

Environmental commitment

EN30 Financial resources

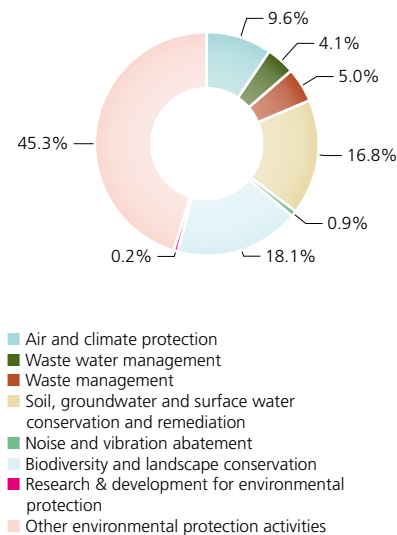
Enel records its environmental expenditure (investments and current expenditure) according to a classification system based on the criteria adopted by Eurostat and Istat (the latter being the Italian Statistical Institute). Under Istat's criteria, "environmental protection expenditure" is defined as the costs incurred for preventing and mitigating environmental pollution and degradation and for restoring the quality of the environment, whatever the origin of such costs (legislation, agreements with local governments, corporate decisions, etc.). It excludes the expenditure incurred for minimizing the use of natural resources, as well as for activities that, albeit environmentally beneficial, primarily satisfy other requirements, such as health & safety in workplaces. The term "expenditure" has always an algebraic sense, as it may also refer to revenues, such as those which may accrue from waste delivery to recovery operators.

GROUP'S FINANCIAL ALLOCATIONS FOR ENVIRONMENTAL PROTECTION IN 2009 (€ MILLION)

	Investments	Current expenditure
Renewable Energy	16	12
Generation and Energy Management	47	103
Iberia and Latin America	80	76
Infrastructure and Networks	40	11
International	11	192
Total	194	394

Overall environmental investments in 2009 (by environmental protection activity)

Total: € 194 million



The **Renewable Energy** Division invested € 16 million.

The **Generation and Energy Management** Division invested about € 47 million (50 in 2008).

The **Iberia and Latin America** Division invested € 81 million (56 in 2008); the deviation between the two years is chiefly due to the full consolidation of Endesa in 2009 (67.05% in 2008).

The **Infrastructure and Networks** Division invested roughly € 40 million (65 in 2008). Investments were down from 2008 owing to: i) lower rate of disposal of PCBs (most of them had been eliminated in previous years); and ii) lower rate of replacement of bare conductors with overhead and underground cables in power lines.

In the **International** Division, environmental investments were equal to € 11 million vs. 13 in 2008.

Among the investments on existing **thermal power plants** made by the Generation and Energy Management Division (Enel Produzione), the Iberia and Latin America Division (Endesa) and the International Division (Enel Maritza East 3, OGG-5 and Slovenské elektrárne), mention is to be made of:

- > significant improvements to SO₂, NO_x and particulate emission abatement systems (plant system upgrades to comply with emission limits and modernization of desulfurizers, denitrification and particulate abatement systems (the latter especially in coal-fired power plants);
- > installation of new low-NO_x burners;
- > revamping and remediation of some fuel-oil storage & handling tanks and upgrades of passive protection systems (containment basins in fuel storage areas and installation of fire prevention systems);
- > renovation and modernization of waste water treatment systems (desulfurizer drainage, waste water and sewage water);
- > new systems for monitoring and analyzing flue gases;
- > characterization of contaminated sites, planning and implementation of rehabilitation projects;
- > morphological, hydrographic and landscape restoration in mining areas;
- > removal of asbestos-containing materials;
- > decontamination of PCB-contaminated oils and machinery.

The same Divisions made the following investments on existing **hydro power plants**:

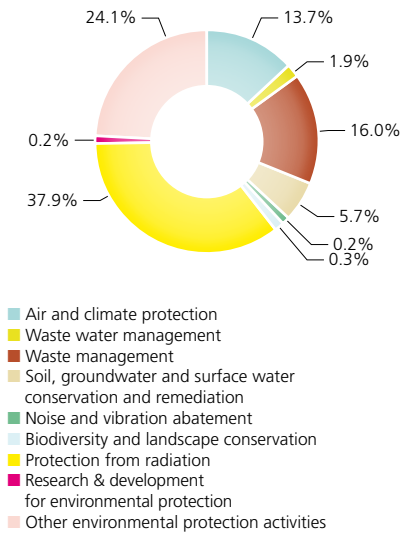
- > upgrades of transformer oil collection tanks;
- > retrofitting of outlets;
- > desilting of basins;
- > consolidation of some channels and of landslide-prone slopes;
- > improved methods to collect materials removed from the trashracks of intake structures;
- > noise abatement in installations and replacement of noisy generators;
- > construction of infrastructure to safeguard the faunal communities living near installations;
- > better integration of installations into the environment;
- > retrofitting of intake structures to release the minimum in-stream flow into the diverted streams;
- > construction of fish ladders;
- > testing of a new system for microorganism-based clean-up of channels.

The Iberia and Latin America, Infrastructure and Networks and International Divisions made the following investments in new and existing **electricity distribution** installations:

- > disposal of PCB-contaminated equipment;
- > use of overhead or underground cables in power lines to conserve biodiversity and landscape; the following extra cost items are recorded as environmental investments: overhead and underground cables instead of bare conductors in medium-voltage lines in areas of low population density; extra costs for underground cables instead of overhead cables in low-voltage lines in the above areas; underground cables instead of bare conductors in high-voltage lines, whatever their location.

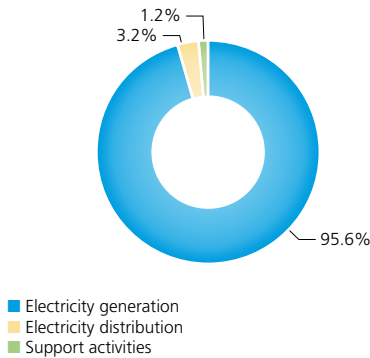
Current environmental expenditure in 2009, excluding extra fuel costs (by environmental protection activity)

Total: € 385 million



Current environmental expenditure in 2009, excluding extra fuel costs (by business activity)

Total: € 385 million



With regard to **current expenditure**, the situation is as follows.

The **Renewable Energy** Division allocated roughly € 12 million to current expenditure.

The **Generation and Energy Management** Division spent € 103 million vs. 224 in 2008. The decrease is due, above all, to the reduced operation of fuel-oil-fired installations. Indeed, this expenditure includes the extra cost incurred for using low-sulfur fuels or natural gas to comply with environmental regulations vs. the cost of a corresponding amount of medium-sulfur fuel oil.

The current expenditure of the **Iberia and Latin America** Division was € 76 million (41 in 2008); the deviation between the two years is mainly due to the full consolidation of Endesa in 2009 (67.05% in 2008).

The current expenditure of the **Infrastructure and Networks** Division was € 11 million (13 in 2008).

The **International** Division allocated € 192 million to current expenditure (174 in 2008), of which € 146 million for processing and permanent storage of spent nuclear fuel and for disposal of equipment.

Electricity generation accounted for as much as 95.6% of Enel's current environmental expenditure in 2009.

Costs for industrial clean-up (waste management, handling and removal) grew. The increase is due, above all, to the extra costs for disposal of coal ash (reflecting, among others, the building crisis) and sludges (owing to the unavailability of recovery facilities).

With regard to renewables in general, the current expenditure covered: removal of materials from trashracks, waste disposal, fish restocking, periodical monitoring of significant environmental aspects, operation and maintenance of hydraulic structures (to keep them efficient and prevent risks to the environment), environmental training & education of employees. In particular, in geothermal generation, emission control costs went up owing to the entry into operation of new mercury and hydrogen sulfide abatement systems (AMIS), which involved extra costs of personnel and expendables (especially sodium hydroxide) for their operation.

The above expenditure includes (in part as investments and in part as current expenditure) the following **research items**.

- > The **Iberia and Latin America** Division allocated a total of € 61 million to research, mostly in power-driven mobility and smart grids. The main ongoing projects are:
 - MOVELE, installation of 550 electric vehicle recharging stations in Madrid, Barcelona and Seville;
 - Málaga SmartCity, urban development of power-driven mobility;
 - Store, study of a large-scale, low-cost, electricity storage system with a view to encouraging power-driven mobility;
 - Cervantes and CENIT DENISE, development of smart grids.
- > In 2009, the Research technical area of the **Engineering and Innovation** Division carried out activities of development and demonstration of innovative technologies, as part of Enel's Technological Innovation Plan (total allocation: € 650 million in the 2009-2013 period). These efforts were focused on: fossil-fired power generation (46%, namely carbon capture & storage, hydrogen, emission abatement and enhanced efficiency of installations); renewables (50%, namely solar photovoltaic and solar thermodynamic,

- geothermal and wind energy, biomass); and energy efficiency (4%, namely power-driven mobility and development of smart grids). The contracts that the Engineering and Innovation Division executed in 2009 on behalf of the companies of the Group (see also the "Research & Innovation" paragraph in this chapter) amounted to about € 83.4 million, divided as follows:
- Enel Produzione: about € 76 million (post-combustion carbon capture, € 7.9 million; carbon capture after oxy-combustion, € 5.4 million; gasification system integrated with combined-cycle power plant and CCS, € 1.1 million; carbon sequestration, € 1.4 million; experimental use of hydrogen fuel in the Fusina plant, € 19.1 million; high-efficiency coal-fired thermal generation, € 0.5 million; pollution abatement, € 2.2 million; emission source analyses, € 0.7 million; expert systems to decrease the unavailability of gas-turbine and coal-fired power plants, € 1.2 million; exploitation of by-products from thermal generation, € 0.5 million; co-firing of biomass and RDF, € 0.5 million; concentrating solar thermodynamic generation, € 34.9 million; Green Islands project at Capraia, € 0.6 million);
 - Enel Green Power: € 6.7 million (innovative solar photovoltaic generation in Catania, € 1.5 million; low-enthalpy geothermal energy, € 0.7 million; abatement of geothermal pollutants, € 0.3 million; prediction of wind source availability, € 0.6 million; survey, characterization and selection of existing and new wind facilities of small and medium size, € 0.3 million; Energy Farm, € 1.1 million; systems of storage of energy from renewables, € 0.4 million; Diamond facility, € 1.3 million; innovative, low-cost, solar generation, € 0.5 million);
 - Enel Energia: € 0.9 million (Casa Enel, a project of research on smart demand-side management and energy efficiency, € 0.6 million; electric car, € 0.3 million).
- > The **Infrastructure and Networks Division** spent about € 2.6 million on smart grid studies and projects, i.e.
- project of an innovative system (Telegestore) for remote management of electricity meters, which will support a new approach to customer relations;
 - project of construction and operation of an electric-vehicle recharging infrastructure;
 - ADDRESS project, which is intended to develop technical and commercial solutions enabling small and medium consumers to modulate their usage and sell their electricity.

Other items of expenditure accrued in financial year 2009, which were separately recorded as they were not explicitly allocated to environmental protection, were as follows:

- > € 33 million (at Group level) - purchase of carbon dioxide emission permits to cover the deficit between allocated emissions (under Directive 2003/87/EC on Emission Trading) and actual emissions;
- > € 426 million (approximately) – purchase of Green Certificates to cover the deficit and fulfill the green quota obligation.

Climate strategy

Industrial commitment

Climate change is a global challenge to which governments, companies and citizens are called to respond within the scope of their duties.

Aware of its responsibilities, Enel is engaged in the fight against climate change. Indeed, Enel believes that, by improving its environmental performance, it can both safeguard the Planet's equilibria and create corporate value.

In March 2009, Enel's CEO was among the 60 leaders of European power companies who - as part of an initiative taken by Eurelectric - committed to achieving a carbon-neutral European electricity industry by 2050. This is an ambitious commitment, which will translate not only into a sharp increase of zero-emission power generation (from renewable and nuclear sources), but also into a radical shift in consumption patterns (for instance, energy efficiency and greater reliance on electricity, e.g. in transport).

Crucial factors in moving towards the new scenario without sudden shocks in the economic system will include fast deployment of Carbon Capture & Storage (CCS) technologies and emission credits from international offset mechanisms (e.g. the Kyoto Protocol Clean Development Mechanism – CDM).

Enel's strategy rests upon five pillars, which cover all the main elements of carbon neutrality.

- > **Use of the best available technologies:** Enel's generating mix is progressively evolving towards 100% high-efficiency - and thus low-emission - power plants.
- > **Development of zero-emission sources, e.g. renewables and nuclear:** Enel is consolidating its long-standing leadership in renewables through a dedicated company - Enel Green Power - and plans to gradually increase the nuclear share of the Group's generating mix.
- > **Energy efficiency:** Enel plans to enhance the efficiency of its grids and to take end-use efficiency initiatives relying, among others, on the Group's energy service companies.
- > **Research & innovation:** Enel allocated a little less than € 1 billion in the 2009-2013 period to CCS demonstration projects, development of innovative solar technologies, smart grids and power-driven mobility dissemination.
- > Global commitment to curbing CO₂ emissions through **dissemination of projects and best practices in East-European and developing countries**, resorting, among others, to the Kyoto Protocol flexible mechanisms (Clean Development Mechanism – CDM – and Joint Implementation – JI), in which the Group stands as a worldwide leader.

Policy commitment

Enel has established a dialogue with decision-makers to promote the adoption of immediate and effective public policies, as well as a long-term stable regulatory framework, which may facilitate choices by the industry in line with strategies like those pursued by the Group.

Unlike command-and-control measures (based on plant-level emission standards), market mechanisms may give a CO₂ price signal, encouraging emission reductions and optimizing resources to the benefit of companies and consumers. The Kyoto Protocol and the European Emission Trading Scheme (EU-ETS) have taken the first steps in this direction. However, the current