GLOBAL CHALLENGES REQUIRE GLOBAL LEADERSHIP

Climate change represents one of the greatest challenges facing humanity in the 21st century. It is an impossibly complex challenge requiring an unparalleled response at a global level. As a consequence we have, for the last twenty years, struggled to find a suitable global response to this challenge.

For some, however, the 'business case' for responding to climate change is already compelling. Indeed, the flip side of every challenge is an opportunity. Climate change is an issue of strategic importance for EDF Group. It influences every aspect of our decision making.

Despite the difficulties in producing a strong global target and a full set of supporting mechanisms, the Copenhagen and Cancun summits confirmed two things for us:

1. there is now a global consensus that avoiding dangerous climate change is vital: the future must be low carbon
2. the lack of immediate action means that some climate change is inevitable: we must be ready to adapt

CLIMATE CHANGE MITIGATION – A BUSINESS OPPORTUNITY

EDF Group is the world's number one nuclear energy company and Europe's number one hydro-power company. Our existing electricity generation fleet has the lowest carbon intensity of all major European energy companies. As we grow, climate change must be embedded into our decision-making process.

Additionally, we must continue to develop products and services that help our customers use energy more efficiently and in a way that reduces climate impact. Our role is not just to decarbonise the electricity sector, but to use low carbon electricity to decarbonise other sectors, especially transport and heat.

We therefore focus significant R&D attention on electric heating (particularly ultra-efficient air and ground-source heat pumps) and electric vehicles. Our partnerships with global car manufacturers is helping pave the way for the highly complex infrastructure that will be needed to support widespread adoption of electric vehicles.

CLIMATE CHANGE ADAPTATION – A CRUCIAL COMPONENT OF OUR SUSTAINABLE DEVELOPMENT POLICY

Despite efforts to mitigate climate change, the planet is already committed to some changes to its climate. Adapting to this predicted change is essential.

EDF Group has devised an adaptation strategy that focuses on the principal challenges that lie ahead up to 2100. We assumed a range of plausible long-term climate and economic scenarios to create a description of the likely effects on natural systems and processes.

Indeed, EDF has already started to make significant changes to its operations in response to changes to the climate that have already occurred.

Predicted climate impacts

Climate change, observed and foreseen, influences EDF's activities in a variety of ways through impacts on existing installations, organisations, markets and stakeholders. For example, many of our nuclear and thermal power stations use river water for cooling and discharge warm water back into rivers – a heavily regulated process. Hotter summers would increase river temperatures limiting our authorization to discharge warm water.

A warmer but more turbulent climate would also impact our distribution networks. Warmer summers would decrease efficiency, and stormier winters would cause more structural damage. And we are already seeing our customers' demands change with more people using air-conditioning in summer. As a result, electricity demand in some markets peaks in the summer rather than in winter, reversing the historical trend. This has consequences for maintenance planning and for network reinforcement.

Adaptation to climate change refers to the capacity of EDF's main activities to adjust to these changes, either through minimizing the adverse impacts or by taking advantage of the benefits.

A proper adaptation strategy needs to take into account all of these aspects and to prioritize them.

EDF'S CLIMATE CHANGE ADAPTATION STRATEGY

Launched in 2010, EDF's adaptation strategy comprises 10 key points, implemented through action plans within each Group business line or company.

■ Gaining access to relevant and sufficient information

- Produce and exchange the right climate-related data and launch a joint project of databases for our businesses.

■ Adapting existing facilities certain to stay in the landscape for a long time

- Adapt our facilities, operating processes, in addition to our Climate Hazards Plan.

■ Mainstreaming the expected consequences of climate change into our design of future assets and facilities

- From the onset of the design phase, the future climate is one of the design parameters for future power-generation facilities.

■ Boosting our resilience to extreme climate events through direct application of our Climate Hazard Plan – Preparing for crisis management

- Prevent an extreme climate event from having catastrophic impacts, and return to initial status as early as possible.

■ Adapting our offers to climate change

- Based on consumer needs, also affected by climate change.
- Factor in new uses, in particular smart grids and electric vehicles.

■ Adapting our internal operations and expertise to climate change

- Adapt the working environment and skills.

■ Activating the right R&D to address the right topics

- Deliver information on the latest breakthroughs about the predictable effects of climate change.
- Provide support to define their impacts on our facilities and organisations.
- Contribute to the construction of our future asset base.

■ Mainstreaming national and international solidarity when implementing our adaptation measures

- Solidarity in energy issues, and consequently in health issues as well.

■ Incorporating knowledge breakthroughs into our strategy

- Initiate and monitor action plans to implement this adaptation strategy.
- Update the strategy based on the latest climate change forecasts.

■ Reinforcing dialogue between our entities and our respective public authorities

- Participate actively to the national debates devoted to the development of national climate adaptation strategy.

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EXAMPLES OF ADAPTATION

- The small changes to the climate that we have already experienced have forced EDF Energy to re-assess their view of 'normal' temperatures. By integrating the results of climate change prediction models, EDF Energy is now able to more accurately forecast gas and electricity demand over the medium term (3 to 5 year ahead).
- Meltwater from underneath the Mer de Glace, in the Alps near Chamonix, feeds the 40MW "Les Bois" hydropower plant. EDF has redesigned the sub-glacial water intake, as accelerated glacier retreat will soon leave the water intake stranded.
- Extended periods of hot weather can affect electricity production. Power plants extracting water from rivers, for cooling or for steam, must work within strict boundaries to ensure stable river water temperatures, so as to comply with regulations. In order to adjust generation output at its power stations beside large rivers in France, and to provide quality information to the authorities, EDF has developed more efficient hydro-meteorological forecasting systems which consider water temperatures and river flow rates. EDF is therefore better able to predict the impact of heat waves on its generation capacity and to effectively anticipate periods when river levels are too low, or water temperatures are too high.