the deployment of renewable energies in order to ensure the success of energy transition.



“ENERGY EFFICIENCY AND RENEWABLE ENERGIES FORM THE BASIS OF THE NEW ENERGY MODEL WHICH IT IS CRUCIAL TO IMPLEMENT ON THE GLOBAL SCALE.”

## OUR GOAL: MEET THE CLIMATE CHALLENGE

STOPPING CLIMATIC WARMING IS ONE OF THE CHALLENGES OF THE OF THE LAW ON ENERGY TRANSITION FOR GREEN GROWTH. THIS SOCIETAL IMPERATIVE IS LINKED TO THE OBJECTIVE OF REDUCING GREENHOUSE GAS EMISSIONS BY 40% BETWEEN 1990 AND 2030, AND INVOLVES “REVOLUTIONS” IN HUMAN ACTIVITIES. FAITHFUL TO ITS FUNDAMENTAL VALUES, CNR IS COMMITTED TO PARTICIPATING IN ACCELERATING THE USE OF CLEAN TRANSPORT MODES AND HELPING AGRICULTURE TO IMPROVE ITS PRODUCTION METHODS AND MAKE THEM MORE ECONOMIC IN TERMS OF WATER AND ENERGY.

### OUR COMMITMENT **No. 8**



## Encourage **alternative mobility**

In the Rhone Valley we participate in developing transport modes that favour the reduction of greenhouse gases and we are committed to accelerating our projects in this area. This goal of “sustainable territories” will be accentuated and concern 4 areas of action:

- the deployment of zero emission electric mobility by developing charge points on an electric corridor along the Rhone;
- assisting the development of hydrogen propulsion on land and on the river;
- the development of river transport by the installation of industrial and port sites;
- lastly, the development of a network of cycle tracks radiating from the ViaRhôna, once completed (the cycle track from Lake Geneva to the Mediterranean Sea), to mesh the regions crossed by the Rhone.

### OUR COMMITMENT **No. 9**



## Support **sustainable agriculture**

We have been helping the agricultural sector and the regions to cope with the radical change confronting them. In addition to our mission of supplying irrigation, we are committed to going still further by providing our know-how and expertise and by supporting research

and experiments, especially regarding the adaptation of agricultural techniques to reduce the consumption of water and phytosanitary products, and to preserve biodiversity.





SYLVAIN MONDON  
executive at the National Observatory of the Effects of Climatic Warming

### Does the reality of climatic warming still stir controversy?

**SYLVAIN MONDON** No, it's now a proven fact. Over the last hundred years, the average temperature of the globe has risen by about 1 °C. By way of comparison, the difference between Ice Ages and interglacial periods is about 5 to 6 °C. In its last report, the IPCC\* forecasted an increase from 2 to 4 °C from now to the end of the century. The human origin of this warming has also been proven without any ambiguity.

### What consequences can be expected for France?

Heatwaves will become more commonplace, and days with frost less frequent. Above all, the soil will become drier. For France we still don't know what impact climatic change will have on rainfall. However, the evapotranspiration of plants and evaporation from the soil will increase, with a rise in the number of droughts.

### How can we confront this change?

What has been triggered cannot be stopped. The concentration of greenhouse gases will lead to effects lasting several decades, even if we stop emitting them. We have to react in two ways: limit our emissions as much as pos-

sible to confine this change; and adapt to the effects of warming by anticipating the inevitable as accurately as possible, especially with respect to water management.

### Are we ready for this new relationship with water?

Although there is no chronic shortage in France, arbitration is already necessary during periods of tension. Contrary to other European countries, we have efficient institutional tools: water agencies, basin committees, professional federations, and actors like CNR. This context sets us in the right direction to foresee risks and future needs. The Rhone Mediterranean Corsica Water Agency has begun reflection on its strategy of adaptation, which may take a long time, particularly when it comes to the question of regional development. These institutional bodies have acquired experience in consultation. The users of a basin such as the Rhone and its tributaries are very diverse. Dialogue, which will obviously be complex, will be made easier.

### What are the challenges facing the Rhone?

Those that CNR has taken into account in its commitments. The development of clean transport modes is an important objective for arresting global warming. Electric mobility, river transport and hydrogen fuel cells are all paths to be explored. Regarding irrigation, it's the right time to evaluate systems in the light of future needs, and for rethinking them if necessary, by taking into account other uses for water. As for energy, it should be remembered that 35% of global greenhouse gas emissions stem from electricity production. The solutions for the future are hydro-, wind and solar power.

\* IPCC: Intergovernment Panel on Climate Change.

“ANTICIPATING THE EFFECTS OF GLOBAL WARMING REQUIRES A GLOBAL STRATEGIC APPROACH AND REFLECTION ON THE SCALE OF LOCAL PROGRAMMES, ESPECIALLY REGARDING THE USE OF WATER.”

# CNR'S CONTRIBUTIONS TO THE WORLD SUMMIT ON CLIMATE & TERRITORIES

1 AND 2 JULY 2015 IN LYON

The World Summit on Climate & Territories gathers the stakeholders from territories all over the world which very often play a predominant role in the combat against climate deregulation through concrete actions carried out on a daily basis in the field.

Local authorities and infra-state governments, the economic world, NGOs, social partners, scientists and experts want their voices to be heard by the States that will be negotiating before the Paris conference, with the reflection produced by 10 workshops supervised by these networks and addressed to the French Presidency of the COP 21.

In addition to its 9 commitments in favour of energy transition and the climate, all voluntary and proactive actions presented at the end of June 2015 with the release of its Annual Report and the World Summit on Climate & Territories in Lyon, CNR, France's leading producer of 100% renewable electricity wanted to contribute to two of these workshops: Mobility and Transport, and Agriculture. Developing navigable waterways, port sites and irrigating farmland are part of CNR's historic missions. It wishes its experience and the actions it implements. In particular these two workshops illustrate the importance of a territorial outlook to the climatic challenges at the heart of CNR's approach.

CNR's proposals are linked to a European context but can be adapted according to situation to many countries, to different time frames and different scales.



AS RIVER MANAGER, ENERGY PRODUCER, ECONOMIC DEVELOPER OF A CONCESSION STRETCHING FROM SWITZERLAND TO THE MEDITERRANEAN AND, WHAT'S MORE, A LABORATORY OF FUTURE ENERGIES, CNR HAS ALL THE ASSETS NEEDED TO GIVE IT A CLEAR PERSPECTIVE OF MOBILITY, TRANSPORT AND AGRICULTURE

## THE MOBILITY AND TRANSPORT WORKSHOP:

The theme mobility and transport, strongly linked to territorial development, is aimed at presenting solutions to encourage trips using sustainable modes and improve energy efficiency.

A stakeholder in electric mobility, CNR supports the use of hydrogen powered vehicles on land and water. The large number of experimental initiatives it has taken contributes to the emergence of alternative forms of mobility. Responsible on a daily basis for 330 km of navigable waterway and 14 wide gauge locks, CNR develops and operates 18 industrial and port sites with the Chambers of Commerce and Industry in the valley, and develops river tourism as part of its mission as concessionary of the Rhone River.

- Regarding mobility, CNR already participates in certain projects and, at local level, recommends:
- **Working on the entire chain of renewable energies** to develop a full range of supply solutions for charging and consumption, and by combining them from the outset with electric mobility: for example, the development of a network of charge points for electric vehicles along the Rhone supplied by 100% green energy.
- **Supporting innovation** to deploy new energies. For example, experiments on hydrogen mobility on land and water have already been carried out in this sector by different actors, including CNR in the Rhône Alpes Region, with the deployment of a fleet of electric vehi-

cles using hydrogen powered range extenders, and filling stations installed in Lyon and Grenoble.

- Making all the partners, elected representatives, industrial companies and private individuals aware of the characteristics and advantages of new branches of activity, with **easier administrative procedures** related to property and **financial assistance**.
- **Creating propitious conditions for the emergence of urban electric mobility** through regulations (circulation and parking facilities), and encouraging the shared ownership of vehicles by providing technical, legal and financial aid.
- Regarding goods transport, especially modal transfer to waterways, CNR uses its feedback from experience to make the following recommendations:
- **Reserve the land of the port sites** and links to the river for industrial companies that wish to set up in them in the future.
- **Integrate the question of modal transfer in territorial economic development strategies** with two key factors for the performance of port sites: proximity with economic activities and the densification of this economic fabric.
- **Win local acceptance of port sites** as their purpose is to serve the general interest, with proven solutions that permit combining industrial and port activities while preserving the landscape and the environment.

## AGRICULTURE WORKSHOP:

The many activities performed by CNR and one of its historic missions in particular, that of irrigating agricultural land, lead it to reason on the basis of sharing resources and reconciling uses and stakes by taking a regional approach. When constructing its hydropower schemes, CNR also built more than 40 of the 180 water intakes installed on the Rhone. Thus it supplies water to cereal, vegetable and fruit crops in the Rhone Valley, with the irrigation of more than 100,000 ha of land.

An actor committed to the future of the river and the regions, CNR is a partner of the agricultural sector, helping it to develop sustainable practices of high economic and environmental value, satisfying the expectations of society, as illustrated by its recent framework agreement with the Rhône-Alpes Regional Chamber of Agriculture and the Rhône-Alpes Higher Institute of Agriculture.

- Confronted by climate change, the challenge is to produce more and better while preserving the environment. The role of agriculture is crucial in view to both reducing the effects of climate change and adapting to evolutions. Achieving this requires:
- Developing and implementing **integrated regional strategies** combining adaptation, mitigation and management of resources (soil, water, energy) in a

multi-sectoral approach to stimulate synergies between the dynamics of agriculture, economic and regional development, etc.

- Encourage the collective mobilisation of all the stakeholders (institutions, farmers, private entities, consumers, researchers, individuals) and inform all generations through **communication, education and incentives**.
- **Promote agro-ecology** to preserve natural resources, notably water, and reduce recourse to fossil fuels.
- Improve energy performance, **optimise consumption** and develop renewable energies in farms.
- Support R&D, experiments and encourage innovation: new practices and techniques, **diversify crop systems**, etc.
- Develop a framework favourable for combined actions by the stakeholders: technical and legal assistance, financial tools, **changes in regulations**, etc.

Projects underway in France, especially in the Rhone Valley, provide examples of these orientations. CNR is a partner of the Alternative and Organic Techniques Platform in Drôme, in actions to preserve pollinators and develop apiculture, and of the European Tech & Bio Show and the "Agriculture and Energy" demonstrator project to optimise energy consumption linked to new practices.





**Who** is naturally overflowing  
with **100 %** energy  
for sale?

CNR, France's  
no. 1 producer of 100 %  
renewable electricity

For 80 years, we have produced renewable energy generated from water, wind and sun, so we are naturally committed to energy transition and green growth. We already supply a quarter of French hydroelectricity and work to develop tomorrow's energies.

**Discover our 9 commitments in favour of energy transition and the climate  
on [cnr.tm.fr](http://cnr.tm.fr)**

CNR,  
PARTNER OF



Energy at the heart of regions

energy is our future, so save it!