Environmental Report 2010

Enel

Enel
Environmental
Report
2010

Table of contents

CEO's message

Reconciling economic and social development with environmental protection is perhaps the most demanding challenge that humankind is now confronted with. Energy industries and, in particular, Enel have always sought to mitigate the impacts of electricity generation and distribution on air, soil, water and on consumption of raw materials. Careful use of natural resources is part of our DNA. Doing more and better with less is a day-to-day commitment for us.

We have become progressively aware of our growing social and environmental responsibilities and of the need to maximize the economic and other benefits of our activities to the hosting land and communities, safeguarding and, where possible, improving the environment. Indeed, being appreciated as good citizens is crucial to helping consolidate reputation and credibility, which represent the long-standing values of a company.

We have gained this awareness over the decades in which we have been the engine of Italian development. Now, we have to bring this awareness to the 40 countries where we are present. Enel has become one of the leading energy operators in the world: we have 97,000 MW of generating capacity; 80,000 people work with us; and we serve 61 million customers. In the world, hundreds of millions of households, businesses and public entities are in contact with Enel, as customers, suppliers and administrators.

Therefore, in moving in the world, we must be proud of our excellence record but, at the same time, ready to learn from the experience of the companies that we have acquired - first among them Endesa - and of the colleagues of other countries, in order to enrich and unify Enel's culture also in the environmental domain. Indeed, when we speak about synergies, we also mean to blend the best practices in each sector of our activities and to foster the creation of a common multinational culture identifying the Enel Group wherever it is present.

Our success will be measured by our capability of responding with innovative solutions to the global challenge of climate change. This is why, in addition to improving performance and zeroing injuries, I have set one more ambitious target for Enel: being the first group in the world to generate emission-free electricity by 2050.

We already have a balanced generating mix with a high percentage of carbon-free technologies, through which we can provide abundant electricity at competitive costs and with low emissions. Nearly 50% of our generation comes from plants using water, sun, wind and the Earth's heat, as well as nuclear energy. In the renewable-energy sector, we are among the world's leaders thanks to Enel Green Power, a company which operates hydro, wind, geothermal, photovoltaic and biomass plants with an installed capacity of over 6,000 MW and will almost double its portfolio of projects by 2014. However, to effectively counter the greenhouse effect, nuclear energy is also needed. Choosing between nuclear energy and renewables is a mistake through which we may lose the battle of climate change.

A fundamental contribution towards zeroing all emissions will come from innovation: carbon capture & storage, high-concentration solar thermodynamic systems, electric mobility, smart grids. It is not by chance that our Group is at the forefront of all of these innovations.

Environmental performance

These are our strategic vision and day-to-day commitment. Our 2010 performance data testify the success of our Environmental Policy. Let us see them in detail.

We are gradually introducing and harmonizing environmental management systems, certified under international standards. In 2010, among others, we gained the ISO 14001 certification for five thermal power plants in Spain and one in Morocco, as well as for our distribution business in Bucharest. At global level, 94% of our power grid length and 83% of our generating capacity and, in Italy, services (e.g. real estate and commercial) are currently certified.

Generation from renewables is on the rise and now exceeds 30% of the total. In 2010, together with the contribution of nuclear energy, our carbon-free generation displaced about 100 million tonnes of CO_2 emissions into the atmosphere, equivalent to those from about 60 million cars (1).

(1) Supposing 150 g/km of specific CO_2 emissions and 11,000 km/year of urban travel.

With respect to 2009, for each total kWh generated, we curbed emissions of CO_2 by over 5% and, in the thermal power generation sector, those of SO_2, NO_x and particulates by 17%.

The overall efficiency of our thermal power plants was up by almost 2%; water consumption dropped by 2%; waste recovery grew by 50% and overhead and underground cables in power lines exceeded 60% of the grid.

In 2010, we unified the Group's carbon strategy, pooling together the skills, know-how and expertise of Enel and Endesa, so as to optimize investments in projects of emission reduction in and technology transfer to developing countries under the Kyoto Protocol offset mechanisms.

As regards innovation, we inaugurated a carbon-capture pilot plant in Brindisi and planned the construction of two industrial-scale demonstration facilities – one in Porto Tolle (Italy) and one in Compostilla (Spain) – already funded by the European Union.

Today, thanks to our partnership with Daimler Mercedes, about 700 Smart electric cars are travelling in Italy and Spain. We plan to install about 900 recharging points in Rome, Pisa, Milan, Madrid, Barcelona and Seville.

The role of electricity for the global environment

I believe that electricity can play a fundamental role in improving the environment and ensuring a better life to future generations, while responding to growing energy security requirements and to customers' needs.

Electricity generated in the cleanest possible way may replace fossil fuels in many fields, from transport to heating/cooling of homes, providing a key contribution to decarbonization of the entire economy.

This is why we are working not only on emission-free generation, but also on the evolution of grids and on end-use efficiency.

With the deployment of smart meters – that we were first in the world to install on a large scale at the premises of our customers in Italy and now also in Spain – we laid the groundwork for smart grids, i.e. an infrastructure that is vital to increasing end-use efficiency and favoring distributed generation of electricity from renewables. Moreover, the smart-grid technology enables producers, consumers and system operators to exchange more information, with benefits in terms of both generation flexibility and improvement of customers' choices and behaviors.

We are also at the forefront of electric mobility, in Italy and Spain. Using electric motors, in place of the less efficient and more polluting combustion engines, means radically slashing pollutants, e.g. benzene, sulfur oxides, nitrogen oxides and particulates, making our towns less noisy and their air more breathable. Additionally, a wide deployment of electric vehicles may help abate greenhouse-gas emissions.

The role of Enel in the success of this positive change in our way of life is a central one. Recharging infrastructures – both residential and public – are imperative to facilitate the penetration of electric mobility. For the development of this sector, we found new counterparts and partners, e.g. vehicle manufacturers and advanced-battery specialists, with whom we are cooperating.

Enel is ready to play its part to offer a better future to new generations and is already demonstrating it with facts. However, public support – financial and non-financial – is required to develop and roll out innovations. Even more important is the putting in place of a regulatory framework, which must be stable and as uniform as possible in the various countries, especially in Europe. Indeed, the huge private investments needed to win the challenge of a future of eco-friendly development call for stable market mechanisms, providing long-term price signals, flexibility and offsets and ensuring a smooth transition to a new model of social and economic development.

The Chief Executive Officer
and General Manager
Fulvio Conti

Parameters of the Environmental Report 2010

Methodological note

This Report deals with the environmental implications of the activities that Enel carries out in the world through all the companies included in its scope of consolidation: electricity generation, distribution and sale, fuel storage & handling, mining and real-estate & service management.

After a concise presentation of the Enel Group, the Report describes the environmental governance tools: environmental policy and targets, organization, management systems, reporting, relations with external stakeholders and environmental commitment (financial resources, climate strategy, renewables, energy efficiency, nuclear energy, research & innovation, water resource management, biodiversity conservation, environmental risk assessment and management, as well as awareness, training & education, etc.). Then, the Report reviews the key energy & environment performance trends in the 2006-2010 period for the overall Group and for each country and technology. At country level, the Report gives insight into the developments occurred in 2010 with the corresponding GRI indicators.

Enel voluntarily requested KPMG SpA to conduct a limited assurance review of its Environmental Report.

The qualitative and quantitative environmental performance data are reported in accordance with the "Sustainability Reporting Guidelines & Electric Utility Sector Supplement" issued in 2009 by the Global Reporting Initiative (GRI), as summarized in the following GRI Content Index table. However, the Report has a deeper level of detail than required by the GRI, since it is the result of a reporting process that Enel has carried out progressively in fifteen editions, including the present one.

The Report presents the Enel Group's environmental performance vs. targets. In particular, the preparation of the Report involved the identification of relevant stakeholders and significant aspects to be reported and relied on adequate processes of internal management and control of the reported data.

The data contained in the Report refer to Enel SpA and to the companies included in its scope of consolidation in financial years 2006 to 2010 (for details, the reader is referred to http://www.enel.com/it-IT/investor/financial_reports/annual/).

In particular, the data of the fully and proportionally consolidated companies (if they produce significant environmental impacts with reference to the specific indicator being commented on) are reported proportionally to their percentage of consolidation. Possible limitations of the reporting perimeter (due to poor-quality or inefficient data collection) are explicitly indicated and commented on.

Affiliates (assessed under the net-worth criterion in the Consolidated Financial Statements) and other entities on which Enel exerts significant influence (including joint ventures) are included in the computation of the data (where available) proportionally to Enel's holdings therein. If the same affiliates or entities produce significant impacts, they are also included in the qualitative reporting sections.

The status data (number of installations, net maximum capacity, length of grids, etc.) reflect the situation of the companies as of December 31 of 2010 or of each of the reported years. The flow data (resources, electricity and heat generation, emissions, liquid releases, waste, etc.) are only considered to the extent of the companies' period of relevance to the Group.

For the numerical values shown in the tables – excluding those which can be expressed only as integers (e.g. number of installations, number of personnel members) – the following approximation criterion has been followed: without decimals for values greater than or equal to 100; with one decimal for values lower than 100 and greater than or equal to 10; with two decimals for values lower than 10 and greater than or equal to 1; with three decimals for values lower than 1. This criterion matches the one adopted in data collection. However, if the last decimal digit is zero, it is omitted.

As regards electricity, the technical definitions of an energy nature are based on the "Statistical Terminology Employed in the Electricity Supply Industry", published by UNIPEDE (International Union of Producers and Distributors of Electrical Energy), which was merged with Eurelectric in June 2001.

The formats for reporting both process and governance data are continuously updated taking into account changes in Enel's organizational configuration, developments in legislation and technologies, as well as experience feedbacks.

The following table explains the GRI performance indicators used in the text.

GRI Content Index (1)

	EN1	EN2	EN3	EN4	EN5	EN6	EN7	EN8	EN9	EN10	EN11	EN12	EU13	EN13
OVERALL GROUP	77, 78, 79, 80, 81, 82, 83, 85, 86, 87, 88	24	77, 78, 79, 81, 82, 83, 86, 87, 88, 89	76, 79, 83, 86, 89, 91, 93	47, 88	22, 46, 95	22	79, 84, 86, 87, 89	61	79, 87, 89	61	60, 65, 67	62, 63, 64, 65, 66, 67	62, 63, 64, 65, 66, 67
EUROPE														
BULGARIA	125, 126, 128, 129	-	125, 128	125	129	129	-	125, 128, 129	-	125, 128	-	-	-	-
FRANCE	132	-	132	132	133	133	-	-	-	-	-	-	-	-
GREECE	135	-	-	135	136	136	-	-	-	-	-	-	-	-
IRELAND	138, 139	-	138, 139	-	140	140	-	138	-	-	-	-	-	-
ITALY	147, 148, 154, 155, 158	-	147, 154, 155, 158	147, 149, 154	158, 159	155, 159, 160	160	148, 154, 155, 160	-	148, 155, 160	-	-	-	-
PORTUGAL	167, 168, 170, 171	-	167, 170, 171	-	-	172	-	168, 170	-	-	-	-	-	-
ROMANIA	175	-	175	175, 176, 177, 179	178	176, 178, 179	-	-	-	-	-	-	-	-
RUSSIA	182, 183, 185, 186, 187	-	182, 185, 186, 187	-	187	183, 186	-	182, 183, 185, 187	-	182, 185, 187	-	-	-	-
SLOVAKIA	194, 195, 199, 201	201	194, 195, 199, 201	195	202	-	-	195, 199, 201	-	195, 199	-	-	-	-
SPAIN	211, 212, 219, 222	-	211, 219, 222	212, 213, 219	222, 223	223	-	212, 219, 223	-	212, 219, 223	-	-	-	-
NORTH AMERICA														
CANADA	229, 232	-	229, 232	-	-	-	-	229, 232	-	-	-	-	-	-
USA	236, 238	239	236, 238	-	239	239	-	236, 238, 239	-	-	-	-	-	-
LATIN AMERICA														
ARGENTINA	246, 247, 249, 250, 251	-	246, 249, 250, 251	247, 249	251	-	-	246, 247, 249, 250, 251	-	-	-	-	-	-
BRAZIL	256, 257, 259, 260	-	256, 259, 260	257, 259	260	260	-	256, 259	-	-	-	-	-	-
CHILE	267, 268, 271, 272, 273	-	267, 271, 272, 273	268, 269, 271	273, 274	274	-	268, 271, 272	-	-	-	-	-	-
COLOMBIA	279, 280, 283, 284	-	279, 283, 284	280, 283, 287	284	-	-	280, 283, 285	-	-	-	-	-	-
COSTA RICA	287	-	-	-	-	-	-	-	-	-	-	-	-	-
GUATEMALA	291	-	291	291	-	-	-	-	-	-	-	-	-	-
MEXICO	295	-	-	-	297	297	-	-	-	-	-	-	-	-
PANAMA	299	-	299	-	-	-	-	-	-	-	-	-	-	-
PERU	305, 306, 308, 309	-	305, 308, 309	306, 308	309	-	-	305, 308, 309	-	-	-	-	-	-
AFRICA														
MOROCCO	313, 315	-	313, 315	-	315	315	-	313, 315	-	-	-	-	-	-

EN Legend

MATERIALS

EN1 Materials used by weight or volume. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN2 Percentage of materials used that are recycled input materials.

ENERGY

EN3 Direct energy consumption by primary energy source.

EN4 Indirect energy consumption by primary source.

EN5 Energy saved due to conservation and efficiency improvements.

EN6 Initiatives to provide energy-efficient or renewable-energy-based products and services, and reductions in energy requirements as a result of these initiatives.

EN7 Initiatives to reduce indirect energy consumption and reductions achieved.

WATER

EN8 Total water withdrawal by source. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN9 Water sources significantly affected by withdrawal of water.

EN10 Percentage and total volume of water recycled and reused.

BIODIVERSITY

EN11 Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.

EN12 Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EU13 Biodiversity of offset habitats compared to the biodiversity of the affected areas.

EN13 Habitats protected or restored.

EN14 Strategies, current actions, and future plans for managing impacts on biodiversity. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN15 Number of IUCN (International Union for Conservation of Nature and Natural Resources) Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.

EMISSIONS, EFFLUENTS, AND WASTE

EN16 Total direct and indirect greenhouse gas emissions by weight. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN17 Other relevant indirect greenhouse gas emissions by weight.

EN14	EN15	EN16	EN17	EN18	EN19	EN20	EN21	EN22	EN23	EN24	EN25	EN26	EN27	EN28	EN29	EN30
63, 64, 65, 66, 67	62, 63, 64, 65, 67	76, 96, 97, 98, 99, 100, 102, 103, 104	24, 76	43, 97, 100	-	96, 97, 98, 100, 101, 102, 103, 104	79, 105, 106, 107, 108	109, 110, 111, 112, 115, 116, 117, 118	-	118	61	58	118, 119	37, 38	74, 75, 76	40,41,42
-	-	126, 128, 130	-	126, 130	-	126, 128, 130	126, 129	127, 128, 130	130	-	-	130	-	-	125	-
-	-	133	-	133	-	-	-	133	-	-	-	133	-	-	132	-
-	-	-	-	136	-	-	-	136	-	-	-	-	-	-	135	-
-	-	139, 140	-	-	-	139, 140	138, 139	139, 140	-	-	-	140	-	-	-	-
-	-	151, 156, 160	-	151, 159, 161	161	151, 156, 161	148, 151	152, 153, 154, 156, 161	162	-	-	162	-	-	146, 154	-
-	-	169, 171, 172	-	169, 172	-	169, 171, 172	169	169, 170, 171	-	-	-	172	-	-	-	-
-	-	177, 178	-	177, 178, 179	-	-	-	177, 178, 179	-	-	-	179	-	-	175, 177, 179	-
-	-	184, 186	-	-	-	184, 186, 187	183, 184	185, 186, 187	-	-	-	187	-	-	182	-
-	-	196, 197, 200, 202	-	197, 202	-	196, 197, 200, 202	195, 197, 198, 200	198, 199, 200, 201, 202	-	-	-	202	-	-	194	-
-	-	214, 220, 223	-	214, 223	223	214, 215, 220, 223	212, 215, 216	216, 217, 218, 220, 221, 223	-	-	-	223	-	-	210, 219, 223	-
-	-	230, 232	-	230, 233	-	230, 232, 233	230	231, 233	-	-	-	-	-	-	-	-
-	-	237, 238	-	237, 239	-	-	-	237, 238, 239	-	-	-	239	-	-	-	-
-	-	248, 250 , 251	-	248, 251	251	248, 250, 251	247, 248	248, 249, 250	252	-	-	252	-	-	249	-
-	-	258, 259, 261	-	258, 260, 261	-	258, 259, 261	256, 258	258, 260	-	-	-	261	-	-	259	-
-	-	269, 272, 273	-	269, 273	-	269, 272, 273	268, 269	270, 271, 272, 273	274	-	-	274	-	-	267, 271	-
-	-	281, 283, 285	-	281, 285	-	281, 283, 285	280, 281	281, 282, 283, 284, 285	285	-	-	285	-	-	282	-
-	-	288	-	288, 289	-	-	-	288, 289	289	-	-	-	-	-	287	-
-	-	292	-	292, 293	-	-	-	292, 293	-	-	-	-	-	-	291	-
-	-	296	-	296, 297	-	-	-	296, 297	-	-	-	297	-	-	-	-
-	-	299	-	299, 300	-	-	-	299, 300	-	-	-	-	-	-	299	-
-	-	307, 308, 309	-	307, 309	309	307, 308, 309	305, 307	307, 308, 309	-	-	-	309	-	-	308	-
-	-	314, 315	-	-	-	314, 315	314	314	-	-	-	315	-	-	-	-

EN18 Initiatives to reduce greenhouse gas emissions and reductions achieved. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN19 Emissions of ozone-depleting substances by weight.

EN20 NO_X, SO_X, and other significant air emissions by type and weight. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN21 Total water discharge by quality and destination. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN22 Total weight of waste by type and disposal method. This indicator includes the sector-specific commentary required by the EUSS (Electric Utilities Sector Supplement).

EN23 Total number and volume of significant spills.

EN24 Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.

EN25 Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization’s discharges of water and runoff.

PRODUCTS AND SERVICES

EN26 Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.

EN27 Percentage of products sold and their packaging materials that are reclaimed by category.

COMPLIANCE

EN28 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.

TRANSPORT

EN29 Significant environmental impacts of transporting products and other goods and materials used for the organization’s operations, and transporting members of the workforce.

OVERALL

EN30 Total environmental protection expenditures and investments by type.

(1) For each indicator, the table shows the commentary page numbers.

The Enel Group

Enel is the largest power company in Italy and the second listed utility in Europe in terms of net maximum capacity. It is an integrated operator, active in electricity generation, distribution and sale, as well as in gas extraction and sale.

Enel is present in the electricity sector of over 40 countries, with a net maximum capacity of over 97,000 MW, about 80,000 employees and 60 million customers.

Enel, which has been listed on the Milan Stock Exchange since 1999, is the Italian company with the highest number of shareholders.

Enel's mission is to create and distribute value in the international energy market, responding to customers' and shareholders' requirements, enhancing competitiveness in the countries where it operates, meeting employees' expectations, serving communities while safeguarding the environment, health & safety, with the commitment of ensuring a better world to coming generations.

Electricity is generated with different technologies, which use both conventional and renewable sources.

As of December 31, 2010, total net maximum capacity amounted to 97,273 MW (1), while total net electricity generation in 2010 exceeded 289 TWh (2).

With regard to distribution, the total electricity wheeled on Enel's grid in 2010 was 430.5 TWh and the total length of power lines as of Dec. 31, 2010 was equal to 1,810,951 km.

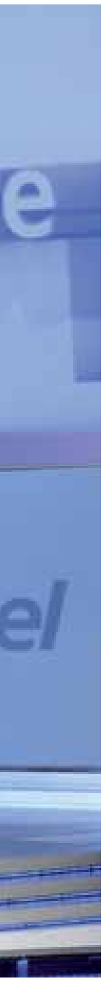
In 2010, Enel sold a total of 309 TWh.

Competitiveness, security and flexibility of supplies are strategic priorities. To cover the requirements of some plants in Spain, Enel extracts coal in the mines owned by Endesa. Enel also participates in activities of extraction of gas in Algeria, Egypt and Russia and of coal in Indonesia.

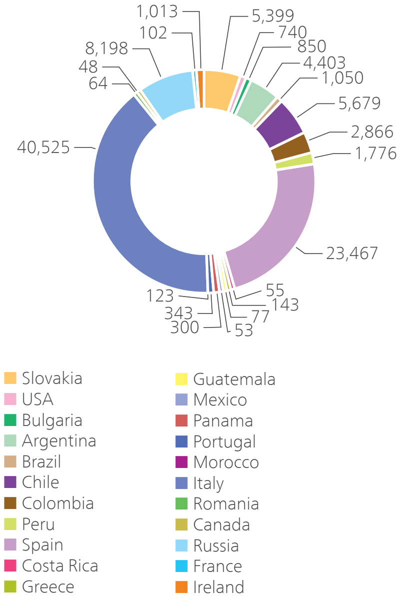
To manage the above-described activities, Enel relies on an organizational structure that consists of:

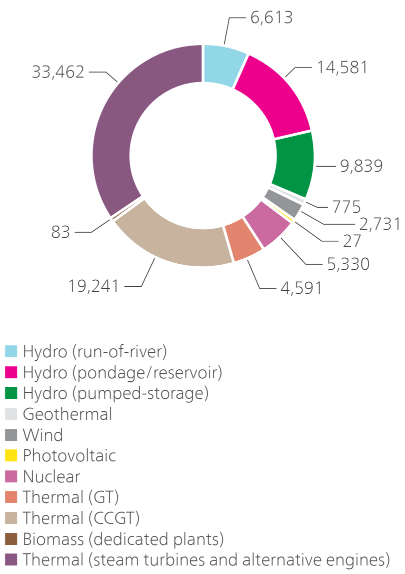
> the Holding Company (the so-called "Corporate"), which – through its central staff functions – plays a role of guidance, coordination and control, so as to leverage the Group's synergies and optimize the management of services in support of the core business;
> the Up-Stream Gas function, which has the mission of developing and managing the Group's up-stream gas segment;
> seven divisions, which ensure the achievement of technical and financial performance targets by the operating companies and the integration of their activities within the Group in accordance with its policies and codes of conduct.

(1) The Consolidated Financial Statements 2010 indicate 8 MW more, representing plants in Chile not consolidated in this Report.
(2) This value is different from the one of the net generation sold reported in the Consolidated Financial Statements 2010 (as explained in the "Electricity generation" paragraph).

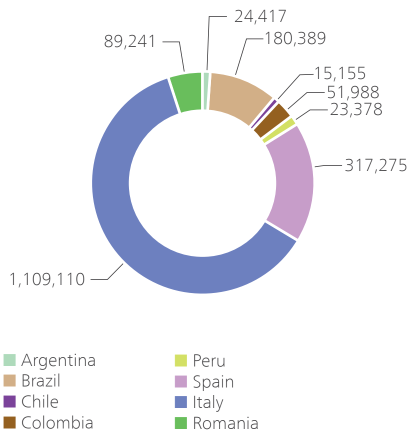


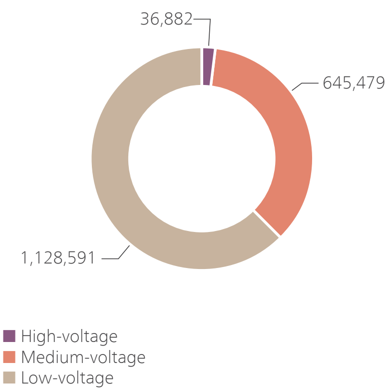
Generating mix as of Dec. 31, 2010
Total: 97,273 MW

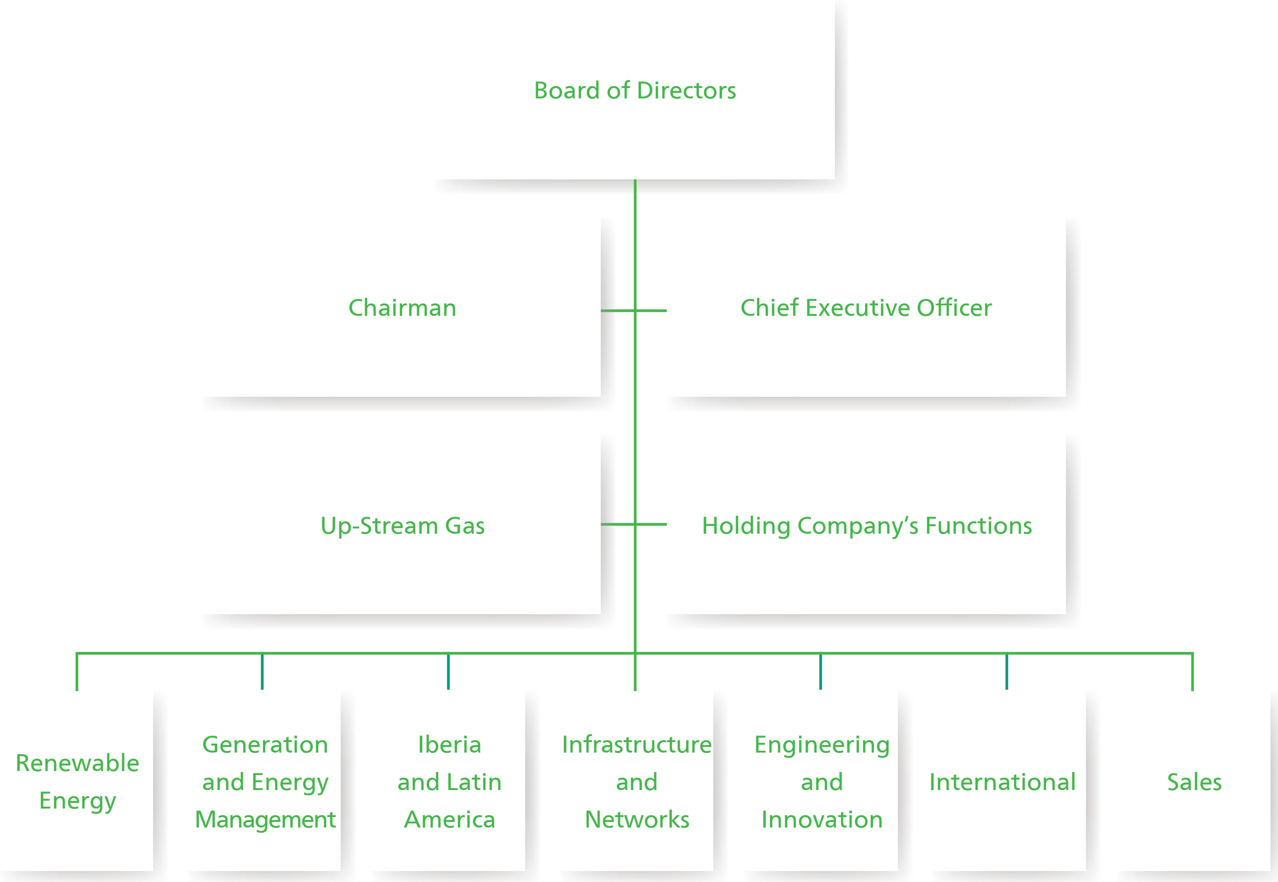




Electricity distribution grid as of Dec. 31, 2010
Total: 1,810,951 km







The **Renewable Energy Division** is in charge of all the renewable power generation assets of the Group, excluding the renewable portfolios of Endesa (Iberia and Latin America Division), Enel Produzione (Generation and Energy Management Division) and Slovenské elektrárne (International Division).
The division gathers all of Enel's wind, solar, geothermal and run-of-river hydro generation assets in 14 countries, totaling about 6,102 MW of capacity.

The **Generation and Energy Management Division** manages all the assets of generation, import and wholesale supply of electricity in Italy, optimizing generation and procurement costs, in compliance with environmental and safety legislation and regulations.
At regional level, power plants are grouped under 32 Business Units (23 thermal and 9 hydro), in addition to the Trento Unit, which is a self-standing legal entity (Hydro Dolomiti Enel).

The **Iberia and Latin America Division** gathers all the assets of generation and distribution of electricity in Spain, Portugal and Latin America, excluding those falling under the responsibility of the Renewable Energy Division.

The **Infrastructure and Networks Division** manages all of Enel's electricity distribution grid and public lighting assets in Italy and provides support to the management of the gas distribution grid (3). The division is focused on the achievement of operating excellence and continuous improvement of its technical-service quality standards.
At regional level, grids and installations are grouped under 4 regional macro-areas for electricity distribution, 4 regional areas for public lighting and 4 regional areas for gas.

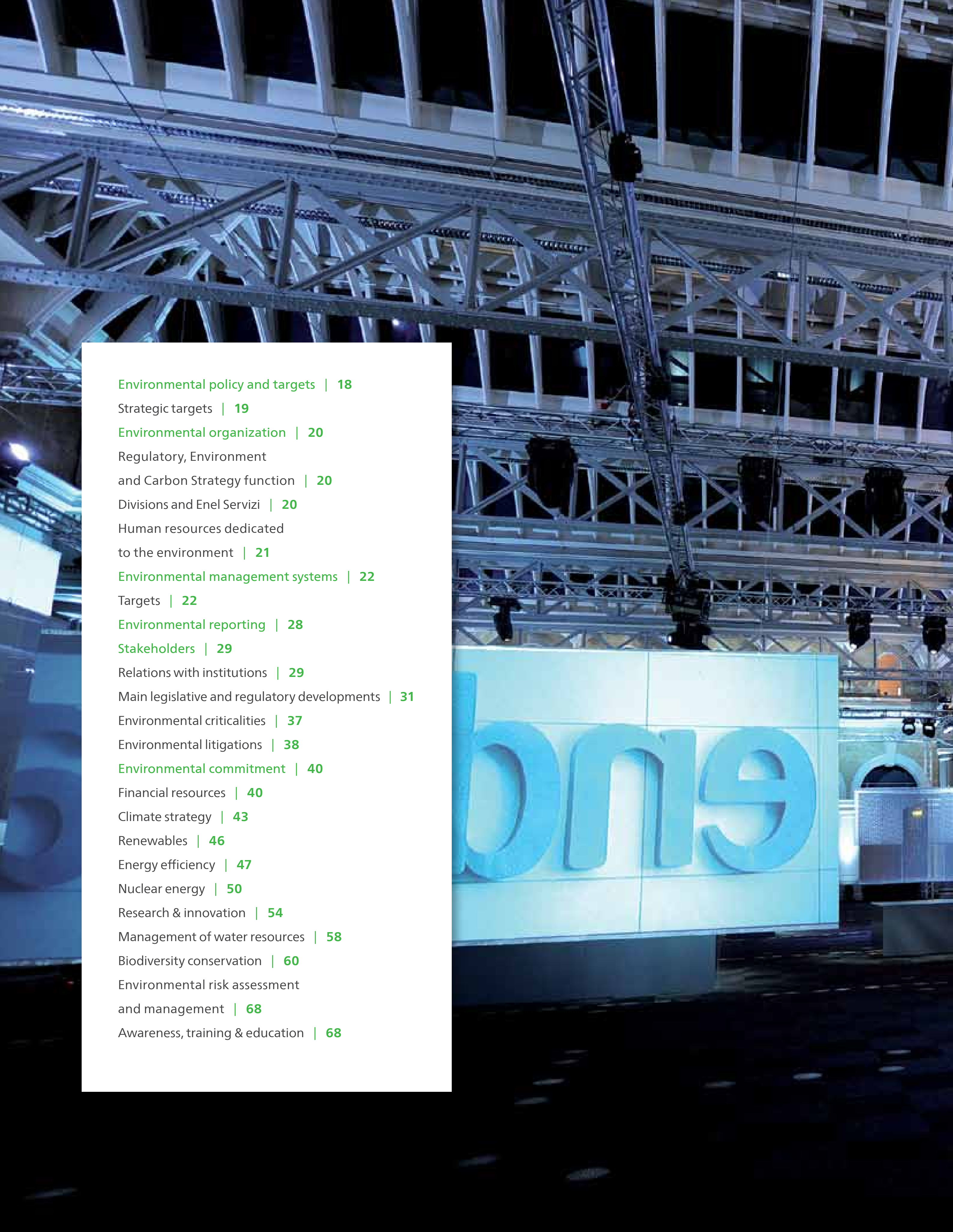
The **Engineering and Innovation Division** has the task of managing the Group's engineering processes of development and construction of power plants, as well as research activities, by scouting for, capturing and developing opportunities of innovation, with particular emphasis on initiatives of high environmental value.
The division consists of 3 technical areas (Innovation & Environment, Research, Nuclear Energy) and of the Power Plant Development & Construction Business Area.

The **International Division** manages all the power generation and distribution business operations in Bulgaria, Romania, Russia and Slovakia, excluding those falling under the responsibility of the Renewable Energy Division and of the Iberia and Latin America Division. The division is organized into 6 regions (each of which is called "Country"): France and Belgium, Bulgaria, Greece, Central-Eastern Europe, Romania, Russia and Commonwealth of Independent States (CIS).

The **Sales Division** has the mission of managing the end-use power and gas markets in Italy, developing integrated offerings of products and services for the various customer segments, while meeting commercial-service quality standards.

The Enel Group also includes **Enel Servizi Srl**, a company which has the task of providing services (personnel administration, procurement, administration-accounting, ICT, management of transport vehicles, real estate, and awareness, training & education) to the Italian companies of the Group. Enel Servizi gives guidance to the foreign companies of the Group on procurement, ICT and real-estate/facility management.

(3) Gas distribution no longer falls within the Group's scope of consolidation after the sale of 80% of Enel Rete Gas (September 30, 2009).



Environmental governance

Environmental policy
and targets

Enel regards the environment, the fight against climate change and sustainable development as strategic factors in carrying out and expanding its activities and as key drivers for strengthening its leadership in energy markets.
The Group's environmental policy is based on three fundamental principles and pursues ten strategic targets.

Principles

- Safeguarding the environment.
- Improving and promoting the environmental features of products and services.
- Creating corporate value.

Strategic targets

- Application of internationally-recognized environmental management systems to the entire organization.
- Optimized integration of installations and buildings into the landscape, while conserving biodiversity.
- Mitigation of environmental impacts by applying the best available technologies and the best practices in construction, operation and decommissioning of installations.
- Leadership in renewables and low-emission electricity generation.
- Efficient use of energy, water and raw materials.
- Optimized management of waste and liquid releases.
- Development of innovative technologies for the environment.
- Communication of Enel's environmental management efforts to citizens, institutions and other stakeholders.
- Environmental awareness, training & education of employees.
- Promotion of environmentally-sustainable practices among suppliers and contractors.

The Chief Executive Officer
and General Manager
Fulvio Conti

Strategic targets

Enel translates the principles enshrined in its environmental policy into a number of initiatives, which are aimed at achieving its strategic targets.

Strategic target	Ongoing initiatives/programs
Application of internationally-recognized environmental management systems to the entire organization	> Extension of certification to sites that are not yet certified > Yearly maintenance of already acquired ISO 14001 certifications and EMAS registrations > Certification of service activities (procurement, real-estate management, training & education, ICT) > Certification of the Sales Division
Optimized integration of installations and buildings into the landscape, while conserving biodiversity	> Biodiversity conservation projects (conservation of protected species habitats, reintroduction of particular species, research centers and sighting points, replanting of indigenous flora) > Biomonitoring (land-, sea- and river-based) > Use of overhead or underground cables (in lieu of bare conductors) in power distribution lines > Mitigation of the visual impact of production and distribution installations and of mines
Mitigation of environmental impacts by applying the best available technologies and the best practices in construction, operation and decommissioning of installations	> Assessment of the environmental impact due to construction or major retrofits of installations > Study and sustainable use of the Best Available Techniques (BATs) in pollutant abatement systems > Protection, monitoring and remediation of surface water, soil and subsoil in the areas surrounding installations
Leadership in renewables and low-emission electricity generation	> Enlargement of the renewable portfolio by building or acquiring new power plants and by entering into construction agreements > Development of the nuclear technology > Construction of new combined-cycle power plants
Efficient use of energy, water and raw materials	> Improvement of power plant efficiency (use of more efficient components and/or processes, reduction of consumption by auxiliaries) > Reduction of grid losses in electricity distribution (optimized grid design, use of conductors with larger cross-section and of electrical components with lower losses) > Mapping and monitoring of all production sites to identify potential water stress and, when necessary, make a more efficient use of water resources > Internal recycling of water for industrial uses > Reuse of ash and gypsum from coal and brown coal as raw materials in external production processes > Promotion of end-use energy efficiency (distribution of more energy-efficient products for lighting and space heating, use of more energy-efficient lamps in public lighting) > Deployment of systems (e.g. smart meters) and rate plans promoting efficient electricity usage
Optimized management of waste and liquid releases	> Decrease of waste production > Decrease of the polluting load of liquid releases > Increased recovery of waste and liquid releases (also by better sorting) > Qualification of suppliers of waste disposal services > Use of information systems for waste traceability
Development of innovative technologies for the environment	> Research on and construction of pilot installations for: - carbon capture & storage (CCS) - smart grids - use of hydrogen as a fuel - solar thermodynamic power - concentrating solar photovoltaic power - multi-generation systems - electric mobility - green ports (electrified piers in ports)
Communication of Enel's environmental management efforts to citizens, institutions and other stakeholders	> Preparation of the Environmental Report, of the Sustainability Report and of the sustainability section of the Annual Report > Preparation of Environmental Declarations for EMAS-registered sites > Communication with analysts and participation in various sustainability indexes > Opening of installations to the public > Posting of environmental initiatives on the Internet site
Environmental awareness, training & education of employees	> Periodical courses of environmental awareness, training & education > Posting of thematic insights on the Intranet site
Promotion of environmentally-sustainable practices among suppliers and contractors	> Use of suppliers' qualification criteria based on environmental performance > Monitoring of contractors' performance during and at the end of works or upon acceptance tests > Awareness, training & education meetings on significant environmental aspects

Environmental organization

Environmental governance is implemented by operational units and coordinated by a dedicated unit at headquarters' level.

Regulatory, Environment and Carbon Strategy function

The Environmental Policies & Climate Change unit (making part of the Regulatory, Environment and Carbon Strategy function) has the mission of formulating and coordinating environmental policies and strategic targets, defining and defending the Group's position, managing compliance risks (by monitoring the achievement of performance targets), ensuring the consistency of the divisions' initiatives, defining the Group's policies in terms of climate change and carbon regulation, coordinating environmental management systems, organizing the Group's environmental reporting process (thus monitoring environmental performance) and preparing the yearly Environmental Report. The unit also develops the Group's carbon strategy.

Divisions and Enel Servizi

Depending on the specific issues to be covered, each division relies on structures at various levels with personnel in charge of conducting environmental activities. The staff functions coordinate the management of the respective environmental issues, providing the necessary specialist support in line with the Holding Company's guidelines. Operational units and specific professional figures deal with specific aspects of industrial sites.

The **Renewable Energy**, **Generation and Energy Management** (GEM) and **Sales** Divisions have Safety & Environment staff functions with coordination tasks. Specific units deal with the environmental issues of power plants. Furthermore, the Power Plant Development & Support function of the Generation and Energy Management Division relies on a unit that prepares the documents required to obtain environmental authorizations for construction and/or retrofit of power plants.

The **Iberia and Latin America** Division (Endesa) has a central-level Environment and Sustainable Development Department (Dirección de Medio Ambiente y Desarrollo Sostenible), which coordinates the management of the division's environmental issues. The environmental contact persons of the regional units report to this department.

In the **Infrastructure and Networks** Division, the Quality, Safety & Environment function coordinates the management of environmental issues. The Safety & Environment units of the regional areas (power grids and gas) are in charge of managing site-specific activities. In the Public Lighting Business Area, the Engineering unit deals, among others, with environmental compliance.

In the **Engineering and Innovation** Division, the Safety & Environment function coordinates the division's environmental activities.
The Innovation & Environment technical area has the task of formulating the technological innovation plan (jointly with the other divisions), coordinating the implementation of actions and promoting initiatives of high environmental value. In the Nuclear technical area, the Radioprotection, Environment and Authorizations unit has the task of: defining environmental requirements from planning/design to operation of installations; coordinating environmental analyses and environmental impact studies; and supporting authorization processes.

In the **International** Division, the Integration, Safety and Operations Support function is responsible for transferring environmental guidelines to the various "Countries". Each "Country" has units or personnel in charge of managing site-specific environmental matters.

Within **Enel Servizi**, the operational department in charge of real-estate and service management is supported by a Safety, Environment & Customer Care unit. This unit (through the Building Safety & Environment unit) coordinates the management of environmental aspects in line with the Holding Company's guidelines.

Human resources dedicated to the environment

In the overall Group, the human resources dedicated to the environment amount to 550 full-time equivalents (FTEs). They include support personnel, i.e. the divisional and regional personnel members who provide environmental services to multiple operational units.

Organizational structure (FTEs)

FTEs	Unit
17	Regulatory, Environment and Carbon Strategy function
38	Renewable Energy Division
94	Generation and Energy Management Division
243	Iberia and Latin America Division
80	Infrastructure and Networks Division
10	Engineering and Innovation Division
60	International Division
3	Sales Division
5	Enel Servizi
550	Total

Environmental management systems

Targets

The progressive deployment of internationally-recognized environmental management systems (EMSs) in all the activities of the Group (industrial, planning, coordination, services, etc.) represents a strategic target of Enel's environmental policy.

Environmental management of services and sales

EN6 EN7 In 2010, the Sales Division and Enel Servizi Srl gained the ISO 14001 certification for the over 1,000 buildings where they operate or that they manage. This certification added to the one already obtained in 2009 for the vehicle fleet, the ICT system and procurement.

The EMS concerns services, commercial offerings and behavioral models. In addition to facilitating the fulfillment of legislative/regulatory requirements, the EMS promotes greater efficiency in the consumption of energy (electricity and fuels) and water and increases the separate collection of waste.

In the overall Group, the management of buildings generated an efficiency gain equal to 14,915 GJ of primary energy saved, i.e. the difference between the electricity saved (corresponding to 9,020 MWh or 32,500 GJ of primary energy saved) (1) and the higher consumption of fuel for internal heating services and canteens (420 toe or 17,585 GJ).

Environmental management policies also include: i) mobility management (subscriptions for public transport (2), for car- and bike-sharing, organization of a car pooling service in Rome, management of travel for duty purposes, choice of reasonably central locations for training & education courses, use of audio and video conferences); ii) optimized use of the vehicle fleet (cars with lower environmental impact, courses for safe and environmentally-sustainable driving, real-time tracking of the nearest available support-crew vehicle and its dispatching to destination); and iii) digitized flows of documents and their transmission by certified e-mail (saving the energy associated with paper manufacturing, document printing and delivery).

Enel organizes EMS awareness, training & education programs for its personnel.

(1) The calculation methodology assumes 4,436 MWh of electricity saved, corresponding to 9,000 MWh of primary energy savings if the share of fossil and nuclear fuels (66-69%) in the Group's generation and the average efficiency of the thermal generating mix (~39%) are taken into consideration.

(2) In 2010, the energy savings from the subscription initiatives were around 800 toe. This figure results from the application of a formula obtained from the report "Reducing CO_2 Emissions from Cars: A Study of Major Car Manufacturers" (published by Transport & Environment), considering the average consumption of the various modes of transport (car, motorcycle, mass transit, soft mobility) multiplied by the number of users, the average home-to-work distance twice and standard factors of emission and oxidation of the different fuels normally used.

Green procurement

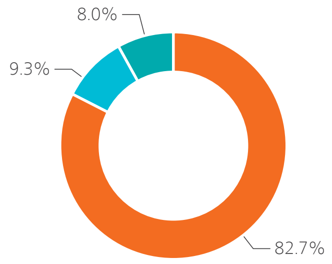
The EMS of Enel Servizi also encompasses green procurement, i.e. the procurement of products and services having a lower impact on human health and on the environment than other products and services that may be used for the same purpose.

In 2010, Enel developed and introduced a new method to assess the impact of goods and services to be purchased. The new method involves stricter requirements than the previous one and takes into account the process of "production" of the good and the "useful stage" of the good or service. The lower environmental impact is measured via specific indicators (for each environmental aspect). A product or service is considered to be adequate (green), if it offers the best performance in terms of consumption of energy, water, raw materials and hazardous substances, use and recovery of packaging materials, polluting emissions and noise, recycling/reuse of the waste produced.

Companies wishing to participate in green tendering procedures must give evidence of the environmental efficiency of their goods or services under the above aspects through internationally-recognized environmental labels (Ecolabel, Nordic Swan, Blue Angel, etc.) and ISO 14001-certified or EMAS-registered EMSs, provided that their improvement program demonstrates the achievement of efficiency objectives.

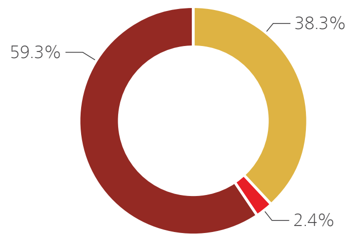
Groups of green products and services and related environmental requirements were thus identified.

ISO 14001 in power plants as of Dec. 31, 2010
% of overall net maximum electrical capacity: 97,273 MW (1)



(1) The Consolidated Financial Statements 2010 indicate 8 MW more, representing plants in Chile not consolidated in this Report.

EMAS in power plants as of Dec. 31, 2010
% of overall net maximum electrical capacity in the EU: 71,904 MW



Green products and services (Environmental requirements)

Storage devices
Production stage: reduction and recovery of packaging materials.

Personal computers (desktops, notebooks, PDAs)
Production stage: reduction of consumption of energy and hazardous substances; reduction and recovery of packaging materials. Useful stage: reduction of energy consumption, emissions and noise.

Bill envelope paper
Production stage: reduction of consumption of energy, raw materials and hazardous substances; reduction and recovery of packaging materials.

Printer and copier paper
Production stage: reduction of consumption of energy, materials and hazardous substances; reduction and recovery of packaging materials. Useful stage: recycling and reuse of waste.

Non-industrial cleaning
Reduction of hazardous substances and emissions.

Office furnishings
Production stage: reduction of consumption of energy, raw materials and hazardous substances; reduction and recovery of packaging materials. Useful stage: recycling and reuse of waste.

Management of company canteens and coffee bars, provision of meal vouchers
Production stage: reduction of consumption of energy, water and hazardous substances; reduction and recovery of packaging materials.

Handling and transport of goods/materials and porterage
Production stage: reduction and recovery of packaging materials. Useful stage: reduction of energy consumption and emissions.

Repair, recovery and disposal of oil-insulated MV/LV transformers (including those with PCBs)
Minimum environmental performance to be achieved.

Lead accumulators
Production stage: reduction of consumption of energy, water and hazardous substances; reduction and recovery of packaging materials.

Ammonia
Production stage: reduction of consumption of energy, water and hazardous substances; reduction and recovery of packaging materials.

Insulating materials and their application and removal
Production stage: reduction of energy consumption. Useful stage: recycling and reuse of waste.

Industrial painting
Production stage: reduction of energy consumption and emissions. Useful stage: recycling and reuse of waste.

Demolition of installations
Useful stage: recycling and reuse of waste.

Demolition of non-industrial buildings
Useful stage: recycling and reuse of waste.

The groups of green products and services will gradually increase thanks to:

> study of applicable environmental criteria based on the type of product being considered;
> monitoring of updates of international environmental labels.

For this purpose, reference is made to the green public procurement documents published by the Italian Environment Ministry, to the European Commission's toolkit (on-line downloadable and continuously updated) and to the contribution given by leading private organizations of the sector.

In view of continuous improvement, Enel administers a questionnaire to its suppliers upon the qualification process. The purpose of the questionnaire is to assess their environmental responsibility and certifications. The questionnaire now comes with a section devoted to greenhouse-gas emissions based on the Carbon Disclosure Project (CDP).

In Italy, in the course of 2010, Enel awarded green procurement contracts for € 800 million (roughly 13% of the yearly total) and formalized green procurement contracts for € 766 million (11% of the yearly total).

EN2 Green procurement also helps progressively increase the use of raw materials and recycled materials.

Resources subject to recycling (%)

	2007	2008	2009	2010
Sulfuric acid (1)	0	0	0	**0.7**
Lime for flue-gas desulfurization (2)	0	0	1.1	**1.3**
Printing paper (3)	45.0	50.0	52.2	**56**
Ferric chloride (4)	0	0	0	**0.5**
Dielectric oil (5)	6.8	17.8	11.5	**59**
Lubricating oil (6)	0	0	1.1	**3**

(1) Brine (by-product of the process of production of demineralized water via osmosis) used in place of sulfuric acid.
(2) Lime (from softening of water for industrial uses) reused in desulfurization.
(3) Paper containing 75% recycled fibers, purchased in the market.
(4) Sludges from waste water treatment reused in place of ferric chloride in water treatment.
(5) Dielectric oil, decontaminated from PCBs and reused or filtered and reused.
(6) Lubricating oil, filtered and reused.

EN17 Since 2009, Enel has joined the Carbon Disclosure Project (CDP) Supply Chain, an initiative aimed at building climate change awareness. Suppliers of goods and services are thus trained to assess the emissions from their activities. In this way, their greenhouse-gas emissions may be monitored and solutions favoring their reduction may be encouraged. So far, Enel and Endesa have involved about 500 suppliers in this initiative.

ISO 14001-certified and EMAS-registered activities

ISO 14001 results

Electricity generation

80,461
net maximum capacity certified (MW)

83%
coverage

Electricity distribution

1,698,411
grids certified (km)

94%
coverage

Sales (Italy and Romania)

100%
coverage

Enel Servizi Srl

100%
coverage

EMAS results

Electricity generation

27,523
net maximum capacity registered in Europe (MW)

38%
coverage

Europe

Italy	EMAS-registered installations/sites	MW	ISO 14001-certified installations/sites	MW	km
Thermal power plants	Bastardo, Fusina, Genova, La Casella, La Spezia, Leri Cavour, Montalto di Castro, Porto Corsini, Porto Marghera, Priolo Gargallo, Santa Barbara, Sulcis, Torrevaldaliga Nord	**12,818**	Bastardo, Brindisi Sud, Fusina, Genova, La Casella, La Spezia, Leri Cavour, Montalto di Castro, Pietrafitta, Porto Corsini, Porto Marghera, Porto Tolle, Priolo Gargallo, Rossano Calabro, Santa Barbara, Sulcis, Termini Imerese, Torrevaldaliga Nord	**20,845**	
Hydro power plants	Business Units: Bologna, Cuneo, Montorio, Sardinia, Vittorio Veneto	**7,686**	Business Units: Bologna, Cuneo, Montorio, Sardinia, Sicily, Sondrio, Vittorio Veneto	**10,839**	
	Bolzano (= SE Hydropower)	**769**	Bolzano (= SE Hydropower)	**769**	
			Business Units: Bergamo, Domodossola, Naples	**1,509**	
	Business Units: Trento (Hydro Dolomiti Energia)	**1,273**	Business Units: Trento (Hydro Dolomiti Energia)	**1,273**	
Geothermal power plants	All	**728**	All	**728**	
Wind power plants			Business Unit: Naples	**456**	
Power grid			All		**1,109,109**
Real estate, vehicle fleet and services (procurement, ICT, management of over 1,000 buildings, training & education)			All		
Sales			All		

Bulgaria	EMAS-registered installations/sites		ISO 14001-certified installations/sites	MW
Thermal power plant			Maritza East 3	**808**

Ireland	EMAS-registered installations/sites		ISO 14001-certified installations/sites	MW
Thermal power plants			All	**1,013**

Portugal	EMAS-registered installations/sites	MW	ISO 14001-certified installations/sites	MW
Thermal power plants	Pego	**221**	Pego	**221**

Romania	EMAS-registered installations/sites		ISO 14001-certified installations/sites		km
Power grid			All		**89,240**
Sales			All		

Slovakia	EMAS-registered installations/sites		ISO 14001-certified installations/sites	MW
Thermal power plants			All	**1,250**
Nuclear power plants			All	**1,818**
Hydro power plants			All	**2,329**

Spain	EMAS-registered installations/sites	MW	ISO 14001-certified installations/sites	MW	km
Thermal power plants	Endesa: Barranco de Tirajana, Cristóbal Colón, Garraf, Granadilla, Litoral, As Pontes (steam-condensing), As Pontes (combined-cycle), Teruel	**4,028**	Endesa: Alcudia, Barranco de Tirajana, Besòs, Candelaria, Ceuta, Compostilla, Cristóbal Colón, El Palmar, Garraf, Granadilla, Ibiza, Jinámar, Las Salinas, Llanos Blancos, Litoral, Los Guinchos, Mahón, Melilla, As Pontes (steam-condensing), As Pontes (combined-cycle), Punta Grande, San Roque, Son Reus, Teruel	**11,663**	
			Eufer: Eneralco	**9**	
Nuclear power plants			All	**3,514**	
Hydro power plants			Endesa: Ebro Pirineos, Noroeste, Sur hydro generating units (UPH)	**4,642**	
			Eufer: Arroibar, Anllo, Avia, Brandariz, Los Batanes, Rosarito	**26**	
Wind power plants			Eufer: Aldeavieja, Belmonte, Cabo Vilano, Caldereros, Careón, Casa, Castelo, Coriscada Corzán, Coto de Codesas I, Do Vilán, Enerbierzo, La Losilla, Malagón I, Malagón II, Pemalsa, Pena Forcada, Peña Armada, San Andrés, San Sebastián, Sierra de la Oliva, Silvaredonda, Valdepero, Viravento	**679**	
Power grid			Aragona, Andalusia, Extremadura, Balearic Islands, Canary Islands, Catalonia		**315,907**
Port terminals	Ferrol		Ferrol, Carboneras, Los Barrios		
Mining			Andorra		
Real estate			Eufer's offices: Andalucía, Barcelona, Castilla, Extremadura, Galicia, Las Palmas, León, Madrid, Santander, Sevilla, Tenerife, Valencia		

North Africa

Morocco	ISO 14001-certified installations/sites	MW
Thermal power plant	Tahaddart	**123**

Latin America

Argentina	ISO 14001-certified installations/sites	MW	km
Thermal power plants	All	**3,075**	
Hydro power plants	All	**1,328**	
Power grid	All		**24,417**

Brazil	ISO 14001-certified installations/sites	MW	km
Thermal power plants	All	**307**	
Hydro power plants	Cachoeira Dourada	**650**	
Power grid	Ampla and Coelce		**68,789**

Chile	ISO 14001-certified installations/sites	MW	km
Thermal power plants	All	**2,067**	
Hydro power plants	Abanico, Antuco, Cipreses, Curillinque, El Toro, Isla, Loma Alta, Los Molles, Ojos de Agua, Palmucho, Pangue, Pehuenche, Ralco, Rapel, Sauzal, Sauzalito	**3,443**	
Wind power plants	All	**77**	
Power grid	All		**15,585**

Colombia	ISO 14001-certified installations/sites	MW	km
Thermal power plants	All	**411**	
Hydro power plants	All	**2,455**	
Power grid	All		**51,988**

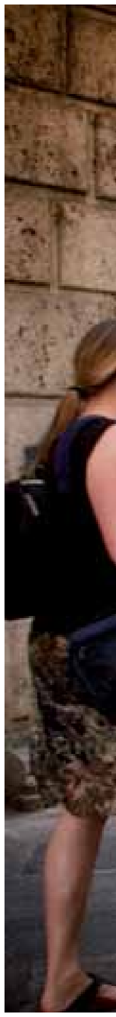
Costa Rica	ISO 14001-certified installations/sites	MW
Hydro power plants	All	**24**
Wind power plants	All	**33**

Panama	ISO 14001-certified installations/sites	MW
Hydro power plants	All	**300**

Peru	ISO 14001-certified installations/sites	MW	km
Thermal power plants	All	**1,037**	
Hydro power plants	All	**739**	
Power grid	All		**23,376**

Environmental reporting

The environmental reporting process is an integral part of Enel's environmental management system. Through ICT-based and structured procedures, its methodology ensures homogeneity of the collected data. The reporting system allows Enel to check the Group's environmental performance vs. targets and to process the environmental data reported in its publications.
The formats used for collection of both process and governance data are continuously updated to accommodate changes in Enel's organizational configuration, legislative and technological developments, as well as experience feedbacks.
In addition to data aggregation by organizational level (business unit, group of power plants, business activity, company, country, division, Group, etc.), the Environmental Policies & Climate Change unit makes available a broad range of reporting datasheets (status data, process data, resources, emissions, liquid releases, waste) and indicators (ratios between homogeneous or heterogeneous quantities). These indicators permit to compare the results of different units, track the performance of a single unit over time (regardless of the volume of its activities), pinpoint deviations from average or target values and assess the reliability and consistency of the reported data.



Stakeholders

Relations with institutions

At national and international scale, social, environmental and economic expectations towards companies are ever-growing. Enel must thus strengthen its institutional dimension in the countries where it is present and raise institutional stakeholders' perception of its strategic role in creating and representing value.

With this purpose in mind, Enel has adjusted to the growing complexity of the competitive scenario, intensifying its relations with international, European, national and local institutions, in order to contribute to the decision-making process, both as a party expressing specific interests and as an experienced energy operator.

Indeed, its constant dialogue with institutions is intended to build public decision-makers' awareness of issues of major interest to Enel through three main drivers: a) consolidation of relations already established in previous years with law- and policy-makers; b) progressive extension of its contacts, establishing relations based on confidence and direct cooperation, even with new partners who are less familiar with the above issues; and c) comprehensive information disclosure, thus helping improve the level of technical knowledge of institutional counterparts.

Relations with institutions take place at different levels.

- At local level, in the areas where it operates, Enel communicates with regional and other local authorities, in order to reconcile the requirements of industrial development with those concerning land and landscape protection and respect for local communities. This interaction is continuous in environmental protection activities and intensified upon possible emergencies or critical stages of the planning processes (granting of authorizations, commencement of works, etc.).

- At national level, Enel has established a fruitful dialogue with the competent administrations, e.g. in Italy with the Ministries of the Environment, Economic Development, Regional Affairs and EU Policies and with representatives of parliamentary commissions involved in the decision-making processes in areas of major interest to Enel, such as energy planning and efficiency, support for renewables, climate change strategies and environmental protection.

- At EU level, Enel actively participates in the debates and decision-making processes of the European Commission, the European Parliament, the Council and the national Permanent Delegations to the European Union.

- At global level, Enel interacts with non-governmental associations and multilateral development banks and actively participates in the main associations of the sector and in global *fora* of consultation over energy and the environment. The analyses emerging from these *fora* (involving Business Europe, Eurelectric, e8, International Emissions Trading Association, UNFCCC, IEA) provide institutional decision-makers with important reference frameworks and with key data on current trends and future developments of the energy sector.

Main legislative and regulatory developments

European Emission Trading Scheme

European Union

In the European Union, 2010 was the third year of the first commitment period (2008-2012) of the scheme for greenhouse gas emission allowance trading within the Community (European Emission Trading Scheme - EU-ETS - Directive 2003/87/EC).

The Climate and Energy Package (enforced on June 25, 2009) contains, among others, Directive 2009/29/EC, improving and extending the EU-ETS. Under the scheme, the covered installations receive tradable emission allowances. However, the auctioning of emission allowances, which was limited in the first and second trading periods, will be the main method of allocation in the third trading period (beginning in 2013). To this end, Member States adopted the Auctioning Regulation on November 12, 2010. This regulation also provides for a common allowance trading platform and a common registry.

The following are the key data of the 2008-2012 National Allocation Plans (NAPs) adopted by the Member States where Enel has installations that are covered by the above legislation (combustion installations with a thermal capacity of over 20 MW).

Bulgaria

The European Commission approved the 2008-2012 NAP in April 2010. In 2010, the allocation for Enel's plant was equal to 6.1 Mt, while emissions were equal to 6.09 Mt.

Ireland

In 2010, CO_2 emissions were equal to 0.28 Mt vs. NAP allocations of 1.4 Mt.

Italy

In 2010, CO_2 emissions from Enel's plants in Italy were equal to 34.57 Mt vs. NAP allocations of 34.6 Mt.

On April 28, 2010, with its Decision 9/2010 the national committee in charge of managing the implementation of Directive 2003/87/EC allocated all the remaining allowances (about 21.7 Mt) of the "new entrants' reserve" to new plants commissioned until April 2009. The allocation excluded Enel's Torrevaldaliga Nord plant, as well as numerous plants of other operators, which had gone into service after the above time limit.

To redress the situation arising from the exhaustion of the new entrants' reserve, the Government adopted Law Decree 72 of May 20, 2010, based on the commitment that it had taken in its allocation decision for the 2008-2012 period. The decree provided that the new entrants' plants excluded from the allocation should receive – on an *ex-post* basis and at market values – the emission allowances for which they were eligible under the above decision and that the free allowances (estimated at about 42 Mt) should be funded in part with the revenues from the auctions to be held in Phase III of the EU-ETS (after 2012).

The Parliament converted the decree into Law 111 of July 19, 2010. Under this law, the national EU-ETS committee adopted its Decision 16/2010, with which it defined the allowances to be allocated to plants commissioned in 2009 and for which it had completed the related assessment procedures. The number of permits to be allocated to unit 4 of the Torrevaldaliga Nord plant for 2010 was equal to 2.6 million tonnes.

Portugal

In 2010, emissions were equal to 0.63 Mt vs. NAP allocations of 2.7 Mt.

Slovakia

The Slovak Environment Ministry allocated an average of 5.4 Mt/yr to Slovenské elektrárne for the 2008-2012 period. In 2010, Slovenské elektrárne produced about 3.04 Mt of emissions.

Spain

Emissions in 2010 were equal to roughly 23.2 Mt; the allowances allocated by the NAP were equal to 24.4 Mt.

Use of renewables

The promotion of the use of renewables (RES) for energy production is a topic of major relevance to Enel, considering its strong involvement in the sector and the fact that Enel Green Power went public at the end of 2010. The following paragraphs give a picture of the legislation in force in the various countries where Enel generates electricity from renewables (all the targets pertain to 2020).

Bulgaria

The Renewable and Alternative Energy Sources and Biofuels Act (June 19, 2007) introduced a support scheme based on guaranteed feed-in tariffs. In November 2008, some changes were introduced:

> duration of the feed-in scheme – 15 years for wind installations and 25 years for solar installations;
> eligibility – all installations commissioned by 2015.

Further amendments (defined in 2010) are expected to be made to the scheme in 2011, upon the issuing of legislation which will transpose the principles of Directive 2009/28/EC. The National Renewable Energy Action Plan (NREAP), submitted to the European Union, sets a target of about 20.6% for the share of renewables in gross final electricity consumption.

France

Electricity generation by hydro, on-shore and off-shore wind, biomass, biogas, photovoltaic (PV) and geothermal power installations is supported through feed-in tariffs, which are differentiated by source (Law 108/2000). The full cost of the installation may be depreciated in the first financial year and tax deductions of up to 33% are granted for investments in the French overseas departments. Household customers enjoy a tax credit for 50% of the costs incurred for the construction of PV installations.

In July 2010, the "Grenelle 2" Law was enacted. The law implemented the provisions of the "Grenelle de l'Environnement" Law, including the requirements for compliance with renewable-energy development targets. In particular, the law defined: i) a period of connection priority for renewable power installations (10 years); ii) the differentiation of payments (royalties) for renewing hydro power leases according to the value of the electricity generated by the installation; and iii) the rules to be abided by in the process of authorization of wind farms belonging to the Zone de Développement Éolien (ZDE).

In January 2010, a decree amended the support scheme for photovoltaic installations commissioned in 2010. The new tariffs will remain constant until 2011 and will be decreased by 10% from 2012 on. Given the high number of applications for "contrats d'achat" received during the year, the decree was subsequently amended, by introducing (in December 2010) a three-month suspension of new applications for feed-in tariffs, except for some types of installations and for particular stages of development of the projects. As an additional form of support for renewables, the French Government held some auctions for wind and biomass projects (bids are to be submitted by mid-2011).

The NREAP, submitted to the European Commission, sets a target of about 27% for the share of renewables in gross final electricity consumption.

Greece

The Greek system of support for electricity generated from RES (Law 2368/2006, revising the previous Law 2773/1999) provides for a feed-in scheme at guaranteed tariffs, differentiated by source and level of interconnection and yearly updated. Electricity from RES is sold under a contract between the generator and the Hellenic Transmission System Operator (HTSO). The contract has a 12-year duration and may be extended by up to 20 years. In addition to the feed-in scheme, some investments in electricity generation from RES may receive public funding (grants covering up to 20-40% of the capital expenditure, tax exemptions and subsidies covering labor costs). The deadline for applications was the end of 2010.

In May 2010, the Parliament passed a new law defining the future schemes of support for RES and introducing the following main changes: i) increase of feed-in tariffs in the absence of financial support, in particular for installations located on previously non-interconnected islands, if they have self-financed their own submarine cable ; and ii) possibility of developing off-shore wind projects solely under Build-Operate-Own concessions granted by the State.

In August 2010, the Environment and Energy Ministry published a consultation document about a tendering procedure for geothermal power generation, with a view to discovering new geothermal fields.

The NREAP, submitted to the European Commission, sets a target of about 39.8% for the share of renewables in gross final electricity consumption.

Italy

The main mechanism supporting RES in Italy is the Green Certificates scheme, which was introduced by Legislative Decree 79/1999 (the so-called "Bersani Decree"). The scheme requires producers and importers of conventional electricity to surrender Green Certificates (GCs), which give evidence of electricity generation from RES. The number of GCs to be surrendered is calculated by applying the mandatory quotas (6.05% and 6.8% for 2010 and 2011, respectively) to the conventional electricity generated and imported in the previous year. GCs may be traded bilaterally or in the market managed by Gestore dei Mercati Energetici (GME). The trades are based on a reference price, i.e. the sale price of the GCs owned by Gestore dei Servizi Energetici (GSE). This price was equal to about € 112/MWh (net of VAT) in 2010. Moreover, in the 2009-2011 period, GSE may – at the request of the producer – buy back the GCs pertaining to the 2008-2010 period at a price equal to the weighted average price of the GCs traded in the market in the same period (this price was equal to € 89/MWh in 2010). For installations of less than 1 MW, the Ministerial Decree of December 17, 2008 introduced an all-inclusive feed-in tariff as an alternative to GCs. The previous rules do not apply to PV and solar thermodynamic installations: for PV installations, the support scheme is based on feed-in tariffs ("Conto Energia") and its validity was extended until May 2011 under the Ministerial Decree of August 6, 2010; for solar thermodynamic installations, the feed-in tariff is defined by the Ministerial Decree of April 11, 2008.

The legislative decree which transposed Directive 2009/28/EC substantially revised these schemes. The decree provided, among others, for the replacement of the Green Certificates scheme with an auction mechanism for installations of over 5 MW and with feed-in tariffs for smaller ones. The new provisions will apply to installations which will go into operation from 2013 on. The only exception to this date concerns the support for PV installations, for which a new Ministerial Decree will be issued within April 2011. This decree, which will update the support scheme in the light of the recent developments of the sector in Italy, will produce its effects as early as in May 2011.

Finally, in July 2010, the Italian Government transmitted its NREAP to the European Commission in accordance with Directive 2009/28/EC, which sets a 17% binding target of renewable energy in national gross consumption to be achieved by Italy by 2020. Taking into account the effects of other energy efficiency measures on final consumption, the NREAP sets a target of about 29% for the share of RES in gross final electricity consumption.

Romania

The scheme for support of RES in Romania was introduced by a law of 2005, then confirmed in 2008. The scheme is based on GCs, which are issued over a period of 15 years to all eligible installations. Electricity suppliers are required to purchase GCs according to a mandatory quota which is periodically updated. In July 2010, some amendments were made to the scheme (Law 139/2010). Among them, it is worth mentioning: i) the progressive growth of the mandatory quota from 8.3% in 2010 to 20% in 2020; ii) a higher penalty for non-fulfillment of the obligation; iii) the assignment of two GCs per MWh of wind power produced until 2017 (one GC afterwards) and six GCs for photovoltaic generation.

The NREAP, submitted to the European Commission, sets a target of roughly 42.6% for the share of RES in gross final electricity consumption.

Spain

Renewable power producers have access to a "special regime" and may choose one of two feed-in schemes:

> all-inclusive tariff (including the electricity price), which is technology-specific and inflation-adjusted;
> premium on top of the electricity market price (with minimum and maximum limits for the sum of the two components); this premium, too, is inflation-adjusted.

As regards PV installations, Royal Decree 1578/2008 distinguished between two specific categories of solar installations (integrated and ground-mounted) and established an appropriate registry into which the installations must be entered in order to receive the support. The decree specifies four time-windows per year, during which applications for registration ("convocatorias") must be lodged. The applications are accepted until reaching a predetermined capacity ceiling. The support is an all-inclusive feed-in tariff (i.e. including the electricity price), which varies depending on the ratio of the registered capacity to the capacity ceiling of the previous "convocatoria".

Royal Law Decree 6/2009 created a new administrative registry, with which new installations falling under the special regime (except PV ones) must be registered in order to receive the support. Furthermore, the decree defines a maximum capacity threshold which may be supported and the basic mechanism ("first come first served") under which the incentive is granted.

In November 2010, Royal Decree 1565/2010 established a new remuneration for PV installations; the main change was an extraordinary reduction with effect from the second "convocatoria" in 2011. Furthermore, in December 2010, Royal Law Decree 14/2010 introduced urgent measures to redress the tariff deficit; for PV installations, the measures included a decrease in the number of hours of operation eligible for support.

As to wind farms and solar thermal installations, Royal Decree 1614/2010 (published in December 2010) modified the following main aspects: i) for both types of installations, definition of a maximum number of hours eligible for support (the remaining hours will be remunerated at market prices); ii) for wind farms, temporary decrease of the applicable premium by 35%; iii) for solar thermal installations, abolition of the premium+market price option for the first year of operation.

The NREAP, submitted to the European Commission, sets a target of approximately 40% for the share of RES in gross final electricity consumption.

USA

The US has no tariff-based RES support scheme at federal level. The large majority of the States adopted mandatory quotas for electricity suppliers (Renewables Portfolio Standard - RPS). The quotas are associated with transferable certificates, which give evidence of compliance with the obligation. To meet their obligation, suppliers hold auctions for entering into long-term (10-15 years) contracts of purchase of certified electricity. The Recovery Plan, ratified by President Obama on February 17, 2009, provides, among others, for specific RES support schemes, including incentives for investments (Investment Tax Credits - ITCs), the extension of the applicability of the Production Tax Credit (PTC) to 2012 for wind farms and to 2013 for geothermal plants, upgrades of hydro plants and biomass plants. All the proposals concerning the implementation of a federal-level RPS system were shelved. In December 2010, the extension of Section 1602 (Cash Grants) of the American Recovery and Reinvestment Act – allowing plants commissioned in 2011 to benefit from the support – was approved.

Brazil

A program of support for wind, mini-hydro and biomass installations (Proinfa) was introduced in 2002 and revised in 2003. The program had set a target of 3,300 MW of new capacity from RES to be reached by December 2008. The target was achieved and a new program (Proinfa 2) was expected. Failing the new program, the Government introduced a federal system of wind capacity auctions. The first auction, held at the end of 2009, assigned 1,800 MW of wind capacity to be installed under a 20-year contract of supply of the generated electricity.

In July 2010, the Brazilian regulator held some auctions for hydro, wind and biomass sources, during which 2,892 MW of installed capacity were allocated. The duration of the contracts depends on the source covered by the auction (15 years for biomass, 20 years for wind, 30 years for hydro).

Chile

The law of promotion of RES (Law 20257) was passed in 2008. The law defined a mandatory quota and introduced a mechanism of transferable certificates. At present, the target of generation from RES, to be reached in 2024, is equal to 10%.

In the last months of 2010, the Commission of Energy Resources examined the assumption of revising the above target, by replacing it with 20% by 2020. The debate is under way and the text is being examined by the Senate (then by the Chamber of Deputies).

Mexico

RES plants are supported through feed-in tariffs. On June 22, 2009, the Comisión Reguladora de Energía (CRE) circulated the draft regulation of the law on promotion of RES, which was finally published in the Diario Oficial de la Federación on September 2, 2009. At present, the secondary legislation implementing the frame-law is being approved, while the Secretaría de Energía (SENER) and CRE are preparing the related technical rules. In March 2010, CRE approved the "Contrato de Interconexión para Centrales de generación de energía eléctrica con energías renovables o con generación eficiente y sus anexos", defining the contractual conditions between the power company and alternative generators for electricity transmission services. Official publication of the document is awaited.

Energy efficiency

The EU's Action Plan for Energy Efficiency, published in 2006, intends to realize the European energy-saving potential and to maintain Europe's position as one of the most energy-efficient regions in the world. The measures and initiatives envisaged in the plan are focused on energy efficiency in view of cost reductions. To this end, the European Commission adopted a new action plan, involving measures to achieve a possible target by 2020. In December 2010, the European Parliament published a guidance resolution for the European Commission's plan, which was published in March 2011. The plan places emphasis on the need to adopt measures in the government and building sectors, to apply the Best Available Techniques (BATs) in the heat & power generation sector and to explore the possibility of making authorizations for new plants conditional upon the use of combined heat & power generation technologies. In 2013, the Commission will review the progress made by Member States towards the target of reducing primary energy consumption by 20%. If the review shows that the target is unlikely to be achieved by Member States, the Commission will consider proposing a binding target. The following paragraphs outline the regulatory provisions on energy efficiency issued in 2010 in some of the countries where Enel operates.

Italy

Support for end-use energy efficiency is based on the energy efficiency certificates scheme (introduced by the Ministerial Decrees of July 24, 2004). Under the scheme, electricity and gas distributors are required to achieve end-use energy savings, certified by energy efficiency certificates (TEE). These certificates may be traded bilaterally or in the regulated market. Each certificate entitles to a tariff contribution whose value is established by Autorità per l'Energia Elettrica e il Gas (AEEG - the Italian electricity and gas regulator). With its Decision EEN 18/10 of November 22, 2010, AEEG set specific primary energy-saving targets for the year 2011. For Enel (Enel Distribuzione and Deval), the overall energy-saving target exceeds 2.6 Mtoe. With its Decision EEN 17/10 of November 18, 2010, AEEG updated the tariff contribution for energy efficiency certificates, setting a value of € 93.68/toe for 2010. This value is based on the yearly trends of the average electricity and gas rates for household customers and of the prices of gas-oil for transport. On January 30, 2011, AEEG concluded its Consultation 43/10 about the revision of the technical and financial rules implementing the energy efficiency certificates scheme. The consultation was aimed at identifying major corrections of the scheme, made necessary by the structural deficit of certificates in the market.

Spain

The Spanish Government submitted its NREAP to the European Commission on June 30, 2010. Under the energy efficiency scenario outlined in the NREAP, final consumption of energy will be decreased by about 13%. The Spanish Government intends to finalize legislative instruments in support of this scenario (two bills: "Ley de economía sostenible" and "Ley de eficiencia energética y energías renovables") and, in particular, introduce tax breaks for energy efficiency initiatives. The "Proyecto de ley para la economía sostenible" confines itself to measures for cutting demand by 20% by 2020 with respect to the trend scenario; no details have yet been given for the electricity sector. Conversely, the "Proyecto de ley de eficiencia energética y energías renovables" refers to promotion of combined heat & power generation and provides that the Ministry of Industry, Tourism and Trade shall set energy-saving and efficiency objectives and minimum requirements for new plants; reduction of grid losses is very likely to be included among the objectives.

Russia

A federal law (261-FZ) on energy efficiency was enacted on November 23, 2009. This law creates a legislative, economic and organizational framework which encourages energy savings and energy efficiency increases.

Other environmental legislation

On December 17, 2010, Directive 2010/75/EU "on industrial emissions (integrated pollution prevention and control)" was published in the Official Journal of the European Union. The directive gathers the provisions of seven existing directives, revisiting the legislation on integrated pollution prevention and control (IPPC Directive), as well as on large combustion plants, incineration of waste, volatile organic compounds and titanium dioxide.
Member States will have to transpose the new directive within the next two years. The central element of the new directive is the requirement for industrial installations to adopt the Best Available Techniques, as described in the sector-specific BREFs (Best Available Techniques Reference Documents; the part of these documents concerning large combustion plants will be revised and updated in

the course of 2011). This significantly limits the possibility for Member States to grant derogations (except in exceptional cases) taking into account the technology used, the geographic location of installations and the actual local environmental conditions. Pre-defined mechanisms of exemption from the BREFs will apply to plants with a short residual lifetime.
By 2015, the Commission will explore the possibility of introducing EU-wide minimum requirements, i.e. emission standards not to be exceeded by any plant releasing emissions into the atmosphere.

In Italy, in the course of 2010, numerous amendments were made to the technical environmental legislation. First of all, a waste tracking system ("SISTRI", Ministerial Decree of December 17, 2009, as subsequently amended and supplemented) will replace – with effect from June 1, 2011 – the current system based on hard-copy documents. Each operator involved in the waste cycle (except private citizens) shall be equipped with information systems enabling the ecological field team (NOE - Nucleo Operativo Ecologico) of the Carabinieri to real-time monitor all the stages of the process, from production to final disposal, and to take action in case of wrongdoings. Enel Produzione, Enel Green Power, Enel Distribuzione, Enel Ingegneria e Innovazione, Enel Servizi are registered in Italy with the above system as producers of special waste.
Legislative Decree 152/2006 (consolidated text of environmental laws) underwent numerous changes. In particular, its part II (VIA-VAS-AIA) now incorporates provisions on the Integrated Environmental Authorization (previously contained in Legislative Decree 59/2005, repealed) in addition to those on the Environmental Impact Assessment and the Strategic Environmental Assessment; in this way, the three processes can thus be better coordinated. Also part IV (waste and rehabilitation) of the decree was amended (transposing Directive 2008/98/EC on waste) by modifying the definitions of "by-product" and "end of waste" (formerly "secondary raw material"); these modifications are expected to streamline the management of ash and gypsum produced in coal-fired thermal plants (now falling under the aforesaid categories). Penalties for non-fulfillment of the SISRI obligations were also introduced. Other modified parts of the decree are as follows:

> soil and water conservation, as a result of the transposition of Directive 2000/60/EC on water resource quality, with the consequent reorganization and coordination of the prior applicable provisions;
> air protection, with the revision of provisions applicable to industrial installations (e.g. definition of installation, use of fuels) and residential/commercial ones;
> environmental damage, as a result of the transposition of Directive 2004/35/EC on environmental liability, with the repeal of the prior applicable provisions.

EN28 Environmental criticalities

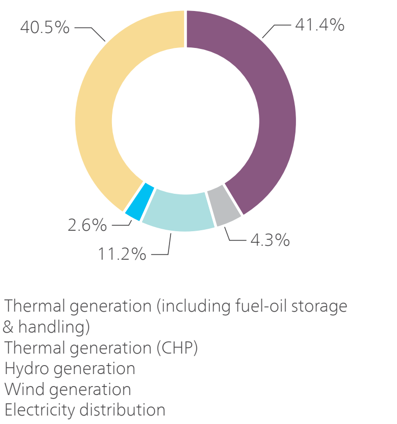
Environmental criticality means the rejection of, opposition to or complaint about the impact deriving from the operation of installations (power plants, grids, substations, buildings, etc.). This position is expressed – for obvious reasons – by a third party feeling disturbed, damaged or threatened by present or future installations. Environmental opposition translates into public or private initiatives, which may involve significant costs owing to denied authorizations, suspensions of works, modifications of installations, etc. Examples are administrative measures, letters before action, written protests (direct or through the press), actions by mass media, as well as verbal complaints (when local complaint desks or offices are available). Each protest concerning the same installation corresponds to a different criticality. The criticality ceases with the end of the circumstances generating it. In any case, environmental litigations are excluded from environmental criticalities.
The use of the most rigorous and advanced organization and management measures cannot avoid the occurrence of environmental criticalities, which originate from various factors, including the excessive emphasis that the media place on some issues, thus inducing particular expectations among communities.

To manage the criticalities involving electric & magnetic fields in Italy, Enel Distribuzione issued guidelines (http://www.enel.it/it-IT/doc/reti/enel_distribuzione/LineaGuidaDPAaiSensiDM290508.pdf) with a view to simplifying and harmonizing the method for determining the first-approximation clearance of its installations (simplified procedure to compute the buffer zone). These guidelines may be used both by private parties upon development of new settlements and by supervisory bodies for verification purposes.

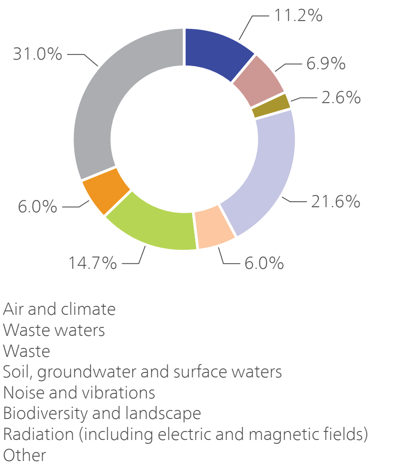
Moreover, Enel, other power line and substation operators and the ISPRA-ARPA system jointly issued additional/explanatory provisions (intended for public administrations and private parties) on the application of the Decrees of May 29, 2008 (approval of procedures to assess and measure magnetic induction and approval of the methodology of computation of buffer zones for power lines – http://www.agenti-fisici.isprambiente.it/documenti-cem/documentazione-tecnica.html).
Thanks to these measures, the risk of occurrence of criticalities connected with electric & magnetic fields and the time of response thereto sharply decreased.
The number of criticalities recorded in 2010 is 116, down by over 30% from 2007. The contraction is significant considering, among others: i) the substantial improvement in the ways in which criticalities are identified in all the countries where Enel operates; and ii) the sharp increase of Enel's assets through the acquisition of Endesa and OGK-5.

The analysis of criticalities by business activity shows that most of them (82%) are due to thermal power generation and electricity distribution (41% each) and that they are followed by those concerning hydro power generation (11%). The analysis by environmental domain indicates that the majority of them fall under the "other" heading (31%) and that they are followed by those

Environmental criticalities
as of Dec. 31, 2010 (by business activity)
Total: 116



Environmental criticalities
as of Dec. 31, 2010
(by environmental domain)
Total: 116



regarding soil, groundwater and surface water (22%, mostly protests against the operation of the Maritza East 3 power plant), biodiversity and landscape (15%, protests in Brazil against the impact of distribution grids and hydro power plants), air and climate (11%, mostly protests against the operation of the Maritza East 3 power plant).
The following is a description of the criticalities, grouped by type, and of the measures taken.

Flooding due to the operation of hydro plants in Italy.
Verification of the damage by the insurance company

Finding of abandoned or polluted material in areas outside plants in Italy (Brindisi, Mercure) and Bulgaria (Maritza).
Rehabilitation, even when the cause is not associated with the activity of Enel

Public opposition to construction of some hydro plants in Chile (project for the Aysen dams) and Colombia (Quimbo dam project), also due to the planned flooding of land areas.
Relations with stakeholders

Press articles against the presence of some plants in Italy (Leghorn, Mercure, Piombino).
Relations with stakeholders and power-plant open-house initiative

Impact of the power grid on biodiversity and landscape in Brazil and Colombia (logging of trees).
Request for authorization, payment of charges and reduction of logging

Impact on the avian fauna caused by wind farms in Greece (Koutsoutis and Agios Kyrillos) and impact on fish fauna caused by hydro power generation in Brazil (Braço Norte).
Activity of biodiversity monitoring and conservation

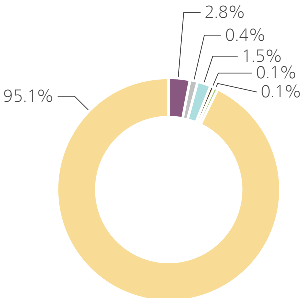
Soil remediation and verification of emergency measures taken (Sulcis and Porto Scuso) by supervisory bodies.
Implementation of remediation program

Concerns and notices about electric & magnetic fields from power grids, especially in Argentina and Italy.
Verification of compliance with applicable limits via monitoring surveys

Noise produced by wind farms in France (Beauséjour) or by power grid transformers in Argentina (Alberdi and Villa Crespo substations).
Noise monitoring and control plans

Notices or administrative measures issued by competent bodies concerning the operation of thermal plants in Italy (Torre Nord) and Bulgaria (Maritza), hydro plants in Brazil (Bagagem) and Guatemala (El Canadá, Matanzas and San Isidro), distribution grid in Romania (station of Militari) and Peru (substations of Huacho and Torre).
Provision of documents giving the necessary clarifications and specific actions

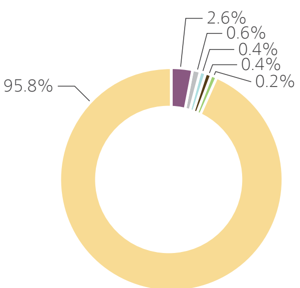
Environmental litigations pending as of Dec. 31, 2010 (by business activity)
Total: 1,295



EN28 Environmental litigations

The civil and criminal proceedings described below are only those where Enel was sued or prosecuted and those which arose from third parties' appeals seeking the quashing of administrative judgments in favor of Enel (**passive** litigations).
As of December 31, 2010, Enel had 1,295 pending judicial proceedings, most of which (about 95%) related to its electricity distribution grid. With respect to 2009, these figures reflect a more complete reporting process in the various countries where the Group operates.
The analysis by environmental domain shows the dominance of litigations connected with biodiversity and landscape (67%). The other judicial proceedings involve the following environmental domains: 16% electromagnetic fields pertaining to the power grid (in spite of compliance with the applicable limits, and

Environmental litigations initiated in 2010 (by business activity)
Total: 531



- Thermal generation
- Thermal generation (CHP)
- Hydro generation
- Geothermal generation
- Nuclear generation
- Electricity distribution

related to the fact that the population, especially in Italy, is particularly concerned about this aspect); 2% soil, groundwater and surface waters; 1.5% air and climate; 1.3% waste; 1.4% noise and vibrations; 1% waste waters. Finally, the litigations falling under multiple headings and classified as "other" amount to 10%.

The following table summarizes the main litigations.

Authorizations
Alleged lack of authorizations for: i) thermal power generation in Italy (Bari, Mercure-Reggio Calabria, Porto Tolle-Rovigo, Torre Nord–Rome, Santa Barbara-Arezzo); ii) construction of some distribution lines in Spain (Canary Islands); and iii) hydro power generation in Brazil (Cachoeira Dourada).

Depositions
Alleged damage to the environment or to property caused by emissions into the atmosphere from plants in Italy (Brindisi, Leghorn, Mercure-Reggio Calabria, Panarea-Messina, Porto Tolle-Rovigo, Torre Nord-Rome, Porto Empedocle-Agrigento), in Slovakia (Nováky, Vojany) and Argentina.

Waste
Waste management without authorizations in thermal power generation in Italy (Brindisi, Fusina-Venice, Genova, Porto Marghera-Venice, Mercure-Reggio Calabria), in Spain (Salinas) and Argentina.

Water use
Alleged damage to groundwater caused by the operation of plants in Italy (Brindisi, Porto Scuso-Carbonia Iglesias).

Releases into waters
Exceedance of limits of releases into waters in power generation in Italy, both thermal (Brindisi, Porto Tolle-Rovigo, Porto Marghera-Venice) and hydro (Sondrio) and in thermal power generation in Spain (Salinas) and Argentina.

Noise
Noise and vibrations due to thermal power generation in Italy (Montalto di Castro-Viterbo, Panarea-Messina, Presenzano-Caserta) and in Chile.

Electromagnetic fields
Electromagnetic fields associated with the distribution business in Italy, Spain and Latin America. Enel Distribuzione and Endesa are involved in various proceedings requiring the relocation of portions of the power grid or the change of its mode of operation on grounds of alleged damage induced by the installations.

Radiation
Appeal against the penalty inflicted for exceedance of limits of radioactive releases from the Ascó plant in Spain.

Damage from fires
Alleged damage from fires caused by the distribution business in Spain (Catalonia).

Hazardous substances
Presence of asbestos in power generation in Italy, both thermal (Termini Imerese-Palermo) and hydro (Lucca).

Damage to the environment
Alleged damage from pollution in hydro power generation in Colombia (Muña basin).

Damage to flora and fish fauna
Alleged damage to flora and fish fauna associated with management of minimum in-stream flows, sediment flushing out and removal in hydro power generation in Italy (Bergamo, Vittorio Veneto-Treviso), Brazil (Cachoeira Dourada), Colombia and Mexico (El Gallo) and in thermal power generation in Russia (KGRES).

Damage from flooding
Alleged damage from flooding caused by hydro power generation in Chile (Pangue).

Damage to vegetation
Damage due to cutting of vegetation in electricity distribution in Colombia.

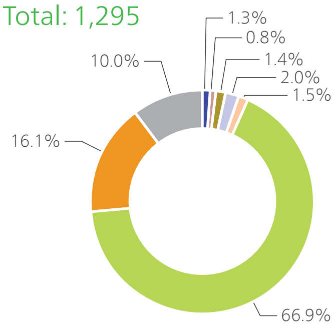
Geothermal risk
Inadequate risk management in geothermal activities in the United States (Stillwater, Salt Wells).

Proceedings in 2010

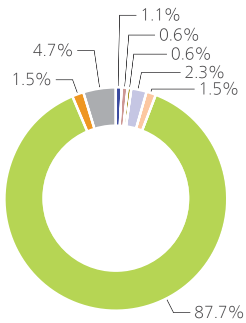
531
new

469
ended

Environmental litigations pending as of Dec. 31, 2010
(by environmental domain)
Total: 1,295



Environmental litigations initiated in 2010 (by environmental domain)
Total: 531



- Air and climate
- Waste waters
- Waste
- Soil, groundwater and surface waters
- Noise and vibrations
- Biodiversity and landscape
- Radiation (including electric and magnetic fields)
- Other

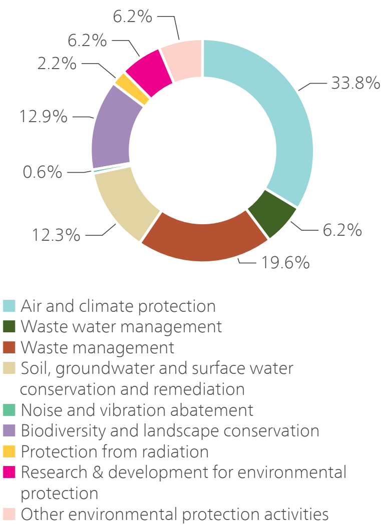
For most of the pending litigations, outcomes favorable to Enel are expected. Only a limited number of litigations might have adverse outcomes and negative effects of unpredictable extent; therefore, they have not been included in the "Provision for litigations, risks and charges" of Enel's Consolidated Financial Statements 2010. The consequences might range from compensation for damages to costs to be incurred for modifying installations or due to their temporary unavailability.
The following is the monetary value of environmental penalties.

€ million	2010	2009	2010-2009
Monetary value of environmental fines	0.058	0.060	-36.7%

Environmental commitment

EN30 Financial resources

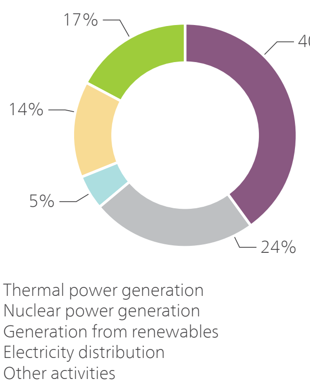
Overall environmental investments in 2010
(by environmental protection activity)
Total: € 353 million



Enel records its environmental expenditure (investments and current expenditure) according to a classification system based on the criteria adopted by Eurostat and Istat [(1)] (the latter being the Italian Statistical Institute). Under these 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.

(1) The criterion in point is recognized as a reference standard by the United Nations. It differs, however, from the criterion of GRI EN30, under which current expenditure in 2010 amounts to roughly € 564 million, since it also includes *the current expenses for purchasing greenhouse gas emission permits*, as well as *amortization and depreciation charges*. In contrast, under Eurostat's criterion, the latter items are regarded as *other separately recorded expenses*, which do not contribute to environmental protection expenditure.

Financial allocations for environmental protection as of Dec. 31, 2010
(by business activity)
Total: € 773 million



Group's financial allocations for environmental protection in 2010

€ million	Investments	Current expenditure	Total
Thermal generation (including fuel handling & storage)	113	197	310
Nuclear generation	24	160	184
Generation from renewables	20	18	38
Electricity distribution	83	26	109
Other activities (including mines and extracting activities)	113	19	132
Total	**353**	**420**	**773**

EN26 Investments

The most significant investments on **thermal plants** were as follows:

> major improvements to SO_2, 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 plants);
> installation of new low-NO_X burners;
> revamping and remediation of some tanks for fuel-oil storage & handling and upgrades of passive protection systems (containment basins in fuel storage areas and fire prevention systems);
> transport and storage of gypsum and ash;
> renovation and modernization of systems for treating liquid releases (desulfurizer drains, waste water and sewage water);
> new systems for monitoring and analyzing flue gases;
> characterization of contaminated sites, planning/design 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.

Investments on **renewable** energy installations were as follows:

> 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 trashracks of intake structures;
> noise abatement in installations and replacement of noisy generators;
> construction of infrastructures to safeguard 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.

€ 113 million
Thermal generation

€ 24 million
Nuclear generation

€ 20 million
Generation from renewables

€ 83 million
Electricity distribution

The main investments on **nuclear plants** were as follows:

> retrofitting of tubings/pipings to protect the subsoil from water containing radioactive tritium;
> asbestos removal;
> program of minimization of radioactive waste;
> program of minimization of radioactive emissions;
> waste water management;
> research & development for environmental protection.

Investments on **electricity distribution** installations were as follows:

> 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 in place of bare conductors in medium-voltage lines in areas of low population density; extra costs for underground cables in place of overhead cables in low-voltage lines in the above areas; extra costs for underground cables in place of bare conductors in high-voltage lines, whatever their location.

EN26 Current expenditure

The current environmental expenditure of 2010 is almost entirely attributable to electricity generation.

The main items of expenditure, divided by business activity, are as follows.

Thermal generation

- > industrial clean-ups connected with plant operation (handling and removal of liquid releases and by-products)
- > delivery of coal ash to waste operators
- > analysis and characterization of waste
- > maintenance of flue-gas desulfurization and environmental monitoring systems
- > maintenance of crystallizers and waste water treatment systems
- > environmental restoration

Electricity distribution

- > waterproofing and clean-up of accidental oil spills
- > analysis of liquid releases
- > waste management
- > environmental training & education of personnel

Nuclear generation

- > protection from radiation
- > environmental restoration
- > radioactive waste management

Generation from renewables

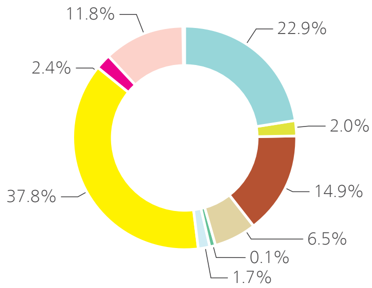
- > monitoring of groundwater
- > waste management
- > maintenance of septic tanks
- > reforestation
- > noise monitoring surveys
- > programs of prevention of pollution from chemical substances (geothermal activities)
- > qualitative analysis of waters used
- > removal of sediment from trashracks
- > fish restocking
- > maintenance of hydraulic structures to keep them efficient and without risks to the environment

The above expenditure includes (in part as investments and in part as current expenditure) the **research** items shown (in € million) in the pie chart beside the text.

Other items of expenditure accrued in financial year 2010 (not explicitly allocated to environmental protection and thus separately recorded) are as follows:

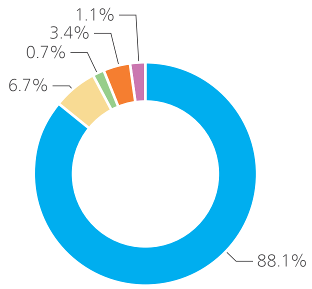
- > € 80 million (at Group level) – purchase of carbon dioxide emission permits to cover the deficit between allocated emissions under the EU-ETS (Directive 2003/87/EC) and actual emissions;
- > about € 223 million – purchase of Green Certificates to cover the deficit and comply with the green quota obligation.

Current environmental expenditure in 2010, excluding extra fuel costs
(by environmental protection activity)
Total: € 389 million



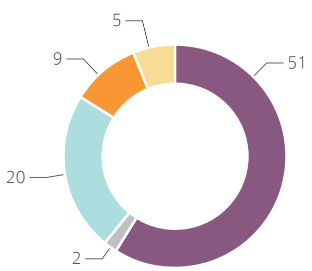
- Air and climate protection
- Waste water management
- Waste management
- Soil, groundwater and surface water conservation and remediation
- Noise and vibration abatement
- Biodiversity and landscape conservation
- Protection from radiation
- Research & development for environmental protection
- Other environmental protection activities

Current environmental expenditure in 2010, excluding extra fuel costs (by business activity)
Total: € 389 million



- Electricity generation
- Electricity distribution
- Support activities
- Mining activities
- Other activities

Financial resources allocated to research as of Dec. 31, 2010
(by business activity)
Total: € 87 million



- Thermal generation
- Nuclear generation
- Generation from renewables
- Other activities
- Electricity distribution

EN18 Climate strategy

Enel recognizes the centrality of the fight against climate change among its responsibilities as a large global energy operator and has long initiated actions to cut down greenhouse-gas emissions in all the countries where it operates.

Compliance with the obligations imposed by the European Emission Trading Scheme (EU-ETS) is one of Enel's main priorities. Enel's commitment is driven by a long-term vision. In fact, Enel's Chief Executive Officer joined Eurelectric's initiative, under which 60 companies are 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 greater efficiency, development of new technologies and reliance on the market of emission rights.

Enel is thus working on a broad range of short- and long-term options in its different areas of activity. Its strategy rests on five pillars:

> **use of the best available technologies:** the commissioning of new high-efficiency and low-emission plants reduces the environmental footprint of the thermal generating mix;
> **development of zero-emission sources:** renewables and nuclear are bound to acquire an increasingly significant role in the generating mix;
> **energy efficiency:** the programs concern both grids (in particular, development of smart grids) and final customers, so as to stimulate a change in consumption patterns, also through beyond-the-meter services and promotion of electric mobility;
> **research & innovation:** growing commitment to innovative technologies for solar energy, carbon capture & storage, smart grids, electric mobility;
> reduction of emissions with **projects 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.

For this purpose, in 2010, Enel set up a new organizational unit, which integrates the competences of Enel and Endesa and which employs over 40 persons in 6 countries. The unit is in charge of coordinating the Group's strategies of compliance with the EU-ETS obligations, managing and developing the portfolio of CO_2 credits in all the relevant markets.

With respect to 1990, the base year of the Kyoto Protocol, the Group's specific CO_2 emissions were down by 37% (1990: 618 g/kWh).

Prospectively, Enel will continue to reduce emissions and, in the short term, to partially cover its obligations with international emission credits. In the longer run, Enel expects even more substantial reductions of emissions when (presumably from 2025 on) its zero-emission generating capacity becomes available on a larger scale.

Such a long-term development plan calls for a regulatory framework providing stable signals, capable of steering important and growing investments towards low-emission technologies. To this end, Enel is committed to providing its contribution to national and international climate policy-making *fora*, so that the most adequate solutions may be found.

Clean Development Mechanism, Joint Implementation and voluntary initiatives

The Clean Development Mechanism (CDM) and Joint Implementation (JI) are two of the three flexible mechanisms envisaged in the Kyoto Protocol.

As of December 31, 2010, the registered CDM and JI projects totaled 3,061. These projects will enable developing countries to displace over two billion tonnes of CO_2 emissions into the atmosphere by 2012. About 85% of these initiatives are privately funded. In accordance with European directives, the companies covered by the European Emission Trading Scheme (EU-ETS) may, within certain limits, count the emission credits accrued from CDM projects towards compliance with their targets. The use of these flexible mechanisms has been a successful experience for the Group; today, Enel and Endesa are among the key players of the global CO_2 market. It is also thanks to these projects that the Group succeeded in:

> achieving environmental targets at the least cost (result being equal, the marginal cost of abatement measures in developing countries is lower than in developed ones);

> transferring technologies to developing countries, thereby contributing to climate change mitigation measures.

The Group's portfolio includes 105 direct-participation projects. Considering also the projects in which the Group participates through carbon funds, the CO_2 emission abatement potential is equal to roughly 200 million tonnes in the 2005-2020 period; as much as 87% of this potential comes from already registered projects. Most of the initiatives were taken bilaterally between Enel-Endesa and the host country. With a view to diversifying the implementation and performance risks of the individual projects, the Group also invested in some funds, whose expected contribution in terms of credits amounts to about 13% of the total.

Most of the projects in the current portfolio are located in China, where the Group found fertile ground thanks to the Sino-Italian Cooperation Program (SICP), started in 1999 between the Italian Environment Ministry, on one hand, and the State Environmental Protection Administration (SEPA) as well as other Chinese institutions, on the other hand. The program has the purpose of fostering sustainable development projects in China by leveraging, among others, the technologies provided by Italian companies which are active in the energy sector and in air, water and landscape conservation. The program made it possible to timely reach local institutions and easily identify the best project opportunities. In China, the portfolio of Enel-Endesa includes 79 projects of electricity generation from renewables (hydro and wind), abatement of industrial gas emissions and efficiency improvements in some large factories. Other projects, located in India, Africa and Latin America, rely on the following: hydro and wind power generation, abatement of emissions of industrial gases, biomass and methane destruction.

The reductions of greenhouse gases (GHGs), achieved by the Group with these initiatives and certified by the United Nations Framework Convention on Climate Change (UNFCCC) in 2010, amount to 8.6 million tonnes of CO_2-equivalent. This figure is divided as follows among the technologies used in the CDM projects:

> 5.4 Mt - abatement of emissions from industrial gases;
> 2.1 Mt - generation from renewables (hydro and wind power);
> 1.1 Mt - other technologies.

As to the JI mechanism, the Group's portfolio comprises 7 projects in Uzbekistan and Ukraine and 32 indirect-participation projects in the European Union, Russia, Moldova and Ukraine.
The details of all the projects in which Enel and Endesa act as project participants are available on the UNFCCC website (starting from page http://cdm.unfccc.int/Projects/index.html). Enel is also focusing on the voluntary carbon-footprint market for a wide range of activities.

Enel Energia (with the technical support of Enel's Carbon Strategy unit) organized an all-inclusive, green, zero-CO_2 energy sales campaign involving, among others, the neutralization of CO_2 emissions associated with the process through the cancellation of Verified Emission Reductions (VERs).

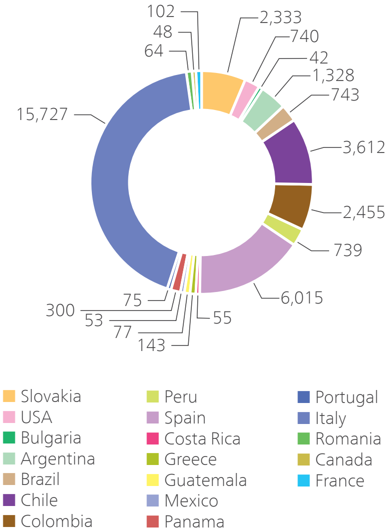
Companies like Enel, which strongly believe that innovative GHG emission reduction initiatives can improve life on the planet, may now neutralize emissions from social events, energy sales campaigns and other types of business. For instance, Enel took the initiative of neutralizing emissions from its 2010 campaign of sales of electricity to residential customers and small and medium enterprises. Moreover, DNV developed a certified methodology for neutralizing emissions from internal and external events, e.g., in 2011, the Carbon Forum North America (organized by the International Emissions Trading Association - IETA) and Jovanotti's tour.

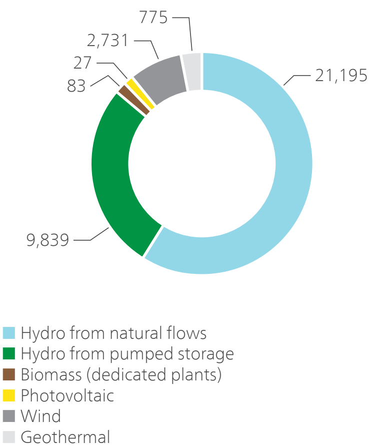
With this objective in mind, Enel created a new brand, CO_2 NEUTRAL, which identifies its carbon-neutral services and emphasizes its constant commitment to the fight against climate change.

EN6 Renewables

Generating mix as of Dec. 31, 2010

Total: 34,649 MW





Renewable energy sources (RES) are one of the main strategic levers that the energy industry can and must use to curb CO_2 emissions into the atmosphere and, at the same time, cover energy demand. Their potential is growing both quantitatively and technologically. Electricity generation from renewables (RES-E) is among the key choices that Enel has made, not only to adequately safeguard the environment, but also to make its generating mix more competitive. Biomass, wind, solar (photovoltaic and thermal), geothermal and hydro are the energy sources on which Enel decided to invest, becoming one of the leaders of the sector. To boost its activities of development and operation of new RES-E plants, Enel set up a dedicated company: Enel Green Power. In 2010, with a net maximum capacity of over 6,000 MW in Europe and in the American continent, Enel Green Power generated over 20 billion kWh. The company – a leader in the world, with a well-diversified technological mix all over the international arena – plans to consolidate its position of advantage thanks to an ambitious program of investments and a pipeline of projects which will double its net maximum capacity by 2014.

In 2010, the company's net maximum renewable capacity was up by 1,221 MW thanks to the commissioning of wind farms in Bulgaria, France, Greece, Italy, Romania and Spain, hydro plants in Latin America, Greece and Spain, photovoltaic plants in Italy and Greece, geothermal plants in Italy and biomass-fired thermal plants in Spain.

Considering also the medium-large hydro plants managed by the companies of the Group (Enel Produzione in Italy, Endesa in Europe and Latin America and Slovenské elektrárne in Slovakia), the net maximum capacity of RES-E plants all over the world is equal to over 34,000 MW, i.e. about 36% of the overall capacity of Enel's generating mix. With this mix, Enel generated a total of about 87 billion kWh from RES in 2010, displacing over 60 million tonnes of CO_2 emissions into the atmosphere.

Among the strategic lines that the Group pursues in order to grow in the sector of renewables, mention is to be made of:

> adopting a balanced growth policy, by investing in the different technologies and geographic areas in its portfolio and maximizing returns thanks to an optimum mix of technologies and regulatory frameworks;

> maintaining an optimum level of profit, by achieving excellence in the operation of installations, acquisition of competitively-priced machinery and technologies, with priority to technological innovations and a targeted and flexible choice of investments;

> positioning in the solar technology sector, by pursuing an integration strategy, namely by producing panels in joint venture with Sharp and ST Microelectronics;

> pursuing technological innovation, by monitoring emerging technologies, conducting pilot tests on technologies close to the commercial stage, and singling out other technologies with high growth potential on which to invest.

The following are some prominent initiatives taken by Enel Green Power:

> participation in the Desertec Industrial Initiative, a project of deployment of renewables in desert areas through cooperation between Europe, North Africa and the Middle East. The planned solar and wind plants will generate renewable electricity which may, among others, be carried to Europe via a high-voltage interconnected power grid. The target of the project is to cover 15% of the electricity requirements of Europe and a substantial portion of those of producing countries by 2050, with estimated investments of € 400 billion. Under the plan, 20 GW of renewable capacity will be installed by 2020;

> agreement with ANB (Italian association of beet growers) to acquire a 15% holding in Terrae, a company with the mission of reconverting and leveraging the beet-growing/sugar-manufacturing sector to roll out projects of power generation from biomass; Enel is expected to acquire a controlling stake in the companies which will be set up with the purpose of implementing initiatives with a capacity of over 1 MW;

> agreement with CAI (Italian agricultural *consortia*) concerning wide cooperation in agro-energy projects for development of biomass-fired plants.

EN5 Energy efficiency

Enel's lines of actions in this area are as follows.

> **Use of the best available technologies**: progressive conversion of Enel's generating assets towards a mix (thermal, nuclear and renewable) using increasingly efficient technologies (e.g. high-efficiency coal plants, nuclear EPR, innovative RES plants, renewable energy storage).

> **Smart grids**: with the dissemination of electricity generation from RES in mini or micro systems, today's power grid, conceived to distribute energy unidirectionally, will turn into a smart grid, capable of: i) managing a high number of distributed systems of generation (especially from RES); ii) optimizing the use of storage systems; iii) interfacing with advanced end-use management and electric-vehicle recharging systems; and iv) improving its overall efficiency.

> **Beyond-the-meter services**: "Casa Enel" (Enel Home), a project aimed at developing value added services for efficient household energy management.

> **Power-driven mobility**: development of an integrated mobility model, giving strong impetus to deployment of electric vehicles for private and business use and increasing end-use energy efficiency, thus helping cut emissions into the atmosphere.

> **Behavioral changes**: sizeable energy savings may be achieved through actions of energy awareness among customers and personnel members. The use of environmental management systems facilitates the systematic implementation of these initiatives.

The most important industrial initiatives are shown in the table below. For other actions, see the "Research & innovation" paragraph further on in this chapter and the preceding "Environmental management systems" chapter in this section.

Country	Type of action	Description
EUROPE		
Bulgaria	Reduction of heat rate in the Maritza East 3 thermal plant	Maintenance of constant values of boiler blow-down heat; use of heated water from units in operation to start up other units; reduction of the consumption of auxiliaries and feedwater and recirculation pumps, by shortening their operating time; system for measuring steam temperature after the turbine and immediately detecting leaks; new system for condenser clean-up, identifying thermal efficiency decreases and then removing micro-organisms from surfaces; increased efficiency of the turbine.
Italy	Increased efficiency of Enel Distribuzione's power grid	Installation of new (HV/MV and MV/LV) substations on the grid, with rationalization and optimization of the lower-voltage grid; reduction of average grid length and load, as well as of losses. Renovation of MV and LV power lines, by replacing existing conductors with other conductors of larger cross section to reduce energy losses (proportional to the resistance and square of the current): on MV power lines, replacement of old offtakes or 16-mm^2 sections of overhead lines with conductors or overhead cables of larger cross section; on LV power lines, replacement of 16- or 25-mm^2 bare copper conductors with 35-mm^2 overhead aluminum cables. Under the 2011-2013 development plan, about 30,000 MV/LV transformers will be installed; these transformers will reduce losses: i) by an estimated about 30% on average under no-load conditions, ii) by an estimated 10% on average under on-load conditions; the reduction coefficient takes into account the original oversizing of transformers with respect to the load at which they are operated.
	Grid operation	Careful management of the configuration of the grid (in particular, the MV grid) may significantly decrease the power dissipated in conductors through the Joule effect. Enel Distribuzione is adopting advanced systems to monitor the grid, operate switching points in remote mode, compute and simulate electrical data both on and off line. These systems will make it possible to achieve the above goal, while satisfying other operating constraints (often of a priority nature).
	Structural actions to connect renewable power installations to the distribution grid	Enel Distribuzione entered into agreements with the Ministry of Economic Development and the Regions of Calabria, Campania, Apulia and Sicily to invest (by 2014) a total of € 123 million in upgrades of existing systems and in the installation of 8 new HV/MV substations in Apulia, 10 in Sicily, 6 in Campania and 7 in Calabria.
	Fusina hydrogen-fired, combined-cycle thermal plant	The plant (net maximum capacity: 16 MW) has an overall electrical efficiency of 41.6% and uses 1.3 tonnes of hydrogen per hour. It consists of a gas-turbine unit (net maximum capacity: about 12 MW), equipped with a new combustion chamber. The combustion chamber is designed to be fired with hydrogen and generate very low NO_x emissions. The flue-gas heat is used to produce steam, which is fed to the existing coal-fired plant in order to generate about 4 MW of additional net maximum capacity.
	Reduction of heat rate in the Brindisi sud thermal plant	In unit 3, replacement of the rotors of the low-pressure turbines with other rotors with improved last-stage 43" blade profile to increase mechanical efficiency by up to 15.4 MW vs. previously installed turbines.
	Reduction of heat rate in the Pietrafitta thermal plant	Replacement of gas-turbine unit burners.
	Efficient use of water resources by the Cuneo hydro Business Unit	Improvement of the Lemie plant to conform to hydro power lease requirements. A study is under way to use the residual head of the flows intercepted by existing hydro plants for the Sampeyre mini-hydro plant.
Portugal	Reduction of heat rate in the Pego thermal plant	Monitoring of the consumption of auxiliaries and of the thermal efficiency of the plant to detect improper consumption.
Romania	Increased efficiency of the power distribution grid	Modernization of LV and MV power lines; replacement of conventional conductors with twisted cables; increased cross section of MV-line conductors; modernization of satellite substations with introduction of low-loss transformers; revamping of metering systems and installation of smart meters.

Russia	Reduction of heat rate in the Reftinskaya thermal plant	The project of modernization of unit 5, which began on November 15, 2010, will be completed at the end of 2011. It will increase the capacity of the plant by 25 MW and its efficiency by 3%. The pieces of equipment which are planned to be installed are: new steam turbine, 325-MW generator, modern combustion system and automatic control system.
	Reduction of heat rate in thermal plants	Revamping of cooling-water feed pumps and adjustment of their blade angle; modernization of air preheaters and of the wiring system for lighting; installation of energy-efficient light bulbs; adoption of a condenser ball-cleaning system; optimized consumption of pressurized air.
	Improved distribution of generating output	Utilization of the more efficient units for generation of electricity.
Slovakia	Increased capacity of the Bohunice nuclear plant	Slovenské elektrárne completed its program of modernization and upgrading of its Bohunice V2 nuclear plant, by increasing the gross installed capacity of each of its two 505-MW units.
	Workspace distribution	Workspace optimization in the offices of the Vojani plant.
Spain	Reduction of heat rate in thermal plants	Project of development of the supercritical-bed technology to convert various boilers to firing new types of fuels with a consequent efficiency increase.
	Efficiency of nuclear plants	EPRI (Electric Power Research Institute) nuclear program to achieve operating excellence of nuclear plants.
	Solar thermodynamic	Project of development of new systems using solar thermal energy to generate steam.
	Smart meters	Phasing-in of smart meters to improve the efficiency of and automate electricity distribution grids.
	LATIN AMERICA	
Argentina	Reduction of heat rate in thermal plants	In combined-cycle gas-turbine (CCGT) plants, clean-up of compressors and reheat of exhaust gases from gas-turbine units.
Brazil	Promotion of end-use efficiency	An end-use efficiency campaign yielded savings and reduced peak demand. The campaign involved: replacement of old refrigerators and incandescent lamps; replacement of incandescent lamps in schools and hospitals; improvement of air conditioning systems and installation of solar thermal systems.
Chile	Improved efficiency of hydro plants	In 2010, the generator of one of the units of the Rapel hydro plant was replaced and works were initiated to replace two turbines of the Antuco hydro plant (the program will end in 2011). Expected result: increased efficiency, translating into an additional capacity of 18 MW.
	Reduction of heat rate in thermal plants	Determination of the optimum time for replacement of turbocompressor suction filters (San Isidro and San Isidro 2 combined-cycle thermal plants); identification of the most appropriate clean-up intervals and monitoring schemes for the make-up water system (Bocamina thermal plant).
	Improved distribution of generating output	Monitoring, processing and recording of variables to permit a better and error-free utilization of the generating mix.
	Management of hydro plants	Introduction of remote systems and telecontrol systems. Determination of the optimum time for maintenance and overhaul of machinery.
	Awareness, training & education	Behavioral changes.
	Promotion of end-use efficiency	An end-use efficiency campaign yielded savings and reduced peak demand.
Colombia	Reduction of heat rate in thermal plants	Decreased consumption of make-up water and shortened operating time of pumps; clean-up of condensers.
Mexico	Management of hydro plants	Application of operating-efficiency methodologies in the three hydro plants.
Peru	Reduction of heat rate in thermal plants	Clean-up of compressors in all units.

Policies of efficiency improvement in thermal plants decreased total energy consumption by about 12,095 TJ (2,889 Tcal). This figure results from a decrease of energy consumption in simple thermal plants of about 4,206 Tcal (-38 kcal/kWh * 110,671 GWh) and from an increase of energy consumption in Russian CHP plants of about 1,317,000 Gcal (+29 kcal/$kWh_{eq.}$ * 45,401 GWh). Russian plant efficiency will benefit from: i) the Reftinskaya modernization plan, but only from the end of 2011 (its effects will thus be reflected in the Environmental Report 2012); and ii) the entry into operation, in the course of 2011, of two new combined-cycle plants with an overall net maximum capacity of 820 MW.

Nuclear energy

The role of nuclear energy in Enel's environmental policy

In the aftermath of the incident of Fukushima (Japan) in March 2011, Enel is actively cooperating with institutions, both at European level and in the countries where it operates, with a view to identifying and carrying out adequate safety verifications of in-service plants. The systems that Enel has in place to monitor the operating safety of and inspect its nuclear power plants on a regular basis are aimed at guaranteeing their maximum safety.

Enel regards nuclear power generation as a necessary – but not sufficient – ingredient to effectively pursue its energy and environmental strategy.

At present, the Group has a net maximum nuclear capacity of about 5,330 MW (5.5% of its overall electrical capacity). In 2010, Enel generated about 41 TWh in nuclear plants (14% of its total generation), displacing over 30 million tonnes of CO_2 emissions into the atmosphere.

The rationale behind Enel's renewed interest in and relaunch of nuclear generation in Italy is based on:

> the need to struggle against pollution and climate change;
> strategic considerations of energy independence;
> economic considerations concerning the volatility of prices of fossil fuels, strongly dependent on those of oil;
> political considerations concerning the instability of the main countries which supply oil and natural gas.

Nuclear fuel (uranium) accounts for a small share of the overall generation cost and is a resource which is geographically diversified and generally coming from politically stable countries.

In the past few years, Enel has reacquired nuclear know-how, by relying on specific resources and making targeted investments in Slovakia (Slovenské elektrárne, with 4 reactors in operation – 2 in Bohunice and 2 in Mochovce – and 2 reactors under construction in Mochovce), in Spain (Endesa, with 7 plants in operation) and in France (joint venture with EDF for construction of one European Pressurized Reactor (EPR) in the plant of Flamanville, in Normandy). The EPR is an advanced third-generation reactor, i.e. the most evolved product of the European technology, with a significant improvement in terms of capacity, safety, reliability, use of fuel, waste management processes and useful lifetime of components.

This technology enables to reach the required level of generation with a limited number of plants, a substantial advantage to a densely populated country like Italy.

Enel pursues other international initiatives: in Romania (participation in consortium which is looking forward to winning the contract for the doubling of the Canadian-technology Cernavodă plant) and in Russia (agreement with Rosatom for development of new plants).

Nuclear safety and radioprotection

The term "nuclear safety" refers to actions undertaken to prevent nuclear incidents and minimize their consequences. The Nuclear Technical Area/Nuclear Safety Oversight (NSO) unit represents Enel's interface with national and international nuclear safety bodies. The NSO is in charge of independently monitoring and maximizing the safety performance of the Group's plants, in line with international best practices, by continuously improving the nuclear safety culture among the organizational units of the Nuclear Technical Area.

Radioprotection (health protection against ionizing radiation) is a discipline strongly based on biology, physics, technical and natural sciences. It developed in the 20th century, first slowly and then at an increasingly quicker pace. Its purpose is to preserve the health and well-being of workers, members of communities and the overall population, reducing the health risks arising from exposure to ionizing radiation. In line with its purpose, it also deals with environmental protection (radioecology). The Nuclear Technical Area/Radioprotection, Environment and Authorizations unit, which is responsible for laying down radioprotection requirements throughout the life cycle of nuclear plants, interfaces with the competent national and international authorities and bodies; it also carries out structured actions of monitoring, analysis and coordination of radioprotection in the Group's nuclear plants via a Radioprotection Survey Network (RSN).

From the standpoint of prevention, the two disciplines of nuclear safety and radioprotection are, in many respects, complementary: both mitigate (and aim to zero) the radiological impact on the environment and on individuals (population and workers), by relying on different strategies and approaches, e.g.: probabilistic and deterministic incident analysis; best practices and behaviors; dissemination of fundamental knowledge and principles; specific training; capture and recycling of operating experience. Upon incidents, nuclear safety seeks to pinpoint and analyze the root causes, whereas radioprotection assesses the consequent “dose commitments”. Both disciplines define the picture of the event in terms of causes and radiological impacts.

Proper management of nuclear plants

The operation of Enel’s nuclear plants in Spain and Slovakia is in line with the international best practices of the sector. The processes defined in the guidelines of the Institute of Nuclear Power Operations (INPO), the World Association of Nuclear Operators (WANO), the Electric Power Research Institute (EPRI) and the International Atomic Energy Agency (IAEA) are a common denominator for the Group’s companies engaged in nuclear generation.

In the light of the best practices accepted by the nuclear industry in the world, a process-based plant operation model is the soundest and most effective method to guarantee a high level of safety and environmental protection in a sustainable way (also during unplanned plant outages). Among the most important processes of the model:

> management of works;
> reliability of components;
> human performance (human error prevention).

These processes take place according to a continuous-improvement approach, as described in the procedures of certified quality, environment and safety management systems (all the nuclear plants are ISO 9001- and 14001-certified; all the plants of the Group – excluding Almaraz, Garoña and Trillo, in which the Group has no controlling stake – are OHSAS 18001-certified). Problems are detected by analyzing results. Then, solutions are studied and applied in a continuous planning, monitoring, control and action cycle.

Thanks to this practice, all the tools used in the processes (procedures, training programs, etc.), including technical ones (software programs, simulators, etc.) are continuously updated in view of achieving operating excellence.

The key activity underlying continuous improvement is the corrective action program. The processes set out in the program ensure that non-conformities or gaps in activities, documents, services, or conditions having a potential impact on the proper operation of the plant, on the health of the personnel, on nuclear safety or on the environment are readily spotted and redressed.

Experience and feedback sharing is also a key activity that the nuclear industry has carried on in a structured way since the Three Mile Island incident in 1979. In the sharing process, dedicated units or teams analyze and disclose information about events (any deviation from the normally expected operation of the plant) or other operating experiences inside and outside the Company which may be of interest to Enel’s plants. This system also lays the groundwork for communication of internal events to the external world, to the benefit of the global nuclear community, through WANO’s event reporting system.

Management of radioactive waste

Both in Slovakia and Spain, radioactive waste is managed by publicly-owned companies, which are paid from a special fund set aside during plant operation.

> In **Slovakia**, Javys (State-owned company) is in charge of radioactive waste and spent-fuel management and of plant decommissioning.
  Medium- and low-level radioactive waste (decay time: 20÷30 years for low-level and 300 years for medium-level) from nuclear plants in service or under decommissioning (just as radioactive waste coming from research centers, laboratories and hospitals) is conditioned (via vitrification and other processes) and then placed in the national storage facility; this facility, located near the Mochovce plant, has been in operation since 2001. Conversely, for high-level radioactive waste (decay time: thousands of years), including spent fuel, no final geological storage site is available yet. At present, after completing its cycle, the fuel is stored for about three years in special pools (inside the plant) and then delivered to a temporary storage facility near Bohunice. A study is under way for the creation of a final geological storage site, to become operational in about 30 years.

- In **Spain**, Enresa (State-owned company) is responsible for waste management and plant decommissioning.
  Medium- and low-level radioactive waste is appropriately treated and then stored in the final storage facility of El Cabril (province of Córdoba, Andalusia). High-level waste, mostly consisting of spent fuel, is provisionally stored in pools or dry storage facilities at the sites of origin. A study on a centralized, above-ground, temporary storage facility (where high-level waste may remain for 60 years) is being conducted; this facility will adjoin a technological park, a center of excellence for nuclear research & development in the country; in the course of 2010, eight Municipalities volunteered to host the facility, but the selection procedure has not ended yet.

Temporary storage makes it possible to defer decisions about the delivery of the spent fuel to a final geological storage site or about its reprocessing and use in fourth-generation reactors, depending on availability of new technologies.

At any rate, all waste management activities are conducted on the basis of quality standards and in line with the best practices of the sector, ensuring the protection of the environment, of the population and of future generations.

Optimizing performance

In-service power plants undergo programs of upgrading and repowering.

- In Slovakia, Slovenské elektrárne's nuclear share of total electricity generation has grown in the past few years thanks to the adoption of the most advanced technologies, which increased the generation of units 1 and 2 of the Mochovce plant and of the two units of the Bohunice plant.
- In Spain, projects of modernization, with major improvements in environmental performance, are also under way.
  At the Ascó and Vandellós plants, works are being carried out, among others, to decrease waste volumes, to recondition cooling towers and (on the cold core) to reduce dependence on the Ebro river.
  At the Almaraz plant, the program is geared to increase capacity, to retrofit cooling systems and to improve water treatment systems.
  At the Garoña plant, the program includes: treatment of concentrated radioactive sludges; reconditioning of about 3,000 casks to be delivered to the El Cabril facility; and declassification of large, potentially radioactive components.

Future developments: the EPR technology

With regard to future developments, especially in Italy, Enel opted for the EPR advanced third-generation technology. The choice was based on the excellence and uniqueness of the EPR technology, whose evolution benefited from the experience that engineers and operators all over the world (above all,

French and German) gained in over 30 years (and over ten thousand reactor-years) of operation.
The EPR plant (like all other nuclear plants) will generate CO_2-free electricity, thus contributing to the struggle against the greenhouse effect and climate change. The EPR project will also yield significant environmental benefits, thanks to increased efficiency of its thermodynamic cycle (reducing the heat released into the environment, electricity generated remaining equal) and to enhanced protection against radiation. In particular, the collective dose per person will be more than halved with respect to the one presently allowed in the countries of the Organization for Economic Cooperation and Development (OECD).
From the viewpoint of radioactive waste, the EPR technology can decrease the volume of high-level radioactive waste per MWh by 15%, by better using the fuel. Moreover, the EPR is designed to use also mixed oxide fuel (MOX, i.e. fuel containing uranium and plutonium oxides). Therefore, the EPR will use plutonium as a fuel and derive energy from its fission instead of wasting it.
The improved efficiency of the plant results from advances which jointly contribute to a better utilization of resources. The reactor is larger than common PWRs. Indeed, it generates the highest capacity installed so far (1,600 MW) and reduces investment costs by maximizing scale economies. The fuel of the EPR is 5% enriched in uranium 235 vs. 3-3.5% in the previous PWRs.
Larger size and higher enrichment permit to utilize the nuclear fuel more uniformly, and thus more intensely, before replacement.
The presence (for the first time in a PWR) of a heavy neutron reflector, lining the inside of the vessel, "saves" free neutrons, which would otherwise be lost in the vessel, and improves fuel utilization.
The total fuel saving, with the same level of electricity generation, is calculated to be 17%.
In addition, the heavy neutron reflector protects the vessel from radiation, retarding steel aging and thus prolonging the service life of the component.
To improve overall efficiency, the steam generator was equipped with an innovative feature (economizer) permitting to produce steam at higher pressure (78 bar) than in the current PWRs. The plant's thermodynamic efficiency is higher (37%) than the one of second-generation PWRs (30-33%).
The load factor of the EPR reaches more than 92% (compared to 83% for second-generation PWRs), thanks to design solutions which reduce refueling and maintenance outages during operation.
Amongst these solutions:
> shorter time for cooling of the primary circuit, depressurization and opening of the vessel head and restart, with consequent shorter fuel replacement outages;
> longer fuel cycles thanks to higher fuel enrichment (5%), thus minimizing refueling outages;
> possibility to enter some areas of the reactor building to carry out maintenance during full-load operation, respecting safety and radioprotection standards.

Training and research

Enel is already active in the following areas:
> specialist on-the-job training: about 60 of Enel's engineers, to be charged with tasks of engineering, construction and operation in connection with the Flamanville 3 project, are being full-time trained by EDF in its sites dedicated to the project;
> research strategy: the Group is using its available specific resources in an integrated way, in particular by coordinating the dialogue between the Spanish and Slovak teams, and is working to relaunch nuclear research in Italy, so as to restore a sound body of knowledge, which is imperative for the new Italian nuclear program.

Furthermore, in 2010, Enel took over the vice-chairmanship of the Sustainable Nuclear Energy Technology Platform (SNE-TP) Governing Board and organized a number of meetings with Italian participants in the platform to coordinate national and international activities in this sector.

To know more about the activities carried out in 2010 in the nuclear sector, go to the parts of the Report concerning Slovakia and Spain.

Research & innovation

Innovation is one of the cornerstones to covering the rising global energy demand in a sustainable way. The challenge that the sector is confronted with is particularly complex: supplying eco-friendly energy at a reasonable cost.
The Group embarked on research programs within the framework of its technological innovation plan (roughly € 700 million in the 2010-2014 period). The plan, which was developed in integrated form with Endesa, has the purpose of enhancing the competitiveness and strengthening the technological and environmental leadership of the Group.

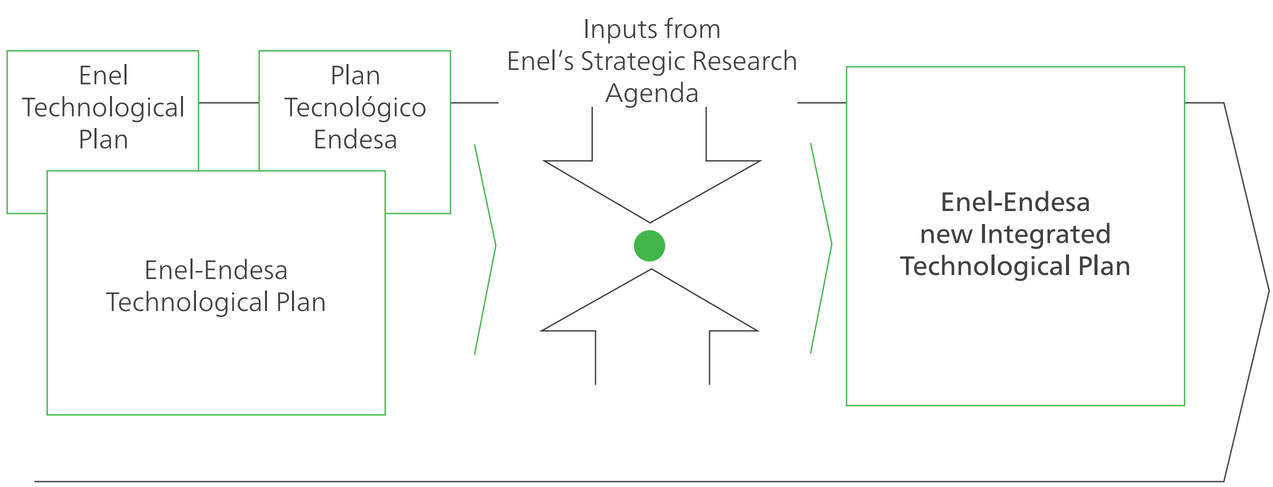
The following are the main projects in which Enel and Endesa are currently engaged.

Carbon capture & storage (CCS)

Enel is at the forefront of the study and demonstration of CCS technologies with a broad range of activities, from carbon capture in the flue gases of coal-fired plants (post-combustion capture) to innovative fossil-fuel oxy-combustion and gasification (pre-combustion capture) and to solutions for geological storage of CO_2.
The following paragraphs outline the activities that the Group carries out in the various technological areas.

Post-combustion carbon capture

The Enel group is involved in different projects of post-combustion and geological storage of CO_2. The largest one includes a pilot facility for carbon capture & storage in Brindisi and a demonstration facility for carbon capture, transport and sequestration in Porto Tolle (Rovigo). For the latter facility, Enel already received a € 100 million financing (at the end of 2009) from the European Energy Plan for Recovery and filed a pre-application with the Italian Government to obtain additional financial resources from the European NER300 funding program for CCS and innovative renewable-energy technology projects. In 2010, Enel: i) completed the construction of the integrated pilot facility (inaugurated on March 1, 2011) at the Federico II plant (Brindisi); ii) put the facility into operation; and iii) began the testing of amine-based carbon capture. This facility, one of the first of its size in Europe and in the world, can treat 10,000 Nm^3/h of flue gases, separating 8,000 t/yr of CO_2. It will optimize the capture process and strengthen Enel's know-how in view of the construction of the industrial-scale demonstration facility (about 250 MWe-equivalent) in Porto Tolle.
In Spain, at the plant of Compostilla, Enel put into operation a 300-kWth pilot facility for amine-based post-combustion carbon capture. The activities in the facility are conducted jointly with those of Brindisi.
At the plant of La Pereda (near Mieres, Asturias), Enel is developing a 1.5-MWth installation to experiment the calcium carbonate looping technology. The installation is scheduled to go into operation in the first half of 2011.



Oxy-combustion

The technology of CCS with combustion in oxygen at atmospheric pressure is mainly developed by Endesa with its demonstration project of Compostilla. The project is conducted jointly with Fundación Ciudad de la Energía (CIUDEN) and Foster Wheeler. This project, too, is funded (€ 180 million) by the European Energy Plan for Recovery. Construction of the pilot facility (30 MWth) is expected to be completed in the second half of 2011.
In Italy, Enel's efforts are focused on evaluating innovative systems of combustion in pressurized oxygen.

Pre-combustion carbon capture

Pre-combustion carbon capture relies on fossil-fuel gasification technologies. Enel concentrated its activities on systems to generate power from hydrogen, a product of the CO_2 separation process. In 2010, Enel continued to fine-tune its hydrogen-fired plant of Fusina (Venice). The 16-MWe plant, inaugurated in July, is the first gas-turbine plant in the world to use pure hydrogen.
Research into coal gasification is carried out at Group level also through the joint participation of Endesa and Enel in the Elcogas plant in Puertollano, Spain.
Additionally, geological investigations began for characterizing two candidate areas (Castile and Aragon) for geological storage of CO_2.

Carbon sequestration

To ensure the feasibility of an industrial solution for reducing CO_2 emissions, Enel's research spans the entire value chain of CCS, including final storage. To this end, Enel completed the characterization and preliminary selection of sites suitable for permanent geological storage of the CO_2 captured by the Porto Tolle demonstration facility. As regards research into biological (algal-based) capture of CO_2 and development of the biorefinery concept, Enel has already built a pilot installation with 500 m^2 of photo-bioreactors at the coal-fired plant of Litoral Almería (Andalusia). In parallel, Enel continued the testing of pilot-scale algal-cultivation solutions for biological carbon sequestration.

Generation from renewables

The growth of electricity generation from renewables (RES-E) is one of the linchpins of the sustainable development strategies of the energy sector. Some forms of generation from renewables (e.g. photovoltaic) are already technologically mature. However, their costs are too high and their efficiencies too low to be harnessed on a large scale; other sources are still under development. Research is thus being focused both on improving existing technologies, in order to lower their costs and increase their efficiency, and on developing new generation concepts.

Enel is engaged in all the main technologies of RES-E generation: from solar photovoltaic (characterization and monitoring of the performance of commercial and innovative systems under real-world conditions) to solar thermodynamic (development of novel plant systems with higher efficiency and lower costs), from wind (prediction of generation) to biomass and other technologies, e.g. innovative geothermal energy, sea or ocean energy, low-cost distributed generation systems for supply of electricity and storage systems in remote locations.

The following are the main activities conducted in 2010 and their results.

Solar thermodynamics

Enel completed the construction and began the experimental operation of its 5-MW Archimedes facility, an innovative solar thermodynamic facility with parabolic troughs based on a technology developed by ENEA. Archimedes, inaugurated in July 2010, is coupled with the existing combined-cycle plant of Priolo Gargallo (Syracuse). With its advanced technology, which uses molten salts as heat carrier, Archimedes (first demonstration facility of the kind in the world) has higher efficiency than plants based on other technologies (e.g. those using diathermic oil) and thus higher generating capability. Indeed, molten salts may reach temperatures of 550 °C. This technology also permits the storage of thermal energy, which may be used to generate electricity even at night-time and under cloudy-sky conditions. In parallel, Enel initiated a feasibility study to develop a system based on the results of the Archimedes project and focused on reduction of the generation cost.
In Spain, Endesa undertook experimental activities of direct steam generation (GDV 500 project, implemented

in Carboneras) in order to experiment key plant components. In 2010, it began tests on the prototype and on energy storage systems based on solids (cement) and Phase Change Materials (PCMs).

Innovative photovoltaics

Enel completed the construction and started the accreditation procedure of its solar laboratory of Catania. The laboratory, which is equipped with advanced systems, can characterize and test the performance of innovative photovoltaic systems and develop new solutions with higher conversion efficiencies and limited costs. The laboratory completed the characterization and comparison of numerous commercial and innovative systems. A research and testing cooperation project was also initiated under a joint venture between Enel Green Power, STM and Sharp.

Innovative geothermal energy

Enel is engaged in the study of a high-performance supercritical organic cycle to build more efficient plants using low-enthalpy geothermal sources. Its Leghorn experimental facility is carrying out experimental work to build a 500-kWe pilot circuit in partnership with Turboden and the Milan Politecnico.

Biomass and Refuse-Derived Fuel

Enel is concentrating its activities on biomass and refuse-derived fuel (RDF) in co-firing with coal. Units 3 and 4 of the Fusina (Venice) plant, where biomass (RDF) and coal are co-fired (5% RDF – 95% coal), were monitored. This activity, which makes part of a European project coordinated by Enel, investigates the behavior of a conventional plant when it is fired with biomass for generating renewable electricity.

Wind energy

Enel completed the collection of operating data on Enel Green Power's wind farms in Italy and is developing a short-term generation prediction system. The purpose of the system is to forecast when and how much electricity can be generated and thus facilitate the management of injections into the grid. Enel also ended the construction of its Molinetto (Pisa) test station, which will characterize small wind turbines, to be used for distributed electricity generation at household customers' premises. The systems to be characterized have already been selected.

Sea or ocean energy

In 2010, Enel completed its pre-feasibility analysis and selection of the most interesting sites. In Europe, Enel identified the potentially most promising geographic areas for the development of this technology, whereas in Chile it has already selected five candidate sites.

Energy storage

Some renewables, such as wind and solar photovoltaic energy, have an intermittent nature. To modulate generating capacity in an optimal way, wind and photovoltaic installations may be coupled with energy storage systems. Currently available energy storage systems should be optimized to increase their performance and diminish their costs and new forms of electrochemical storage or alternative systems (e.g. compressed-air storage) should be evaluated. Also the strategies of utilization of these systems have to be defined in order to maximize their benefits to the power grid.

In this field, Enel concentrates its activities on experimenting systems coupled with renewable power installations and the power grid. In Leghorn, Enel completed the construction of a test facility for characterizing pilot-scale storage systems and began the testing of three promising technologies (vanadium, lithium ions and ZEBRA) by using a generation and load emulator.

In Spain (Canary Islands), Endesa is field testing different storage technologies (sodium-sulfur batteries, zinc-bromine batteries) as part of the STORE project. This integrated Italian-Spanish project will yield important results in terms of technical potential, optimum modes of installation and operation, and profitability of the various storage systems.

Energy efficiency

Smart grids

With the deployment of electricity generation from renewables in mini or micro systems, today's power grid, designed to distribute electricity unidirectionally, will evolve into a smart grid capable of accommodating a high number of distributed systems, especially those based on renewable energy, optimizing the use of storage systems, interfacing with advanced end-use management and electric-vehicle recharging systems and improving its overall efficiency.

In 2010, Enel went on with its program of development of smart grids, as part of the European ADDRESS project, of which Enel Distribuzione is the leader and coordinator. The project is expected to give rise to a new model of infrastructure, including new network concepts which can actively manage distributed generation, as well as load balancing and management systems.

Interesting insights and experiences on this front may come from the Malaga Smart City project. In 2010, the project led to the installation of the first about 2,500 smart meters and to the launch of projects of public lighting based on the LED technology. The power line communication (PLC) network and the automated MV and LV grids are already up and running.

Beyond-the-meter services

In this area, Enel went on with its "Casa Enel" (Enel Home), a project aimed at developing value added services for efficient household energy management. In particular, it completed preparations for a pilot scheme of beyond-the-meter services to customers.

As part of activities to develop integrated solutions (including generation, storage and grid management systems), Enel embarked on the Navicelli project. The project, funded by the Tuscany Region, has the purpose of developing and testing new systems for managing the heating and power grids of a service- or industrial-sector energy district.

Power-driven mobility

Another important contribution that Enel gave to environmental protection in 2010 is the deployment of zero-emission mobility, i.e. the electric car. Its power-driven mobility program is expected to create an integrated mobility model, giving strong impetus to the dissemination of electric vehicles for private and business use, increasing end-use energy efficiency and helping slash emissions into the atmosphere. In 2010, the "e-mobility Italy" project kicked into high gear. The project is the result of a partnership with Daimler-Mercedes, which started in 2008 and which led to design and development of intelligent recharging systems for both private and public car parks (home stations and public stations) in 2009.

Under the project, 100 "Smart electric drive" cars will be supplied to customers in Rome, Pisa and Milan and 400 Enel's recharging stations will be rolled out in case-study cities. In 2010, the first cars were delivered, the first recharging systems went into operation and offerings of energy and recharging services for the customers of this pilot project were activated.

Additionally, Enel entered into cooperation agreements for developing similar projects with other car manufacturers (Renault-Nissan, Piaggio, Citroën) and began studies for the design of a recharging infrastructure with innovative services dedicated to fleet operators.

Enel also concluded important frame agreements for developing sustainable mobility with Poste Italiane (the first experimental project is kicking off in Pisa) and the Emilia-Romagna Region (with the involvement of the cities of Bologna, Rimini and Reggio Emilia, where pilot projects will be launched). As regards electric mobility in Spain, Endesa actively participates in the Movele governmental project and signed agreements with leading producers and distributors of the transport sector (Peugeot, Mitsubishi, Toyota, Piaggio, Bergé) to establish preferential cooperation relationships. The first electric vehicles have already been tested at the Madrid headquarters.

Furthermore, cooperation relations were established with SGTE and Marubeni to develop fast recharging systems, with a plan of further development of different types of pilot configurations in Spain.

Green ports

This project is aimed at offering a line of integrated services to large Italian ports interested in carrying out activities of high environmental value and curbing emissions of pollutants and GHGs from maritime traffic.

The project arose from the analysis of the development and environmental improvement needs of the overall port energy system. It offers a wide array of technologically-innovative and environmentally-benign solutions for low-emission ports, e.g. electricity supply to ships ("cold ironing"), electric transport of goods and persons, high-efficiency artistic lighting, renewable power installations, energy offerings combined with energy efficiency for port buildings.

In particular, under an agreement with the Civitavecchia Port Authority (Italy), Enel completed the project of electrification of one pier of the port to supply electricity to cruise ships.

Moreover, during 2010, Enel signed two new agreements with the La Spezia and Venice Port Authorities and Enel-Endesa entered into an agreement with the Barcelona Port Authority.

Systems to enhance energy efficiency and hold down emissions

Increasing the efficiency of coal-fired plants is crucial both to improving environmental performance and as a factor enabling the development of carbon capture & sequestration technologies.

In 2010, Enel confirmed its strong commitment to and leadership in a European consortium for the study of optimized components for high-efficiency coal-fired plants: in a few years, the development of technologies and materials reaching operating temperatures of up to 700 °C will make it possible to build plants with an efficiency exceeding 50%.

In 2010, Enel finalized its candidacy for participation in a research program (coordinated by VGB PowerTech) to build a pilot facility for testing innovative materials at 700 °C (nickel alloys) at Enel's Fusina plant (Venice). The most important European utilities and the main manufacturers participate in the program.

Furthermore, Enel also continued efforts to develop technologies for holding down polluting emissions, in which it boasts long-standing experience.

> Mercury: Enel continued oxidation tests on SCR catalysts at its pilot facility of La Spezia (Italy) and completed laboratory testing of low-temperature catalytic oxidation of mercury. Lab tests on mercury adsorption in a desulfurizer system are under way.

> Particulates: Enel fine-tuned an integrated system to assess the contribution of coal-fired plants to atmospheric concentrations of particulates in neighboring areas.

> Hydrochloric acid: Enel successfully completed the qualification of a dry sodium-bicarbonate injection process to abate hydrochloric acid in the superheated steam used in its geothermal plants.

> Ammonia: Enel carried out a process analysis to reduce ammonia emissions from the operation of geothermal plants.

Endesa is implementing programs to enhance the environmental efficiency of its conventional plants: efficiency optimization (CFB500 program); development of new amine adsorbent beds to capture CO_2 from flue gases (Novare CO_2SOLSORB); hybrid plasma filtering systems (Novare Plasmacol); and continuous monitoring of emissions of heavy metals, in particular mercury.

EN26 Management of water resources

The management of locally-available water resources is central to biodiversity conservation, as well as to societal development and well-being. High rates of water consumption with respect to local natural flows may cause water stress.

Enel constantly monitors all of its production sites in areas at risk of water scarcity, so as to manage water resources in the most efficient way. Actions are carried out at different levels:

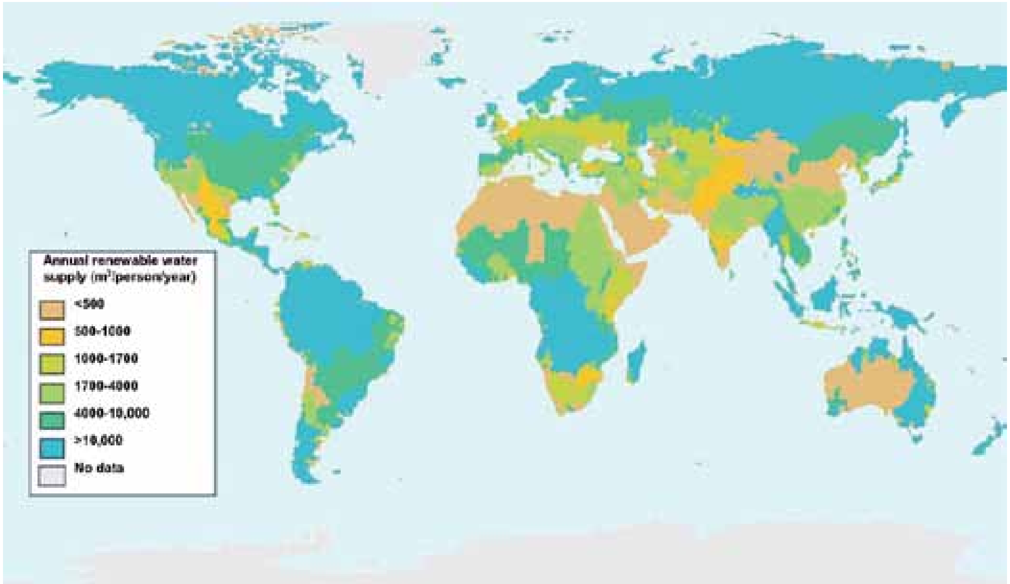
> mapping of areas of potential water scarcity: if the countries involved have an average value of renewable water resources per person lower than FAO's reference value, use is also made of specific software programs (e.g. the one developed by the World Business Council for Sustainable Development) to identify possible production sites located in these areas;

> identification of "critical" production sites, i.e. using freshwater;

> more efficient management, thanks to retrofits of plant systems or processes aimed, among others, at maximizing the use of liquid releases and sea water;

> monitoring of climate and vegetation data in each site.

The above analyses showed that only the steam-cycle and combined-cycle plants of Costanera (Argentina), the Foix plant (Spain) and the Malacas plant (Peru) exploit freshwater resources in areas at risk of drought.



Nevertheless, it is worth pointing out that:

> the Costanera plants abstract water from Rio de la Plata, a river with high discharge throughout the year; water consumption by these plants is limited and may be regarded as negligible from the standpoint of water stress in the region;

> the Foix plant uses five freshwater basins located many kilometers off the coast; this plant is used only to cover peak loads; in 2010, it only operated for 14 hours, thus with a negligible water consumption;

> the Malacas plant uses aqueducts to cover its water requirements for industrial uses (very limited and thus negligible).

Biodiversity conservation

For Enel, biodiversity conservation – one of the strategic targets of its environmental policy – has become a consolidated practice. The Group carries out biodiversity conservation actions mostly on a voluntary basis (adoption of ISO 14001 or EMAS management systems), even if, at times, the national legislation of the various countries affects its strategies, actions and specific plans.
The EU dedicated the year 2010 to biodiversity and a Green Week – the largest annual event on environmental policy organized by the European Commission's Environment Directorate-General – was held in Brussels on June 1-4. The Enel Group was the only company of the energy sector to participate in the event, bringing its experience in biodiversity conservation.
Enel's efforts in this field regard both installations and their areas of influence and consist of preventive and corrective actions, socio-environmental projects and studies, as well as research applied to sustainable development.
The Group has a number of projects in Italy and abroad to support the conservation of ecosystems and natural habitats in the areas where it is present, not only as an industrial operator but as an active protagonist in the local, social, cultural and environmental life, giving its contribution to reducing biodiversity loss.

EN12 In all the countries where it operates, the Group has sites and installations which are located in or close to protected areas (national parks, sites of community importance, WWF sanctuaries, etc.). Enel conducts its activities in full respect of the natural environment and of ecosystems. These ecosystems always have an excellent conservation status and are often actively monitored by the companies of the Group, under arrangements with local, regional, national and international agencies. Data on the high number of protected areas where the Group generates hydro and wind power are posted at http://sustainabilityreport2010.enel.com/en/environment/biodiversity/attention-biodiversity/.
To manage this environmental aspect, Enel carries out prior impact studies, systematically evaluating effects on biodiversity and adopting offsets or improvements to the original situation. The selection of sites for wind facilities always takes into account the need for protecting birds' migratory flows. For power grids, Enel conducts studies to identify the best options in terms of structure, materials, components and geometry of supports and conductors (including studies on the use of overhead cables). For power lines, careful selection of line routes and heights (above the vegetation level) limits the cutting of plants; the use of insulated cables averts the risk of birds' electrocution; and bird diverters installed on conductors minimize birds' collisions and electrocution risks.

Then, during plant operation, the following activities are carried out in sequence:

1. in many sites, by agreement with local institutions, independent third parties conduct land-, river- and sea-based biomonitoring surveys to determine the impact of the activities of Enel on biodiversity and the adequacy of its offsets or enhancements. So far, all the surveys showed no negative impact on biodiversity and the adequacy of the measures undertaken to avoid the negative effects of atmospheric emissions, warm liquid releases, noise and maintenance of distribution line corridors;

2. an environmental management system under the ISO 14001 standard is put in place, by applying the Group's environmental policy and periodically evaluating impacts on biodiversity;

3. risks (including the risk of impact on biodiversity) are analyzed;

4. personnel members are made aware of the possible risk of impact, of the measures to mitigate it and of the Group's commitment to biodiversity.

Operating precautions include the reduction of water abstraction and releases and the mitigation of noise from equipment. Releasing the minimum in-stream flow makes the discharge of ephemeral streams downstream of dams more constant than the natural one, preventing their drying up, at least in some periods. Indeed, regular water flows represent an unquestionable environmental enhancement, preserving the biodiversity of aquatic ecosystems. Basins also act as minor wetlands, which are crucial to avian fauna migration.
Enel's commitment to biodiversity also translates into the conservation of the species included in the Red List of the International Union for Conservation of Nature and Natural Resources (IUCN). This is why, in its sites, Enel continuously monitors the presence of these species to determine the level of risk and the measures to be taken in order to ensure their conservation. These data are available at http://sustainabilityreport2010.enel.com/en/environment/biodiversity/attention-biodiversity/.

EN9 EN11 EN25 The website pages indicated above also provide detailed data on: location of protected areas and streams; streams from which water is withdrawn for hydro power generation and cooling (whatever the volumes of withdrawal); water releases exceeding 5% of the yearly average discharge of the stream or of the impoundment volume.

The following table displays the biodiversity projects initiated or fully implemented in 2010 and those continued or completed in the same year. Institutional stakeholders (agencies, associations, foundations, study centers, universities, etc.) are involved in the projects. Data on the activities are also disseminated through specific publications (Environmental Report, Annual Report, Sustainability Report, EMAS environmental declarations, flyers or documents posted on the Internet).

Enel's projects of biodiversity conservation

IUCN risk of extinction

Extinct		Threatened			At lower risk		
EX	EW	CR	EN	VU	CD	NT	LC

For each project, the following data are generally reported: location/name, content (referring to the species shown in the first column, unless otherwise specified) and, between brackets, the project coordinator/s.

Europe

Bulgaria	*Project*	*GRI KPIs*
Griffon Vulture (*Gyps fulvus*) LC	**Central Balkan national park**: as part of the project for reintroduction of the species, the first 40 raptors from Spain were relocated to the park (2009) and an acclimation aviary was installed to favor their feeding and reproduction. [Enel Maritza East 3, Bulgarian Society for the Protection of Birds of Prey].	**EU13, EN15**
Flora, fauna, ecosystem and landscape	**Maritza East power plant**: to meet its commitment with local authorities, Enel cleaned the Sokolitsa river bed, removing the sediment deposited and the plants grown in the area close to the Obruchishte village (municipality of Galabovo). [Enel Maritza East 3].	**EN13**
	Maritza East power plant: the lake Rozov Kladenetz and Sokolitza river area (1,265 ha) surrounding the plant and their habitats, fauna (especially avian) and flora are designated as protected. Talks are being held with local authorities to develop a conservation scheme, which is likely to put emphasis on water management and greater reuse of liquid releases. Particular attention is paid to water consumption (efficient water management system) and to water releases (chemical, physical and biological treatments) with a view to mitigating their impacts on the lacustrine ecosystem. [Enel Maritza East 3].	
	Maritza East power plant: under a project of restoration authorized by local authorities, Enel completed the replanting of the asbestos landfill (sealing, revegetation and seeding of autochthonous herbaceous species). A belt with 10,000 trees was planted around the second ash settling tank. [Enel Maritza East 3].	

France	*Project*	*GRI KPIs*
Montagu's Harrier (*Circus pygargus*) LC	**Barrois area - Site of Community Importance for bird conservation**: measures of conservation of nesting species (namely, Montagu's Harrier) in cooperation with local farmers (refraining from the fight against rodents and from the use of pesticides), the permanent center for environmental initiatives (CPIE), the hunters of the Aube department, the avian protection league (LPO) and the Ardenne Region (conducting bird surveillance activities).	**EN13, EN15**

Italy	Project	GRI KPIs
White Stork (*Ciconia ciconia*) LC	Cilento and Vallo di Diano national park (Sala Consilina - Salerno): improvement of storks' staging areas, also in view of educational-scientific activities. [Enel jointly with LIPU and WWF].	**EN13, EN15**
Griffon Vulture (*Gyps fulvus*) LC	Sardinia: study and monitoring of the species and of its habitat in the area surrounding the town of Bosa (Nuoro); attention to threats to its survival; awareness actions in schools and among local communities; creation of sighting points and of a nature trail. [Enel jointly with Legambiente].	**EN13, EN15**
European Otter (*Lutra lutra*) NT	Upper Volturno river valley: habitat monitoring and protection; population estimates; demarcation of home ranges to be protected; creation of sighting points and educational signs. [Enel jointly with the Pianeta Terra association].	**EN13, EN15**
Northern Pike (*Esox lucius*) LC	La Casella thermal plant: yearly restocking of 1,500 juveniles in the Po river, as specified in the relevant water abstraction permit. [Enel Produzione].	**EU13, EN15**
Loggerhead Sea Turtle (*Caretta caretta*) EN	Sea turtle rescue center of Brancaleone (Reggio Calabria): development of the center, which deals with rehabilitation and care of injured animals, conducts awareness and education actions and updates the national database. [Enel jointly with CTS, owner].	**EN13, EN15**
	Sea turtle rescue centers of the lake Salso sanctuary (Foggia) and of the Rauccio forest (Lecce): support to the centers, study of habitats suitable for egg laying and youth awareness actions in local schools. [Enel jointly with Legambiente].	**EN13, EN15**
Red Kite (*Milvus milvus*) NT	Mount Amiata area (Mount Amiata, Mount Penna and upper Albegna river valley) – southern Tuscany (Grosseto) – and Gola della Rossa and Frasassi regional natural park – Marche (Ancona): the main purpose of the project is to complete the reintroduction of red kites, already started in the upper Albegna river valley and in the Frasassi park. The project consists of: relocating young red kites from other European countries, e.g. France (Corsica) and Switzerland; taking safety measures on over 40 km of power lines; installing more than 1,200 protections on pole heads (where red kites roost) to eliminate the risk of electrocution; using satellite and VHF tracking of the released red kites; setting up systems for video surveillance of feeding platforms; and conducting a large-scale awareness campaign (publication and distribution of informative material, preparation of an educational trail on the theme of bat protection, two dedicated rooms in the Mount Amiata wildlife park and in the Frasassi park, lectures in schools). A website shows real-time web-cam images of the systems of video surveillance of a colony of troglophile bats and of two feeding platforms used by the red kites; the website will also post maps of the movements of the red kites fitted with satellite radio transmitters. [Amiata Mountain Community of the Grosseto area, Esino Frasassi Mountain Community and Enel Distribuzione].	**EU13, EN14, EN15**
Eel, trout, small trout, cyprinids (various species including those at risk, including Marble Trout - *Salmo trutta marmoratus*) and salmonoids LC	Various sites: restocking of various species of local fishes. [Enel Produzione and Enel Green Power].	**EU13, EN15**
Mediterranean Tapeweed LC	Torrevaldaliga Nord thermal plant: sea-based monitoring of benthic components and of physico-chemical features of the water; monitoring of a Mediterranean tapeweed prairie (1 hectare) planted in previous years; extension of the protected area of the Site of Community Importance to 435 hectares. [Enel Produzione].	**EU13, EN15**
Ecosystem	Jointly with the competent authorities, determination of the optimum minimum in-stream flow to be released into the Serchio and Lima river basins. Monitoring of the Serchio and Lima rivers every six months. [Enel Produzione].	**EU13, EN14**
	In 2010, Enel continued its environmental rehabilitation and restoration of contaminated sites in industrial areas considered to be at high industrial risk. These sites are designated as of "national interest" by Law 426/1998 and subject to the technical rules of Legislative Decree 152/2006. In particular, for thermal plants, Enel: approved the characterization plans for the Assemini and Giugliano plants; undertook emergency groundwater safety and conservation measures in the Piombino and Maddaloni plant areas (adding to the measures already completed in the La Spezia, Fusina, Porto Marghera, Sulcis, Leghorn and Porto Scuso plant areas); completed the planning of environmental restoration and rehabilitation in the Brindisi and La Spezia plant areas; continued its program of environmental restoration in the Priolo Gargallo and Augusta plant areas.	

Italy	Project	GRI KPIs
Marine, freshwater and wetland ecosystems	Porto Corsini plant (Ravenna): monitoring survey of the Pialassa Baiona lagoon, covering a surface area of 1,100 ha. At the end of the reporting period, results were good. [Enel Produzione].	**EU13**
	Priolo Gargallo plant: agreement with the managed nature reserve of the Priolo salt flats (RNO Saline di Priolo) to conserve the wetland. Memorandum of understanding with the Priolo Gargallo Municipality and the RNO Saline di Priolo for environmental education activities (supply of water from the wells of Enel's plant). [Enel Produzione].	**EU13**
	Pietrafitta thermal plant: monitoring of the trophic state of the storage basin water with the methodologies used for developing the register of environmental aspects of the ISO 14001 environmental management system. Enel went on with its program of environmental restoration of the protected area and cultivation of previously restored areas; in particular, measures were taken to control meteoric water flows through corrective maintenance/renovation of collection and channeling systems. Moreover, part of the area used in previous years for fire-fighting drills was environmentally restored. [Enel Produzione].	**EN14**
	Brindisi thermal plant: the Province of Brindisi carries out periodical monitoring of the water body facing the plant. The surveys are based on preliminary bathymetric and geomorphological characterization, subsequent collection of biological samples for biomarker analysis and of sediment samples to determine grain size, carry out toxicity tests and characterize the planktonic component. Finally, the data are processed with Beyond-BACI (Before and After Control Impact) procedures in order to quantify anthropogenic effects. [Enel Produzione].	**EN14**
Fluvial ecosystem	Hydro plants: testing of the effectiveness of minimum in-stream flows on ecosystems. [Enel Green Power, Enel Produzione].	**EU13, EN14**
Flora, freshwater and wetland ecosystems	Santa Barbara thermal plant: air quality biomonitoring surveys via passive sensors (lichens); periodical surveys to measure algal concentration and composition, the Extended Biotic Index and some chemical parameters along the San Cipriano stream. The results of the surveys are forwarded to the local environmental agency (ARPAT) and authorities. [Enel Produzione].	**EN14**
Flora, fauna, ecosystem and landscape	San Francesco forest (Assisi - Perugia): in a 60-ha forested area, Enel cooperates with the Italian environmental fund (FAI) to restore and conserve the forest, by censusing and cataloguing significant botanical species, cleaning the underwood and conservatively pruning trees and shrubs. [Enel SpA].	**EN13**

Portugal	Project	GRI KPIs
Iberian Wolf (*Canis lupus signatus*) VU	Portugal: agreement with local institutions for conservation of the Iberian Wolf. Enel participates in a fund which was created to finance programs of: reforestation of farmland with autochthonous species; maintenance of forested areas; increased availability of food and shelters for prey hunting; reduction of disturbance to the Iberian wolves by introducing banned-hunting areas; promotion and improvement of prey diversity and availability. [Enel Green Power, ACHLI – association for conservation of the Iberian Wolf habitat].	**EN13, EN15**

Romania	Project	GRI KPIs
Stork (*Ciconia ciconia*) LC	Danube: mounting of circular supports on power line towers to favor nesting. [Enel Distributie Dobrogea].	**EN13, EN15**

Slovakia	Project	GRI KPIs
Rainbow Trout (*Oncorhynchus mykiss*)	Conservation of the stream network and of the Rainbow Trout at the High Tatras national park: the project is aimed at removing human threats to the survival of this species, by purchasing and releasing 90% of the fry needed for its conservation, constantly monitoring and regularly cleaning up the streams. [Slovenské elektrárne].	**EU13, EN13**
Golden Eagle (*Aquila chrysaetos*) Lesser Spotted Eagle (*Aquila pomarina*) LC	High Tatras national park: protection, removal of threats, collection of blood samples for genetic analyses and rehabilitation of wounded eagles, monitoring and mapping of hunting grounds, microchip tagging and identification of nesting sites. Enel also undertook a cooperation project with the Tourist Club for educational initiatives. Thanks to projects of cooperation with national parks (implemented in previous years), an increase in the chamois and marmot populations was observed. [Slovenské elektrárne].	**EN13, EN15**

Spain	Project	GRI KPIs
Avian fauna	Aragon: investments were made on infrastructures (medium-voltage power lines of Magallon-Valdeferrín, Ricla-Purroy, Belsierre-Yeba, Fuentes Claras-Bello) to improve the protection of the avian fauna. [Endesa].	**EN12, EN14**
Mollusks	International commitment to research on *Dreissena polymorpha*, an invading exotic species which occurs in various Spanish water bodies. This is a freshwater bivalve zebra mollusk, similar to the common mussels and autochthonous of the Black Sea and Caspian Sea. This non-edible mollusk is known to withstand salty water and to rapidly reproduce and propagate. Fluvial navigation and maritime transport have facilitated the spreading of this species, causing serious economic and ecological effects, including interference with feeding, growth, movement, breathing and reproduction of other species (in particular, mussels and clams). [Endesa].	**EN14**
Osprey (*Pandion haliaetus*) and Black Kite (*Milvus migrans*) LC	Balearic Islands: under the Gesa-Endesa cooperation program, the Environment Ministry and the Government of the Balearic Islands completed 186 projects of conservation (128 in Majorca and 58 in Minorca), aimed above all at reducing collision with power lines. [Endesa Distribución].	**EN12, EN13, EN15**
Avian fauna (chiefly raptors)	Wind power installations may cause impacts on biodiversity due to collisions or disturbances to the nesting of the avian fauna. To avoid or mitigate negative impacts, the avian fauna is continuously monitored in all the plant sites. [Enel Green Power].	**EN12, EN14**
Avian fauna	Andalusia and Extremadura: under the 2008 agreement with the Government of Andalusia (co-funding of the LIFE+Nature and Biodiversity project of conservation and management of special protection areas for the birds of the Andalusian steppe), the European Commission's LIFE Committee selected the project of identification of critical points of birds' collision with and electrocution from power lines. Development of other research projects in conjunction with research centers and public institutions. [Endesa Distribución].	**EN15**
Bonelli's Eagle (*Hieraaetus fasciatus*) LC	Catalonia: monitoring of the Bonelli's eagle population, habitat and conservation status. In 2010, studies were conducted to determine the age, number, settlements and physical conditions of the eagles. 37 eagles were tagged to investigate their rates of dispersion and survival, as well as causes of mortality. [Endesa Distribución].	**EN13, EN15**
Egyptian Vulture (Neophron percnopterus) EN	Canary Islands: study to assess the effectiveness of measures taken in the previous two-year period to limit the risk of collision of the avian fauna with overhead medium-voltage lines in Fuerteventura and Lanzarote. [SEO-BirdLife and Endesa Distribución].	**EN13, EN15**
Flora, fauna, ecosystem and landscape	Andorra, As Pontes and Puertollano mining areas: hydrogeomorphological and landscape restoration to reinstate the original local biodiversity. [Endesa].	**EN13**
	Doñana national park (Andalusia): support to the initiatives of the Doñana 21 foundation for conservation of the natural heritage and maintenance of a wild birds' care center. [Eufer]. Development of a device to prevent avian fauna electrocution. [Endesa].	**EN13**
Flora, fauna, ecological equilibrium and landscape	Ebro-Pirineos and Ibones (small lakes) region: environmental regeneration of the area by removing obsolete installations and their appurtenances, restoring the landscape and recovering the autochthonous vegetation and fauna. [Endesa].	**EN13**

North America

United States	Project	GRI KPIs
Flora, fauna, ecosystem and landscape	Caney River wind plant (Kansas): an environmental plan was launched to promote conservation of the local fauna and grazing land, to preserve important ecological areas and encourage research on new approaches to environmental protection in Kansas. [Enel Green Power jointly with the National Fish and Wildlife Federation].	**EN13**
Fish fauna	Lawrence hydroelectric plant: the new inflatable crest gate of the dam improves fish migration. [Enel North America].	**EN14**
Fish fauna (*Pomoxis nigromaculatus*, *Lepomis gibbosus*)	Ware Shoals hydroelectric plant (South Carolina): by agreement with local communities, dried-up Christmas trees were placed into the lacustrine basin to create fish shelters from predators, sustain algal reproduction and growth and give rise to an ecosystem favoring the reproduction of insects as a food for fish. [Enel North America].	**EN13**

Latin America

Argentina	Project	GRI KPIs
Avian fauna	Arroyito hydro plant: in 2010, Enel continued its program of monitoring and control of third-party access to the lake area lying downstream of the plant. This area is home to migratory birds and thus to be protected. [Endesa].	**EN13**

Brazil	Project	GRI KPIs
Flora	Cachoeira hydro plant: project of restoration of a riparian forest damaged by agropastoral activities in the areas surrounding the storage basin. The forest controls water flows, acts as a filter for sediment and nutrients, reduces landslides and erosion and provides protection and food to aquatic fauna, birds and mammals. In 2010, about 50,000 autochthonous species of trees and shrubs were sown over a total surface of 30 ha in the States of Goias and Minas Gerais. The surface already reforested in previous years, with about 90,000 individuals of typical species of the local savanna, amounts to 54 ha. Additionally, studies are conducted on wild fauna and fish fauna to understand their migration dynamics. [Endesa].	**EU13, EN13**

Colombia	Project	GRI KPIs
Mangroves	Cartagena thermal plant: implementation of the previously announced biodiversity recovery plan concerning the lagoonal mangroves located in the area of the plant (landscape restoration and solutions for dry periods). [Endesa].	**EN13**
Fish fauna	Betania basin: seeding of 360,000 individuals of autochthonous fishes jointly with local authorities and communities. [Endesa].	**EU13**
Flora, fauna and ecosystems	Betania basin: project of conservation, characterization and enhancement of the value of the ecosystems located on the left bank of the Magdalena river. The project, started in 2009, is intended to characterize flora and fauna, make employees aware of its goals, restore the landscape and create a trail for recreational purposes. [Endesa].	**EN13**
	Guavio river hydroelectric basin: take-off of a program of conservation and sustainable power generation to protect water resources, biodiversity and the environment in the area of influence of the basin. Monitoring of the avian fauna and of the quality of habitats to determine the related conservation potential and strategies. Local communities directly participated in the project. [Centro Nacional de Investigaciones del Café and Endesa].	**EN13, EN14**
Wetlands, mangroves and forests	Codensa: planting of 20,000 autochthonous trees in the Bogotá and Tenjo rivers, as a voluntary pledge to offset the company's paper consumption. [Endesa].	**EU13**
Flora	Emgesa: continuing of the program of forest management and supply of vegetal material to the municipalities surrounding the Betania plant. 10 hectares near the Guavio river basin were reforested and local autochthonous species were sown over the land owned by the San Antonio, Tequendama, Betania and Guaca Limonar plants (6,271 trees in total). [Endesa].	**EU13**

Mexico	Project	GRI KPIs
Fish fauna	El Gallo hydro plant: restocking of fish in the basin serving the plant, jointly with local anglers' communities and institutions. [Enel Latin America].	**EU13**

Costa Rica	Project	GRI KPIs
Flora, ecosystem and landscape	Don Pedro and Rio Volcán hydro plants: funding of the activities conducted by the FUNDECOR NGO for conservation of 5,000 ha of forested areas; Enel owns 6.5 ha of this protected area near its two plants. [Enel Latin America].	**EN13**

Chile	Project	GRI KPIs
Coruro (*Spalacopus cyanus*) and reptiles (*Homonota gaudichaudii, Liolaemus lemniscatus, Philodryas chamissonis, Tachymenis chilensis*) EN	Canela wind farm: monitoring of the effects of construction work on the populations of the Coruro, an endemic underground rodent at risk of extinction. In the construction site, to prevent the death of these rodents, specialized biologists induce the transfer of their populations outside the area, by digging holes in their tunnels and disturbing them with noise. [Endesa]. Canela wind farm: in the construction site, reptiles are caught, identified, marked and transferred to safe places. In total, 1,228 individuals were caught and relocated. [Endesa].	**EN13, EN15**
Flora, fauna, ecosystem and landscape	Chilean Patagonia: study of the functioning of the aquatic ecosystem and assessment of the biodiversity value of ponds and lakes in the steppe. [Endesa].	**EU13, EN13, EN14**
	Cooperation with the San Ignacio del Huinay Foundation (created by Endesa and the Pontificia Universidad Católica de Valparaíso): in this area of 35,000 ha, located in the Hualahuié municipality and extending from the Comau fjord to Argentina, the foundation devotes itself to the conservation of the rainforests of the planet and to the study of marine invertebrates (49 new species classified), conducting microbiological investigations on hot springs, flora and fauna censuses and limnological studies of previously uninvestigated water bodies. These activities led to identify very numerous new species and ecosystems in areas of particular interest [Endesa].	**EN15**
Flora	Atacama desert: project of conservation of Incas' crops under agreements with local communities which are aimed at creating new development opportunities and improving their quality of life. [GDN Chile, geothermal energy company].	**EN13**
	Pullinque plant: maintenance of the area (100 ha), reforested with autochthonous species two years ago. [Enel Latin America].	**EU13, EN13**
Flora, ecosystem and landscape	Pullinque and Pilmaquén plants: purchase of 7 ha of land on which environmental restoration activities will be carried out. [Enel Latin America].	**EU13**
Flora (*Baccharis macraei, Chorizanthe paniculata, Erigeron fasciculatus*)	Canela wind farm: offset project involving the reforestation of about 50 ha with 24,000 individuals of autochthonous species in the wind farm area. [Endesa].	**EU13**
Cactus plants	Canela wind farm: project of relocation of cactus plants from some areas of the plant with conservation problems to other areas owned by the company. [Endesa].	**EN14**
Flora	Chilectra: in compliance with the applicable legislation, trees were replanted over an area of 1.19 ha surrounding the Andes substation. The project includes the planting of soil-covering species to mitigate the environmental impact. [Endesa].	**EU13**

Guatemala	Project	GRI KPIs
Avian fauna	Maintenance of corridors near transmission lines over a surface area of about 6 ha. [Enel Latin America].	**EN12**
Flora, ecosystem and landscape	Matanzas/San Isidro and El Canadá/Montecristo hydro plants: reforestation of an area of 5 ha with Oocarpa pines (Pinus oocarpa): the area which surrounds the plants has been heavily deforested by the local population; protection of the ecosystem and of the basins serving the two plants. [Enel Latin America].	**EU13, EN13**

Panama	Project	GRI KPIs
Flora, fauna, ecosystem and landscape NT	Fortuna forest reserve: administration of 19,500 ha of forest, a national protected area with important animal species (large mammals, birds, reptiles, etc.) and vegetal species. Surveillance and patrolling of critical areas to prevent damage to and crimes against flora and fauna; communication to local communities, authorities and representatives (through meetings and brochures) on the most significant features of the area, bans and national legislation on resource management in the reserve; periodical bathymetric surveys to determine the level of siltation of the basin; organization of research activities (starting with biodiversity monitoring in the Fortuna site) with the involvement of national- and international-standing institutes.These activities identified, among others, the presence of near-threatened species, such as the jaguar. [Enel Latin America jointly with the Smithsonian Tropical Research Institute and the National Conservancy Association].	**EN13** **EU13, EN15**

Environmental risk assessment and management

In 2010, the Enel Group embarked on a project to identify, analyze and map the potential risks arising from the operation of its installations in terms of damage to the environment and to its strategy, reputation and financial resources. The project methodology, which gives support to the management in the investment decision-making and planning process, has the purpose of steering all the components of the Group, in the various geographic and technological contexts, towards the best practices of the sector.

The project relied on the direct involvement of environmental experts from the operational divisions concerned, who contributed to defining the approach and criteria of the methodology.

Persons responsible for managing processes directly or indirectly related to the environment carry out risk analyses according to a bottom-up approach. This approach is based on three fundamental steps:

1. inherent risk assessment: assessment of the probability of occurrence of a critical event and of its impact under predefined criteria, assuming no control activities for risk mitigation;
2. control level assessment: assessment of the effectiveness of existing risk management and control activities;
3. residual risk calculation: the residual risk, i.e. Enel's exposure to the risk, is obtained by subtracting the control level from the inherent risk.

The project will be gradually implemented so as to cover all of Enel's sites in a matter of five years. The assessments are updated every year.

In 2010, 46 installations in 10 different countries (Italy, Spain, Chile, Argentina, Colombia, Peru, Costa Rica, Russia, Slovakia and Romania) were assessed:

- 8 coal-fired thermal plants
- 2 combined-cycle thermal plants
- 6 oil/gas-fired thermal plants
- 1 biomass-fired thermal plant
- 14 hydro generation groups
- 1 geothermal generation group
- 1 photovoltaic plant
- 4 wind farms
- 9 electricity distribution sites.

Awareness, training & education

Environmental awareness, training & education initiatives are core elements of the yearly plan for improving the skills and know-how of Enel's human resources. In this report, training & education activities are mentioned with reference to the recipient units, whatever the organizational entity that proposed or manages them. The reported data also concern the support personnel, i.e. personnel members rendering services to multiple units, even if such units are involved in the same industrial business activity; indeed, the environmental responsibilities of an intellectual nature that these personnel members fulfill are assumed to provide support to industrial operations only.

In 2010, Enel developed education modules for its environment-dedicated personnel: in the overall Group, 71,637 person-hours of courses were delivered. Training & education efforts were concentrated in places with installations under construction and with certified environmental management systems. The sharp decrease recorded in 2010 is due to the peak of training & education activities in 2009, which was associated with the construction of the Bocamina II power plant in Chile. The following tables show the person-hours of courses by business activity and geographic area.

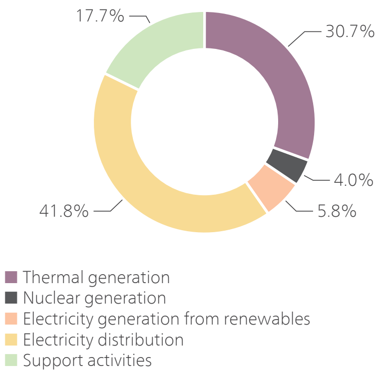
Enel also relies on communication for disseminating knowledge of its initiatives internally and externally.

Its intranet site has a thematic section with CEO's messages, environmental policy, Environmental Reports, data on environmental management systems and environmental procedures issued at different organizational levels. For environment-dedicated personnel, access to the environmental reporting application is provided. Links to the environmental pages of Enel's Intranet and Internet sites are also posted.

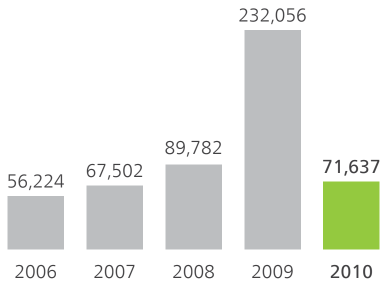
Enel's websites (**http://www.enel.it/it-IT/azienda/ambiente/** and **http://www.enel.com/en-GB/sustainability/environment/**) have a comprehensive section dedicated to environmental themes.

The page gives access to the Environmental Reports (published from 2000 to 2010 and, from 2009 on, also in navigable version) and to links with relevant topics, e.g. the Group's environmental policy, commitment to the fight against climate change and to biodiversity conservation, EMAS and ISO 14001 environmental management systems, renewables, energy efficiency, innovative projects and emission abatement (zero-emission) projects.

Environmental training
& education in 2010
Total: 71,637 person-hours



Environmental training
& education (person-hours)

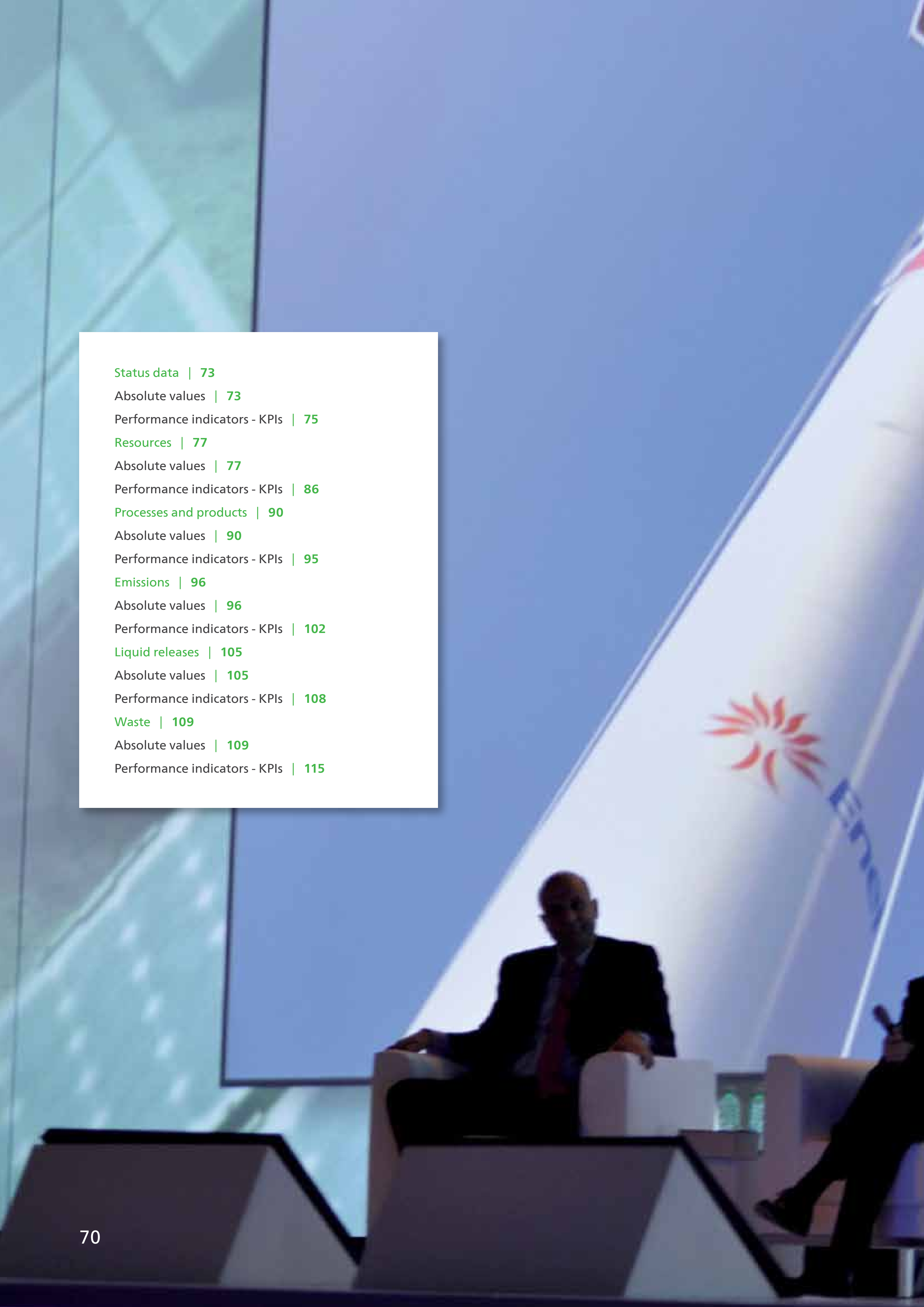


Business activity/line (person-hours in 2010)

Thermal generation (including CHP)	Generation from renewables	Nuclear generation (including CHP)	Electricity distribution	Environmental support activities	
21,979	4,151	2,891	29,940	12,676	71,637

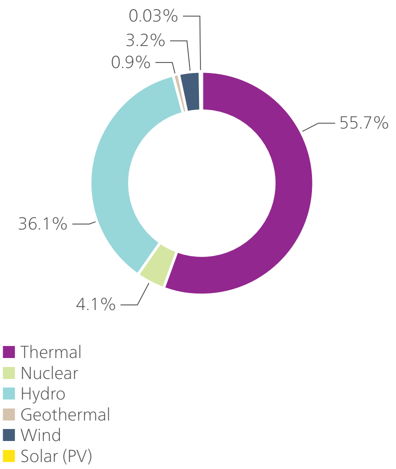
Geographic area (person-hours in 2010)

Italy	Spain	Russia	Rest of Europe	American continent	
18,692	3,808	7,592	21,600	19,945	71,637

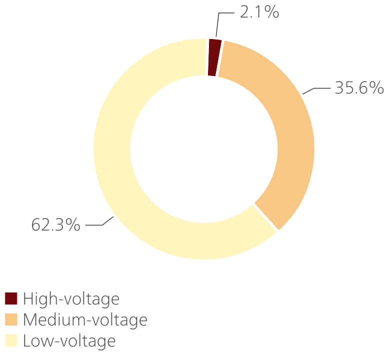


Group’s environmental results

Net maximum electrical capacity of power plants as of Dec. 31, 2010
Total: 85,913 MW



Circuit-length of power lines as of Dec. 31, 2010
Total: 1,810,951 km



Electricity generation (especially thermal) is the activity of Enel which has the most significant effects on and interactions with the environment.
However, this Eco-Balance also takes into consideration the other activities that Enel carries out in the world and quantifies their environmental aspects in aggregated form.

The data of the Eco-Balance are divided into the following four parts (1), each of which shows not only absolute data, but also specific performance indicators:

> status data;
> resources;
> processes and products;
> emissions, liquid releases and waste.

For each item, the Eco-Balance provides and comments on the data regarding the past five years.

To facilitate the understanding and assessment of the Eco-Balance, the following graphs and tables summarize the key data of Enel's installations in the world as of December 31 of each of the years from 2006 to 2010 ("status data").
The status data and absolute values of resources, processes and products, emissions, liquid releases and waste are accompanied by appropriate indicators (ratios between homogeneous or heterogeneous quantities). These indicators express Enel's environmental performance over time, whatever the volume of activities in each year. Details on their nature and commentaries, if any, on their trends are provided.

Details on absolute data and indicators are shown in the datasheets and tables pertaining to each country where Enel is present.

(1) In the tables of this section and in those of the individual countries, the expression "various activities" means a number of activities (not all of which are present in the different contexts) which contribute – albeit to a minor extent – to the following:
> consumption of fuels (in this case, the activities are mining & extracting, fuel storage & handling, geothermal drilling, operation of auxiliary boilers and emergency generating sets in industrial business activities other than thermal generation, service and real-estate management);
> consumption of electricity (in this case, the activities are mining & extracting, fuel storage & handling, gas distribution, service and real-estate management);
> CO_2 emissions (in this case, the activities are mining & extracting, fuel storage & handling, gas distribution, geothermal drilling, operation of auxiliary boilers and emergency generating sets in industrial business activities other than thermal generation, service and real-estate management);
> waste production (in this case, the activities are mining & extracting, fuel storage & handling, gas distribution, service and real-estate management).

Status data

Absolute values

		2006	2007	2008	2009	2010 (1)
Power-generating installations						
Power plants	no.	760	1,172	1,158	1,070	1,112
thermal	no.	53	104	98	102	103
nuclear	no.	-	5	5	5	5
hydro	no.	637	873	858	768	811
geothermal	no.	31	32	32	34	35
wind	no.	35	154	161	155	151
solar (photovoltaic)	no.	4	4	4	6	7
Net maximum electrical capacity	MW	46,045	71,687	70,222	82,916	85,913
thermal	MW	27,472	39,538	38,088	46,046	47,832
nuclear	MW	-	2,441	2,442	3,522	3,514
hydro	MW	17,199	27,122	26,561	30,279	31,033
geothermal	MW	671	678	687	742	775
wind	MW	699	1,902	2,440	2,303	2,731
solar (photovoltaic)	MW	3.88	4.52	4.20	23.9	27.4
Combined heat & power installations						
Power plants	no.	11	12	21	22	22
thermal	no.	9	10	19	20	20
nuclear	no.	2	2	2	2	2
Net maximum electrical capacity	MW	3,341	2,995	11,218	11,283	11,360
thermal	MW	1,701	1,355	9,506	9,521	9,544
nuclear	MW	1,640	1,640	1,712	1,762	1,816
Useful thermal capacity	million kcal/h	681	477	3,198	3,340	3,329
thermal	million kcal/h	319	87.9	2,785	2,876	2,865
nuclear	million kcal/h	361	389	413	464	464
Power lines (circuit-length)						
Total	km	1,179,280	1,571,009	1,586,845	1,785,270	1,810,951
high-voltage	km	24,965	45,023	44,753	38,705	36,882
medium-voltage	km	369,566	536,374	544,795	638,698	645,479
low-voltage	km	784,749	989,613	997,297	1,107,866	1,128,591
Gas pipelines						
Total	km	30,600	30,664	31,765	3,440	-
high-pressure	km	191	58.8	205	1,007	-
medium-pressure	km	11,615	11,766	12,342	1,596	-
low-pressure	km	18,794	18,839	19,219	837	-

(1) For details about changes in assets, refer to the chapters devoted to the various countries where the Group is present.
-: no data due to absence of activities in the year.

		2006	2007	2008	2009	2010 (1)
Mining & extracting activities (2)						
Mining activities						
Mines	no.			8	8	8
coal	*no.*			*5*	*5*	*4*
brown coal	*no.*			*3*	*3*	*4*
Amount of fuels extractable since the start of activities	Mt			60	60	399
Areas occupied by excavations and other activities	ha			2,724	5,351	4,448
coal mines	*ha*			*2,714*	*5,341*	*4,438*
other mines	*ha*			*10*	*10*	*10*
Extracting activities (gas)						
Areas occupied by excavations, drilling and other activities	ha			500	-	-
EN29 **Service & real-estate management** (3)						
Vehicle fleet						
service vehicles	no.		0	14,065	16,185	15,858
special vehicles	no.		0	2,244	2,537	2,164
vehicles for both private and service use	no.		0	1,019	1,244	1,153
Gross real-estate surface area	thousand m^2		1,253	1,749	1,836	2,549

(1) For details about changes in assets, refer to the chapters devoted to the various countries where the Group is present.
(2) These activities have been surveyed since 2008.
(3) These activities have been surveyed since 2007.
-: no data due to absence of activities in the year.

Changes in Enel's assets

In the past five years, Enel has recorded major changes in its assets, which are reflected in the status data.

> In 2006, Enel completed its acquisition of the Bulgarian company Enel Maritza East 3.

> Always in 2006, Enel continued its expansion into the natural-gas distribution business, by purchasing a grid with an about 15,000 customer base in the Italian provinces of Catania, Ragusa and Syracuse.

> In late April 2006, Enel acquired 66% of Slovenské elektrárne, the first power producer of Slovakia and the second in central-eastern Europe, with a generating capacity of roughly 4,600 MW, balanced among nuclear, thermal and hydro.

> In the same year and in 2007, Enel continued to sell part of its Italian power grids to local companies, as per Legislative Decree 79/1999 on rationalization of the electricity distribution business.

> In the course of 2007, Enel acquired important renewable power generation assets in Latin America (Brazil, Mexico and Panama).

> In October of the same year, Enel completed the acquisition of 67.05% of the Endesa Group, the major power producer and distributor of Spain with significant operations in a large part of Latin America.

> In the same month, Enel acquired control of some wind power generation assets located in Greece.

> In June 2008, Enel included its acquisition of a controlling stake in the Russian company OGK-5 in its accounting records.

> In June 2008, Enel acquired a majority holding in the electricity distribution company Muntenia Sud (which then became Enel Distributie Muntenia) in Romania.

> In the same month, Enel sold the companies Viesgo Generación and Viesgo Distribución to E.ON.

> In July 2008, Enel inaugurated its first wind farm in France.

> In the same year, acquisitions of gas grid assets in Italy – especially of the infrastructure of Avisio (Trento) – were dominant over sales.

> In 2009, most of the high-voltage distribution grid in Italy was transferred from Enel Distribuzione to Terna under the agreement signed on December 29, 2008.

> In February of the same year, Enel completed the acquisition of Endesa by transferring some hydro and wind power plants in Portugal and Spain to Acciona, as part of the deal under which Acciona sold its stake in Endesa to Enel.

> In September 2009, Enel sold Enel Rete Gas, which is no longer part of the Group's consolidated assets.

> In 2009, the Enel Group started its operations in Ireland (thermal generation) through Endesa and extended those in Bulgaria (wind generation) through Enel Green Power.

> In the same year, Enel Green Power inaugurated its first two wind farms in Romania.
> In 2010, the gas grid assets in Spain and the high-voltage grid in the Canary and Balearic Islands were sold (consequently, the Group has no longer gas pipelines).

Performance indicators - KPIs

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN29 Land								
LV cable lines								
overhead	% of entire LV grid	52.1	51.5	45.4	43.1	45.5	-12.7	5.6
underground	% of entire LV grid	30.6	29.5	32.7	33.2	33.2	8.5	0.0
Total cable lines	**% of entire LV grid**	**82.7**	**80.9**	**78**	**76.3**	**78.7**	**-4.8**	**3.1**
MV cable lines								
overhead	% of entire MV grid	2.24	2.01	2.05	2.03	2.08	-7.1	2.5
underground	% of entire MV grid	35.9	30.4	32.2	30.5	30.4	-15.3	-0.3
Total cable lines	**% of entire MV grid**	**38.1**	**32.4**	**34.3**	**32.5**	**32.5**	**-14.7**	**0.0**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	67	62.2	60.9	59.1	60.7	-9.4	2.7

EN29 Overhead and underground cables in power lines

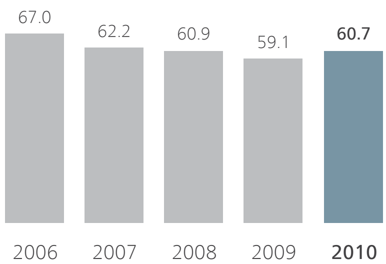
As regards land and landscape protection, Enel pursues two main strategies to mitigate the impact of the construction of new grids and of the revamping of old ones:
> underground cables in low-, medium- and high-voltage lines;
> helically-twisted cables (elicord) in low- and medium-voltage lines. The cable consists of three twisted and insulated phases.

Underground cables are used in built-up areas in place of bare conductors. The use of twisted cables in overhead lines mitigates their overall visual impact because: i) the cable is less visible than three separate conductors; and ii) it can cross forested areas, fully integrating into the vegetation thanks, among others, to its smaller supports.

The percentage ratio of the length of overhead and underground cables in power lines to the total length of power lines expresses the level of mitigation of the visual impact of power lines.

In 2010, this ratio was up by more than 1.5 percentage points on 2009.

Overhead and underground cables in HV+MV+LV distribution lines (% of total length)



EN29 Transport vehicles

The data of the Group's vehicles are shown in the status data table.

The impact of the Group's vehicle fleet is due to fuel consumption and to polluting and greenhouse-gas emissions into the atmosphere (calculated as direct emissions under the "various activities" heading). Enel is trying to mitigate this impact by switching to certified Euro 4 and higher-efficiency vehicles.

Under its ISO 14001-certified or EMAS-registered environmental management systems, Enel assesses the indirect impact caused by suppliers and contractors in the use of transport vehicles, so as to reward companies demonstrating more environmentally-friendly behaviors (e.g., all other conditions being equal, preference is given to ISO 14001-certified or EMAS-registered companies).

EN16 EN17 The following table shows the indirect emissions generated by the transport (scope 3) of coal by sea and by rail, of expendables, waste and some fuels (gas-oil, RDF, biomass) by road, as well as the emissions due to electricity consumption (scope 2, see § "EN4 Primary electricity") in electricity distribution, fuel handling, coal extraction and real-estate management.

CO_2 emissions from coal transport by sea are estimated from the transported quantity (for the years 2006 and 2007, it was equivalent to 100% of the total coal used and, for the years 2008-2010, to 52%), considering Panamax ships with a tonnage of 67,600 t, covering an average distance of 700 nautical miles in 22 days of cruising, with a consumption of 35 t/day of fuel oil and a CO_2 emission factor of 3.2 kg/liter of burnt oil.

CO_2 emissions from railway transport of coal are estimated from the transported quantity (for the years 2008-2010, it was equivalent to 43% of the total), considering trains with a carrying capacity of 1,100 t, covering an average distance of 1,400 km, with a consumption of 6.9 kWh/t every 100 km of travel and Enel's average CO_2 emission factor in the world (390 g/kWh in 2010).

In the case of coal extraction, the emissions of greenhouse gases (CH_4) are calculated on the basis of the emission factors reported in the "2006 IPCC Guidelines for National Greenhouse Gas Inventories". These factors are different for surface mining (1.15 m^3/t) and deep mining (17.5 m^3/t) and multiplied by the tonnes of fuel extracted (50% for surface mining and 50% for deep mining). The 100-year Global Warming Potential (GWP) which has been used (25) is specified in the "IPCC Fourth Assessment Report: Climate Change 2007".

CO_2 emissions due to transport of expendables, gas-oil, solid biomass, RDF and waste are estimated from the transported quantities of raw materials, considering trucks with a tonnage of 28 t, covering an average round-trip distance of 50 km, with a consumption of 1 liter of gas-oil every 3 km of travel and a CO_2 emission factor of 3 kg/liter of burnt gas-oil.

EN16 EN17		2006	2007	2008	2009	2010
Total emissions	**kt**	**2,971.7**	**3,848.8**	**5,625.8**	**6,437.5**	**6,211.6**
Indirect CO_2 emissions (scope 2 EN16)	kt	140	218	220	232	245
Indirect CO_2 emissions (scope 3 EN17)	kt	2,831.7	3,630.8	5,405.8	6,205.5	5,966.6
from transport of coal by sea	kt	533.8	684.2	475.1	543.9	525.1
from transport of coal by rail	kt	-	-	449.2	483.2	440.7
from coal extraction	$kt_{eq.}$	2,288	2,933	4,457	5,151	4,974
from transport of materials	kt	0.7	1.1	2.3	2.2	2.1
from transport of fuels (gas-oil, biomass, RDF)	kt	0.9	1.9	4	4.7	4.2
from transport of waste	kt	8.3	10.6	18.2	20.5	20.5

Resources

Absolute values

		2006	2007	2008	2009	2010
EN1 EN3 Fossil fuels						
Thermal generation						
fuel oil	thousand t	3,690	2,157	2,862	3,104	2,625
	thousand toe	3,649	2,116	2,818	3,045	2,562
HS	*thousand t*	*8.28*	*46.4*	*6.18*	*6.92*	*4.36*
	thousand toe	*7.86*	*44.6*	*5.87*	*6.57*	*4.14*
MS	*thousand t*	*247*	*179*	*310*	*256*	*191*
	thousand toe	*237*	*171*	*300*	*248*	*185*
LS	*thousand t*	*1,597*	*831*	*1,708*	*2,180*	*2,186*
	thousand toe	*1,565*	*798*	*1,679*	*2,137*	*2,128*
VLS	*thousand t*	*1,839*	*1,100*	*838*	*661*	*245*
	thousand toe	*1,838*	*1,102*	*834*	*654*	*245*
gas-oil	thousand t	81.1	551	1,653	1,950	1,612
	thousand toe	82.7	498	1,619	1,995	1,663
natural gas	million m^3	7,343	8,053	10,130	9,146	9,746
	thousand toe	6,228	6,896	8,678	7,862	8,410
technologically captive use	*million m^3*	*4,550*	*5,702*	*8,391*	*7,806*	*8,719*
	thousand toe	*3,849*	*4,886*	*7,187*	*6,725*	*7,540*
of which in combined-cycle units	million m^3	3,760	5,077	7,809	7,257	8,057
	thousand toe	3,175	4,340	6,684	6,255	6,969
non-technologically captive use	*million m^3*	*2,793*	*2,351*	*1,739*	*1,339*	*1,027*
	thousand toe	*2,379*	*2,010*	*1,491*	*1,136*	*870*
coal	thousand t	12,537	16,635	19,998	20,598	17,535
	thousand toe	7,377	9,306	11,328	11,800	10,060
brown coal	thousand t	6,763	7,192	8,382	7,915	9,048
	thousand toe	1,157	1,199	1,548	1,440	1,556
coke-oven gas	million m^3	0	0.002	0.002	0.003	0.009
	thousand toe	0	0.003	0.002	0.003	0.010
Total	**thousand toe**	**18,493**	**20,015**	**25,991**	**26,142**	**24,251**
	TJ	**774,283**	**837,968**	**1,088,172**	**1,094,528**	**1,015,346**

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Thermal generation (CHP)						
fuel oil	thousand t	47.2	55.6	84.4	89.4	62.9
	thousand toe	45.5	52.7	83.2	87	61.2
MS	*thousand t*	*0*	*0*	*55.4*	*59.7*	*50*
	thousand toe	*0*	*0*	*53.6*	*56.4*	*48.4*
LS	*thousand t*	*47.2*	*55.6*	*29*	*29.7*	*12.9*
	thousand toe	*45.5*	*52.7*	*29.6*	*30.5*	*12.8*
gas-oil	thousand t	0.043	0.031	0.030	0.003	0.150
	thousand toe	0.044	0.032	0.033	0.004	0.136
natural gas	million m^3	56.6	38.4	3,764	6,119	6,659
	thousand toe	65.8	54.1	3,192	5,018	5,493
technologically captive use	*million m^3*	*18.1*	*21.4*	*185*	*65.6*	*105*
	thousand toe	*16.7*	*19.7*	*154*	*56.1*	*88.1*
of which in combined-cycle units	million m^3	0.258	0	168	51	88.4
	thousand toe	0.237	0	139	42.5	73.1
non-technologically captive use	*million m^3*	*56.6*	*38.4*	*3,764*	*6,119*	*6,659*
	thousand toe	*49.1*	*34.4*	*3,039*	*4,962*	*5,405*
coal	thousand t	1,093	837	7,936	11,993	13,933
	thousand toe	657	502	3,204	5,073	5,494
brown coal	thousand t	2,036	1,981	2,318	2,308	2,273
	thousand toe	501	505	585	571	575
Total	**thousand toe**	**1,269**	**1,113**	**7,064**	**10,749**	**11,623**
	TJ	**53,142**	**46,598**	**295,774**	**450,042**	**486,635**
Various activities	thousand toe	6.25	25	44.8	56.5	43.2
Grand total	**thousand toe**	**19,769**	**21,152**	**33,100**	**36,948**	**35,917**
	TJ	**827,687**	**885,612**	**1,385,822**	**1,546,937**	**1,503,790**
EN1 EN3 **Hydrogen**						
Thermal generation	thousand m^3	0	0	0	0	3.54
	thousand toe	0	0	0	0	0.881
	TJ	0	0	0	0	36.9
EN1 EN3 **Biomass and waste**						
Thermal generation						
solid biomass	t	5,913	65,427	115,905	223,616	267,666
	toe	1,431	17,458	32,271	70,717	83,211
liquid biomass	t	0	36.9	114	336	350
	toe	0	37.6	115	331	298
biogas	thousand m^3	0	0	0	33,104	37,442
	toe	0	0	0	13,197	14,846
RDF	t	26,997	32,081	22,546	55,235	46,136
	toe	10,931	12,990	9,129	23,027	19,377
Thermal generation (CHP) (solid biomass)	t	403,901	400,458	451,239	411,188	424,854
	toe	89,948	89,181	100,479	91,910	95,706
Grand total	**thousand toe**	**102**	**120**	**142**	**199**	**213**
	TJ	**4,284**	**5,010**	**5,945**	**8,325**	**8,936**

		2006	2007	2008	2009	2010
EN1 EN3 Nuclear fuel						
Nuclear generation	t (discharged)	-	16.2	25.6	79.7	36.4
	thousand toe	-	na	na	6,191	6,040
Nuclear generation (CHP)	t	33	36.6	37.5	36	37.4
	thousand toe	na	na	na	3,727	3,782
Grand total	thousand toe	na	na	na	**9,918**	**9,822**
	TJ	na	na	na	415,258	411,246
EN1 EN3 Geothermal fluid						
Total fluid extracted	thousand t	49,929	62,075	59,371	76,375	93,280
net of reinjected fluids	*thousand t*	*32,985*	*30,364*	*29,855*	*28,462*	*27,486*
Used for electricity generation	thousand t	43,937	55,812	53,130	70,982	87,968
EN4 Primary electricity						
Various activities	million kWh	5.35	127	131	163	175
EN8 Water for industrial uses						
From rivers (including meteoric waters from secondary rainfall)	million m^3	81.4	125	262	326	307
From wells	million m^3	7.27	6.32	11.3	14.5	15.38 (1)
From aqueducts	million m^3	5.84	6.65	8.91	11	8.99
Total abstraction from inland waters	**million m^3**	**94.5**	**138**	**282**	**351**	**332** (1)
From the sea (as-is)	million m^3	12.2	12.1	13	8.60	8.31
From the sea (desalinated)	million m^3	7.17	6.47	7.63	9.30	9.71
EN10 From waste waters (used inside plants)	million m^3	6.35	6.16	15.2	16.9	23.7
Total requirements	**million m^3**	**120**	**163**	**318**	**386**	**373**
for thermal generation	million m^3	70.5	85.1	109	109	101
for thermal generation (CHP)	million m^3	14.3	16.6	62.7	62.1	53.1
for nuclear generation	million m^3	0	24	106	171	175
for nuclear generation (CHP)	million m^3	35.3	37	38.5	40.4	41
for geothermal drilling	million m^3	0.047	0.049	0.007	0.211	0.059
for fuel storage & handling	million m^3	0.045	0.010	0.016	0.051	0.042
for mining & extracting activities	million m^3	0	0	2.64	3.09	2.92
EN8 EN21 Open-cycle cooling water						
For thermal generation (simple and CHP)	million m^3	13,145	11,809	20,166	23,210	23,643
For nuclear generation (simple and CHP)	million m^3	0	433	1,827	2,435	2,988
Total	**million m^3**	**13,145**	**12,242**	**21,993**	**25,645**	**26,631**
Water for non-industrial uses						
Real-estate & service management	million m^3	0	1.32	1.52	4.64	2.68

(1) It includes the amount of water (2.7 million m^3) extracted at the mining sites of Spain and not considered in the Sustainability Report.

		2006	2007	2008	2009	2010
EN1 Expendables						
Resins	t	24	82.5	148	504	276
Hydrazine	t	19.6	79.8	58.3	83.4	68
Carbohydrazide	t	17.7	270	269	296	31.9
Hydrogen peroxide	t	44.5	83.5	46.3	0.231	0.749
Ammonia	t	19,170	22,125	20,127	20,567	15,669
Limestone for flue-gas desulfurization	t	334,854	514,034	1,136,959	1,097,191	1,028,003
Magnesium oxide	t	53.2	33.3	136	326	279
Sodium hypochlorite	t	1,439	2,448	7,450	5,827	4,488
Chlorine dioxide	t	0	0	0	0.514	0.875
Ferrous sulfate	t	0	10.2	255	272	279
Ferrous chloride	t	61.4	39.9	44.2	41	20.2
Trisodium phosphate	t	3.63	12.7	29.8	35.6	33.1
Lime	t	9,465	26,360	36,436	33,374	25,337
Ferric chloride	t	702	1,128	1,091	1,239	1,233
Polyelectrolyte	t	84.2	57.7	93.5	120	112
Sulfuric & hydrochloric acids	t	7,188	8,242	12,361	15,111	13,554
Caustic soda	t	14,630	17,653	21,154	32,118	30,623
Bentonite	t	1,927	549	1,696	1,739	518
Barite	t	90.3	0	0	471	216
Geothermal cement	t	3,506	2,729	3,909	4,559	2,905
Lubricating oil	t	5,304	1,068	12,005	17,702	7,239
Dielectric oil	t	2,249	494	1,604	1,383	1,333
Printing paper	t	0	1,393	1,224	1,284	1,218
Other	t	1,781	2,281	14,161	12,519	42,753
Total	**t**	**402,613**	**601,172**	**1,271,257**	**1,246,764**	**1,176,189**
for thermal generation	t	285,393	482,865	1,125,440	1,090,140	1,043,834
for thermal generation (CHP)	t	95,667	92,475	110,896	108,781	90,661
for nuclear generation	t	0	0	2,433	1,047	1,108
for nuclear generation (CHP)	t	0	5,771	5,738	6,361	6,145
for hydro generation	t	3,671	301	616	797	562
for geothermal activities	t	17,846	17,845	20,661	30,557	28,185
for wind generation	t	7.77	17.5	62.5	1,395	56.7
for fuel storage & handling	t	1.57	0.047	0.105	712	169
for electricity distribution	t	26.4	413	594	624	956
for gas distribution	t	0	91.1	91.8	0	0
EN1 PCB survey (1)						
Equipment & transformers with PCBs > 500 ppm (excluding their oil)	t	0	6,634	77.5	999	81.5
Oil with PCBs > 500 ppm contained in equipment & transformers	t	0	3,346	69.8	340	5.90
Equipment & transformers with PCBs > 50 ppm and ≤ 500 ppm (excluding their oil)	t	0	142	988	20,377	24,766
Oil with PCBs > 50 ppm and ≤ 500 ppm contained in equipment & transformers	t	0	216	341	4,382	6,238

(1) The erratic pattern of the five-year series is due to the opposite effects (of positive and negative sign) of the change of the reporting perimeter (Endesa has reported these items since 2009) and to the progressive decommissioning or decontamination of equipment containing PCBs > 500 ppm.

EN1 EN3 Fuels

This part of the Eco-Balance reports the consumption of energy resources (fossil and non-fossil fuels, geothermal fluid and primary electricity) and non-energy resources (water for industrial uses, expendables).

The near totality of fuels (mostly of fossil origin) are used for thermal generation.

> The consumption of fuel oils is indicated on the basis of their sulfur content (HS = high: >2.5%; MS = medium: >1.3% and ≤2.5%; LS = low: >0.5% and ≤1.3%; VLS = very low: ≤0.5%).
> Coal and brown coal are used in power plants usually equipped with flue-gas desulfurizers and denitrification systems.
> Gas-oil, a high-cost fuel, is used on an exceptional basis: i) in single-cycle gas-turbine power plants that are not connected to the natural gas grid (as an emergency fuel in the other gas-turbine power plants); ii) in diesel-engine power plants (supplying some small Italian islands); iii) in start-up of steam-cycle power plants, auxiliary boilers and emergency generating sets.
> The consumption of natural gas is broken down on the basis of its uses: non-technologically captive (when the use of gas is a corporate choice) and technologically captive (when gas feeds single-cycle, combined-cycle or re-powering gas turbines, for which it is the only practicable option).
> The contribution of non-fossil fuels consists of:
  – refuse-derived fuel (RDF), co-fired with coal;
  – solid biomass, used as main fuel or co-fired with coal;
  – biodiesel, used in some gas-turbine units located on small Italian islands;
  – biogas, used in some small installations with alternative engines located in Spain.

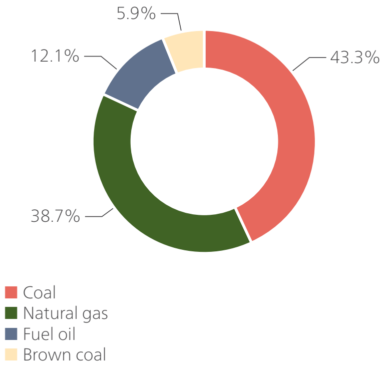
Natural gas and start-up gas-oil feed the boilers which heat the fuel oil contained in the storage tanks (heating fluidifies fuel oil before its transfer to destination). Small quantities of gas-oil are also used for driving geothermal drilling equipment and in emergency generating sets, which are present in practically all of Enel’s installations. Fuel consumption, measured and certified in each installation, is expressed both in metric units (thousand tonnes or million cubic meters) and in energy potential (tonnes or thousand tonnes of oil-equivalent – toe or ktoe – and thousand billions of Joules - Terajoules – TJ). To sum the various contributions, use is instead made of the corresponding energy potential.

The consumption of fossil fuels in the overall Group fell from ~37 Mtoe in 2009 to ~36 Mtoe in 2010 owing to a decrease in thermal generation of ~3 TWh, which was due, in particular, to the contraction of electricity demand in Italy and Spain.

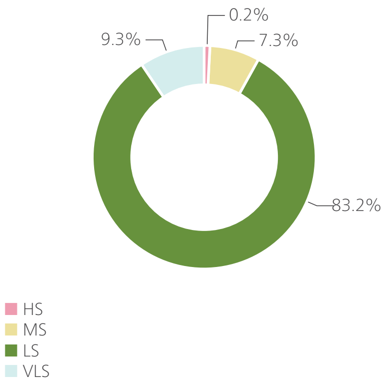
The fuel mix shows an increase of the share of natural gas (~+4%,of which ~+2% used in high-efficiency combined-cycle plants), a slight increase of brown coal of local origin (~+0.5%) and a decrease of coal (~-2.5%), fuel oil (~-1%) and gas-oil (~-1%).

Generation from fuel oil and gas-oil was down by ~2.5 TWh (very close to the value of the decrease of overall generation from fossil fuels). With respect to

Fossil-fuel consumption for thermal generation (simple and combined heat & power) in 2010
Total: 35.9 Mtoe



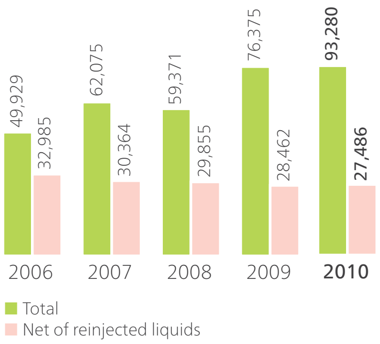
Fuel-oil consumption for thermal generation in 2010
Total: 2.6 million t



2009, the consumption of oil products with different sulfur content was as follows: high-sulfur oil remained practically unchanged and close to zero (~0.2%); medium-sulfur oil continued to have a downward trend (from ~10% to ~9%); low-sulfur oil continued to have an upward trend (from ~70% to ~82%); and very low-sulfur oil continued to have a downward trend (from ~21% to ~9%).

EN1 EN3 Geothermal fluid

Consumption of geothermal fluid (thousand t)



Geothermal fluid, in the form of steam at adequate pressure (4-18 bar) and temperature (160-230 °C), is the energy source for geothermal generation.
If the extracted fluid has thermodynamic properties unsuitable for geothermal generation, it may be used for the same purpose in an indirect way by resorting to binary cycles (e.g. in North America, where the geothermal resource is a low-salinity brine at a temperature of 135-165 °C), or it may be employed in non-electric uses. In the case of Enel, these uses are now limited to the supply of heat (especially for greenhousing and district heating, but also as process heat in the food industry). For the supply of heat, use is also made of the fluid which becomes available after expansion in Enel's only geothermal unit equipped with an atmospheric-exhaust turbine.
The capability of geothermal fields is mostly sustained by the reinjection of fluids into geothermal reservoirs. These fluids consist of: water entrained by steam and separated from it at the well outlet; steam condensed after its expansion in the turbines; and liquid remaining after use in the primary circuits of binary cycles and after non-electric uses. Reinjection and extraction of fluids into/from the deep subsoil do not jeopardize shallow aquifers which are isolated from the wells by casings, cemented to the soil and between them.
The difference between the total fluid extracted and the fluids reinjected is due to: incondensibility of the gases contained in geothermal steam; vaporization and entrainment of condensates in cooling towers (by far the largest contribution) and inevitable losses.
A comparison of the results of the two-year period from 2008 to 2010 highlights the sharp increase of the fluid used for electricity generation vs. the overall extracted fluid, owing to the opening of new wells in the US (Stillwater and Salt Wells) and in Italy (Sasso 2 and Nuova Lagoni Rossi) in 2009 and in Italy (Chiusdino and Radicondoli 2) in 2010.

EN1 EN3 Nuclear fuel

Enriched natural uranium, improperly called "fuel", is the energy source for nuclear generation. The uranium that is found in nature is practically composed of two isotopes: uranium 238 (about 99.3%) and uranium 235 (0.7% only), as uranium 234 only accounts for 0.056%.
Uranium enrichment – usually obtained by diffusion or centrifugation of a gaseous uranium compound (hexafluoride, UF6) – raises the U235 content to values lying in the typical range of 3-5%. U235 is the only fissile isotope: when the nucleus of a U235 atom is hit by a slow neutron, it splits up into two smaller nuclei (fission), releasing energy and other (fast) neutrons. These neutrons are slowed down by the water that is contained in light-water reactors and that acts as a "moderator" (the water also carries the heat produced by the fission process), and they hit other nuclei, inducing a chain reaction. Nuclear fuel may generate an amount of energy 50,000 times higher than the one released upon combustion of an equal mass of fuel oil.
In a nuclear power plant, nuclear fuel management consists of three stages:

> procurement of fresh fuel;

> transport of fresh fuel to the power plant site (dry storage containers in the reactor building or fresh fuel pond), preparation of reload, reload, start-up tests, monitoring of operation, unloading from the reactor and storage in the reactor pools (prior to transfer to temporary storage pools);

> organization of the transfer of the spent fuel to the pools of the temporary storage facility (where available, the storage facility may be on-site or off-site) or to reprocessing facilities; the spent fuel must be transferred to a temporary storage facility or to reprocessing facilities after a given number of years of operation of the plant, in order to avoid saturation of the storage capacity of reactor pools.

Reload is needed when, after being utilized in the reactor for a few years, the fuel loses its efficiency (i.e. its U235 content diminishes) owing to the fission process. Reload is usually carried out on a 12-, 18- or 24-month basis, but only replacing a fraction of the core. Fuel is loaded into the core, shuffling the remaining assemblies that have not been unloaded, so as to optimize fuel utilization and overall efficiency of the plant. The content of fission products (regarded as high-activity and "long-lived" radioactive waste) in the spent fuel is as little as about 3%. The remaining components are: unused uranium (about 96%), which is recovered via reprocessing and may be used for generating new fuel; and plutonium (about 1%), which is a by-product resulting from nuclear reactions and radioactive decays of U238. The plutonium isotopes (Pu239 and Pu241) are fissile. Plutonium may be recycled as mixed oxide fuel (MOX, i.e. $UO_2 + PuO_2$). MOX combines normal fuel with fissile substances (plutonium). MOX, consisting of 7÷9% plutonium mixed with depleted uranium, is equivalent to uranium oxide fuel enriched to 4.5% in U235.

EN4 Primary electricity

Electricity is used as energy raw material in fuel-oil storage & handling, mining & extracting activities, and real-estate management.
In the first case, it is used for pumping fuel oil into pipelines and for feeding the auxiliaries of installations.
In real-estate management, electricity is used for lighting and air conditioning of buildings.
In electricity distribution, electricity is used for the operation of grids.

The amounts of net electricity generation and of electricity wheeled on distribution grids (see "Processes and products") already take into account own consumption and losses.
The following table displays the primary electricity purchased for fuel storage & handling, mining activities, real-estate management and services for the overall Group:

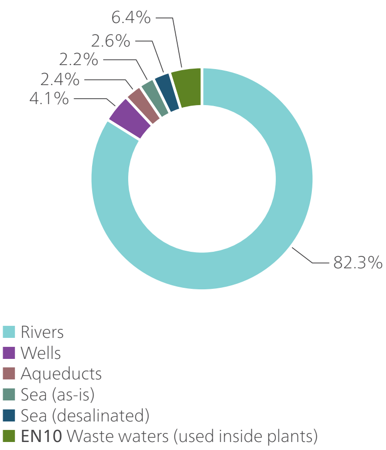
Indirect electricity consumption by primary source

		2010	2009
Fuel storage & handling	GJ	23,436	4,741
	GWh	6.5	1.3
Electricity distribution	GJ	1,589,990	1,513,998
	GWh	441.7	420.6
Real-estate management, vehicles and services	GJ	558,965	574,934
	GWh	155.268	159.704
Mining	GJ	48,776	8,078
	GWh	13.69	2.2
Total consumption of electricity from non-renewable sources	**GJ**	**2,221,156**	**2,101,752**
	GWh	**617**	**583.8**

The higher indirect consumption in electricity distribution, mining and fuel handling is due to the increase in the overall volumes of the three activities, whereas the lower indirect consumption in real-estate management is due to the adoption of environmental management systems and to the introduction of energy-saving targets into the improvement program.

EN8 Water for industrial uses

Coverage of water requirements for industrial uses in 2010
Total: 373 million m^3



Water for industrial uses is consumed above all in thermal and nuclear power plants, especially to make up for the amounts lost in the generation process of steam-turbine power plants and in closed-cycle wet cooling tower systems, but also to carry out clean-up jobs (above all of boilers) and to feed auxiliaries and desulfurizers.

To a much lesser extent, water is used:

> in geothermal activities for preparation of the drilling slurry; the amounts of water used in these activities are very variable, depending on the type of activity (e.g. drilling of new wells, rehabilitation or deepening of existing wells) and on the characteristics of the geological formations crossed (by contrast, the functioning of cooling towers does not require water, since it is based on revaporization of part of the condensates from the steam discharged by turbines);

> in fuel-oil storage & handling, especially for preparing demineralized water; this water is used to make up for the amount lost in the closed-cycle production of steam for heating and fluidifying fuel oil before its transfer to destination.

Water requirements do not include the water used for open-cycle cooling of thermal power plants, because it is returned to the original water body with negligible physico-chemical changes.

The data show:

> the strong contribution of surface water, mostly used in: closed-cycle cooling systems of nuclear power plants in Slovakia and Spain; closed-cycle cooling and ash handling systems of thermal power plants in Bulgaria, Slovakia and Russia (in the latter case only for ash handling);

> the progressive increase of waste water recovery throughout the five-year period.

EN1 Expendables

Expendables, used mainly in thermal and nuclear power plants and in geothermal drilling, complete the list of resources.

The following are the chief ones and their most common uses.

> Resins are used to produce (via ion exchange) the high-purity water which is needed for the thermal cycle of steam-cycle and nuclear power plants.

> Hydrazine, carbohydrazide and hydrogen peroxide are used for deoxygenation and pH balancing of thermal-cycle water and steam.

> Ammonia, too, is used to balance the pH of the thermal-cycle water, but above all as a reagent in the flue-gas denitrification process.

> Limestone is the reagent for the flue-gas desulfurization process.

> Magnesium oxide is injected into the flue-gas circuits of thermal plant boilers that are fed with vanadium-containing fuel, in order to prevent corrosion of heat-transfer surfaces due to the indirect action of vanadium.

> Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride and trisodium phosphate are occasionally added to the cooling waters of steam-cycle power plants to prevent deposits and fouling or to protect condenser tube surfaces from corrosion.

> Lime, ferric chloride and polyelectrolyte are mainly used in waste water treatment, thanks to their neutralizing and/or flocculating properties.

> Sulfuric acid, hydrochloric acid and caustic soda are most commonly used in the regeneration of ion-exchange resins and in the clean-up of equipment, but also in waste water treatment. In geothermal activities, soda has various applications, including as an additive in the slurries used in the drilling of geothermal wells.

> Bentonite is a type of clay used as a slurry for the drilling of geothermal wells.

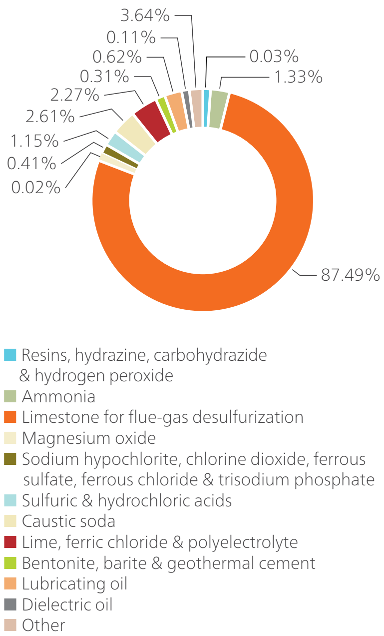
> Barite is used in some cases to thicken bentonite slurries, thereby improving their effectiveness when drilling into mechanically-unstable rock formations.

> Geothermal cement is used for joining the steel walls of new wells and for permanent plugging of disused wells.

> Printing paper is used in different formats in office activities. An increasing share of this paper derives from processes of recycling of used paper.

> "Other" expendables (antifouling, defouling, deoxidizing, antifoam, detergent and antifreezing agents, carbon dioxide, bottled hydrogen, etc.), just as lubricating oil and dielectric oil, are used in the generality of installations.

Expendables in 2010
Total: 1,176 thousand t



The figures shown for expendables are obtained from the accounting records of purchases, which are held in each installation. Given the small size of stocks and the high number of installations surveyed, the amounts purchased are practically equivalent to those consumed.

A number of factors make it extremely difficult to interpret the trends of most of the expendables at aggregated level: plurality of business activities, multiple uses of many materials, variety of installation configurations and the fact that the consumption of some products is often independent of the basic operating parameters of the installations involved.

Limestone is an exception. Together with ammonia, it plays a key role among expendables. However, unlike ammonia, limestone has a single use: in the flue-gas desulfurizers which are installed in coal-fired power plants of larger size.

The decline in the consumption of limestone is due to the decrease of coal-fired generation.

EN1 Survey of PCBs contained in equipment

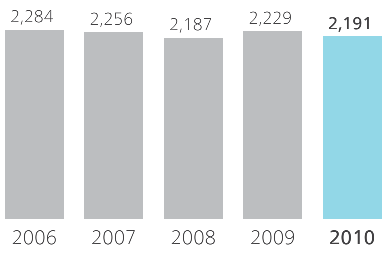
The survey makes it possible to identify the amounts of oil with a PCB content of over 500 ppm or between 50 and 500 ppm, and of equipment and transformers containing it. In 2010, the survey was completed in all the countries (15 in 2009). The related trends are affected by this progressive participation in the survey.

Performance indicators - KPIs

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Resource conservation and quality								
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	2,284	2,256	2,187	2,229	2,191	-4.1	-1.7
EN1 EN3 Net heat rate of thermal generation (CHP)	$kcal/kWh_{eq.}$	2,763	2,684	2,204	2,151	2,180	-21.1	1.3
EN1 EN3 Net heat rate of geothermal generation	kcal/kWh	5,447	5,729	5,724	6,022	6,422	17.9	6.6
EN1 EN3 Net efficiency of hydro generation from pumped storage	%	71.6	72.4	72.6	77.7	77.4	8.1	-0.4
EN4 Consumption of electricity for distribution grid operation	% of electricity distributed	0.129	0.141	0.106	0.101	0.100	-22.5	-1.0
EN1 EN3 Consumption of natural gas for distribution grid operation	% of natural gas distributed	0.150	0.156	0.137	0	0	-100.0	0.0
Natural-gas losses along the grid	% of natural gas distributed	0.650	0.650	0.650	0	0	-100.0	0.0
EN8 Net specific requirements of water for industrial uses in thermal generation								
including contribution of as-is sea water	liters/kWh	0.870	0.958	0.913	0.929	0.912	4.8	-1.8
excluding contribution of as-is sea water	liters/kWh	0.719	0.822	0.803	0.856	0.837	16.4	-2.2
EN8 Net specific requirements of water for industrial uses in thermal generation (CHP)	$liters/kWh_{eq.}$	2.91	3.70	1.93	1.23	0.989	-66.0	-19.6
EN8 Net specific requirements of water for industrial uses in nuclear generation	liters/kWh	0	5.82	6.04	7.55	6.33	0.0	-16.2

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN8 Net specific requirements of water for industrial uses in nuclear generation (CHP)	liters/kWh$_{eq.}$	3.11	3.11	3.02	2.95	2.88	-7.4	-2.4
EN8 Coverage of requirements of water for industrial uses								
from rivers (including meteoric waters from secondary rainfall)	% of requirements	67.7	76.9	82.6	84.7	82.9	22.5	-2.1
from wells	% of requirements	6.05	3.88	3.20	3.33	3.39	-44.0	1.8
from aqueducts	% of requirements	4.86	4.09	2.82	2.83	2.42	-50.2	-14.5
Total from inland waters	**% of requirements**	**78.6**	**84.8**	**88.6**	**90.9**	**88.7**	**12.8**	**-2.4**
from the sea (as-is)	% of requirements	10.1	7.42	4.13	2.25	2.24	-77.8	-0.4
from the sea (desalinated)	% of requirements	5.97	3.98	2.42	2.43	2.62	-56.1	7.8
EN10 from waste waters (used inside plants)	% of requirements	5.28	3.79	4.83	4.41	6.40	21.2	45.1
EN1 EN3 Fossil fuel consumption for thermal generation								
fuel oil	% of total fuel consumption	18.7	10.3	8.78	8.49	7.31	-60.9	-13.9
gas-oil	% of total fuel consumption	0.419	2.36	4.90	5.41	4.64	1,007.4	-14.2
natural gas	% of total fuel consumption	31.8	32.9	35.9	34.9	38.8	22.0	11.2
coal	% of total fuel consumption	40.7	46.4	44	45.7	43.4	6.6	-5.0
brown coal	% of total fuel consumption	8.39	8.06	6.45	5.45	5.94	-29.2	9.0
HS fuel oil	% of total fuel-oil consumption	0.213	2.06	0.202	0.210	0.158	-25.8	-24.8
MS fuel oil	% of total fuel-oil consumption	6.43	7.89	12.2	9.71	8.90	38.4	-8.3
LS fuel oil	% of total fuel-oil consumption	43.6	39.2	58.9	69.2	81.6	87.2	17.9
VLS fuel oil	% of total fuel-oil consumption	49.8	50.8	28.7	20.9	9.33	-81.3	-55.4
natural gas, technologically captive use	% of total natural-gas consumption	61.4	70.6	61.8	52.7	54.9	-10.6	4.2
of which in combined-cycle units	*% of total natural-gas consumption*	*50.5*	*62.4*	*57.5*	*48.9*	*50.7*	*0.4*	*3.7*
natural gas, non-technologically captive use	% of total natural-gas consumption	38.6	29.4	38.2	47.3	45.1	16.8	-4.7
Geothermal fluid for electricity generation	% of total geothermal fluid extracted	96.9	99.5	97.4	97.9	98.3	1.4	0.4

Net heat rate of simple thermal generation (kcal/kWh)



EN1 EN3 The **net heat rate of simple thermal generation** defines the average quantity of fuels (expressed here in terms of energy) consumed by thermal power plants to generate 1 kWh net. In the past few years, its trend in the overall Group and in the individual countries was the result of opposite effects: the growing amount of electricity absorbed by systems abating emissions into the atmosphere; the entry into operation of new high-efficiency combined-cycle power plants (in Italy and Spain); the full consolidation of Endesa in 2009; and initiatives of improvement of the efficiency of thermal power plants undertaken over the years.
Its value in 2010 was 38 kcal/kWh lower than the one of 2009.

EN1 EN3 The **net heat rate of thermal combined heat & power generation (CHP)**, defines the average quantity of fuels (expressed here in terms of energy) consumed by thermal CHP plants to generate 1 $kWh_{eq.}$ net (i.e. from generation of both electricity and heat, expressed in kWh).
In this case, the value was up by 29 $kcal/kWh_{eq.}$ on 2009.

As regards thermal power generation, policies of improvement of plant efficiency (see § "EN5 Energy efficiency") decreased total energy consumption by about **12,095 TJ (2,889 Tcal), a value equal to the average consumption of about 150,000 cars in one year**. These results were achieved thanks to a decrease of about **4,206 Tcal** (-38 $kcal/kWh_{eq.}$ * 110,671 GWh) in the energy consumption of simple thermal power plants and to an increase of about 1,317,000 Gcal (+29 $kcal/kWh_{eq.}$ * 45,401 GWh) in the energy consumption of the Russian CHP thermal power plants. Russian plant efficiency will benefit from: i) the Reftinskaya modernization plan, but only from the end of 2011 (its effects will thus be reflected in the Environmental Report 2012); and ii) the entry into operation, in 2011, of two new combined-cycle plants with an overall net maximum capacity of 811 MW.

EN1 EN3 The **net heat rate of geothermal generation** defines the average quantity of geothermal steam (expressed here in terms of energy) used by geothermal power plants to produce 1 kWh net.
In the calculation, the residual energy content of the fluid used for supply of heat (fluid becoming available after expansion in the geothermal unit equipped with an atmospheric-exhaust turbine) is subtracted from the energy content of the endogenous fluid.
The increase in this rate is due to the natural decline of geothermal field pressure over time.

EN1 EN3 The **net heat rate of nuclear generation (simple and CHP)** is obtained from the energy content of the steam used to generate 1 kWh net and 1$kW_{eq.}$ net, respectively.

EN1 EN3 The **net efficiency of hydro generation from pumped storage** expresses, in percentages, the ratio of net electricity generated by pumped-storage hydro power plants to electricity consumed for pumping.

EN4 The **consumption of electricity for grid operation** is expressed as a percentage of the total amounts distributed.

EN8 The **net specific requirements of water for industrial uses in simple thermal generation** express the amount of water consumed per kWh thermal net.
As a result of policies of reduction of water consumption, this indicator dropped by over 2% in 2010.

EN8 The **net specific requirements of water for industrial uses in thermal combined heat & power generation (CHP)** express the amount of water consumed per $kWh_{eq.}$ thermal net.
The 2009 value is 41.5% lower than the 2008 one, owing to decreased consumption, especially in the Russian power plants.
Thanks to policies of reduction of water consumption, this indicator was down by about 20% in 2010.

EN8 The **net specific requirements of water for industrial uses in nuclear generation** express the amount of water consumed per kWh nuclear net.
Thanks to policies of reduction of water consumption, this indicator fell by over 16% in 2010.

EN8 The **net specific requirements of water for industrial uses in nuclear combined heat & power generation (CHP)** express the amount of water consumed per $kWh_{eq.}$ nuclear net.
Thanks to policies of reduction of water consumption, this indicator was down by more than 2% in 2010.

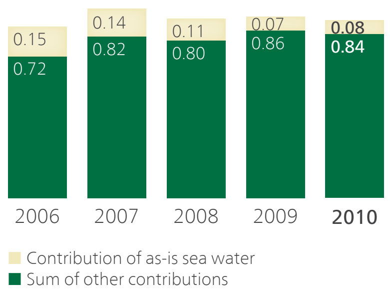
EN8 **Coverage of requirements of water for industrial uses**. In the overall Group, the total contribution of inland waters (rivers, wells and aqueducts) to coverage of requirements of water for industrial uses was down by two percentage points, owing to a corresponding increase in waste water recovery.

EN10 It is worth stressing that, in some cases, waste waters may be unsuitable for reuse, which would require frequent clean-up and maintenance of the served loads. In these cases, reuse is avoided, with a consequent decrease in the amount of reusable waste waters.

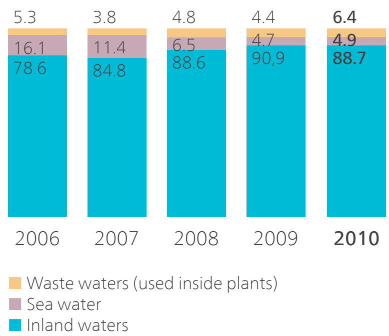
EN3 In the 2010 **fossil fuel mix** (see § Fuels), gas and brown coal went up, whereas coal, gas-oil and fuel oil went down.

EN3 The **share of endogenous fluid used for electricity generation** accounts for the near totality of the fluid extracted.

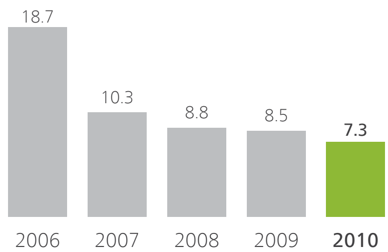
Net specific requirements of water for industrial uses in simple thermal generation (liters/kWh)



Coverage of requirements of water for industrial uses (%)



Relative consumption of fuel oil (% of total consumption of fossil fuels for thermal generation)



Processes and products

Absolute values

		2006	2007	2008	2009	2010
Electricity generation (net)						
From fossil fuels	million kWh	84,973	92,243	145,798	159,006	156,072
simple	million kwh	80,977	88,701	118,830	117,290	110,671
fuel oil & gas-oil	*million kWh*	*15,258*	*10,858*	*18,732*	*20,601*	*18,074*
natural gas	*million kWh*	*32,304*	*36,156*	*48,282*	*42,959*	*45,249*
of which in combined-cycle units	million kWh	19,463	25,625	40,850	37,729	40,132
coal	*million kWh*	*29,838*	*38,033*	*46,335*	*48,238*	*41,706*
brown coal	*million kWh*	*3,577*	*3,655*	*5,481*	*5,492*	*5,642*
combined with heat generation	million kwh	3,996	3,541	26,968	41,716	45,401
fuel oil & gas-oil	*million kWh*	*180*	*240*	*118*	*119*	*59.6*
natural gas	*million kWh*	*227*	*184*	*12,257*	*19,176*	*21,153*
coal	*million kWh*	*2,192*	*1,693*	*12,953*	*20,780*	*22,549*
brown coal	*million kWh*	*1,397*	*1,424*	*1,640*	*1,640*	*1,639*
From waste (non-biodegradable fraction)	million kWh	25.2	28.8	21.2	51.9	30.8
From hydrogen	million kWh	0	0	0	0	2.17
From renewables	million kWh	29,298	36,514	64,989	85,682	86,898
biomass and biodegradable fraction of waste	million kWh	193	260	308	491	553
simple	*million kWh*	*22.8*	*84.5*	*135*	*334*	*351*
combined with heat generation	*million kWh*	*171*	*175*	*172*	*157*	*202*
geothermal	million kWh	5,208	5,292	5,218	5,150	5,278
hydro from natural flows	million kWh	22,585	29,020	55,505	75,621	75,971
wind	million kWh	1,312	1,941	3,955	4,392	5,069
solar (photovoltaic)	million kWh	0.463	1.34	2.94	27.8	27
Hydro from pumped storage	million kWh	7,030	6,473	6,228	5,890	5,127
Nuclear generation	million kWh	10,902	15,528	29,672	35,685	41,153
simple	million kWh	0	4,132	17,508	22,630	27,620
combined with heat generation	million kWh	10,902	11,395	12,164	13,055	13,534
Total	**million kWh**	**132,228**	**150,786**	**246,708**	**286,314**	**289,284**
simple	million kWh	117,160	135,674	207,404	231,386	230,147
combined with heat generation	million kWh	15,069	15,112	39,303	54,927	59,137
Electricity consumption for pumping	million kWh	9,812	8,939	8,581	7,580	6,628
Available generation	million kWh	122,416	141,847	238,127	278,734	282,655

		2006	2007	2008	2009	2010
Useful heat output (combined with power generation)						
In thermal power plants	million kcal	647,630	655,135	4,621,536	7,338,791	7,017,506
fossil fuels	million kcal	615,415	625,509	4,591,387	7,315,748	6,984,982
biomass and biodegradable fraction of waste	million kcal	32,215	29,626	30,149	23,042	32,524
In nuclear power plants	million kcal	397,752	454,001	478,592	541,146	596,857
Total	**million kcal**	**1,045,382**	**1,109,136**	**5,100,128**	**7,879,937**	**7,614,363**
	million kWh	**1,216**	**1,290**	**5,931**	**9,164**	**8,856**
Fuel storage & handling						
Fuel transferred to destination	t	574,091	58,295	42,282	10,144	4,510
Heat generation	million kcal	36,505	3,858	8,700	8,700	6,769
Geothermal drilling						
Extent	m	10,684	15,225	14,718	27,816	15,498
Electricity distribution						
Electricity distributed	million kWh	269,129	299,169	398,017	417,851	430,558
EN4 Electricity consumption for grid operation	million kWh	347	422	423	421	442
Natural-gas distribution						
Natural-gas distributed	million m^3	3,659	3,418	3,570	442	0
Natural-gas consumption for grid operation	million m^3	5.49	5.32	4.90	0	0
Natural-gas losses along the grid	million m^3	23.8	22.2	23.2	0	0
Mining & extracting activities (1)						
Mining activities						
Fuel extracted in the reporting year	million t			1.38	1.90	1.84
Areas restored in the year (geomorphology, hydrogeology and landscape)						
Areas revegetated with plant, shrub and tree species	ha			69.9	23.1	0
Areas occupied by water bodies	ha			157	234	0
Areas restored since the start of activities (geomorphology, hydrogeology and landscape)						
Areas revegetated with plant, shrub and tree species	ha			1,532	2,287	2,287
Areas of high landscape-cultural value	ha			88.7	132	132
Areas occupied by water bodies	ha			198	509	509
Areas occupied by infrastructure (roads, canals, aqueducts, power lines)	ha			65.7	97.9	97.9
Areas awaiting final restoration	ha			168	271	271

(1) These activities have been surveyed since 2008.

		2006	2007	2008	2009	2010
Sales (1)						
Open market						
Residential segment						
Green offerings						
Customers	no.	0	0	673,370	1,364,507	1,581,542
Power sold	million kWh	0	0	1,290	3,032	5,258
Time-of-use offerings						
Customers	no.	0	37,492	224,450	192,651	286,920
Power sold	million kWh	0	17	512	889	781
Total						
Customers	no.	0	233,648	902,126	1,806,129	2,551,720
Power sold	million kWh	0	106	2,345	4,549	6,900
Business segment						
Green offerings						
Customers	no.	0	196,181	204,024	367,527	407,884
Power sold	million kWh	0	1,063	3,230	3,950	5,901
Time-of-use offerings						
Customers	no.	0	18,305	168,370	569,235	690,075
Power sold	million kWh	0	6,316	17,603	16,790	17,227
Total						
Customers	no.	0	962,753	996,425	1,068,029	1,139,076
Power sold	million kWh	0	19,885	27,705	32,972	24,871
Large customers' segment						
Green offerings						
Customers	no.	0	6	16	7,925	5,612
Power sold	million kWh	0	0,141	80	986	126
Time-of-use offerings						
Customers	no.	0	3,635	27,441	38,115	46,518
Power sold	million kWh	0	7,693	8,054	8,088	7,419
Total						
Customers	no.	0	21,356	31,534	52,545	58,820
Power sold	million kWh	0	8,624	9,429	10,290	9,899
Very large customers' segment						
Total						
Customers	no.	0	99	101	134	150
Power sold	million kWh	0	13,543	15,406	46,864	45,783
Universal-service market						
Household customers' segment						
Time-of-use offerings						
Customers	no.	0	689,740	168,012	187,982	7,126,590
Power sold	million kWh	0	2,758	594	617	17,312
Total						
Customers	no.	0	23,816,519	24,816,711	25,135,660	24,313,927
Power sold	million kWh	0	52,952	54,071	53,082	50,656
Non-household customers' segment						
Time-of-use offerings						
Customers	no.	0	316	5,696	3,091,587	3,855,927
Power sold	million kWh	0	24,5	263	18,245	20,212
Total						
Customers	no.	0	5,473,851	4,824,492	4,607,488	4,458,415
Power sold	million kWh	0	34,743	26,914	26,767	25,209
Overall power sold						
high-voltage	million kWh	0	18,418	18,006	51,374	46,017
medium-voltage	million kWh	0	22,069	21,711	23,636	19,664
low-voltage	million kWh	0	101,420	113,781	112,843	109,781
Total	**million kWh**	**0**	**141,907**	**153,499**	**187,853**	**175,463**
Total RECS certificates canceled	**no. (MWh)**	**0**	**1,066,000**	**4,600,000**	**7,968,119**	**11,148,877**

(1) These activities have been surveyed since 2007.

Enel's activities are today focused on electricity generation and electricity and gas distribution. Other activities include geothermal drilling, fuel storage & handling, mining, electricity sales, as well as service and real-estate management.

Electricity generation

With regard to electricity generation, it is worth pointing out that:

> the various contributions are net of the electricity consumed by power plant auxiliaries and of losses in the main transformers (net generation);

> the above-mentioned net generation does not necessarily match the amount of electricity sold; the latter value is measured further ahead (and thus affected by grid losses) and is gross of the electricity consumed by some auxiliaries (medium-voltage auxiliaries in some dams, start-up auxiliaries in thermal power plants, etc.);

> generation from RDF (refuse-derived fuel) is distinguished into: i) the one obtained from the non-biodegradable fraction of waste; and ii) the one obtained from the biodegradable fraction of waste and regarded as generation from renewables;

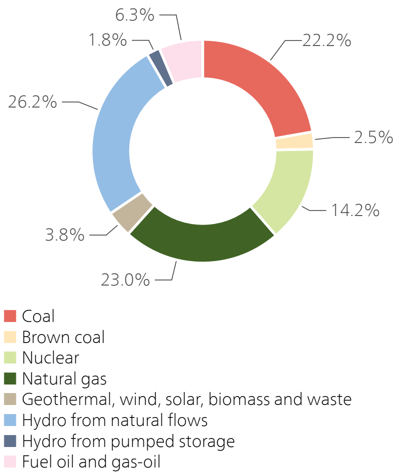
> hydro generation from pumped storage is the electricity that is produced, in peak-load hours, through the falling of water previously pumped from a lower reservoir to an upper reservoir, using electricity surpluses arising in low-load hours (pumped storage is the only available option for storing significant amounts of electricity, albeit indirectly);

> combined heat & power generation (CHP) takes place simultaneously in both thermal and nuclear power plants;

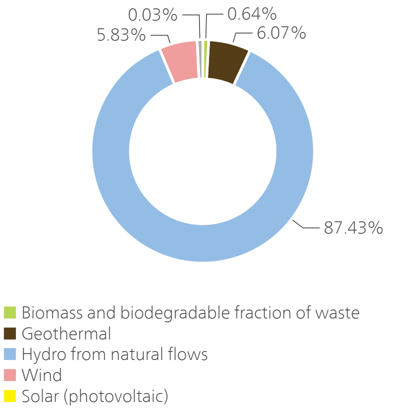
> actually available generation is the overall net generation, i.e. after deducting the electricity consumed for pumping.

In 2010, total available electricity generation slightly rose, because the increase in generation from nuclear and renewable sources exceeded the decrease of generation from fossil sources.

Net electricity generation (simple and CHP) by source in 2010
Total: 289 TWh



Net electricity generation from renewables in 2010
Total: 86.9 TWh



EN4 Electricity distribution

The data on this activity are expressed in terms of electricity wheeled on the distribution grid and own consumption of electricity.
The former is the overall electricity delivered to end users connected to the grid. Own consumption is the consumption of electricity required for the operation of the grid.

Fuel storage & handling

This activity, which is carried out far from thermal plant sites, is aimed at storing and handling fuels:

- liquid fuels: oil and gas-oil storage tanks and pipelines;
- solid fuels: coal and brown-coal bunkers located in dedicated port terminals.

The amounts of product transferred to destination and of heat generation only refer to fuel oil, which may be carried via pipelines and which needs heat for fluidification.
For this activity, the Eco-Balance shows, in particular, the use of resources, the consumption of primary energy, the consumption of electricity and the production of emissions, liquid releases and waste.

Geothermal drilling

This activity is aimed at making available endogenous fluid for geothermal generation.
Geothermal drilling involves the use of technologies and know-how in which Enel is a worldwide leader.
The extent of yearly drilling represents, in some way, the volume of activity. Nevertheless, it should be emphasized that operating conditions – and thus consumption of energy and expendables and generation of waste and residues – may vary significantly, depending on the nature of the rock formations that are crossed.

Mining & extracting activities

These activities are carried out in the mines from which coal and brown coal are extracted.
The Eco-Balance shows not only the extractable amount of fuel (among the "Status data") but also the activities of geomorphological, hydrogeological and landscape restoration.
In particular, the Eco-Balance displays the use of resources, the consumption of primary energy, the consumption of electricity and the production of emissions, liquid releases and waste.

Sales

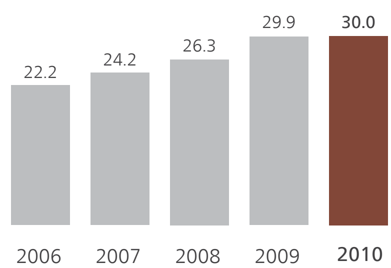
This is the activity of sale of both green power and time-of-use power, which has positive effects on the environment:

- in the case of green rate plans, customers pay a small extra amount to finance the development of renewables;
- time-of-use rate plans shift electricity demand to off-peak hours (lower number of thermal power plants, higher generating efficiency and lower grid losses thanks to the shorter distance between generation and consumption).

Service & real-estate management

This activity refers to the management of the vehicle fleet and of buildings.
The typical data of this activity are fuel consumption, uses of water and resources and production of waste.

Electricity generation from renewables vs. total electricity generation (%)



Performance indicators - KPIs

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN6 Electricity generation from renewables								
Thermal from biomass & biodegradable fraction of waste	% of total generation	0.146	0.172	0.125	0.171	0.191	30.8	11.7
Geothermal	% of total generation	3.94	3.51	2.12	1.80	1.82	-53.8	1.1
Hydro from natural flows	% of total generation	17.1	19.2	22.5	26.4	26.3	53.8	-0.4
Wind and solar (photovoltaic)	% of total generation	0.992	1.29	1.60	1.54	1.76	77.4	14.3
Total	**% of total generation**	**22.2**	**24.2**	**26.3**	**29.9**	**30**	**35.1**	**0.3**
EN6 Sales								
Residential segment								
Green power sold	% of power sold		0	55	66.6	76.2		14.4
Time-of-use power sold	% of power sold		16	21.8	19.5	11.3		-42.1
Business segment								
Green power sold	% of power sold		5.35	11.7	12	23.7		97.5
Time-of-use power sold	% of power sold		31.8	63.5	50.9	69.3		36.1
Large customers' segment								
Green power sold	% of power sold		0.002	0.848	9.58	1.27		-86.7
Time-of-use power sold	% of power sold		89.2	85.4	78.6	74.9		-4.7
Household customers' segment								
Time-of-use power sold	% of power sold		5.21	1.10	1.16	34.2		2,848.3
Non-household customers' segment								
Time-of-use power sold	% of power sold		0.070	0.977	68.2	80.2		17.6
Overall power sold								
high-voltage	% of power sold		13	11.7	27.3	26.2		-4.0
medium-voltage	% of power sold		15.6	14.1	12.6	11.2		-11.1
low-voltage	% of power sold		71.5	74.1	60.1	62.6		4.2
Total green power sold	**% of power sold**		**0.749**	**3**	**4.24**	**6.43**		**51.7**
Total time-of-use power sold	**% of power sold**		**11.8**	**17.6**	**23.8**	**35.9**		**50.8**
Mining & extracting activities (1)								
Yield of the site (open-pit mine)	million m^3 of moved soil/million t of extracted mineral	0	0	7.01	9.58	6.95	0.0	-27.5

(1) These activities have been surveyed since 2008.

> EN6 **Electricity generation from renewables**, expressed as a percentage of total electricity generation, was equal to 30% in 2010, the highest value in the five-year period.

> EN6 **Green power sold**, expressed as a percentage of total power sold to each customer segment of the open market (residential, business and large customers), shows a progressively growing trend throughout the reporting period, highlighting the Group's commitment to promoting renewable sources in electricity generation.

> EN6 **Time-of-use power sold**, expressed as a percentage of total power sold to each customer segment (open market: residential, business and large customers; universal-service or standard-offer market: household and non-household customers) displays a gradually rising trend throughout the reporting period; this trend underlines the Group's efforts to encourage a more environmentally-sustainable usage of power in terms of more efficient operation of the generating mix (shift of demand towards hourly bands involving lower environmental impacts).

Emissions

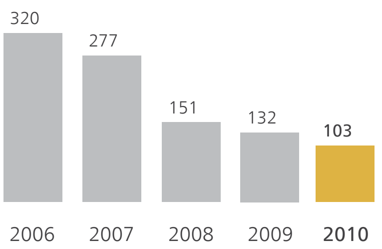
Absolute values

		Source		2006	2007	2008	2009	2010
Emissions into the atmosphere								
EN20	SO_2	thermal generation	thousand t	320	277	151	132	103
		thermal generation (CHP)	thousand t	40.4	33.2	117	156	184
		Total	**thousand t**	**360**	**310**	**267**	**288**	**287**
EN20	NO_X (scope 1)	thermal generation	thousand t	66.6	91.5	149	163	127
		thermal generation (CHP)	thousand t	7.93	6.55	55	98.8	125
		fuel storage & handling	thousand t	0.007	0.001	0.002	0.002	0
		Total	**thousand t**	**74.5**	**98**	**204**	**261**	**251**
EN20	Particulates	thermal generation	thousand t	9.75	10.8	7.17	8.43	6.68
		thermal generation (CHP)	thousand t	7.33	0.828	94.2	120	148
		Total	**thousand t**	**17.1**	**11.6**	**101**	**129**	**155**
EN16	CO_2 (scope 2)	*fossil-fired thermal generation (from combustion)*	*thousand t*	*60,048*	*66,203*	*86,498*	*86,759*	*78,512*
		fossil-fired thermal generation (from desulfurization)	*thousand t*	*105*	*192*	*586*	*411*	*401*
		Total from fossil-fired thermal generation	thousand t	60,154	66,395	87,084	87,170	78,913
		non-fossil-fired thermal generation (from fossil carbon)	thousand t	18.2	23.3	16.2	39.7	33.1
		Total from thermal generation	thousand t	60,172	66,419	87,100	87,210	78,946
		fossil-fired thermal generation (CHP) (from combustion)	*thousand t*	*4,853*	*4,332*	*23,353*	*34,735*	*37,066*
		fossil-fired thermal generation (CHP) (from desulfurization)	*thousand t*	*42.1*	*34.1*	*37.3*	*37.6*	*32*
		Total from fossil-fired thermal generation (CHP)	thousand t	4,895	4,367	23,391	34,772	37,098
		non-fossil-fired thermal generation (from fossil carbon)	*thousand t*	*42.1*	*34.1*	*37.3*	*37.6*	*35*
		Total from thermal generation (CHP)	thousand t	4,937	4,401	23,428	34,810	37,133
		Various activities	thousand t	26.8	85.5	94.5	166	143
		Total	**thousand t**	**65,136**	**70,905**	**110,623**	**122,186**	**116,223**
EN16	SF_6	electricity generation	kg	1,598	2,103	2,282	1,378	1,619
			thousand t of CO_2-equivalent	36.4	48	52	31.4	36.9
		electricity distribution	kg	2,982	3,109	3,781	4,649	4,678
			thousand t of CO_2-equivalent	68	70.9	86.2	106	107
		Total	**kg**	**4,580**	**5,212**	**6,064**	**6,027**	**6,297**
			thousand t of CO_2-equivalent	**104**	**119**	**138**	**137**	**144**

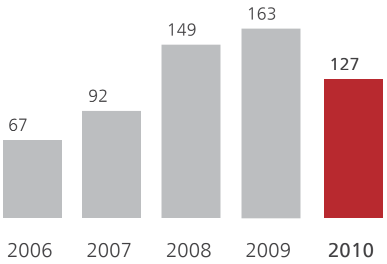
	Source		2006	2007	2008	2009	2010
EN16 CH_4	gas distribution and mining & extracting activities	thousand t	15.9	14.8	16.6	1.57	1.52
		thousand t of CO_2-equivalent	396	370	415	39.3	38
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		**thousand t of CO_2-equivalent**	**65,636**	**71,394**	**111,176**	**122,362**	**116,405**
EN20 H_2S	geothermal generation (fluid)	thousand t	20.8	16.2	13.1	10.2	10.4
EN16 CO_2	geothermal generation (fluid)	thousand t	1,946	1,953	1,902	1,876	1,829
EN18 Avoided CO_2 emissions							
Due to hydro generation from natural flows		thousand t	16,889	21,574	44,151	56,775	52,726
Due to geothermal generation		thousand t	3,643	3,686	3,617	3,877	3,903
Due to wind and solar generation		thousand t	1,137	1,619	3,238	3,617	4,138
Due to generation from biomass & biodegradable fraction of waste		thousand t	16	59	94	373	414
Due to generation from hydrogen		thousand t	0	0	0	0	1.55
Due to generation from renewables		**thousand t**	**21,685**	**26,938**	**51,101**	**64,639**	**61,181**
Due to nuclear generation		**thousand t**	**13,525**	**17,867**	**29,042**	**34,102**	**37,062**
Total		**thousand t**	**35,210**	**44,805**	**80,144**	**98,741**	**98,244**
EN20 Radioactive emissions into the atmosphere							
Noble gases	nuclear generation	TBq	0	3.10	24.4	24	15.2
	nuclear generation (CHP)	TBq	13.5	9.17	6.52	6.56	8.51
	Total	**TBq**	**13.5**	**12.3**	**30.9**	**30.6**	**23.7**
Iodine 131	nuclear generation	MBq	0	2.93	158	258	88.8
	nuclear generation (CHP)	MBq	20.7	10.6	0.648	0.556	0.608
	Total	**MBq**	**20.7**	**13.5**	**158**	**258**	**89.4**
Aerosol β & γ	nuclear generation	MBq	0	1.87	20,132	18,401	6,567
	nuclear generation (CHP)	MBq	34.5	20.5	18.1	20.8	18.7
	Total	**MBq**	**34.5**	**22.3**	**20,150**	**18,421**	**6,586**
Aerosol α	nuclear generation	kBq	0	4.88	35.9	63.7	31.4
	nuclear generation (CHP)	kBq	108	26.8	13.7	22.6	6.49
	Total	**kBq**	**108**	**31.7**	**49.7**	**86.3**	**37.9**
Strontium 89 and 90	nuclear generation	kBq	0	681	2,781	8,482	2,896
	nuclear generation (CHP)	kBq	201	183	133	91.5	74.7
	Total	**kBq**	**201**	**864**	**2,914**	**8,573**	**2,971**

Emissions into the atmosphere

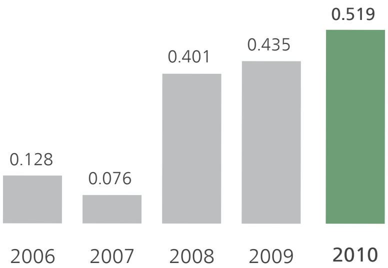
SO_2 emissions from simple thermal generation (thousand t)



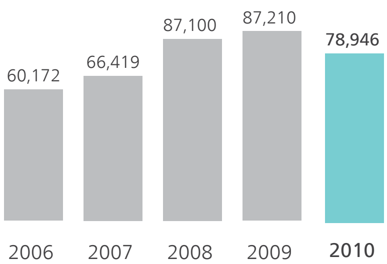
NO_X emissions from simple thermal generation (thousand t)



Particulate emissions from simple thermal generation (thousand t)



CO_2 emissions from simple thermal generation (thousand t)



The emissions of some substances into the atmosphere have a polluting effect, while those of other substances contribute to the greenhouse effect.
The emissions into the atmosphere, which are quantitatively most significant and typical of Enel's industrial activities, are as follows: in the first category, sulfur dioxide (SO_2), nitrogen oxides (NO_X) and particulates; and, in the second category, carbon dioxide (CO_2), sulfur hexafluoride (SF_6) and methane (CH_4).

EN20 SO_2, NO_X and particulates originate from the combustion process and mostly come from thermal and thermal CHP power plants. SO_2 is abated by desulfurizers in large coal-fired power plants. Emissions of SO_2 may be prevented by using high-grade fuels with low or very low sulfur (LS and VLS).
Emissions of NO_X are controlled through the generalized use of advanced combustion systems (prevention measures) and their constant tuning, whereas post-combustion abatement is based on the installation of denitrification systems in coal- and oil-fired power plants.
Particulates are abated by particulate collection systems – usually based on electrostatic precipitators, but also on more efficient bag filters, which are suitable for coal-fired power plants only – in almost all power plants.
The amounts of emissions are calculated by multiplying their concentrations in the flue gases (generally continuously monitored) by the volumes of the gases. NO_X are expressed in terms of NO_2-equivalent.
With respect to 2009, the emissions of SO_2 from simple and CHP thermal generation remained practically unaltered, those of NO_X declined, whereas those of particulates went up because the Reftinskaya power plant in Russia used a type of coal with a higher quantity of unburnt carbon particles. In the next few years, this pollutant is expected to progressively decrease in mass terms thanks to the planned gradual modernization of the Reftinskaya plant, which will use bag filters for its unit 5 from the end of 2011.

EN16 EN17 Greenhouse-gas emissions – Scopes 1, 2 and 3

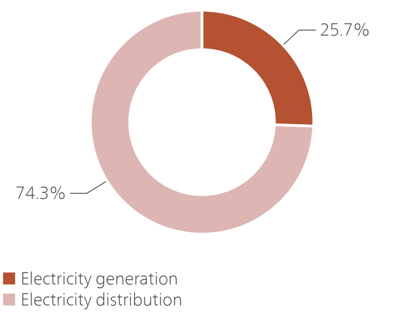
The World Business Council for Sustainable Development (WBCSD) categorizes direct and indirect greenhouse-gas (GHG) emissions and their origin into three broad scopes:
scope 1: all direct GHG emissions from sources that are owned or controlled by the company, e.g. emissions directly resulting from production;
scope 2: indirect GHG emissions from consumption of purchased electricity, e.g. emissions from the plant where such electricity is generated;
scope 3: other indirect GHG emissions that are a consequence of the activity of the company, but occur at sources not owned or controlled by the same company, e.g. emissions from extraction of materials or transport of purchased fuels.

EN16 Scope 1 - CO_2 is the typical product of combustion and, as such, the near totality of it comes from thermal power plants (simple and CHP). Small

amounts – reported here in view of the attention paid to the greenhouse effect – also derive from: geothermal drilling (combustion of the gas-oil which feeds the diesel engines of drilling equipment); emergency generating sets installed in the generality of Enel's installations (combustion of gas-oil); fuel storage & handling (use of fuels for producing process steam); and service & real-estate management (combustion of gasoline, natural gas and gas-oil).
CO_2 is also contained in the reaction products from the process of desulfurization of the flue gases outgoing from the boilers of some thermal power plants.
Finally, natural-gas distribution contributes to CO_2 emissions also in another way: as CO_2 is a minor constituent of natural gas, it is also present in the losses from the distribution grid.
Since the implementation of Directive 2003/87/EC (establishing a scheme for greenhouse gas emission allowance trading within the Community – EU-ETS), a different procedure has been used for computing CO_2 emissions. For the fuels and installations covered by the scheme (and required to monitor and report their emissions), the calculation is based on analyses (carbon content of the fuel, calorific value, carbon content of ash) conducted on the individual lots of fuel.
In the other cases (fuels and installations not covered by the scheme), Enel uses the reference parameters of the latest national greenhouse-gas inventories.
The amount of CO_2 from the desulfurization process is computed stoichiometrically from the amount of limestone used.
It is worth noting that the overall generating mix improved its performance in terms of CO_2 emissions, whose increase was lower than the one of generation (as evidenced by the specific CO_2 emissions from thermal generation, simple and CHP, vs. those from overall net generation of electricity and heat – see, later on, "Performance indicators"). This is due, in particular, to a higher share of natural gas in the fuel mix.
For emissions, scopes 2 and 3, see page 76.

EN16 SF_6 is used in high- and medium-voltage electrical equipment as an insulant and for electric arc extinction; in these applications, it is irreplaceable. Its emissions into the atmosphere are due to leaks from the above equipment. These emissions are determined with a complex procedure, which takes into account replenishments (difference between the weights of SF_6 contained in the bottles used for replenishment, at the start and end of the year, increased by the weight of SF_6 contained in the bottles purchased or acquired during the year and decreased by the weight of SF_6 contained in the bottles transferred during the year), including those carried out by third parties. In the very rare event of breakage of SF_6-containing equipment, its nominal SF_6 content is considered as leakage.
Given the particular care with which SF_6 is removed from end-of-life equipment, the above procedure can yield fairly reliable data.
These emissions are expressed in weight of SF_6 and in weight of CO_2-equivalent, in terms of Global Warming Potential (GWP). The 100-year GWP value that has been used (22,800) is the one specified in the "IPCC Fourth Assessment Report: Climate Change 2007".
When expressed in CO_2-equivalent, the values of SF6 appear to be extremely low (143,566 t in 2010) as against Enel's overall greenhouse-gas emissions. At

Origin of emissions of SF_6 in 2010
Total: 6,296.76 kg



local level, the variability of SF_6 emissions from one year to the other is largely due to the occasional character of the above-mentioned replenishments.

EN16 CH_4 comes from:

> coal extraction, since methane is naturally contained in coal seams.

The emissions are determined on the basis of the IPCC emission factors ("2006 IPCC Guidelines for National Greenhouse Gas Inventories"). These factors, which are different for surface mining (1.15 m^3/t) and deep mining (17.5 m^3/t), are multiplied by the tonnes of fuel extracted. The 100-year GWP that has been used (25) is the one specified in the "IPCC Fourth Assessment Report: Climate Change 2007". When expressed in CO_2-equivalent, CH_4 emissions account for a very low share (about 38,000 t in 2010) of Enel's overall greenhouse-gas emissions.

EN20 With regard to "minor" pollutants" (e.g. metals), Enel conducted extensive programs of monitoring of their concentrations in the flue gases released by its thermal power plants, under different conditions of types of fuel and abatement systems. The results indicate that these concentrations comply – with wide margins – with the point-source limits of emissions indicated by the national legislation of the countries where Enel operates.
Separate considerations should be made about the gases contained in geothermal steam. As such gases are incondensible, they are emitted into the atmosphere when steam condenses after expansion in turbines.
These gases are:

EN20 EN16

hydrogen sulfide (H_2S), the only potentially polluting substance (offensive odor) which is present in significant amounts in geothermal fluid;

> carbon dioxide (CO_2).

A wide debate is under way on the natural or anthropogenic origin of these gaseous emissions.
The International Geothermal Association supports their natural origin: as spontaneous emissions are present in diffuse form in geothermal areas, geothermal power plants only convey them in concentrated form, thereby reducing natural ones.
The IPCC Guidelines for national greenhouse inventories do not include CO_2 emissions from geothermal generation among those to be censused. However, Italy included these CO_2 emissions in national reports on greenhouse-gas emissions.
In this Environmental Report, CO_2 and H_2S emissions from geothermal generation are reported for the sake of information completeness.
Their values are estimated on the basis of periodical analyses and measurements of the composition and flow rate of geothermal steam used by power plants.
Thanks to the growing use of abatement systems, H_2S emissions are lower than those that would be naturally present in geothermal areas without geothermal power plants.
In line with the IPCC Guidelines, the Eco-Balance does not report the emissions of CO_2 from the share of thermal generation obtained from biomass and from the biodegradable fraction of RDF (containing non-fossil carbon). Indeed, these emissions counterbalance the CO_2 that biomass (organic component of waste or used on as-is basis) absorbs during its growth.
However, CO_2 emissions from combustion of the non-biodegradable fraction (containing fossil carbon) of RDF are reported.

EN18 Avoided CO_2 emissions

Avoided CO_2 emissions are an indicator of the environmental benefits arising from the mix of resources used for production processes and from the efficiency of the full cycle, going from utilization of the resources to end uses of the various products.
The tables show the CO_2 emissions that the Enel Group avoided thanks to renewable and nuclear generation, rather than from the otherwise necessary fossil-fired thermal generation.
These emissions are determined by multiplying the electricity generation from each renewable or nuclear source by the average specific CO_2 emissions from fossil-fired thermal power plants in the various countries where the Group is present. Failing thermal power plants, reference is made to the national average specific emissions of Enerdata's database (htpp://services.enerdata.eu).
Overall avoided emissions are calculated as the sum of the avoided emissions in the various geographic areas.
In the case of hydro power, reference is made only to generation from natural flows, excluding the contribution of pumped-storage power plants.
In 2010, the overall Group avoided about 100 million tonnes of CO_2 emissions (more than 61 million tonnes thanks to generation from renewables and over 37 thanks to nuclear generation). The percentage ratio of the overall

CO_2 emissions that Enel avoided thanks to renewable generation to those which would have been produced by its power generation activities, failing the contribution of renewables [avoided CO_2/(actual CO_2 + avoided CO_2)], is above 35%. If also the contribution of nuclear generation is considered, then this percentage exceeds 44%.

EN20 Radioactive emissions into the atmosphere (nuclear generation)

Nuclear fission produces unstable (radioactive) isotopes, which turn into stable isotopes – also through subsequent decays – and release energy in the form of radiation with different properties and penetrating power.

Alpha and beta radiation (consisting of electrically-charged particles) and gamma radiation (consisting of electromagnetic waves) are also produced naturally.

Alpha particles (helium nuclei) are relatively heavy and slow and have a low penetrating power, so that they can be blocked by less than 10 cm of air or merely by a sheet of paper.

Beta particles (electrons) are lighter and faster and their penetrating power is higher than the one of alpha particles; however, this power is so small that the particles can be blocked by a thin metal sheet: a few millimeters can stop them, whereas in air a few meters would be needed.

Gamma radiation is more penetrating and energetic and is stopped only by a thick layer of concrete, lead or steel.

Under normal operating conditions, the emissions of a nuclear power plant come from the ventilation system of the reactor containment and from other buildings (e.g. the condensate ejector one) and flow into the stack.

The total activity of the gamma rays emitted by discharged noble gases, iodine 131 and radioactive aerosols is continuously monitored. Samples are collected to measure the activity of nuclides, which have radiotoxicological implications. The following isotopes are measured:

> Noble gases: Ar41, Kr85, Kr85m, Kr87, Kr88, Xe133, Xe133m, Xe135;
> Iodine 131;
> Alpha aerosols (alpha emitters): Pu238, Pu239+Pu240, Am241;
> Beta aerosols (beta emitters): Sr89, Sr90;
> Gamma aerosols (gamma emitters): Cr51, Mn54, Co57, Co58, Fe59, Co60, Zn65, Nb95, Zr95,Mo99, Ru103, Rh106, Ag110m, Sb122, Sb124, Cs134, Cs137, Ce141, Ce144;
> Tritium and C14.

The "activity" is defined as the number of disintegrations of a given amount of radioactive material per unit time. It is measured in Becquerel (Bq): 1 Bq = 1 disintegration per second. As the Becquerel is a very small unit of measurement, radioactivity is very often indicated in multiples of Becquerel.

Radioactive emissions into the atmosphere are reported here in absolute values (using the most appropriate multiples of Becquerel).

When the activity refers to contamination on a given surface, it is expressed in Bq per unit surface area (Bq/cm^2). When it refers to volume (e.g. contamination of air or water), it is expressed in Bq per unit volume (Bq/cm^3). Likewise, in the case of contamination of matrices, such as soil, food, etc., reference is made to activity per unit mass (Bq/kg).

The abnormal trend of radioactive emissions into the atmosphere in the years 2008 and 2009 (Iodine 131, Sr 89-90, β and γ aerosols) is due to the replacement of fuel rods in all the Spanish power plants except for Asco II (no replacement in 2010).

Performance indicators - KPIs

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Specific emissions into the atmosphere								
EN20 SO_2 (thermal generation)	g/kWh thermal net	3.95	3.12	1.27	1.12	0.929	-76.5	-17.1
EN20 NO_X (thermal generation)	g/kWh thermal net	0.821	1.03	1.25	1.38	1.14	38.9	-17.4
EN20 Particulates (thermal generation)	g/kWh thermal net	0.120	0.121	0.060	0.072	0.060	-50.0	-16.7
EN16 CO_2 (thermal generation)	g/kWh thermal net	743	748	732	741	711	-4.3	-4.0
EN20 SO_2 (thermal generation - CHP)	$g/kWh_{eq.}$ thermal net	8.21	7.41	3.59	3.10	3.43	-58.2	10.6
EN20 NO_X (thermal generation - CHP)	$g/kWh_{eq.}$ thermal net	1.61	1.46	1.69	1.96	2.32	44.1	18.4
EN20 Particulates (thermal generation - CHP)	$g/kWh_{eq.}$ thermal net	1.49	0.185	2.90	2.38	2.75	84.6	15.5
EN16 CO_2 (thermal generation - CHP)	$g/kWh_{eq.}$ thermal net	1,003	983	721	691	691	-31.1	0.0
EN20 SO_2 (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	2.70	2.04	1.06	0.975	0.964	-64.3	-1.1
EN20 NO_X (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	0.558	0.645	0.806	0.884	0.843	51.1	-4.6
EN20 Particulates (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	0.128	0.076	0.401	0.435	0.519	305.5	19.3
EN16 CO_2 (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	488	466	437	413	389	-20.3	-5.8
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0.893	0.948	0.687	0.555	0.820	-8.2	47.7
CH_4+CO_2, expressed as CO_2-equivalent (gas distribution)	g/m³ of natural gas	111	111	111	0	0	-100.0	0.0
EN20 H_2S (geothermal fluid)	g/kWh geothermal net	3.99	3.06	2.51	1.98	1.97	-50.6	-0.5
EN20 CO_2 (geothermal fluid)	g/kWh geothermal net	374	369	365	364	347	-7.2	-4.7
EN20 **Specific radioactive emissions into the atmosphere**								
Nuclear generation								
Noble gases	kBq/kWh	0	1	1	1	1	0.0	0.0
Iodine 131	kBq/kWh	0	1	9	11	3	0.0	72.7
Aerosol β & γ	mBq/kWh	0	0	1,150	813	238	0.0	70.7
Aerosol α	µBq/kWh	0	1	2	3	1	0.0	66.7
Strontium 89 and 90	µBq/kWh	0	165	159	375	105	0.0	72.0
Nuclear generation (CHP)								
Noble gases	$kBq/kWh_{eq.}$	1	1	1	0	1	0.0	0.0
Aerosol β & γ	$mBq/kWh_{eq.}$	3	2	1	2	1	66.7	50.0
Aerosol α	$µBq/kWh_{eq.}$	10	2	1	2	0	100.0	100.0
Strontium 89 and 90	$µBq/kWh_{eq.}$	18	15	10	7	5	72.2	28.6

Specific emissions into the atmosphere

In electricity generation, specific emissions into the atmosphere express the amounts of the typical and significant substances emitted into the atmosphere per kWh net of thermal, geothermal or total electricity generation or per $kWh_{eq.}$ net of electricity and heat generation (in the case of CHP).

The **specific emissions from thermal generation (simple or CHP)** represent:

EN20 for SO_2, NO_X and particulates, the cumulated effect of the fuel mix, of the efficiency of thermal power plants and of direct prevention and abatement measures;

EN16 for CO_2, the cumulated effect of the fuel mix, of the efficiency of thermal power plants and of the marginal contribution of the desulfurization process.

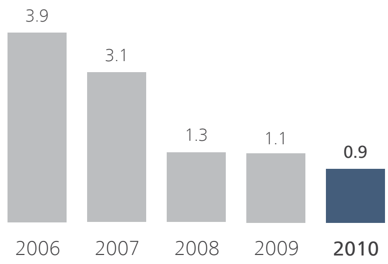
With respect to 2009, the trends of specific emissions of SO_2, NO_X and particulates from simple thermal generation were as follows: SO_2 was down by as much as 17%, thanks to the desulfurizers installed in 2009; NO_X were down by 18%, thanks to the installation of abatement systems and to the utilization of the more efficient units in terms of abatement of this pollutant; particulates and CO_2 diminished by 17% and 4%, respectively, thanks to a higher share of natural gas in the fuel mix.

A distinction should be made between the performance of thermal power plants (which generate electricity only) and the one of combined heat & power (CHP) plants. Thermal power plants that generate electricity only are present especially in Bulgaria, Italy, Portugal, Spain and Latin America: they account for about four fifths (~48,000 MW) of the net maximum capacity. Conversely, CHP plants are located above all in Slovakia and Russia and account for one fifth of the generating mix (~9,500 MW). This distinction is useful both to separate the two types of generation and to distinguish assets which are located in geographic areas with completely different technological, cultural and socio-political traditions. Therefore, the related performance data should be analyzed on a case-by-case basis.

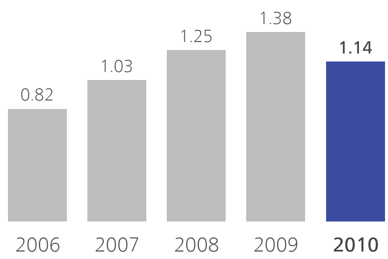
The overall performance of CHP generation is strongly affected by the Russian plants. In particular, all the three specific indicators of macro-pollutants worsened as against 2009 (SO_2 ~+10%, NO_X ~+18%, particulates ~+16%), whereas CO_2 had a practically unchanged value.

Net specific emissions are also determined vs. total generation of electricity and heat (expressed in $kWh_{eq.}$), thereby mirroring also the effect of the overall mix of energy sources.

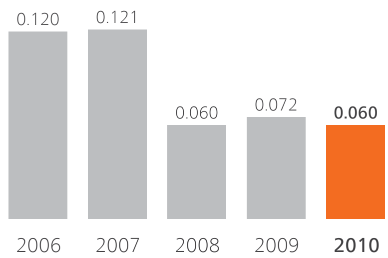
Specific SO_2 emissions from simple thermal generation
(g/kWh thermal net)



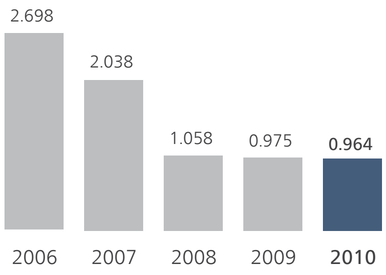
Specific NO_X emissions from simple thermal generation
(g/kWh thermal net)



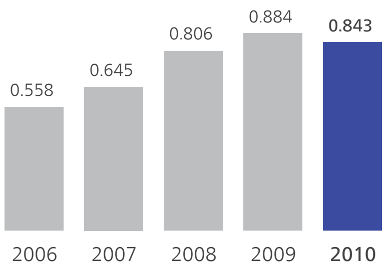
Specific particulate emissions from simple thermal generation
(g/kWh thermal net)



Specific SO_2 emissions from thermal generation (simple and CHP) vs. total electricity and heat generation (g/kWh$_{eq.}$ total net)



Specific NO_X emissions from thermal generation (simple and CHP) vs. total electricity and heat generation (g/kWh$_{eq.}$ total net)



The indicators of SO_2, NO_X, particulates and CO_2 had a downward trend (~-1%, ~-5%, ~+19% and ~-6%, respectively). Total specific CO_2 emissions were the lowest in the five-year period, reaching a value of 390 g/kWh.

Relative SF_6 emissions, which concern all electric activities, express the ratio of the yearly emissions of SF_6 to the year-end volume of SF_6 contained in in-service & in-stock equipment, as well as in the bottles used for replenishments.

The percentages of SF_6 over the years have small fluctuations, owing above all to the occasional character of replenishments. However, they all lie below the value reported in the literature and suggested by the IPCC Guidelines for national greenhouse-gas inventories (1%).

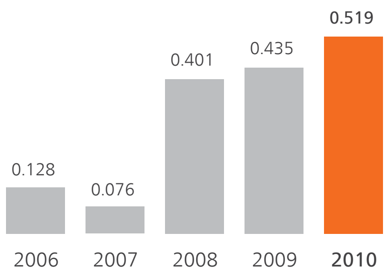
EN20 EN16

Specific emissions from geothermal generation – bearing in mind the considerations made about their origin – are entirely attributed to electricity generation, on the assumption that no steam is lost during drilling and that the fluid used in non-electric applications is liquid (i.e. without gases, except those dissolved in it). These emissions express:

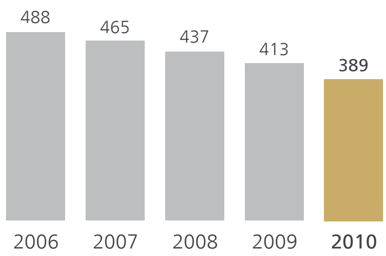
> for H_2S, the cumulated effect of the composition of geothermal steam, of the efficiency of geothermal power plants and of abatement systems;
> for CO_2, the cumulated effect of the composition of geothermal steam and of the efficiency of geothermal power plants.

Both continued to progressively decline in 2010.

Specific particulate emissions from thermal generation (simple and CHP) vs. total electricity and heat generation (g/kWh$_{eq.}$ total net)



Specific CO_2 emissions from thermal generation (simple and CHP) vs. total electricity and heat generation (g/kWh$_{eq.}$ total net)



Liquid releases

Absolute values (1)

			2006	2007	2008	2009	2010
EN21 **Conventional polluting load of waste waters discharged by installations**							
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	12,216	22,260	7,245	66,132	85,846
	in some plants with an overall capacity of	MW	24,023	31,643	24,492	27,934	26,765
	thermal generation (CHP)	kg	0	0	89,549	53,085	42,430
	in some plants with an overall capacity of	MW	0	0	8,183	6,979	6,979
	nuclear generation	kg	0	111	49.7	70.3	104
	on an overall capacity of	MW	0	2,441	2,442	3,522	3,514
	nuclear generation (CHP)	kg	383	169	168	158	366
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
	Total electricity generation	kg	12,599	22,540	97,012	119,444	128,746
	Fuel storage & handling	kg	10.5	12	12.2	7.70	4
	Total	**kg**	**12,610**	**22,552**	**97,025**	**119,452**	**128,750**
Total nitrogen (expressed as N)	thermal generation	kg	96,211	146,778	110,133	286,230	337,125
	in some plants with an overall capacity of	MW	22,675	30,804	27,114	28,147	27,716
	nuclear generation	kg	0	2,213	7,407	17,612	5,888
	on an overall capacity of	MW	0	2,441	2,442	3,522	3,514
	nuclear generation (CHP)	kg	93,764	86,596	40,295	34,566	32,130
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
	Total electricity generation	kg	189,975	235,587	157,835	338,409	375,143
	Fuel storage & handling	kg	115	47.3	16.9	12.6	45
	Total	**kg**	**190,090**	**235,634**	**157,852**	**338,421**	**375,188**
Total phosphorus (expressed as P)	thermal generation	kg	11,515	18,234	8,873	16,625	23,217
	in some plants with an overall capacity of	MW	21,809	29,220	24,246	21,970	24,233
	nuclear generation	kg	0	76.6	99.4	118	1,189
	on an overall capacity of	MW	0	2,441	2,442	3,522	3,514
	nuclear generation (CHP)	kg	3,608	2,387	2,319	2,213	2,491
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
	Total electricity generation	kg	15,123	20,698	11,292	18,956	26,897
	Fuel storage & handling	kg	48.1	6.15	1.83	1.85	3
	Total	**kg**	**15,171**	**20,704**	**11,294**	**18,958**	**26,900**

(1) The variability of the data of the five-year series is due to the change in the number of plants (defined in the table by the overall capacity in MW) on which the analysis has been made.

			2006	2007	2008	2009	2010
COD	thermal generation	kg	519,690	359,746	289,006	335,660	347,461
	in some plants with an overall capacity of	MW	23,438	23,174	27,957	26,654	28,898
	thermal generation (CHP)	kg	1,667,536	229,453	131,714	72,306	79,815
	in some plants with an overall capacity of	MW	1,621	1,275	1,275	1,255	1,275
	nuclear generation	kg	0	1,734	2,064	2,714	24,125
	on an overall capacity of	MW	0	2,441	2,442	3,522	3,514
	nuclear generation (CHP)	kg	149,668	117,003	105,591	111,648	140,870
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
	Total electricity generation	kg	2,336,894	707,936	528,375	522,329	592,271
	Fuel storage & handling	kg	1,021	325	38.5	397	375
	Total	**kg**	**2,337,915**	**708,260**	**528,413**	**522,726**	**592,646**
BOD	thermal generation	kg	130,938	82,978	69,734	75,016	118,955
	in some plants with an overall capacity of	MW	15,908	15,995	18,224	21,126	21,177
	thermal generation (CHP)	kg	241,608	33,463	18,167	14,208	15,874
	in some plants with an overall capacity of	MW	1,621	1,275	1,275	3,508	1,275
	nuclear generation	kg	0	297	1,376	1,792	4,623
	on an overall capacity of	MW	0	2,441	2,442	3,522	3,514
	nuclear generation (CHP)	kg	17,710	15,290	15,497	17,605	16,021
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
	Total electricity generation	kg	390,256	132,028	104,775	108,621	155,473
	Fuel storage & handling	kg	314	345	12.2	167	119
	Total	**kg**	**390,569**	**132,372**	**104,787**	**108,787**	**155,592**
EN21 **Radionuclides in waste waters discharged by plants**							
Tritium	nuclear generation	GBq	0	9,028	58,777	57,746	71,013
	nuclear generation (CHP)	GBq	14,579	12,970	12,444	21,621	19,359
	Total	**GBq**	**14,579**	**21,998**	**71,221**	**79,367**	**90,372**
Corrosion and fission products	nuclear generation	GBq	0	3.08	12.8	21.7	9.82
	nuclear generation (CHP)	GBq	0.067	0.029	0.034	0.032	0.035
	Total	**GBq**	**0.067**	**3.11**	**12.9**	**21.8**	**9.85**

EN21 Waste waters

Waste waters include residual waters for industrial uses and meteoric waters collected from the outdoor areas of thermal power plants, when they are susceptible to oil contamination. They are treated on a regular basis and always if they are to be returned to surface water bodies. After treatment, waste waters are in part used inside power plants – thereby contributing to coverage of water requirements for industrial uses – and in part released into surface water bodies. The volumes of waste waters are estimated by referring to the potential capability and utilization of water treatment systems, as well as to the modes of operation of the industrial installation to which these systems belong. As is obvious, waste waters reflect the trend of water requirements for industrial uses, with a few deviations due, above all, to the variability of precipitation.

EN21 Polluting load of waste waters

Waste waters carry substances which alter the physico-chemical characteristics of the receiving water bodies, thus causing a potentially negative impact on ecosystems and affecting subsequent water uses (e.g. drinking, farming and recreation).

In the case of Enel, the extent of the problem is much smaller than in other industries, such as the chemical one. Nevertheless, the applicable legislation specifies strict limits for concentration of pollutants, with which Enel complies through the use of treatment systems. Waste waters are distinguished on the basis of their characteristics (acidic/alkaline, oily, ammonia-containing, coming from desulfurizer drains, meteoric, gray water) and separately treated. After treatment, some of their parameters (e.g. conductivity, pH, turbidity, dissolved oxygen and oil content) are continuously monitored. This activity ensures compliance with legislative limits; indeed, when pollutant concentrations get close to legislative limits, waste waters are treated again until reaching compliance. Also the waste waters that are reused inside power plants (contributing to coverage of water requirements for industrial uses) usually need prior treatment to conform to the applicable legislation.

The use of environmental management systems (certified or to be certified) makes it possible to record the mass emissions of typical and quantitatively significant pollutants (metals and compounds, nitrogen and compounds, phosphorus and compounds), as well as COD (Chemical Oxygen Demand) and BOD (Biochemical Oxygen Demand) in the waste waters released by almost all installations (except for some small thermal power plants). These data are obtained by multiplying the measured concentrations by the volumes of the released waste waters. The variability of the data of the five-year series is due to the change in the number of installations (defined in the table by the overall capacity in MW) on which the analysis has been made.

EN21 Radionuclides in waste waters (nuclear generation)

The most common sources of radionuclide-containing waste waters are laundries, decontamination areas, drains or losses from primary loop components. Before being discharged, radioactive waste waters are mixed with conventional waste waters. If radionuclide concentrations (corrosion & fission products and tritium) exceed the limits mandated by the applicable legislation or specified in the authorizations for releases into the receiving water bodies, then radioactive waste waters are conveyed to a vaporization treatment system. Given its low level of radioactivity, the vaporized water may, after condensing, be reused or rejoin waste waters, while the remaining concentrated solution flows into liquid radioactive waste.

The following radioactive isotopes are monitored:

> corrosion and fission products: the same radionuclides as those measured in aerosols (alpha, beta and gamma emitters);

> tritium.

Here, the activity of the radionuclides contained in the discharged waste waters (obtained by multiplying their measured concentrations by the volumes of the discharged waste waters) is expressed in billions of becquerel (GBq).

Performance indicators - KPIs

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN21 Net specific conventional polluting load of waste waters discharged by plants (nuclear generation - CHP)								
Metals and compounds (expressed as metal equivalents)	mg/kWh$_{eq.}$	0.034	0.014	0.013	0.012	0.026	-23.5	116.7
Total nitrogen (expressed as N)	mg/kWh$_{eq.}$	8.25	7.26	3.17	2.53	2.26	-72.6	-10.7
Total phosphorus (expressed as P)	mg/kWh$_{eq.}$	0.317	0.200	0.182	0.162	0.175	-44.8	8.0
COD	mg/kWh$_{eq.}$	13.2	9.81	8.30	8.16	9.90	-25.0	21.3
BOD	mg/kWh$_{eq.}$	1.56	1.28	1.22	1.29	1.13	-27.6	-12.4
EN21 Net specific polluting load of radionuclides in waste waters								
Nuclear generation (tritium)	kBq/kWh	0	2.19	3.36	2.55	2.57	0.0	0.8
Nuclear generation - CHP (tritium)	kBq/kWh$_{eq.}$	1.28	1.09	0.978	1.58	1.36	6.3	-13.9

EN21 Specific polluting load of waste waters

This item expresses the amount (per kWh net or kWh$_{eq.}$ net of thermal/nuclear generation, simple or CHP) of the typical and significant polluting substances and of the parameter values of the waste waters from thermal and nuclear power plants which are returned to water bodies.

As is obvious, this load is chiefly dependent on the efficiency of waste water treatment systems and cannot be easily correlated with other factors concerning power plants and their modes of operation.

Waste

Absolute values

			2006	2007	2008	2009	2010
EN22 **Non-hazardous special waste**							
Coal bottom ash	fossil-fired thermal generation (simple and CHP)						
production		t	445,292	492,101	696,718	680,732	640,309
delivery to recovery operators		t	52,436	91,603	86,622	111,219	106,876
Coal flyash	fossil-fired thermal generation (simple and CHP)						
production		t	2,926,986	3,733,578	6,771,554	7,838,149	8,435,452
delivery to recovery operators		t	1,654,647	2,347,218	2,697,738	2,259,685	1,814,307
Oil bottom ash	fossil-fired thermal generation (simple and CHP)						
production		t	93.1	24.4	0	63	1.84
delivery to recovery operators		t	0	0	0	0	1.84
Orimulsion bottom ash	fossil-fired thermal generation (simple and CHP)						
production		t	0	0	0	3,511	6,352
Gypsum from desulfurization	fossil-fired thermal generation (simple and CHP)						
production		t	405,710	860,546	1,782,515	1,698,998	1,563,570
delivery to recovery operators		t	280,767	286,811	320,523	328,029	577,405
Other							
production	electricity generation & geothermal drilling	t	761,710	704,373	730,791	812,714	565,440
	electricity distribution	t	31,439	43,384	129,505	208,474	193,385
	various activities	t	371	278	1,397	7,091	3,038
	Total	**t**	**793,520**	**748,035**	**861,692**	**1,028,280**	**761,862**
delivery to recovery operators	electricity generation & geothermal drilling	t	111,955	114,314	102,061	85,743	111,333
	electricity distribution	t	29,296	32,477	32,945	42,687	46,975
	various activities	t	331	273	2,608	3,019	2,669
	Total	**t**	**141,582**	**147,064**	**136,342**	**131,450**	**160,977**
Total							
production	electricity generation & geothermal drilling	t	4,549,791	5,790,622	9,981,578	11,034,167	11,211,124
	electricity distribution	t	31,439	43,384	129,505	208,474	193,385
	various activities	t	371	278	1,397	7,091	3,038
	Total	**t**	**4,581,601**	**5,834,284**	**10,112,479**	**11,249,733**	**11,407,546**
delivery to recovery operators	electricity generation & geothermal drilling	t	2,099,804	2,839,945	3,206,945	2,784,676	2,609,923
	electricity distribution	t	29,296	32,477	32,945	42,687	46,975
	various activities	t	331	273	1,336	3,019	2,669
	Total	**t**	**2,129,432**	**2,872,695**	**3,241,226**	**2,830,382**	**2,659,567**

			2006	2007	2008	2009	**2010**
EN22 **Hazardous special waste**							
Oil flyash	fossil-fired thermal generation (simple and CHP)						
production		t	7,212	1,914	1,403	1,122	1,352
delivery to recovery operators		t	133	118	0	753	909
Other ash	fossil-fired thermal generation (simple and CHP)						
production		t	0	0	0	8.17	8.90
delivery to recovery operators		t	0	0	0	0.190	8.60
Other							
production	electricity generation & geothermal drilling	t	22,449	25,769	23,402	48,248	49,060
	electricity distribution	t	16,308	24,606	39,959	20,488	22,727
	various activities	t	13.8	756	1,034	1,481	176
	Total	**t**	**38,771**	**51,130**	**64,394**	**70,217**	**71,963**
of which with PCBs	*electricity generation & geothermal drilling*	*t*	*1,192*	*3,161*	*2,966*	*4,135*	*4,634*
	electricity distribution	*t*	*1,386*	*1,479*	*2,025*	*1,428*	*1,306*
	various activities	*t*	*0.060*	*0*	*0.640*	*403*	*1.07*
	Total	***t***	***2,577***	***4,640***	***4,991***	***5,966***	***5,941***
delivery to recovery operators	electricity generation & geothermal drilling	t	3,910	3,731	4,416	5,451	8,959
	electricity distribution	t	8,537	12,800	18,496	15,837	17,586
	various activities	t	3.49	2.35	102	312	16
	Total	**t**	**12,450**	**16,533**	**23,014**	**21,600**	**26,561**
of which with PCBs	*electricity generation & geothermal drilling*	*t*	*1,095*	*1,177*	*2,512*	*3,893*	*4,408*
	electricity distribution	*t*	*1,297*	*1,200*	*1,723*	*1,069*	*1,262*
	various activities	*t*	*0*	*0*	*0*	*0*	*0.574*
	Total	***t***	***2,392***	***2,377***	***4,236***	***4,962***	***5,671***
Total							
production	electricity generation & geothermal drilling	t	29,661	27,683	24,805	49,378	50,421
	electricity distribution	t	16,308	24,606	39,959	20,488	22,727
	various activities	t	13.8	756	1,034	1,481	176
	Total	**t**	**45,982**	**53,044**	**65,797**	**71,348**	**73,324**
delivery to recovery operators	electricity generation & geothermal drilling	t	4,043	3,849	4,416	6,205	9,876
	electricity distribution	t	8,537	12,800	18,496	15,837	17,586
	various activities	t	3.49	2.35	102	312	16
	Total	**t**	**12,583**	**16,652**	**23,014**	**22,354**	**27,478**

			2006	2007	2008	2009	**2010**
EN22 Total special waste							
production	electricity generation & geothermal drilling	t	4,579,452	5,818,305	10,006,383	11,083,546	11,261,546
	electricity distribution	t	47,747	67,989	169,463	228,963	216,111
	various activities	t	384	1,034	2,430	8,572	3,214
	Total	**t**	**4,627,583**	**5,887,328**	**10,178,276**	**11,321,800**	**11,480,871**
delivery to recovery operators	electricity generation & geothermal drilling	t	2,103,847	2,843,795	3,211,360	2,790,880	2,619,799
	electricity distribution	t	37,833	45,277	51,441	58,524	64,561
	various activities	t	335	275	1,439	3,332	2,685
	Total	**t**	**2,142,015**	**2,889,347**	**3,264,240**	**2,852,736**	**2,687,045**
EN22 Radioactive waste							
Low- , intermediate- and high-level: stored inside plants	nuclear generation (simple and CHP)						
liquid		m^3	3,054	2,923	2,795	2,643	2,540
solid		m^3	0	0	1,231	2,953	1,528
solid		t	441	346	338	310	307
Low-, intermediate- and high-level: production	nuclear generation (simple and CHP)						
liquid		m^3	161	125	119	93.6	80.2
solid		m^3	0	39.3	127	218	241
of which fraction not storable in off-site surface or subsurface sites		*m^3*	*0*	*0*	*72.5*	*0*	*33.4*
solid		t	44.6	81.2	39.4	31.7	29.3
of which fraction not storable in off-site surface or subsurface sites		*t*	*0*	*12.8*	*0*	*0*	*0*
High-level: production	nuclear generation (simple and CHP)						
liquid		m^3	0	0	0	0	4.02
solid		m^3	0	1.49	0	22.1	10.6
solid		t	0.901	14.4	4.93	1.01	2.13

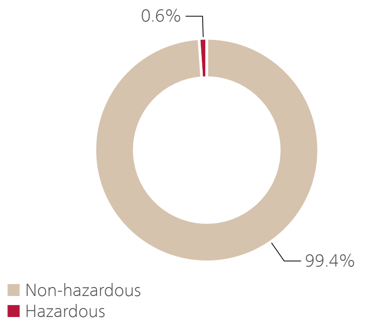
EN22 Special waste

Special waste represents the refuse from Enel's activities. This refuse is covered by the national legislation applicable in the countries where the Group operates. At European level, the reference legislation is Directive 2008/98/EC.
For the classification of waste into non-hazardous and hazardous, Enel refers to Community legislation.

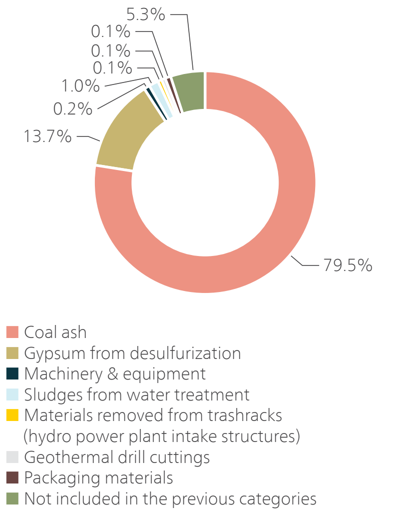
> In the pie chart, the non-hazardous special waste includes: i) the most representative items (specified in the "Waste" table: coal ash (flyash and bottom ash) and gypsum from desulfurization; ii) "other" waste (also globally shown in the tables), i.e. typical items which are individually inventoried or grouped as "not included in the previous categories". The typical items that are individually inventoried are: machinery & equipment and their parts; sludges from water treatment (waste waters and waters from dredging or septic tanks); materials removed by Enel from the trashracks of hydro power plant intake structures; the portion of alluvial sediments – mechanically removed from hydro basins upon emptying – which is not reused locally, because it is not classified as inert or classified as inert without a specified use; drill cuttings from geothermal activities; and packaging materials (paper and cardboard, wood, glass, plastics and metal). The waste "not included in the previous categories" consists of items of a general or exceptional nature, both liquid (e.g. aqueous waste from groundwater remediation) and solid (e.g. waste from fuel storage and preparation in coal-fired thermal power plants, absorbents, filtering materials, rags and protective clothing, batteries and accumulators, paper and cardboard, cables, miscellaneous components, iron and steel, wood, insulating materials, bituminous mixes, plastics, copper, bronze, brass, saturated or exhausted ion-exchange resins, waste equivalent to non-separately collected municipal waste, inorganic waste, mixed waste from building and demolition activities, waste from primary filtering and screening processes, waste from cooling water treatment, salts and their solutions, soil and rocks, exhausted toner cartridges, glass), as well as other items produced in low amounts but also individually inventoried, such as fuel-oil bottom ash and other ash.

> Hazardous special waste comprises: i) fuel-oil flyash (specified in the "Waste" table as the most representative item); ii) "other" waste (only specified in the pie chart), including: typical items which are individually inventoried (PCB-contaminated equipment, e.g. transformers, capacitors and their parts; used oils; used batteries; asbestos-containing materials; sludges from condensation of geothermal steam; waste from material contaminated by geothermal fluids); or items of a general or exceptional nature (oil-stained clothing, dirt and deposits, soil from remediation works, oil-in-water emulsions, etc.) which are grouped under the "remaining solid" and "remaining liquid" waste categories. "Delivery to recovery operators" means the waste which is transferred to operators authorized to recover waste. The waste data are those yearly reported to the waste inventory (for activities carried out within the European Union) or obtained from the qualitative and quantitative characteristics of the waste indicated in the relevant records.

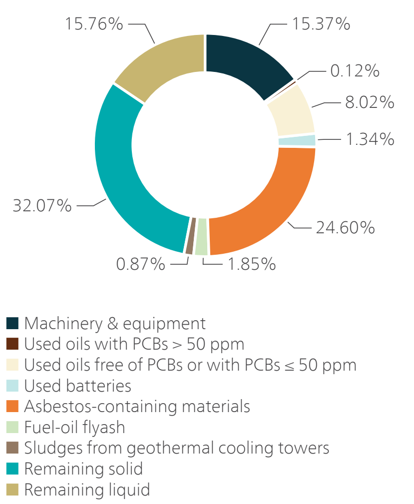
Special waste in 2010
Total production: 11.48 million t



Non-hazardous special waste in 2010
Total production: 11.4 million t



Hazardous special waste in 2010
Total production: 73.3 thousand t



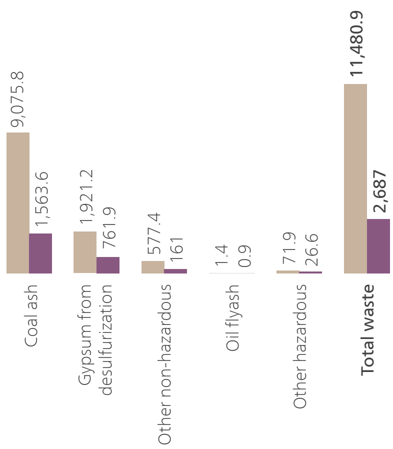
The results show that:

> the production of ash is obviously correlated with fuel consumption and characteristics, as well as with the presence of more or less effective treatment systems (bag filters or electrostatic precipitators); however, the amount of ash depends on various factors, such as: frequency of ash removal from flue-gas ducts and from the hoppers of boilers and of particulate collectors; possible "watering" of the ash to prevent the formation of dust during its temporary storage in the plant site; combustion of flyash in the upper part of boiler furnaces in the case of dual oil-gas firing; the production of gypsum naturally reflects limestone consumption in the flue-gas desulfurization process;

> the "remaining solid" waste includes the following main items: in the case of electricity generation, packaging materials containing residues of or contaminated by hazardous substances, absorbents, filtering materials, rags and protective clothing contaminated by hazardous substances, fluorescent tubes and other mercury-containing waste; in the case of distribution, soil from clean-up of accidental oil spills;

> the "remaining liquid" waste mostly derives from meteoric waters potentially contaminated by oils and collected in the vats underlying the transformers of high-voltage/medium-voltage substations in the electricity distribution grid.

Main categories of special waste in 2010 (thousand t)



The data show that, in the overall Group, about one fourth of the waste produced is recovered. In contrast, the percentage of recovery in Italy, where the waste management capability is higher, exceeds 80%. Enel plans to progressively extend this capability to its non-Italian operations through an intense awareness-raising activity, which is already under way. It should be stressed that the recovery of the main categories of waste (ash, gypsum and sludges) requires the presence of an advanced manufacturing industry (cement and brick factories, building industry) near Enel's installations. In areas where these industrial settlements are not present, Enel intends to assess the cost-effectiveness of transferring the waste to more distant locations or spurring the development of activities capable of taking up the amounts of waste produced.

Radioactive waste (nuclear generation)

The radioactive waste produced in Slovakia is treated in State-owned facilities. Both liquid and solid radioactive waste items are classified into the following categories:

> low-level (e.g. clothing, paper towels, laboratory equipment used in areas where radioactive material is handled) and intermediate-level (e.g. contaminated equipment, sludges and resins from various treatments); this waste produces less than 2 kW/m^3 of residual heat and may be further distinguished into:
  – "short-lived", the waste that, after conditioning, qualifies under the requirements for off-site surface or subsurface storage (specified average

concentration of alpha-emitting nuclides: below 400 Bq/g);
  - "long-lived": the waste that, after conditioning, does not qualify under the requirements for off-site surface or subsurface storage (specified average concentration of alpha-emitting nuclides: equal to or greater than 400 Bq/g);
- > high-level: waste releasing more than 2 kW/m^3 of residual heat; it does not qualify under the requirements for off-site surface or subsurface storage; production of this waste is very small under the normal operating conditions of a nuclear power plant (e.g. metal waste and corrosion products removed during clean-up of the reactor core). Solid waste is sorted on the basis of its activity and classified as follows:
  - burnable technological waste;
  - compactable technological waste;
  - suitable for other treatment, such as fragmentation and cementing.

The waste is characterized and, depending on its type, it may be decontaminated, dried, cut, low-pressure compacted and finally packaged in drums or plastic bags. These drums or bags are temporarily segregated in shielded enclosures and then fed to treatment systems. The waste that cannot be stored in off-site surface or subsurface sites and remains in the plant site is placed into stainless steel containers.

Another category of solid waste, whose activity decreases rapidly (e.g. filters of the reactor ventilation system), may be disposed of as special waste (normal industrial waste) immediately or after an adequate period of decay within the plant.

Liquid waste mostly consists of concentrated solutions resulting from the treatment of waste waters via vaporization (see "Radionuclides in waste waters" in the "Liquid releases" chapter) and of drainage waters from systems, pipings and floors of the reactor building. Other contaminated liquid waste includes used oils, oils separated from waters, solvents, etc.

In Spain, radioactive waste management is defined in the General Radioactive Waste Plan prepared by Enresa and approved by the Ministry of Industry. The current plan was approved in July 2006.

Two categories of radioactive waste are considered:

- > low- and intermediate-level waste with "short-lived" beta-gamma radiation and limited content of "long-lived" alpha emitters; this waste is treated, solidified (if liquid) and conditioned in 220-liter drums in the nuclear power plants (resins, concentrates, sludges, dried sludges and filters are cementified, while compactable waste is supercompacted); once the waste has been accepted by Enresa, it is delivered to the El Cabril facility for final storage;
- > high-level waste with higher concentration of "long-lived" emitters and creation of considerable amounts of residual heat; the basic strategy (applying also to some intermediate-level waste which is not suitable for being finally stored at the El Cabril facility) is to deliver this waste to a dry, centralized, temporary storage facility operated by Enresa.

The tables show the most significant absolute data on radioactive waste: share of waste produced since the beginning of operation of the power plants and stored inside the same plants, as well as production of low/intermediate- and high-level waste in the year, distinguishing in both cases between liquid and solid waste.

The production of intermediate- and low-level radioactive waste had a declining trend, in line with the program of reduction which was introduced after retrofitting the sewage and drainage system of the Slovak plants. These retrofits permit to recirculate liquid radioactive waste (containing boric acid) inside the plants and thus to avoid its discharge.

Performance indicators - KPIs

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN22 Specific production of waste								
Coal and brown-coal ash (thermal generation)	g/kWh net from coal and brown coal	84.7	89.9	79.1	70	69.3	-18.2	-1.0
Oil flyash (thermal generation)	g/kWh net from fuel oil & gas-oil	0.473	0.176	0.075	0.054	0.075	-84.1	38.9
Oil bottom ash (thermal generation)	g/kWh net from fuel oil & gas-oil	0.479	0.179	0.075	0.058	0.075	-84.3	29.3
Coal and brown-coal ash (thermal generation - CHP)	g/$kWh_{eq.}$ net from coal and brown coal	138	133	219	204	231	67.4	13.2
EN22 Specific production of radioactive waste								
low- and intermediate-level								
liquid	mm^3/kWh net	0	1	0	0	0	0.0	0.0
solid	mg/kWh net	0	10	0	0	0	0.0	0.0
	mm^3/kWh	0	10	7	10	9	0.0	-10.0
high-level								
solid	mg/kWh net	0	3	0	0	0	0.0	0.0
	mm^3/kWh	0	0	0	1	0	0.0	-100.0
low- and intermediate-level								
liquid	mm^3/$kWh_{eq.}$ net	14	10	9	7	5	-64.3	-28.6
solid	mg/$kWh_{eq.}$ net	4	3	3	2	2	-50.0	0.0
EN22 Low-, intermediate- and high-level radioactive waste stored inside plants								
liquid	% in volume of production since the start of operation	73.8	92	64.3	58.2	53.6	-27.4	-7.9
solid	% in weight of production since the start of operation	55.8	87.9	37.1	32.8	30.8	-44.8	-6.1
	% in volume of production since the start of operation	0	0	21.5	69.9	27.1	0.0	-61.2

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN22 Waste recovery								
Coal and brown-coal ash	% of production	50.5	57.7	37.3	27.8	21.2	-58	-23.7
bottom ash	*% of production*	*11.5*	*18.6*	*12.4*	*16.3*	*16.7*	*45.2*	*2.5*
flyash	*% of production*	*56.5*	*62.9*	*39.8*	*28.8*	*21.5*	*-61.9*	*-25.3*
Gypsum from desulfurization	% of production	69.2	33.3	18	19.3	36.9	-46.7	91.2
Other non-hazardous special waste								
electricity generation & geothermal drilling	% of production	14.7	16.2	14	10.5	19.5	14.7	85.7
electricity distribution	% of production	93.2	74.9	25.4	20.5	24.3	-73.9	18.5
fuel storage & handling, gas distribution	% of production	89.4	98.1	93.5	21.4	88.7	-0.8	314.5
Total	**% of production**	**17**	**19.7**	**15.8**	**12.5**	**20.7**	**16.3**	**65.6**
Total non-hazardous special waste								
electricity generation & geothermal drilling	% of production	46.2	49	32	25.2	23.3	-49.6	-7.5
electricity distribution	% of production	93.2	74.9	25.4	20.5	24.3	-73.9	18.5
fuel storage & handling, gas distribution	% of production	89.4	98.1	93.5	21.4	88.7	-0.8	314.5
Total	**% of production**	**46.5**	**49.2**	**32**	**25.1**	**23.3**	**-49.9**	**-7.2**
Oil flyash	% of production	1.85	6.18	0	67.1	67.2	3,532.4	0.1
Other hazardous special waste								
electricity generation & geothermal drilling	% of production	17.4	14.5	18.9	2.78	18.3	5.2	558.3
electricity distribution	% of production	52.3	52	46.3	77.3	77.4	48.0	0.1
fuel storage & handling, gas distribution	% of production	24.3	0.311	1.25	0	17.6	-27.6	0.0
Total	**% of production**	**32.1**	**32.3**	**35.7**	**9.83**	**37**	**15.3**	**276.4**
Total hazardous special waste								
electricity generation & geothermal drilling	% of production	13.6	13.9	17.8	3.15	19.6	44.1	522.2
electricity distribution	% of production	52.3	52	46.3	77.3	77.4	48.0	0.1
fuel storage & handling, gas distribution	% of production	24.3	0.311	1.25	0	17.6	-27.6	0.0
Total	**% of production**	**27.4**	**31.4**	**34.9**	**10.1**	**37.5**	**36.9**	**271.3**
Total special waste								
electricity generation & geothermal drilling	% of production	45.9	48.9	32.1	24.8	23.3	-49.2	-6.0
electricity distribution	% of production	79.2	66.6	30.4	25.6	29.5	-62.2	16.8
fuel storage & handling, gas distribution	% of production	87.1	26.6	42.3	20.6	80.2	-7.9	289.3
Total	**% of production**	**46.3**	**49.1**	**32.1**	**24.9**	**23.4**	**-49.5**	**-6.0**

EN22 Specific production of waste

Ash and gypsum from desulfurization (both from thermal generation, simple and CHP) are the only categories of waste which have a significant correlation with the volume of activities.

The tables show the overall production of coal ash and oil ash per kWh net (thermal generation) or $kWh_{eq.}$ net (CHP) obtained with each of the two fuels. The use of better quality fuels (lower production of ash) and the generalized application of advanced particulate collection technologies (higher collection of flyash) have opposite effects, which are accompanied by fluctuations that depend on contingent circumstances, as previously pointed out with reference to the waste production figures in absolute terms.

The net specific production of coal and brown-coal ash from thermal generation stood steady (~69 g/kWh), whereas the one of coal and brown-coal ash from thermal CHP generation grew, owing above all to the higher amount of unburnt carbon particles in the coal used in Russia.

For nuclear generation, the tables show two indicators that are typical of the sector:

> production of radioactive waste (distinguished by activity and state of aggregation) per unit of electricity produced in the year;

> ratio of the amount of (liquid and solid) radioactive waste stored in the plant site to the overall amount of the same waste produced since the beginning of operation of the plant.

The specific production of liquid and solid, intermediate- and low-level radioactive waste in nuclear CHP plants had a declining trend as a result of retrofits of the sewage and drainage system of the Slovak plants, permitting to recirculate liquid radioactive waste (containing boric acid) inside the plants and thus to avoid its discharge.

EN22 Special waste recovery

For the main categories of special waste, this indicator expresses the ratio of the quantities delivered to recovery operators to the quantities produced.

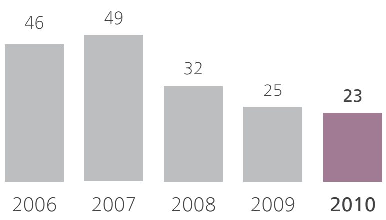
The percentage of overall special waste recovery passed from about 25% to 23%.

In spite of an increase in the recovery of gypsum and hazardous waste, the decrease in the recovery of coal and brown-coal ash by Endesa in Spain (from 73% to 65%) lowered the percentage of total waste recovery.

The erratic pattern of hazardous and non-hazardous waste production (especially from the technological cycles producing lower amounts thereof) is to be ascribed, above all, to two factors: i) the change of Enel's assets in 2007 and 2008 (Endesa, OGK-5 and Muntenia, sale of gas assets); and ii) the nature of this waste, because it originates from different operation and maintenance activities, which generate different types of waste over the years with different opportunities of recovery.

Total waste recovery

(% of waste production)



The following are the methods used for disposing of and recovering the waste produced:

> Methods of disposal
  - specially engineered landfill (e.g. placement into lined, discreet cells which are capped and isolated from one another and the environment for non-recovered ash and gypsum);
  - incineration on land (for biological waste).

> Methods of recovery
  - used principally as a fuel or other means to generate energy (oil ash, dirty rags and other burnable waste);
  - regeneration/recovery of solvents (waste from chemical laboratories);
  - recycling/reclamation of metals and metal compounds;
  - recycling/reclamation of inorganic materials (recovered ash and gypsum);
  - regeneration (oils and batteries).

EN24 Weight of transported, imported, exported or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III and VIII, and percentage of transported waste shipped internationally

The overall weight of hazardous waste delivered by Enel or on behalf of Enel to recovery or disposal operators coincides with the amounts of the individual types of waste produced during the year, except for the amounts temporarily remaining in authorized deposits, located in the waste production sites. All the amounts of waste are delivered to authorized waste management operators. Enel does not import or export waste.
For details, see indicator EN22.

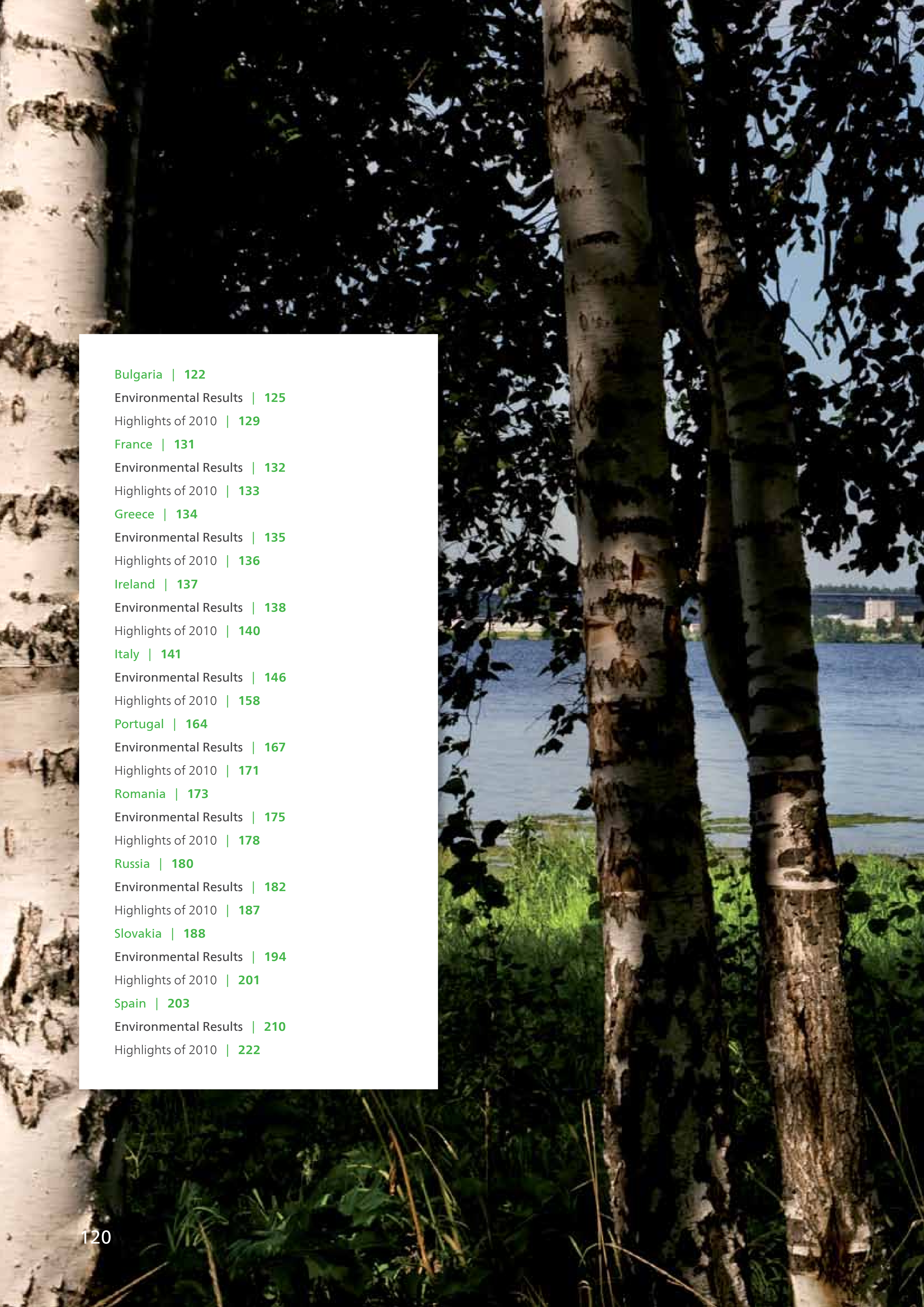
EN27 Percentage of products sold and their packaging materials that are reclaimed by category

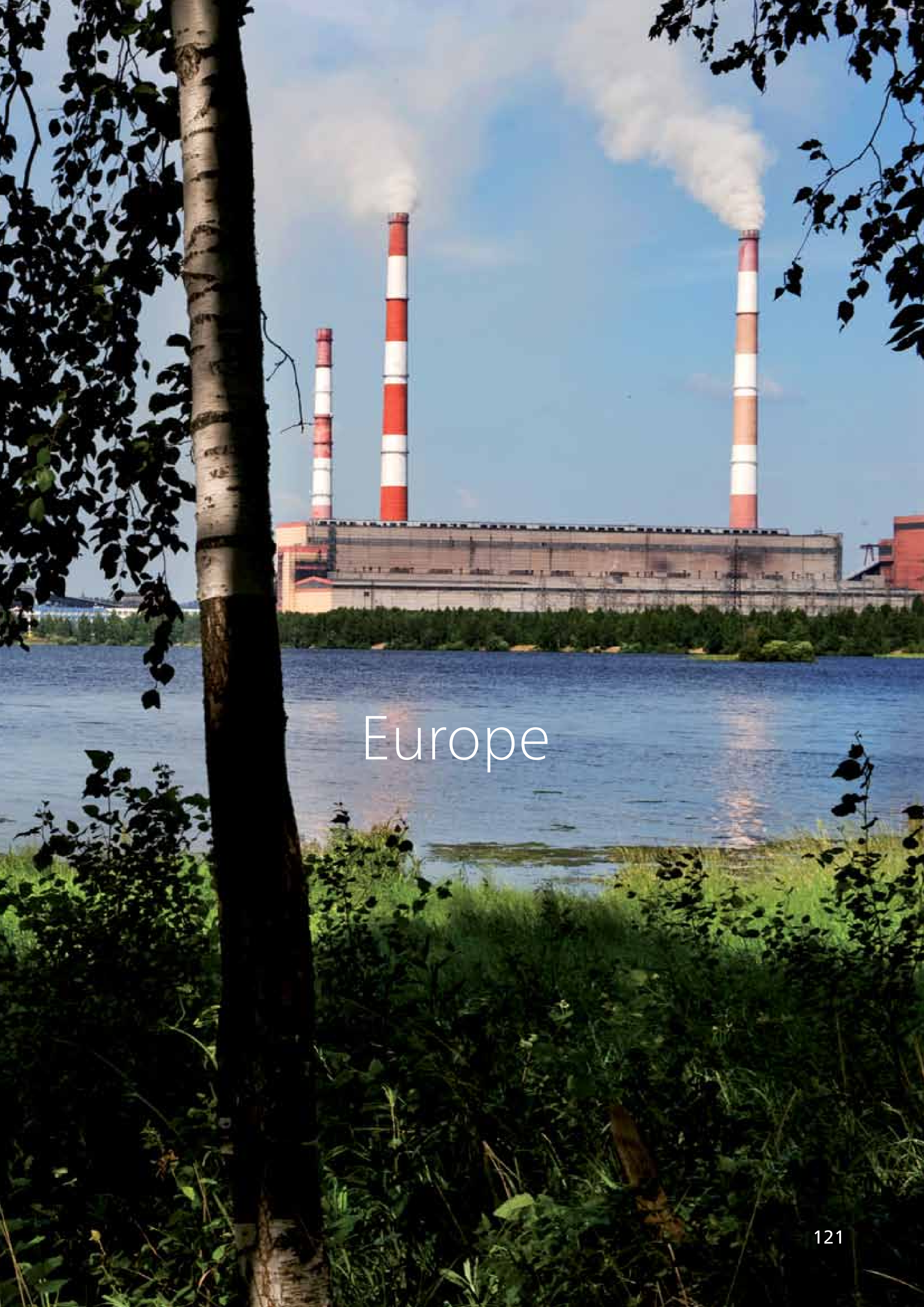
To carry out its activities, the Enel Group purchases a broad range of products and raw materials in the market. These products and materials are packaged in containers of different shape and materials.
The pursuit of environmental management policies throughout the Group and the dissemination of ISO 14001-certified or EMAS-registered environmental management systems (with emphasis on performance) improve the sorting of waste and, consequently, the recovery of packaging materials.

Packaging materials are separately collected (paper and cardboard, wood, plastics, metals and glass). Metal waste is sold, whereas the other separately-collected items of waste are disposed of at zero or extremely low costs.

The following are the categories of packaging materials that are produced and recovered.

			2008	2009	2010
EN27 Waste packaging (non-hazardous special waste)					
Paper and cardboard packaging (CER 15 01 01)	production	t	69	326	206
	delivery to recovery operators	t	63	260	184
Wooden packaging (CER 15 01 03)	production	t	396	461	889
	delivery to recovery operators	t	372	419	909
Plastic packaging (CER 15 01 02)	production	t	19	36	137
	delivery to recovery operators	t	13	19	119
Metallic packaging (CER 15 01 04)	production	t	13	40	19
	delivery to recovery operators	t	5	6	16
Other waste packaging not falling under the previous categories	production	t	4,793	1,596	1,554
	delivery to recovery operators	t	3,750	1,176	1,361
Paper and cardboard (CER 19 12 01, 20 01 01)	production	t	94	451	432
	delivery to recovery operators	t	93	356	392
Ferrous metal (iron, aluminum and steel) (CER 12 01 01, 12 01 02, 16 01 17, 17 04 05, 19 10 01, 19 10 02)	production	t	19,130	33,308	30,376
	delivery to recovery operators	t	12,253	19,060	30,087
Wood (CER 19 12 07, 17 02 01, 20 01 38)	production	t	1,571	1,637	1,915
	delivery to recovery operators	t	1,535	1,454	1,948
Plastic (CER 07 02 13, 12 01 05, 16 01 19, 17 02 03, 19 12 04, 20 01 39)	production	t	272	762	601
	delivery to recovery operators	t	113	501	484
Copper, bronze, brass (CER 17 04 01)	production	t	351	960	1,660
	delivery to recovery operators	t	338	615	1,865
Glass (CER 16 01 20, 17 02 02, 20 01 02)	production	t	40	426	133
	delivery to recovery operators	t	29	104	96
EN27 Waste packaging (hazardous special waste)					
Packaging containing residues of or contaminated by dangerous substances (CER 15 01 10)	production	t	60	170	221
	delivery to recovery operators	t	7	19	147
Metal waste contaminated with dangerous substances (CER 17 04 09, 15 01 11)	production	t	45	91	924
	delivery to recovery operators	t	2	51	857
Glass, plastic and wood containing or contaminated with dangerous substances (CER 17 02 04)	production	t	480	246	79
	delivery to recovery operators	t	374	42	9



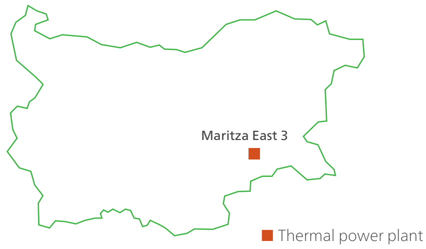


Europe

Bulgaria

Thermal power generation

Enel Maritza East 3 AD



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
1	808	4,673

Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Steam (condensing)	**1**	**4**	**808**

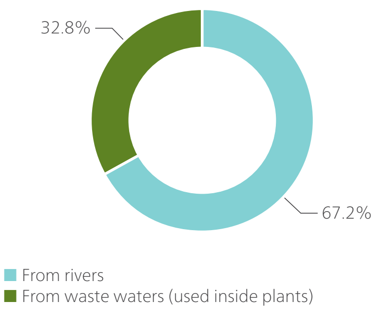
The Maritza East 3 power plant is ISO-14001 certified.

Net electricity generation

Total: 4,673 million kWh

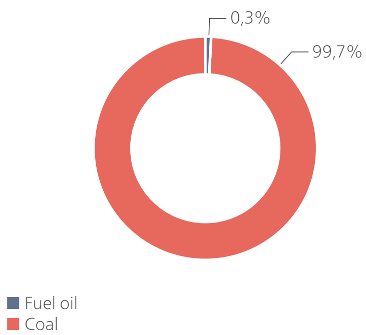
Water for industrial uses

Total requirements:
30 million m³
Total abstraction from inland waters:
20.1 million m³



Fuel consumption

Total: 1,312,794 t of oil-equivalent

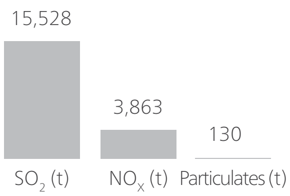


Waste waters

Discharged: **4,356,750 m³**
Used inside plants: **9,828,440 m³**

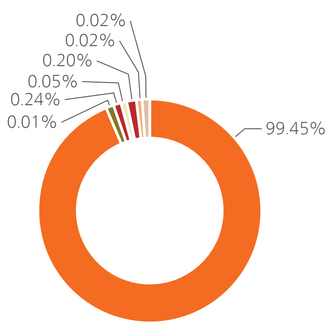
Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Emissions into the atmosphere



CO_2 (t)	6,086,209
from combustion	*5,891,604*
from desulfurization (stoichiometric computation)	*205,355*

Expendables
Total: 469,292 t



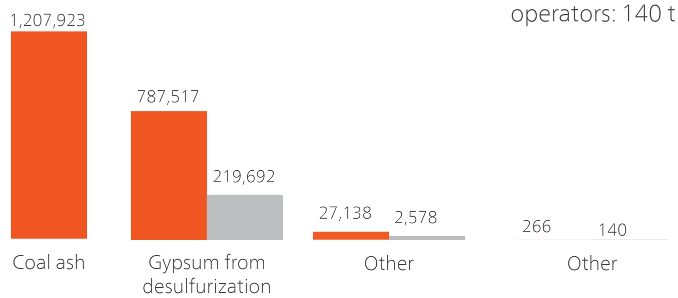
- Limestone for flue-gas desulfurization
- Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride & trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride and polyelectrolyte
- Lubricating oil
- Other

Special waste

Total production: **2,022,844 t**
Total delivery to recovery operators: **222,410 t**

Non-hazardous
Production: 2,022,578 t
Delivery to recovery operators: 222,270 t

Hazardous
Production: 266 t
Delivery to recovery operators: 140 t

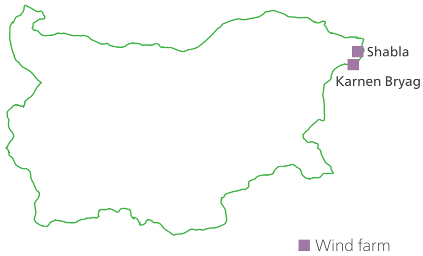


Production Delivery to recovery operators

Bulgaria

Wind power generation

Enel Green Power SpA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
2	42	60

Power installations

Power plants no.	Net maximum electrical capacity MW
2	42

Net maximum electrical capacity

Total: 42 MW

Equivalent yearly hours of utilization*

Wind: **1,424 hours**

* Yearly generation/capacity ratio.

Other data

Wind systems

Surface area occupied by platforms, service roads and buildings: **14 ha**

Total surface area affected by the installations: **from 20 to 100 times larger**

Net electricity generation

Total: 60 million kWh

Avoided CO_2 emissions

Due to wind generation: **77,892 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants	no.	1	1	1	3	3
thermal	no.	1	1	1	1	1
wind	no.				2	2
Net maximum electrical capacity	MW	763	778	602	796	850
thermal	MW	763	778	602	775	808
wind	MW				21	42
EN29 **Service & real-estate management**						
Vehicle fleet						
service vehicles	no.	-	-	-	-	9
Gross real-estate surface area	thousand m^2	-	-	-	-	0.96

Resources

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Thermal generation						
fuel oil (HS)	thousand t	8.28	7.11	6.18	6.92	4.36
	thousand toe	7.86	6.75	5.87	6.57	4.14
brown coal	thousand t	6,297	6,614	6,969	6,702	8,268
	thousand toe	999	1,051	1,114	1,071	1,309
Total	**thousand toe**	**1,007**	**1,058**	**1,120**	**1,077**	**1,313**
	TJ	**42,153**	**44,306**	**46,897**	**45,102**	**54,964**
Thermal generation combined with heat production (various activities)	thousand toe	0	0	0	0.205	0
Grand total	**thousand toe**	**1,007**	**1,058**	**1,120**	**1,077**	**1,313**
	TJ	**42,153**	**44,306**	**46,897**	**45,110**	**54,964**
EN4 **Primary electricity**						
Various activities	million kWh	0	0	0	0	0.072
EN8 **Water for industrial uses**						
From rivers (including meteoric waters from secondary rainfall)	million m^3	20.8	25.7	23.5	20.3	20.1
From wells	million m^3	0.085	0.091	0.036	0.113	0
Total abstraction from inland waters	**million m^3**	**20.9**	**25.8**	**23.6**	**20.4**	**20.1**
EN10 From waste waters (used inside plants)	million m^3	3.59	4.39	4.15	3.18	9.83
Total requirements	**million m^3**	**24.5**	**30.2**	**27.7**	**23.6**	**30**
for thermal generation	million m^3	24.5	30.2	27.7	23.6	30

		2006	2007	2008	2009	2010
EN1 Expendables						
Resins	t	3.64	50	38.4	92.8	2.40
Hydrazine	t	1.81	3.70	2.11	1.60	1.69
Ammonia	t	4.83	8.11	7.90	2.65	5.66
Limestone for flue-gas desulfurization	t	69,661	244,090	400,081	387,675	466,716
Sodium hypochlorite	t	0	0	0	10.2	32.4
Trisodium phosphate	t	0	2.10	1.85	2.78	3.15
Lime	t	155	164	331	762	886
Ferric chloride	t	16	35.7	127	119	73.2
Polyelectrolyte	t	0	0.500	1.37	1.81	1.75
Sulfuric & hydrochloric acids	t	919	938	738	611	1,143
Caustic soda	t	758	867	669	248	244
Lubricating oil	t	46	74.1	194	142	98.7
Dielectric oil	t	0	10.4	0	0	0.550
Printing paper	t	0	0	0	0	0.165
Other	t	57	45.6	59	73.7	82.7
Total	t	**71,622**	**246,288**	**402,251**	**389,743**	**469,292**
for thermal generation	t	71,622	246,288	402,251	389,743	469,292

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From fossil fuels (simple)	**million kWh**	**3,065**	**3,467**	**3,720**	**3,731**	**4,673**
fuel oil & gas-oil	million kWh	23.9	22	19.5	22.8	14.7
brown coal	million kWh	3,041	3,445	3,700	3,709	4,658
From renewables (wind)	**million kWh**	**0**	**0**	**0**	**11.1**	**59.8**
Total	**million kWh**	**3,065**	**3,467**	**3,720**	**3,743**	**4,733**

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN20 SO_2	thermal generation	thousand t	194	99.7	28.5	14.9	15.5
EN20 NO_X	thermal generation	thousand t	7.21	5.44	4.78	3.87	3.86
EN20 Particulates	thermal generation	thousand t	3.37	1.55	0.816	0.837	0.130
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	4,393	4,697	4,996	5,004	5,892
	fossil-fired thermal generation (from desulfurization)	thousand t	30.7	107	171	162	195
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		thousand t of CO_2-equivalent	4,424	4,804	5,167	5,166	6,086
EN18 Avoided CO_2 emissions							
Due to wind power generation		thousand t	-	-	-	15.4	77.9
EN21 Waste waters (discharged quantity)	thermal generation	million m^3	5.68	6.28	7.63	4.64	4.36

	Source		2006	2007	2008	2009	**2010**
EN21 **Conventional pollutant load in waste waters discharged by plants**							
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	9,280	6,453	4,912	939	773
	in some plants with an overall capacity of	MW	763	778	602	775	808
Total nitrogen (expressed as N)	thermal generation	kg	-	-	33,111	23,417	18,652
	in some plants with an overall capacity of	MW	-	-	602	775	808
Total phosphorus (expressed as P)	thermal generation	kg	-	-	1,487	783	413
	in some plants with an overall capacity of	MW	763	778	602	775	808
COD	thermal generation	kg	115,407	1,891	2,981	1,504	1,854
	in some plants with an overall capacity of	MW	763	778	602	775	808
BOD	thermal generation	kg	31,371	664	876	404	583
	in some plants with an overall capacity of	MW	763	778	602	775	808
EN22 **Non-hazardous special waste**							
Coal bottom ash	thermal generation						
production		t	157,894	107,008	111,780	106,808	120,792
delivery to recovery operators		t	0	0	0	500	0
Coal flyash	thermal generation						
production		t	894,735	963,072	1,006,024	961,275	1,087,130
delivery to recovery operators		t	0	0	0	4,500	0
Gypsum from desulfurization	thermal generation						
production		t	113,826	419,834	682,941	655,280	787,517
delivery to recovery operators		t	0	0	0	1,456	219,692
Other	electricity generation						
production		t	21,749	24,269	38,863	28,845	27,138
delivery to recovery operators		t	2,734	3,772	5,523	3,542	2,578
Total	**electricity generation**						
production		**t**	**1,188,204**	**1,514,183**	**1,839,608**	**1,752,208**	**2,022,578**
delivery to recovery operators		**t**	**2,734**	**3,772**	**5,523**	**9,998**	**222,270**
EN22 **Hazardous special waste**	electricity generation						
production		t	263	823	1,114	134	266
of which with PCBs		*t*	*12.8*	*72.3*	*67.9*	*106*	*144*
delivery to recovery operators		t	17.1	66.9	76.1	124	140
of which with PCBs		*t*	*17.1*	*66.9*	*58.3*	*124*	*139*
EN22 **Total special waste**							
production	electricity generation	t	1,188,467	1,515,005	1,840,722	1,752,343	2,022,844
	various activities	t	0	0	0	134	0
delivery to recovery operators	electricity generation	t	2,751	3,839	5,599	10,122	222,410

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Resource conservation and quality								
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	3,285	3,052	3,011	2,887	2,809	-14.5	-2.7
EN8 Net specific requirements of water for industrial uses in thermal generation								
including contribution of as-is sea water	liters/kWh	8	8.72	7.45	6.32	6.41	-19.9	1.4
excluding contribution of as-is sea water	liters/kWh	8	8.72	7.45	6.32	6.41	-19.9	1.4
EN8 Coverage of requirements of water for industrial uses								
from rivers (including meteoric waters from secondary rainfall)	% of requirements	85	85.2	84.9	86	67.2	-20.9	-21.9
from wells	% of requirements	0.347	0.301	0.130	0.479	0	-100.0	-100.0
Total from inland waters	**% of requirements**	**85.4**	**85.5**	**85**	**86.5**	**67.2**	**-21.3**	**-22.3**
EN10 from waste waters (used inside plants)	% of requirements	14.7	14.5	15	13.5	32.8	123.1	143.0
EN1 EN3 Fossil fuel consumption for thermal generation								
fuel oil	% of total fuel consumption	0.781	0.638	0.524	0.610	0.315	-59.7	-48.4
brown coal	% of total fuel consumption	99.2	99.4	99.5	99.4	99.7	0.5	0.3
HS fuel oil	% of total fuel-oil consumption	100	100	100	100	100	0.0	0.0
Electricity generation from renewables								
wind	% of total generation	0	0	0	0.297	1.26	0.0	324.2
Specific emissions into the atmosphere								
EN20 SO_2 (thermal generation)	g/kWh thermal net	63.4	28.8	7.66	3.99	3.32	-94.8	-16.8
EN20 NO_X (thermal generation)	g/kWh thermal net	2.35	1.57	1.28	1.04	0.827	-64.8	-20.5
EN20 Particulates (thermal generation)	g/kWh thermal net	1.10	0.447	0.219	0.224	0.028	-97.5	-87.5
EN16 CO_2 (thermal generation)	g/kWh thermal net	1,443	1,386	1,389	1,385	1,302	-9.8	-6.0
EN20 SO_2 (total from thermal generation)	g/kWh total net	63.4	28.8	7.66	3.98	3.28	-94.8	-17.6
EN20 NO_X (total from thermal generation)	g/kWh total net	2.35	1.57	1.28	1.03	0.816	-65.3	-20.8
EN20 Particulates (total from thermal generation)	g/kWh total net	1.10	0.447	0.219	0.224	0.027	-97.5	-87.9
EN16 CO_2 (total from thermal generation)	g/kWh total net	1,443	1,386	1,389	1,380	1,286	-10.9	-6.8
EN22 **Specific production of waste**								
Brown-coal ash (thermal generation)	g/kWh net from brown coal	346	311	302	288	259	-25.1	-10.1
EN22 **Waste recovery**								
Brown-coal ash	% of production	0	0	0	0.468	0	0.0	-100.0
bottom ash	*% of production*	*0*	*0*	*0*	*0.468*	*0*	*0.0*	*-100.0*
flyash	*% of production*	*0*	*0*	*0*	*0.468*	*0*	*0.0*	*-100.0*
Gypsum from desulfurization	% of production	0	0	0	0.222	27.9	0.0	12,467.6
Other non-hazardous special waste								
electricity generation	% of production	12.6	15.5	14.2	12.3	9.50	-24.6	-22.8
Total non-hazardous special waste								
electricity generation	% of production	0.230	0.249	0.300	0.571	11	4,682.6	1,826.4
Other hazardous special waste								
electricity generation	% of production	6.49	8.13	6.84	92.1	52.6	710.5	-42.9
Total special waste								
electricity generation	% of production	0.231	0.253	0.304	0.578	11	4,661.9	1,803.1

Highlights of 2010

Enel operates in Bulgaria through Enel Maritza East 3 (thermal generation) and Enel Green Power (wind generation).

EN5 EN6 Enel Green Power put into operation a new 21-MW wind farm in Shabla, thus doubling the net maximum electrical capacity of its wind farms (42 MW).
The new plant consists of 7 wind turbines and can generate about 34 GWh/yr (equal to the consumption of 14,000 households), displacing about 44,000 tonnes of CO_2 emissions into the atmosphere/yr and saving about 9,500 tonnes of oil-equivalent (toe) of fossil fuels.

EN1 Among expendables, the consumption of ammonia rose, owing to increased generation and consequent higher amount of flue gases to be denitrified; also the consumption of sulfuric and hydrochloric acid (balancing of the pH of closed-cycle water) and of sodium hypochlorite (biofouling treatment of cooling water) went up. The decrease in the consumption of resins is due to their replacement in 2009.

EN5 The decrease in the heat rate of the Maritza East 3 thermal power plant (about 3% on 2009) may be attributed to a careful efficiency enhancement plan, involving: i) maintenance of constant values of boiler blow-down heat; ii) use of heated water from in-service units for start-up of other units; iii) shortening of the operating time of feedwater and recirculation pumps; iv) installation of a system to measure steam temperature after the turbine, so as to identify leaks; and v) use of a new condenser ball-cleaning system when the heat transfer efficiency diminishes.

EN8 As regards water consumption, the use of inland waters sharply dropped, while the recovery of waste waters climbed by about 20 percentage points.

EN21 This result may be ascribed to improved water management. Works (started in 2009) to increase waste water recovery and make multiple uses of the water resource were completed:

> construction of a 30,000-m^3 tank, which collects part of the waters from the ash settling basin and the drains from the cooling towers;
> construction of a rainwater collection basin (including an oil separation tank), which collects the waters drained from the sewer system, to be subsequently used in the ash handling process;
> reuse of the closed-cycle cooling-system drainage waters to feed desulfurizers and cover other requirements of the plant;
> construction of a new feedwater system for the ash handling process.

EN16 EN18 EN20 The sharp reduction of specific emissions of all pollutants – SO_2 (-17%), NO_X (-20%), particulates (-88%) – and of CO_2 (-6%) is mainly due to the environmental enhancements completed in 2009 and to the efficiency increase achieved in the same year.
Wind power generation displaced about 78,000 t of CO_2 emissions into the atmosphere (roughly 6 times more than last year) thanks to an equivalent increase in renewable power generation.

EN22 As a result of increased efficiency, specific production of coal ash was down by 10% (from 288 to 259 g/kWh). Conversely, the recovery of gypsum was significantly up (~28 percentage points) in line with the program. The increase in the production of hazardous waste in 2007 and 2008 is due to the demolition of asbestos-containing structures and components. The increase in the recovery of hazardous waste in 2009 and 2010 is due to the delivery of asbestos-containing materials to vitrification facilities (previously, these materials were placed into a landfill owned by Enel – see EN26).

EN23 The system for handling brown-coal ash recorded a number of leaks, which caused the spilling of an unspecified amount of water and ash over the soil and into the Sokolitza river. The total spilled amount cannot be quantified. Anyway, these substances are not hazardous and, based on investigations, they caused no environmental impact. Prompt measures were instituted to minimize the spills.
The ash handling system will be gradually refurbished in order to minimize or eliminate these incidents. The new pipings of the system will have a layer of abrasion-resistant basalt avoiding the formation of cracks.

EN26 Environmental enhancements.

Releases

> Reduction of water releases thanks to better water management, as indicated above.

Waste

> High level of separate collection of waste to increase its recovery. In 2010, 219,692 t of gypsum were sold.
> Completion of the asbestos-landfill revegetation program.

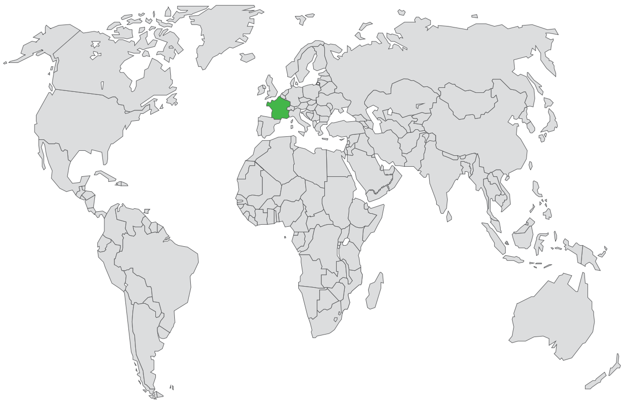
Other

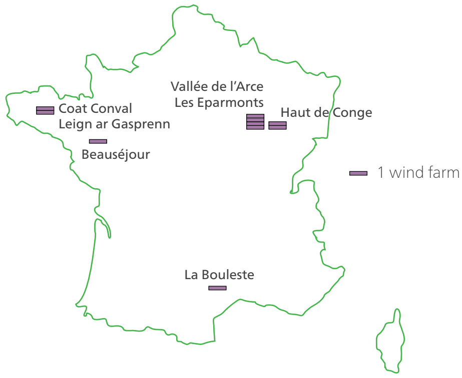
> Implementation of an emergency management system for spills of hydrazine, hydrochloric acid and ammonia.

France

Wind power generation

Enel Erelis Sas





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
10	102	149

Power installations

Power plants no.	Net maximum electrical capacity MW
10	**102**

Net electricity generation

Total: 149 million kWh

Equivalent yearly hours of utilization*

Wind: **1,459 hours**

* Yearly generation/capacity ratio.

Avoided CO_2 emissions

Due to wind generation: **96,999 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Environmental Results

Status data

		2008	2009	2010
Power-generating installations				
Power plants (wind)	no.	1	7	10
Net maximum electrical capacity (wind)	MW	11.6	68.1	102
EN29 **Service & real-estate management**				
Vehicle fleet				
service vehicles	no.	-	10	9
Gross real-estate surface area	thousand m^2	-	0.700	1.18

Resources

		2008	2009	2010
EN1 EN3 **Fossil fuels**				
Various activities	thousand toe	0	0.013	0.013
	TJ	0	0.544	0.544
EN4 **Primary electricity**				
Various activities	million kWh	0	0.013	0.028
Water for non-industrial uses				
Service & real-estate management	million m^3	0	0.001	0.001
EN1 **Expendables**				
Lubricating oil	t	0	0	19.2
Dielectric oil	t	0	0	5.50
Printing paper	t	0	0.499	0.798
Total	**t**	**0**	**0.499**	**25.5**
for wind generation	t	0	0	24.7

Processes and products

		2008	2009	2010
Electricity generation (net)				
From renewables (wind)	million kWh	7	65.9	149

Emissions

	Source		2008	2009	**2010**
Emissions into the atmosphere					
EN16 CO_2	various activities	thousand t	0	0.039	0.039
EN18 Avoided CO_2 emissions					
Due to wind generation		thousand t	4.56	42.9	97
EN22 Hazardous special waste					
production	various activities	t	0	0	0.087

Indicators

		2008	2009	**2010**	% ('10-'09)/'09
Electricity generation from renewables					
wind	% of total generation	100	100	100	0.0

Highlights of 2010

EN5 EN6 EN18 In the Champagne-Ardenne region, Enel Green Power commissioned its 24-MW wind power plant of Haut de Conge and acquired the 10-MW wind farm of La Bouleste, so as to reach 102 MW of net maximum capacity in France. The plants will produce about 55 GWh/yr and cover the yearly consumption of about 22,000 households, displacing over 35,000 tonnes of CO_2 emissions into the atmosphere and saving about 12,000 tonnes of oil-equivalent (toe) of fossil fuels. In the next few years, Enel Green Power will capture additional development opportunities in France thanks to a pipeline of hydro, solar and wind projects totaling more than 1,000 MW.

Enel operates in France through Enel Erelis (wind generation).

EN18 Wind power generation displaced about 97,000 t of CO_2 emissions into the atmosphere (more than twice the figure of last year) thanks to a proportional increase in generation.

EN26 Environmental enhancements.

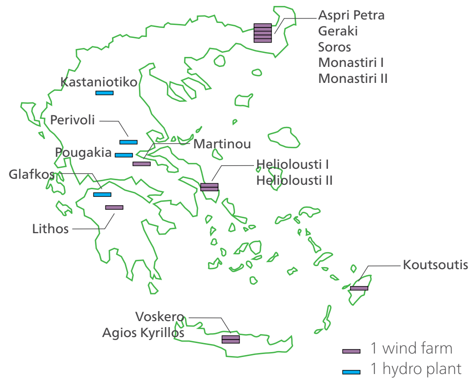
Noise

> Day-time and night-time noise abatement and monitoring.

Greece

Hydro and wind power generation

Enel Green Power SpA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
16	143	310

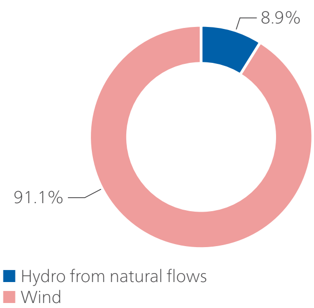
Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	4	4	14

WIND	Power plants no.	Net maximum electrical capacity MW
	12	129

Net electricity generation

Total: 310 million kWh



Equivalent yearly hours of utilization*

Hydro: **2,044 hours**

Wind: **2,180 hours**

* Yearly generation/capacity ratio.

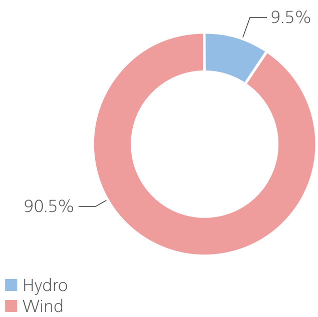
Special waste

Total production: **2 t**

Total delivery to recovery operators: **0 t**

Net maximum electrical capacity

Total: 143 MW



Avoided CO_2 emissions

Due to hydro generation from natural flows	26,582 t
Due to wind generation	270,698 t
Total	**297,280 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Expendables

Total: 462.76 t

Other data

Wind generation

Wind systems

Surface area occupied by platforms, service roads and buildings: **41.56 ha**

Total surface area affected by the installations: **from 20 to 100 times larger**

Environmental Results

Status data

		2007	2008	2009	**2010**
Power-generating installations					
Power plants	no.	7	16	13	16
hydro	no.	-	7	2	4
wind	no.	7	9	11	12
Net maximum electrical capacity	MW	79.6	107	133	143
hydro	MW	-	9.58	10	13.6
wind	MW	79.6	97.2	123	129
EN29 **Service & real-estate management**					
Vehicle fleet					
service vehicles	no.	-	-	7	7
special vehicles	no.	-	-	4	4

Resources

		2007	2008	2009	**2010**
EN4 **Primary electricity**					
Various activities	million kWh	0	0	0.467	0.467
Water for non-industrial uses					
Service & real-estate management	million m^3	0	0	0.006	0.006
EN1 **Expendables**					
Lubricating oil	t	0	1.53	0.500	1.22
Printing paper	t	0	0	1.25	0
Other	t	0	0.040	0	0
Total	**t**	**0**	**1.57**	**1.75**	**1.22**
for hydro generation	t	0	0	0.500	0.760
for wind generation	t	0	1.57	0	0.462

Processes and products

		2007	2008	2009	**2010**
Electricity generation (net)					
From renewables	million kWh	53.5	243	262	310
hydro from natural flows	million kWh	0	2.81	17.1	27.7
wind	million kWh	53.5	240	245	282

Emissions

	Source		2007	2008	2009	2010
EN18 Avoided CO_2 emissions						
Due to hydro generation from natural flows		thousand t	0	2.70	16.4	26.6
Due to wind generation		thousand t	51.3	230	235	271
Due to generation from renewables		**thousand t**	**51.3**	**233**	**251**	**297**
EN22 Non-hazardous special waste	electricity generation					
production		t	0.200	5.24	1.52	1.18
delivery to recovery operators		t	0	4.76	0.600	0.261
EN22 Hazardous special waste	electricity generation					
production		t	0.100	3.60	11.4	0.462
of which with PCBs		*t*	*0.100*	*1.78*	*11.4*	*0.462*
delivery to recovery operators		t	0	1.04	11.4	0
of which with PCBs		*t*	*0*	*0*	*11.4*	*0*
EN22 Total special waste	electricity generation					
production		t	0.300	8.84	13	1.64
delivery to recovery operators		t	0	5.80	12	0.261

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
Electricity generation from renewables						
hydro from natural flows	% of total generation	0	1.16	6.54	8.94	36.7
wind	% of total generation	100	98.8	93.5	91.1	-2.6
EN22 Waste recovery						
Other non-hazardous special waste						
electricity generation	% of production	0	90.7	39.4	22.1	-43.9
Other hazardous special waste						
electricity generation	% of production	0	28.9	100	0	-100.0
Total special waste						
electricity generation	% of production	0	65.6	92.9	15.9	-82.9

Highlights of 2010

EN5 EN6 EN18 In 2010, Enel Green Power acquired new net maximum capacity from Endesa. These assets, which have not been previously consolidated, include the Kastaniotiko and Pougakia hydro plants (totaling 4 MW), as well as the Martinou wind power plant (about 6 MW). These plants will produce roughly 21.5 GWh/yr, displacing about 20,000 tonnes of CO_2 emissions into the atmosphere, saving about 4,730 tonnes of oil-equivalent (toe) of fossil fuels and covering the yearly consumption of approximately 8,500 households.

Enel operates in Greece through EGP Hellas (wind and hydro generation).

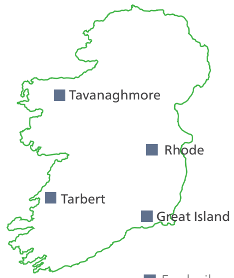
EN18 Wind power generation avoided approximately 271,000 tonnes of CO_2 emissions into the atmosphere.

EN22 The increase in waste production and recovery in 2008 is due to the decontamination of PCB-containing oils.

Ireland

Thermal power generation

Endesa SA



Fuel-oil and gas-oil thermal power plant

The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
4	1,013	300

Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Steam (condensing)	**4**	**11**	**1,013**

The four power plants (total capacity 1,013 MW) have an ISO 14001-certified environmental management system in place.

Net electricity generation

Total: 300 million kWh

Water for industrial uses

Total requirements: 254,990 m³

Total abstraction from inland waters: 254,990 m³

Special waste

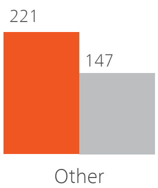
Total production: **507 t**

Total delivery to recovery operators: **296 t**

Non-hazardous

Production: 221 t

Delivery to recovery operators: 147 t

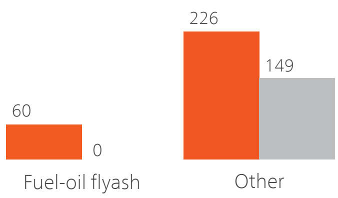


Production Delivery to recovery operators

Hazardous

Production: 286 t

Delivery to recovery operators: 149 t



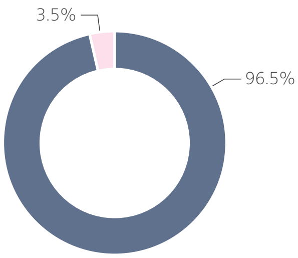
Waste waters

Discharged: 10,500 m³

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

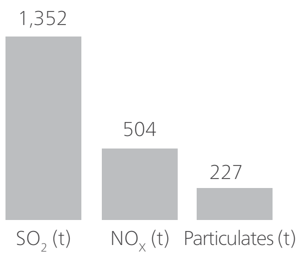
Fuel consumption

Total: 82,857 toe



Fuel oil
Gas-oil

Emissions into the atmosphere



CO_2: **275,075 t**

Environmental Results

Status data

		2009	2010
Power-generating installations			
Power plants (thermal)	no.	4	4
Net maximum electrical capacity (thermal)	MW	1,068	1,013

Resources

		2009	2010
EN1 EN3 **Fossil fuels**			
Thermal generation			
fuel oil	thousand t	171	83.7
	thousand toe	163	80
MS	*thousand t*	*0*	*71.5*
	thousand toe	*0*	*68.3*
LS	*thousand t*	*0*	*12.2*
	thousand toe	*0*	*11.7*
VLS	*thousand t*	*171*	*0*
	thousand toe	*163*	*0*
gas-oil	thousand t	3.16	2.86
	thousand toe	3.19	2.89
Total	thousand toe	166	82.9
	TJ	6,960	3,469
EN8 **Water for industrial uses**			
From wells	million m^3	0	0.002
From aqueducts	million m^3	0.418	0.253
Total abstraction from inland waters	million m^3	0.418	0.255
for thermal generation	million m^3	0.418	0.255
EN8 EN21 **Open-cycle cooling water**			
For thermal generation (simple and CHP)	million m^3	222	128

Processes and products

		2009	2010
Electricity generation (net)			
From fossil fuels (simple)	million kWh	627	300

Emissions

	Source		2009	2010
Emissions into the atmosphere				
EN20 SO_2	thermal generation	thousand t	2.80	1.35
EN20 NO_X	thermal generation	thousand t	1.20	0.504
EN20 Particulates	thermal generation	thousand t	0.272	0.227
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	552	275
EN21 **Waste waters (discharged quantity)**	thermal generation	million m^3	0.011	0.011
EN22 **Non-hazardous special waste**				
Oil bottom ash	thermal generation			
production		t	63	0
Other	electricity generation			
production		t	391	221
delivery to recovery operators			80	147
Total	**electricity generation**			
production		**t**	**454**	**221**
delivery to recovery operators		**t**	**80**	**147**
EN22 **Hazardous special waste**				
production	thermal generation	t	0	60
	electricity generation	t	850	226
of which with PCBs	*electricity generation*	*t*	*194*	*95*
delivery to recovery operators	electricity generation	t	194	149
of which with PCBs	electricity generation	*t*	*194*	*55.2*
EN22 **Total special waste**	electricity generation			
production		t	1,304	507
delivery to recovery operators		t	274	296

Indicators

		2009	2010	% ('10-'09)/'09
Resource conservation and quality				
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	2,651	2,763	4.2
EN8 Net specific requirements of water for industrial uses in thermal generation				
including contribution of as-is sea water	liters/kWh	0.667	0.850	27.4
excluding contribution of as-is sea water	liters/kWh	0.667	0.850	27.4
EN8 Coverage of requirements of water for industrial uses				
from wells	% of requirements	0	0.784	0.0
from aqueducts	% of requirements	100	99.2	-0.8
Total from inland waters	**% of requirements**	**100**	**100**	**0.0**
EN1 EN3 Fossil fuel consumption for thermal generation				
fuel oil	% of total fuel consumption	98.1	96.5	-1.6
gas-oil	% of total fuel consumption	1.92	3.49	81.8
MS fuel oil	% of total fuel-oil consumption	0	85.4	0.0
LS fuel oil	% of total fuel-oil consumption	0	14.6	0.0
VLS fuel oil	% of total fuel-oil consumption	100	0	-100.0

		2009	2010	% ('10-'09)/'09
Specific emissions into the atmosphere				
EN20 SO_2 (simple thermal generation)	g/kWh thermal net	4.47	4.51	0.9
EN20 NO_X (simple thermal generation)	g/kWh thermal net	1.92	1.68	-12.5
EN20 Particulates (simple thermal generation)	g/kWh thermal net	0.434	0.757	74.4
EN16 CO_2 (simple thermal generation)	g/kWh thermal net	880	917	4.2
EN22 **Specific production of waste**				
Oil flyash (thermal generation)	g/kWh net from fuel oil & gas-oil	0	0.200	0.0
Oil bottom ash (thermal generation)	g/kWh net from fuel oil & gas-oil	0.100	0.200	100.0
EN22 **Waste recovery**				
Other non-hazardous special waste electricity generation	% of production	17.6	66.6	278.4
Other hazardous special waste electricity generation	% of production	22.8	66	189.5
Total special waste electricity generation	% of production	21	58.5	178.6

Highlights of 2010

EN5 EN6 Energy-saving initiatives: installation of a sensor to detect persons in toilets and corridors.

EN16 EN20 The change in the values of specific emissions of CO_2, SO_2 and particulates is mainly due to the use of fuels with a higher content of sulfur and unburnt particles. The improvement of NO_X emissions is due to better management of combustion temperatures (tuning-up of the system injecting water into the boiler).

EN22 The amount of fuel-oil bottom ash produced in 2009 is due to clean-up of boilers, which is carried out at regular intervals.

EN26 Environmental enhancements.

Waste

> Increase in waste recovery and introduction of a new contractual system supporting the achievement of this objective.

Water

> Improvement of cooling-tower internals distribution to increase heat-transfer efficiency and decrease water loss by evaporation; wise use of showers.

Enel operates in Ireland through Endesa (thermal generation).

Soil

> Yearly inspection of the tank collecting water from clean-up of boilers and tubings/pipings in order to detect possible leaks.

Noise

> Noise monitoring survey to check compliance with applicable limits.

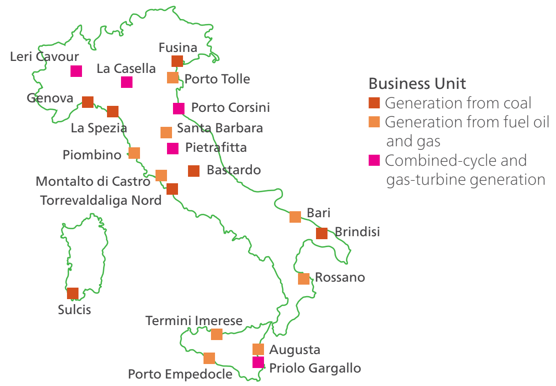
Other

> Training courses on environmental management systems, waste management, emergency readiness, internal auditing, legislation and use of chemicals.

Italy

Thermal power generation

Enel Produzione SpA



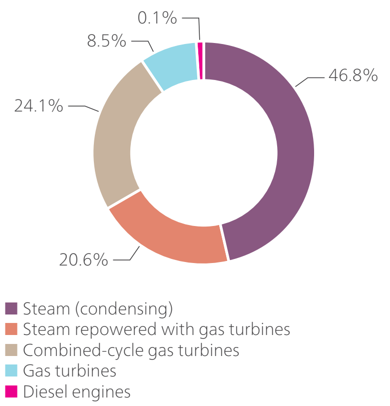
The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
43	24,832	47,058

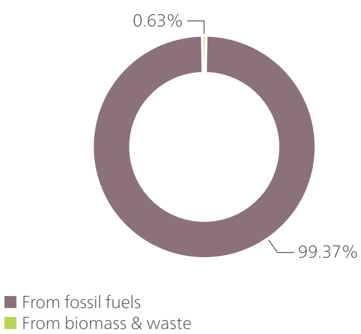
Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Steam (condensing)	16	44	11,621
Steam repowered with gas turbines	3	4	5,103
Combined-cycle gas turbines	7	19	5,973
Gas turbines	8	27	2,107
Diesel engines	9	40	28
	43	**134**	**24,832**

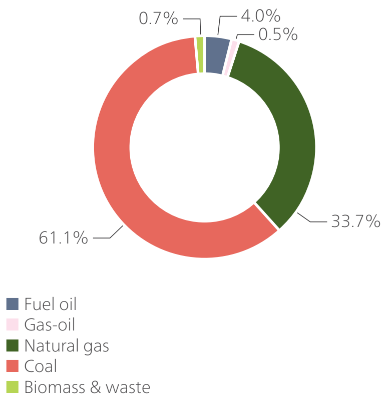
Net maximum electrical capacity
Total: 24,832 MW



Net electricity generation
Total: 47,058 million kWh



Fuel consumption
Total: 10,384,027 t of oil-equivalent



Waste waters

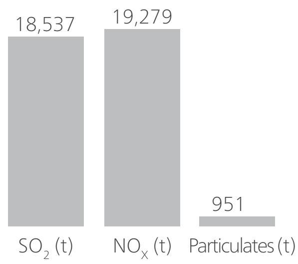
Discharged: **7,758,305 m³**
Used inside plants: **5,587,407 m³**

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Avoided CO_2 emissions

Electricity generation from biomass and biodegradable fraction of waste: **195,148 t**

Emissions into the atmosphere

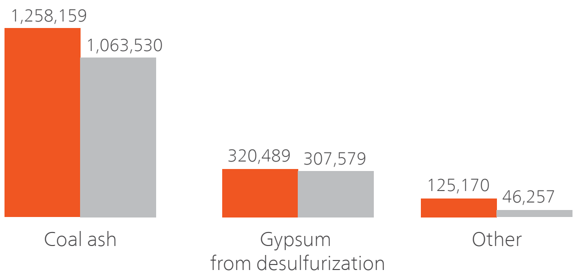


CO_2 (t)	34,294,463
from combustion	*34,159,688*
from desulfurization	*126,113*
SF_6 (kg)	849
(t of CO_2-equivalent)	18,859
Total (t of CO_2-equivalent)	34,313,322

Special waste

Total production: **1,734,803 t**
Total delivery to recovery operators: **1,417,744 t**

Non-hazardous
Production: 1,703,818 t
Delivery to recovery operators:1,417,365 t

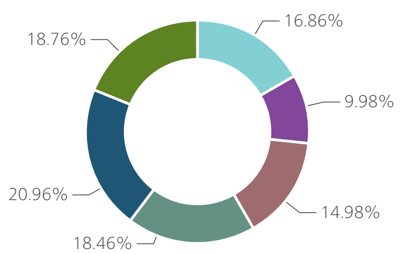


Hazardous
Production: 30,985 t
Delivery to recovery operators: 379 t

Production | Delivery to recovery operators

Water for industrial uses

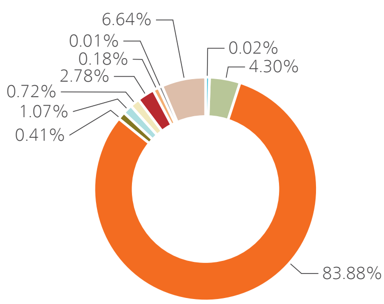
Total requirements: 29,779,949 m³
Total abstraction from inland waters: 12,452,710 m³



- From rivers
- From wells
- From aqueducts
- From the sea (as-is)
- From the sea (desalinated)
- From waste waters (used inside plants)

Expendables

Total: 341,694 t



- Resins, hydrazine, carbohydrazide & hydrogen peroxide
- Ammonia
- Limestone for flue-gas desulfurization
- Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride & trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride & polyelectrolyte
- Lubricating oil
- Dielectric oil
- Other

Fuel-oil storage & handling

The Thermal Generation Business Area operates an integrated fuel-oil storage & handling facility in Ravenna. The facility (IICO), which is equipped with pumping and heating systems, supplies fuel oil via a pipeline to the Porto Tolle power plant.

Overall length of supply pipelines, from sea terminal and from AGIP dock: **28 km**
Capacity of storage tanks: **183,630 m³**
Length of transfer pipeline to Porto Tolle: **92 km**
Fuel oil transferred to Porto Tolle: **4,510 t**
Heat generation - 15 bar and 210 °C steam: **6,769 million kcal**
Electricity consumption: **1 million kWh**

In the following pages, the other flow data (consumption of natural gas and gas-oil, expendables, water for industrial uses, waste waters, emissions into the atmosphere and into water bodies, waste) are included among the thermal generation data.

Italy

Generation from renewables

Enel Produzione SpA
Enel Green Power SpA

Enel Green Power SpA:
- O&M, hydro, solar and wind plants
- O&M, geothermal plants

Enel Produzione SpA:
Business Unit
- Hydro generation, Alps
- Hydro generation, Apennines

The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
560	15,691	34,122

GEO	Power plants no.	Generating units no.	Net maximum electrical capacity MW
Condensing	32	34	722
Atmospheric exhaust	1	1	6
	33	**35**	**728**

456 plants (14,846 MW) – of which 392 hydro, 25 wind, 33 geothermal and 6 solar photovoltaic plants – have an ISO 14001-certified environmental management system in place; 180 of them (8,381 MW) are also EMAS-registered.

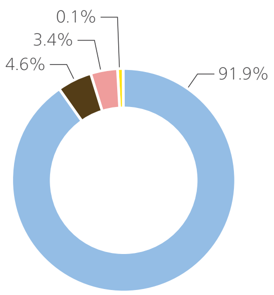
Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	305	246	2,000
Pondage/reservoir	172	182	4,937
Pure/mixed pumped storage	19	20	7,481
	496	**448**	**14,418**

WIND	Power plants no.	Net maximum electrical capacity MW
	25	**533**

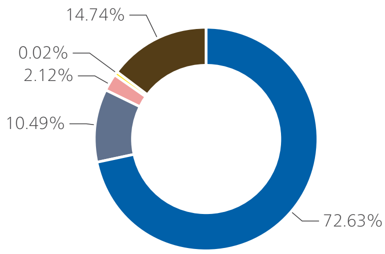
SOLAR PHOTOVOLTAIC	Power plants no.	Net maximum electrical capacity MW
	6	**12**

Net maximum electrical capacity
Total: 15,691 MW



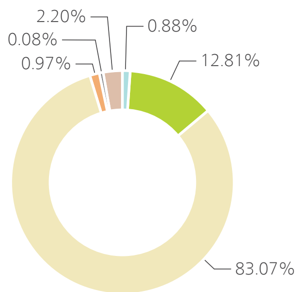
- Hydro
- Geothermal
- Wind
- Solar photovoltaic

Net electricity generation
Total: 34,122 million kWh



- Hydro from natural flows
- Hydro from pumped storage
- Wind
- Solar photovoltaic
- Geothermal

Expendables
Total: 28,401 t



- Hydrochloric acid
- Bentonite, barite and geothermal cement
- Caustic soda
- Lubricating oil
- Dielectric oil
- Other

Equivalent yearly hours of utilization*

6,908 geothermal

3,573 hydro

1,357 wind

485 solar photovoltaic

* Yearly generation/capacity ratio (excluding hydro from pumped storage).

Avoided CO_2 emissions (t)

Hydro generation from natural flows	18,159,808
Geothermal generation	3,685,214
Wind generation	529,403
Solar photovoltaic generation	4,295
Generation from biomass and biodegradable fraction of waste	195,148
Total	**22,573,868**

Avoided CO_2 emissions from the otherwise necessary fossil-fired thermal generation. The contribution of geothermal generation has been calculated on the assumption that the related CO_2 emissions are of natural origin.

Emissions into the atmosphere

SF_6 - all types of generation (kg)	527
(t of CO_2-equivalent)	11,695
CO_2 (t)	8,046

Carbon dioxide emissions from gas-oil combustion.

H_2S - from geothermal fluid (t)	10,383
CO_2 - from geothermal fluid (t)	1,829,149

A large debate is under way on the natural or anthropogenic origin of emissions of incondensible gases from geothermal fluid.

Geothermal fluid

Total fluid extracted: **47,806,710 t**

net of reinjected liquids: **27,485,694 t**

Steam for electricity generation: **42,495,454 t**

Fluid used for supply of heat: **557,180 t**

directly: **370,150 t**

after utilization for electricity generation: **187,030 t**

Geothermal fluid may not have or may have lost the thermodynamic properties that make it suitable for geothermal generation. In this case, the fluid is used for supply of heat, especially for greenhousing and district heating.

Water for industrial uses

59,140 m^3

Abstraction from inland waters (from rivers only)

Gas-oil

2,613 toe

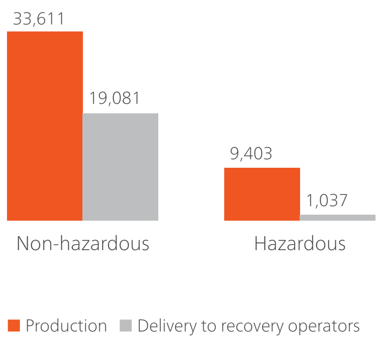
Total consumption

Used for driving the drilling equipment and, to a much lesser extent, for feeding emergency generating sets.

Special waste

Total production: **43,014 t**

Total delivery to recovery operators: **20,118 t**



Other data

Hydro

Emptied reservoirs

Quantity: **15**

Alluvial sediments removed by flushing them out through bottom outlets: **178,970 m^3**

Alluvial sediments removed by mechanical equipment : **264,093 m^3** (of which reused locally: **264,093 m^3**)

Fish ladders : 40

Fish restocking campaigns

Quantity: **59**

Restocked fish: **2,674,542 individuals** in addition to **590 kg**

Geothermal activities

Drilled wells

New: **4**

Rehabilitated: **4**

Extent of drilling: 14,824 m

In-service wells: 484

for steam production: 308

for reinjection: 63

for other uses: 133

Wind & solar photovoltaic generation

Wind systems

Surface area occupied by platforms, service roads and buildings: **92 ha**

Total surface area affected by the installations: from 20 to 100 times larger

Photovoltaic solar systems

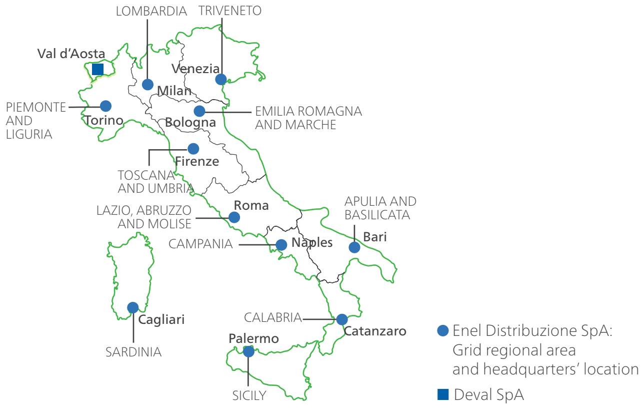
Surface area occupied by modules: **12 ha**

Total surface area affected by the installations: **12 ha**

Italy

Electricity distribution

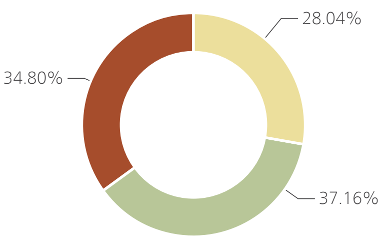
Enel Distribuzione SpA
Deval SpA



The Numbers

Substations	Capacity (MVA)	Total lines (km)
565,266	188,437	1,109,109

Enel Distribuzione has an ISO 14001-certified environmental management system in place, which extends to its entire organization.



Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	2,150	100,022
Satellite substations and MV units	485	32
MV/LV	428,144	76,569
MV/MV	134,487	11,815
	565,266	**188,437**

LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	Total
HV	57	-	0	**57**
MV	198,520	9,598	135,911	**344,029**
LV	112,455	402,513	250,056	**765,024**
	311,032	**412,111**	**385,967**	**1,109,109**

General data

Municipalities served: **7,723**

Surface area served: **286,857 km²**

Customers connected to the grid: **31,505,789** (of which supplied by companies of the Group: **31,397,418**)

Resource consumption

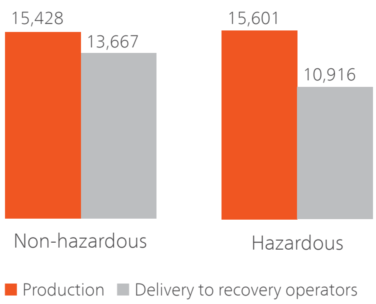
Expendables: **99 t**

Gas-oil: **207 toe**

Special waste

Total production: **31,030 t**

Total delivery to recovery operators: **24,584 t**



Electricity

Total electricity distributed: **245,887 million kWh**

Own consumption for grid operation: **332 million kWh**

Emissions into the atmosphere

SF_6: **4,102 kg** (91,064 t of CO_2-equivalent)

CO_2: **637 t**

Total greenhouse gases: **91,702** t of CO_2-equivalent

Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants	no.	600	599	604	607	603
thermal	no.	46	43	43	43	43
hydro	no.	500	501	501	502	496
geothermal	no.	31	31	31	32	33
wind	no.	19	20	25	25	25
solar (photovoltaic)	no.	4	4	4	5	6
Net maximum electrical capacity	MW	40,475	40,397	40,324	40,422	40,525
thermal	MW	25,117	25,005	24,862	24,855	24,833
hydro	MW	14,379	14,401	14,424	14,431	14,417
geothermal	MW	671	671	671	695	728
wind	MW	305	315	362	429	533
solar (photovoltaic)	MW	3.88	4.52	4.20	11.6	14.1
Power lines (circuit-length)						
Total	km	1,096,299	1,104,980	1,112,164	1,099,683	1,109,109
high-voltage	km	18,804	18,930	18,952	56.5	56.6
medium-voltage	km	336,517	338,644	340,424	342,290	344,029
low-voltage	km	740,979	747,406	752,789	757,337	765,024
Gas pipelines						
Total	km	30,600	30,664	31,765	-	-
high-pressure	km	191	58.8	205	-	-
medium-pressure	km	11,615	11,766	12,342	-	-
low-pressure	km	18,794	18,839	19,219	-	-
Mining & extracting activities (1)						
Mining activities						
Mines	no.			3	3	3
Amount of fuels extractable since the start of activities	Mt			60	60	60
Areas occupied by excavations and other activities	ha			10	10	10
EN29 **Service & real-estate management** (2)						
Vehicle fleet						
service vehicles	no.		14,585	14,065	13,382	12,786
special vehicles	no.		2,177	2,244	2,218	1,832
vehicles for both private and service use	no.		1,030	1,019	1,031	1,080
Gross real-estate surface area	thousand m^2		1,253	1,749	1,460	1,360

-: no data due to absence of activities in the year.
(1) These activities have been surveyed since 2008.
(2) These activities have been surveyed since 2007.

Resources

		2006	2007	2008	2009	**2010**
EN1 EN3 **Fossil fuels**						
Thermal generation						
fuel oil	thousand t	3,637	1,773	1,389	910	419
	thousand toe	3,597	1,755	1,374	899	414
HS	*thousand t*	*0*	*39.2*	*0*	*0*	*0*
	thousand toe	*0*	*37.9*	*0*	*0*	*0*
MS	*thousand t*	*247*	*179*	*308*	*249*	*97.9*
	thousand toe	*237*	*171*	*297*	*240*	*94.7*
LS	*thousand t*	*1,551*	*456*	*249*	*173*	*86.5*
	thousand toe	*1,521*	*446*	*244*	*169*	*84.4*
VLS	*thousand t*	*1,839*	*1,098*	*832*	*488*	*235*
	thousand toe	*1,838*	*1,101*	*832*	*490*	*235*
gas-oil	thousand t	79.1	69.9	93.4	96.1	52.1
	thousand toe	80.6	71.4	95.7	98.4	53.1
natural gas	million m^3	7,305	7,233	6,652	4,216	4,114
	thousand toe	6,192	6,134	5,639	3,579	3,494
technologically captive use	*million m^3*	*4,550*	*4,970*	*5,286*	*3,476*	*3,557*
	thousand toe	*3,849*	*4,206*	*4,469*	*2,950*	*3,019*
of which in combined-cycle units	million m^3	3,760	4,510	4,997	3,357	3,478
	thousand toe	3,175	3,813	4,221	2,847	2,951
non-technologically captive use	*million m^3*	*2,755*	*2,263*	*1,367*	*740*	*557*
	thousand toe	*2,343*	*1,928*	*1,171*	*629*	*476*
coal	thousand t	10,749	11,386	11,724	11,122	10,741
	thousand toe	6,520	6,791	6,919	6,587	6,344
coke-oven gas	million m^3	0	0.002	0.002	0.003	0.009
	thousand toe	0	0.003	0.002	0.003	0.010
Total	**thousand toe**	**16,390**	**14,752**	**14,027**	**11,163**	**10,306**
	TJ	**686,217**	**617,646**	**587,300**	**467,385**	**431,472**
Various activities	thousand toe	5.65	23.2	24.9	27.9	27.3
Grand total	**thousand toe**	**16,396**	**14,775**	**14,052**	**11,191**	**10,333**
	TJ	**686,454**	**618,619**	**588,343**	**468,552**	**432,617**
EN1 EN3 **Hydrogen**						
Thermal generation	thousand m^3	0	0	0	0	3.54
	thousand toe	0	0	0	0	0.881
	TJ	0	0	0	0	36.9
EN1 EN3 **Biomass and waste**						
Thermal generation						
solid biomass	t	5,913	65,427	115,905	153,842	201,406
	toe	1,431	17,458	32,271	43,983	57,825
liquid biomass	t	0	36.9	114	0.336	350
	toe	0	37.6	115	0.331	298
RDF	t	26,997	32,081	22,546	55,235	46,136
	toe	10,931	12,990	9,129	23,027	19,377
Grand total	**thousand toe**	**12.4**	**30.5**	**41.5**	**67**	**77.5**
	TJ	**518**	**1,276**	**1,738**	**2,806**	**3,245**
EN1 EN3 **Geothermal fluid**						
Total fluid extracted	thousand t	49,929	50,478	50,172	46,778	47,807
net of reinjected fluids	*thousand t*	*32,985*	*30,364*	*29,855*	*28,462*	*27,486*
Used for electricity generation	thousand t	43,937	44,215	43,931	41,385	42,495
EN4 **Primary electricity**						
Various activities	million kWh	5.35	127	131	130	115

		2006	2007	2008	2009	2010
EN8 Water for industrial uses						
From rivers (including meteoric waters from secondary rainfall)	million m^3	9.40	9.44	8.48	7.43	5.08
From wells	million m^3	3.87	3.60	6.56	6.73	2.97
From aqueducts	million m^3	4.85	5.52	6.50	5.81	4.48
Total abstraction from inland waters	**million m^3**	**18.1**	**18.6**	**21.5**	**20**	**12.5**
From the sea (as-is)	million m^3	12.2	11.9	10	5.87	5.50
From the sea (desalinated)	million m^3	7.17	6.40	5.87	6.16	6.24
EN10 From waste waters (used inside plants)	million m^3	2.45	1.48	2.09	4.80	5.59
Total requirements	**million m^3**	**39.9**	**38.4**	**39.5**	**36.8**	**29.9**
for thermal generation	million m^3	39.8	38.3	39.1	36.7	29.8
for geothermal drilling	million m^3	0.047	0.049	0.007	0.069	0.059
for fuel storage & handling	million m^3	0.045	0.010	0.016	0.024	0.013
for mining & extracting activities	million m^3	0	0	0.400	0	0
EN8 EN21 Open-cycle cooling water						
For thermal generation (simple and CHP)	million m^3	12,904	10,531	11,729	10,460	10,235
Water for non-industrial uses						
Real-estate & service management (1)	million m^3		1.32	1.52	1.06	1.30
EN1 Expendables						
Resins	t	19.2	32	22.8	32.6	39.6
Hydrazine	t	1	0.380	0.100	0	0
Carbohydrazide	t	17.7	270	262	260	18.9
Hydrogen peroxide	t	44.5	83.5	46.2	0.033	0.212
Ammonia	t	19,164	19,759	17,708	18,702	14,691
Limestone for flue-gas desulfurization	t	169,594	192,376	249,858	260,830	286,619
Magnesium oxide	t	53.2	33.3	0	8.58	0
Sodium hypochlorite	t	975	1,766	2,543	1,701	1,370
Ferrous sulfate	t	0	0	0	6.94	4.69
Ferrous chloride	t	61.4	39.9	44.2	41	20.2
Trisodium phosphate	t	2.60	2.10	2	1.64	1.80
Lime	t	9,101	10,128	8,244	7,039	8,710
Ferric chloride	t	683	1,030	654	759	742
Polyelectrolyte	t	84.1	57	59	76.5	62.5
Sulfuric & hydrochloric acids	t	4,946	4,547	4,278	4,825	3,896
Caustic soda	t	13,489	15,601	16,784	26,778	26,056
Bentonite	t	1,927	549	1,696	1,359	518
Barite	t	90.3	0	0	211	216
Geothermal cement	t	3,506	2,729	3,909	3,329	2,905
Lubricating oil	t	4,042	855	7,792	13,492	890
Dielectric oil	t	106	120	554	369	147
Printing paper	t	0	1,393	1,224	1,132	1,023
Other	t	1,108	1,745	2,884	4,885	23,297
Total	**t**	**229,015**	**253,114**	**318,563**	**345,838**	**371,227**
for thermal generation	t	210,971	233,521	296,221	314,268	341,693
for hydro generation	t	175	199	253	224	209
for geothermal activities	t	17,846	17,832	20,660	28,665	28,185
for wind generation	t	0.030	0.600	0.600	1,341	6.50
for fuel storage & handling	t	1.57	0.047	0.105	0.533	0.266
for electricity distribution	t	21.3	78.4	113	207	98.8
for gas distribution	t	0	91.1	91.8	0	0
EN1 PCB survey (2)						
Equipment & transformers with PCBs > 500 ppm (excluding their oil)	t	0	6,634	77.5	0	-0.180
Oil with PCBs > 500 ppm contained in equipment & transformers	t	0	3,346	69.8	0	0.180
Equipment & transformers with PCBs > 50 ppm and ≤ 500 ppm (excluding their oil)	t	0	107	939	14,181	17,226
Oil with PCBs > 50 ppm and ≤ 500 ppm contained in equipment & transformers	t	0	214	334	3,021	3,438

(1) These activities have been surveyed since 2007.
(2) The survey began in 2007.

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From fossil fuels (simple)	**million kWh**	**73,726**	**67,261**	**64,163**	**49,431**	**46,759**
fuel oil & gas-oil	million kWh	15,070	7,023	5,259	3,405	1,481
natural gas	million kWh	32,183	32,852	31,208	19,254	18,759
of which in combined-cycle units	million kWh	19,463	23,273	25,828	17,047	17,540
coal	million kWh	26,473	27,386	27,696	26,772	26,520
From waste (non-biodegradable fraction)	**million kWh**	**25.2**	**28.8**	**21.2**	**51.9**	**30.8**
From hydrogen	**million kWh**	**0**	**0**	**0**	**0**	**2.17**
From renewables	**million kWh**	**24,035**	**21,487**	**26,478**	**29,437**	**30,809**
biomass and biodegradable fraction of waste	million kWh	22.8	84.5	135	207	266
simple	million kWh	22.8	84.5	135	207	266
geothermal	million kWh	5,208	5,243	5,181	5,000	5,030
hydro from natural flows	million kWh	18,406	15,691	20,695	23,725	24,784
wind	million kWh	398	468	464	499	723
solar (photovoltaic)	million kWh	0.463	1.34	2.94	5.82	5.86
Hydro from pumped storage	**million kWh**	**6,284**	**5,501**	**5,418**	**4,655**	**3,580**
Total	**million kWh**	**104,070**	**94,278**	**96,080**	**83,575**	**81,180**
Electricity consumption for pumping	million kWh	8,704	7,570	7,540	5,754	4,409
Fuel storage & handling						
Fuel transferred to destination	t	574,091	58,295	42,282	10,144	4,510
Heat generation	million kcal	36,505	3,858	8,700	8,700	6,769
Geothermal drilling						
Extent	m	10,684	15,225	13,130	14,824	15,498
Electricity distribution						
Electricity distributed	million kWh	255,613	257,093	260,473	241,817	245,887
EN4 Electricity consumption for grid operation	million kWh	317	364	365	318	332
Natural-gas distribution						
Natural gas distributed	million m^3	3,659	3,418	3,570	-	-
Natural-gas consumption for grid operation	million m^3	5.49	5.32	4.90	-	-
Natural-gas losses along the grid	million m^3	23.8	22.2	23.2	-	-
Mining & extracting activities (1)						
Areas revegetated with plant, shrub and tree species	ha			0	0	841
Areas occupied by infrastructure (roads, canals, aqueducts, power lines)	ha			0	0	2

-: no data due to absence of activities in the year.
(1) These activities have been surveyed since 2008.

		2007	2008	2009	2010
Sales					
Open market					
Residential segment					
Green offerings					
Customers	no.	0	673,370	1,364,507	1,581,542
Power sold	million kWh	0	1,290	3,032	5,258
Time-of-use offerings					
Customers	no.	37,492	224,450	183,328	286,920
Power sold	million kWh	17	512	847	781
Total					
Customers	no.	233,648	902,126	1,603,426	2,359,385
Power sold	million kWh	106	2,345	4,099	6,418
Business segment					
Green offerings					
Customers	no.	196,181	204,024	367,527	407,884
Power sold	million kWh	1,063	3,230	3,950	5,901
Time-of-use offerings					
Customers	no.	18,305	168,350	569,160	690,034
Power sold	million kWh	6,316	17,600	16,770	17,221
Total					
Customers	no.	962,753	995,287	1,057,383	1,125,473
Power sold	million kWh	19,885	27,495	25,789	23,691
Large customers' segment					
Green offerings					
Customers	no.	6	16	7,925	5,612
Power sold	million kWh	0.141	80	986	126
Time-of-use offerings					
Customers	no.	3,635	27,434	38,109	46,514
Power sold	million kWh	7,693	8,020	8,068	7,397
Total					
Customers	no.	21,356	31,377	52,373	58,475
Power sold	million kWh	8,624	9,015	9,733	7,679
Very large customers' segment					
Total					
Customers	no.	99	101	133	88
Power sold	million kWh	13,543	15,375	14,402	6,154
Universal-service market					
Household customers' segment					
Time-of-use offerings					
Customers	no.	689,740	164,127	178,917	7,120,327
Power sold	million kWh	2,758	584	599	17,294
Total					
Customers	no.	23,816,519	23,479,632	22,750,962	21,883,251
Power sold	million kWh	52,952	52,199	49,193	46,639
Non-household customers' segment					
Time-of-use offerings					
Customers	no.	316	574	3,077,277	3,844,711
Power sold	million kWh	24.5	1.20	15,121	18,556
Total					
Customers	no.	5,473,851	4,712,437	4,435,542	4,287,945
Power sold	million kWh	34,743	24,578	22,080	21,124
Overall power sold					
high-voltage	million kWh	18,418	17,763	15,148	6,520
medium-voltage	million kWh	22,069	21,129	18,645	15,318
low-voltage	million kWh	101,420	110,364	104,832	102,009
Total	**million kWh**	**141,907**	**149,256**	**138,625**	**123,847**
Total RECS certificates canceled	**no. (MWh)**	**1,066,000**	**4,600,000**	**7,968,119**	**11,148,877**

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN20 SO_2	thermal generation	thousand t	68.9	45.2	34.5	26.1	18.5
EN20 NO_X	thermal generation	thousand t	43.1	35.2	31.8	24.7	19.3
	fuel storage & handling	thousand t	0.007	0.001	0.002	0.002	0
	Total	**thousand t**	**43.1**	**35.2**	**31.8**	**24.7**	**19.3**
EN20 Particulates	thermal generation	thousand t	2.11	1.64	1.51	1.20	0.951
EN16 CO_2	*fossil-fired thermal generation (from combustion)*	*thousand t*	*51,498*	*46,657*	*44,290*	*36,905*	*34,126*
	fossil-fired thermal generation (from desulfurization)	*thousand t*	*74.6*	*84.6*	*109*	*114*	*135*
	total from fossil-fired thermal generation	thousand t	51,572	46,742	44,399	37,019	34,261
	non-fossil-fired thermal generation (from fossil carbon)	thousand t	18.2	23	16.2	39.7	33.1
	Total from thermal generation	thousand t	51,590	46,765	44,415	37,059	34,294
	Various activities	thousand t	25.4	80.8	83.4	82.4	81.4
	Total	**thousand t**	**51,616**	**46,846**	**44,498**	**37,141**	**34,376**
EN16 SF_6	electricity generation	kg	1,394	1,819	1,562	1,080	1,376
		thousand t of CO_2-equivalent	31.8	41.5	35.6	24.6	31.4
	electricity distribution	kg	2,937	3,004	3,319	4,023	4,102
		thousand t of CO_2-equivalent	67	68.5	75.7	91.7	93.5
	Total	**kg**	**4,331**	**4,823**	**4,881**	**5,103**	**5,478**
		thousand t of CO_2-equivalent	**98.7**	**110**	**111**	**116**	**125**
EN16 CH_4	gas distribution, mining & extracting activities	thousand t	15.9	14.8	15.5	0	0
		thousand t of CO_2-equivalent	396	370	387	0	0
EN16 **Total greenhouse gases (CO_2, SF_6, CH_4)**		**thousand t of CO_2-equivalent**	**52,111**	**47,326**	**44,996**	**37,258**	**34,500**
EN20 H_2S	geothermal generation (fluid)	thousand t	20.8	16.2	13.1	10.2	10.4
EN16 CO_2	geothermal generation (fluid)	thousand t	1,946	1,953	1,902	1,876	1,829
EN18 Avoided CO_2 emissions							
Due to hydro generation from natural flows		thousand t	12,875	10,904	14,320	17,768	18,160
Due to geothermal generation		thousand t	3,643	3,643	3,585	3,745	3,685
Due to wind and solar (photovoltaic) generation		thousand t	279	326	323	378	534
Due to generation from biomass & biodegradable fraction of waste		thousand t	15.9	58.7	93.8	155	196
Due to generation from hydrogen		thousand t	0	0	0	0	1.59
Due to generation from renewables		**thousand t**	**16,813**	**14,932**	**18,322**	**22,045**	**22,574**
EN21 Waste waters (discharged quantity)	thermal generation	million m^3	13.2	13.6	11.4	9.04	7.75
	fuel storage & handling	million m^3	0.070	0.034	0.031	0.037	0.014
	Total	**million m^3**	**13.3**	**13.7**	**11.4**	**9.08**	**7.76**

	Source		2006	2007	2008	2009	2010
EN21 Conventional polluting load of waste waters							
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	2,672	4,232	2,333	3,372	4,114
	in some plants with an overall capacity of	MW	22,179	22,106	23,890	21,539	20,021
	fuel storage & handling	kg	10.5	12	12.2	7.70	4
	Total	**kg**	**2,683**	**4,244**	**2,346**	**3,380**	**4,118**
Total nitrogen (expressed as N)	thermal generation	kg	86,785	118,131	66,818	40,525	30,797
	in some plants with an overall capacity of	MW	22,179	22,106	23,890	21,539	20,021
	fuel storage & handling	kg	115	47.3	16.9	12.6	45
	Total	**kg**	**86,900**	**118,178**	**66,835**	**40,538**	**30,842**
Total phosphorus (expressed as P)	thermal generation	kg	9,268	8,300	7,268	5,221	3,419
	in some plants with an overall capacity of	MW	20,581	20,522	21,580	19,230	18,531
	fuel storage & handling	kg	48.1	6.15	1.83	1.85	3
	Total	**kg**	**9,316**	**8,306**	**7,269**	**5,223**	**3,422**
COD	thermal generation	kg	379,948	351,702	259,942	245,687	212,591
	in some plants with an overall capacity of	MW	22,179	22,106	23,890	21,539	20,021
	fuel storage & handling	kg	1,021	325	38.5	132	375
	Total	**kg**	**380,969**	**352,027**	**259,981**	**245,819**	**212,966**
BOD	thermal generation	kg	83,147	81,207	66,976	60,861	51,988
	in some plants with an overall capacity of	MW	14,795	15,073	16,864	17,221	16,434
	fuel storage & handling	kg	314	345	12.2	52.9	119
	Total	**kg**	**83,460**	**81,551**	**66,989**	**60,914**	**52,107**
EN22 Non-hazardous special waste							
Coal bottom ash	thermal generation						
production		t	28,626	23,606	14,855	31,714	34,861
delivery to recovery operators		t	28,548	24,325	14,519	28,876	33,016
Coal flyash	thermal generation						
production		t	1,058,323	1,290,650	1,440,304	1,280,130	1,223,299
delivery to recovery operators		t	974,404	1,079,355	1,258,693	1,067,575	1,030,514
Oil bottom ash	thermal generation						
production		t	93.1	24.4	0	0	0
Other non-hazardous ash	thermal generation						
production		t	0	0	0	2.75	0
Gypsum from desulfurization	thermal generation						
production		t	267,814	260,341	322,667	291,901	320,489
delivery to recovery operators		t	256,696	258,884	300,060	294,916	307,579
Other							
production	electricity generation & geothermal drilling	t	158,442	157,254	129,539	171,146	158,616
	electricity distribution	t	28,947	30,847	24,345	15,389	15,428
	various activities	t	371	278	1,104	1,663	1,942
	Total	**t**	**187,760**	**188,380**	**154,988**	**188,197**	**175,987**
delivery to recovery operators	electricity generation & geothermal drilling	t	92,911	101,316	80,837	59,084	65,174
	electricity distribution	t	28,395	30,331	23,480	14,350	13,667
	various activities	t	331	273	1,058	1,660	1,791
	Total	**t**	**121,638**	**131,920**	**105,375**	**75,094**	**80,632**

	Source		2006	2007	2008	2009	**2010**
Total							
production	electricity generation & geothermal drilling	t	1,513,298	1,731,875	1,907,365	1,774,893	1,737,265
	electricity distribution	t	28,947	30,847	24,345	15,389	15,428
	various activities	t	371	278	1,104	1,663	1,942
	Total	**t**	**1,542,616**	**1,763,001**	**1,932,814**	**1,791,945**	**1,754,635**
delivery to recovery operators	electricity generation & geothermal drilling	t	1,352,559	1,463,880	1,654,110	1,450,451	1,436,283
	electricity distribution	t	28,395	30,331	23,480	14,350	13,667
	various activities	t	331	273	1,058	1,660	1,791
	Total	**t**	**1,381,285**	**1,494,485**	**1,678,647**	**1,466,461**	**1,451,741**
EN22 **Hazardous special waste**							
Oil flyash	thermal generation						
production		t	7,212	1,811	868	369	383
delivery to recovery operators		t	133	118	0	0	0
Other							
production	electricity generation & geothermal drilling	t	14,580	13,011	11,772	35,671	39,979
	electricity distribution	t	15,689	22,864	20,536	14,314	15,601
	various activities	t	13.8	756	892	12.4	61.6
	Total	**t**	**30,282**	**36,631**	**33,200**	**49,997**	**55,641**
of which with PCBs	*electricity generation & geothermal drilling*	*t*	*848*	*2,246*	*726*	*918*	*911*
	electricity distribution	*t*	*1,154*	*1,223*	*818*	*426*	*416*
	various activities	*t*	*0.060*	*0*	*0.640*	*0*	*0*
	Total	*t*	*2,002*	*3,470*	*1,545*	*1,344*	*1,327*
delivery to recovery operators	electricity generation & geothermal drilling	t	1,411	1,732	1,748	1,809	1,415
	electricity distribution	t	8,225	12,289	12,899	10,960	10,916
	various activities	t	3.49	2.35	16.7	2.05	2.43
	Total	**t**	**9,639**	**14,023**	**14,664**	**12,771**	**12,334**
of which with PCBs	*electricity generation & geothermal drilling*	*t*	*820*	*836*	*717*	*796*	*923*
	electricity distribution	*t*	*1,148*	*1,112*	*721*	*424*	*397*
	Total	*t*	*1,968*	*1,949*	*1,438*	*1,220*	*1,320*
Total							
production	electricity generation & geothermal drilling	t	21,792	14,822	12,639	36,039	40,361
	electricity distribution	t	15,689	22,864	20,536	14,314	15,601
	various activities	t	13.8	756	892	12.4	61.6
	Total	**t**	**37,494**	**38,442**	**34,068**	**50,366**	**56,024**
delivery to recovery operators	electricity generation & geothermal drilling	t	1,544	1,850	1,748	1,809	1,415
	electricity distribution	t	8,225	12,289	12,899	10,960	10,916
	various activities	t	3.49	2.35	16.7	2.05	2.43
	Total	**t**	**9,772**	**14,141**	**14,664**	**12,771**	**12,334**

	Source		2006	2007	2008	2009	2010
EN22 Total special waste							
production	electricity generation & geothermal drilling	t	1,535,089	1,746,697	1,920,004	1,810,933	1,777,626
	electricity distribution	t	44,636	53,711	44,881	29,703	31,030
	various activities	t	385	1,034	1,996	1,675	2,003
	Total	**t**	**1,580,110**	**1,801,442**	**1,966,881**	**1,842,311**	**1,810,659**
delivery to recovery operators	electricity generation & geothermal drilling	t	1,354,103	1,465,730	1,655,858	1,452,260	1,437,698
	electricity distribution	t	36,619	42,620	36,379	25,310	24,584
	various activities	t	335	275	1,075	1,662	1,793
	Total	**t**	**1,391,058**	**1,508,626**	**1,693,311**	**1,479,232**	**1,464,075**

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN29 Land								
LV cable lines								
overhead	% of entire LV grid	52.4	52.4	52.6	52.6	52.6	0.4	0.0
underground	% of entire LV grid	31.3	31.7	32.2	32.7	32.7	4.5	0.0
Total	**% of entire LV grid**	**83.7**	**84.1**	**84.8**	**85.3**	**85.3**	**1.9**	**0.0**
MV cable lines								
overhead	% of entire MV grid	2.46	2.53	2.60	2.72	2.79	13.4	2.6
underground	% of entire MV grid	37.9	38.4	38.8	39.2	39.5	4.2	0.8
Total	**% of entire MV grid**	**40.4**	**40.9**	**41.4**	**41.9**	**42.3**	**4.7**	**1.0**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	69	69.4	70.1	71.8	72	4.3	0.3
Resource conservation and quality								
EN1 EN3 Net heat rate of simple thermal generation	kcal/kWh	2,223	2,193	2,186	2,258	2,204	-0.9	-2.4
EN1 EN3 Net heat rate of geothermal generation	kcal/kWh	5,447	5,415	5,473	5,344	5,459	0.2	2.2
EN1 EN3 Net efficiency of hydro generation from pumped storage	%	72.2	72.7	71.9	80.9	81.2	12.5	0.4
EN4 Consumption of electricity for distribution grid operation	% of electricity distributed	0.124	0.142	0.140	0.131	0.135	8.9	3.1
EN1 EN3 Consumption of natural gas for grid operation	% of natural gas distributed	0.150	0.156	0.137	-	-	-	-
Natural-gas losses along the grid	% of natural gas distributed	0.650	0.650	0.650	-	-	-	-
EN8 Net specific requirements of water for industrial uses in thermal generation								
including contribution of as-is sea water	liters/kWh	0.540	0.569	0.608	0.739	0.633	17.2	-14.3
excluding contribution of as-is sea water	liters/kWh	0.375	0.392	0.452	0.621	0.516	37.6	-16.9

-: no data due to absence of activities in the year.

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN8 Coverage of requirements of water for industrial uses								
from rivers (including meteoric waters from secondary rainfall)	% of requirements	23.6	24.6	20.7	20.2	17	-28.0	-15.8
from wells	% of requirements	9.71	9.39	16.8	18.3	9.95	2.5	-45.6
from aqueducts	% of requirements	12.1	14.4	16.6	15.8	15	24.0	-5.1
Total from inland waters	**% of requirements**	**45.4**	**48.4**	**54**	**54.3**	**42**	**-7.5**	**-22.7**
from the sea (as-is)	% of requirements	30.5	31.1	25.6	16	18.4	-39.7	15.0
from the sea (desalinated)	% of requirements	18	16.7	15	16.7	20.9	16.1	25.1
EN10 from waste waters (used inside plants)	% of requirements	6.15	3.85	5.34	13	18.7	204.1	43.8
EN1 EN3 Fossil fuel consumption for thermal generation								
fuel oil	% of total fuel consumption	21.9	11.9	9.79	8.05	4.02	-81.6	-50.1
gas-oil	% of total fuel consumption	0.492	0.484	0.682	0.882	0.515	4.7	-41.6
natural gas	% of total fuel consumption	37.8	41.6	40.2	32.1	33.9	-10.3	5.6
coal	% of total fuel consumption	39.8	46	49.3	59	61.6	54.8	4.4
HS fuel oil	% of total fuel consumption	0	2.16	0	0	0	0.0	0.0
MS fuel oil	% of total fuel consumption	6.60	9.75	21.6	26.7	22.9	247.0	-14.2
LS fuel oil	% of total fuel consumption	42.3	25.4	17.8	18.8	20.4	-51.8	8.5
VLS fuel oil	% of total fuel consumption	51.1	62.7	60.6	54.5	56.8	11.2	4.2
natural gas, technologically captive use	% of total natural-gas consumption	62.2	68.6	79.2	82.4	86.4	38.9	4.9
of which in combined-cycle units	*% of total natural-gas consumption*	*51.3*	*62.2*	*74.8*	*79.5*	*84.5*	*64.7*	*6.3*
natural gas, non-technologically captive use	% of total natural-gas consumption	37.8	31.4	20.8	17.6	13.6	-64.0	-22.7
Geothermal steam for electricity generation	% of total geothermal fluid extracted	96.9	99.5	97.3	97.6	97.9	1.0	0.3
Electricity generation from renewables								
thermal from biomass & biodegradable fraction of waste	% of total generation	0.022	0.090	0.141	0.248	0.328	1,390.9	32.3
geothermal	% of total generation	5	5.56	5.39	5.98	6.20	24.0	3.7
hydro from natural flows	% of total generation	17.7	16.6	21.5	28.4	30.5	72.3	7.4
wind and solar (photovoltaic)	% of total generation	0.383	0.497	0.486	0.604	0.897	134.2	48.5
Total	**% of total generation**	**23.1**	**22.8**	**27.6**	**35.2**	**38**	**64.5**	**38.0**
EN6 **Sales**								
Residential segment								
Green power sold	% of power sold		0	55	74	81.9		10.7
Time-of-use power sold	% of power sold		16	21.8	20.7	12.2		-41.1
Business segment								
Green power sold	% of power sold		5.35	11.7	15.3	24.9		62.7
Time-of-use power sold	% of power sold		31.8	64	65	72.7		11.8
Large customers' segment								
Green power sold	% of power sold		0.002	0.887	10.1	1.64		-83.8
Time-of-use power sold	% of power sold		89.2	89	82.9	96.3		16.2
Household customers' segment								
Time-of-use power sold	% of power sold		5.21	1.12	1.22	37.1		2,941.0
Non-household customers' segment								
Time-of-use power sold	% of power sold		0.070	0.005	68.5	87.8		28.2

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Overall power sold								
high-voltage	% of power sold		13	11.9	10.9	5.27		-51.7
medium-voltage	% of power sold		15.6	14.2	13.5	12.4		-8.1
low-voltage	% of power sold		71.5	73.9	75.6	82.4		9.0
Total green power sold	**% of power sold**		**0.749**	**3.08**	**5.75**	**9.11**		**58.4**
Total time-of-use power sold	**% of power sold**		**11.8**	**17.9**	**29.9**	**49.5**		**65.6**
Specific emissions into the atmosphere								
EN20 SO_2 (simple thermal generation)	g/kWh thermal net	0.934	0.671	0.537	0.525	0.394	-57.8	-25.0
EN20 NO_X (simple thermal generation)	g/kWh thermal net	0.584	0.523	0.494	0.498	0.410	-29.8	-17.7
EN20 Particulates (simple thermal generation)	g/kWh thermal net	0.029	0.024	0.024	0.024	0.020	-31.0	-16.7
EN16 CO_2 (simple thermal generation)	g/kWh thermal net	699	694	691	746	729	4.3	-2.3
EN20 SO_2 (total from thermal generation)	$g/kWh_{eq.}$ total net	0.662	0.480	0.359	0.312	0.228	-65.6	-26.9
EN20 NO_X (total from thermal generation)	$g/kWh_{eq.}$ total net	0.414	0.374	0.331	0.296	0.237	-42.8	-19.9
EN20 Particulates (total from thermal generation)	$g/kWh_{eq.}$ total net	0.020	0.017	0.016	0.014	0.012	-40.0	-14.3
EN16 CO_2 (total from thermal generation)	$g/kWh_{eq.}$ total net	496	496	462	443	422	-14.9	-4.7
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0.940	1.02	1.02	1.07	1.16	23.4	8.4
CH_4+CO_2, expressed as CO_2-equivalent (gas distribution)	g/m³ of natural gas distributed	111	111	111	0	0	-100.0	0.0
EN20 H_2S (geothermal fluid)	g/kWh geothermal net	3.99	3.09	2.53	2.04	2.06	-48.4	1.0
EN20 CO_2 (geothermal fluid)	g/kWh geothermal net	374	372	367	375	364	-2.7	-2.9
EN22 **Specific production of waste**								
Coal and brown-coal ash (thermal generation)	g/kWh net from coal and brown coal	41.1	48	52.5	49	47.4	15.3	-3.3
Oil flyash (thermal generation)	g/kWh net from fuel oil & gas-oil	0.479	0.258	0.165	0.108	0.259	-45.9	139.8
Oil bottom ash (thermal generation)	g/kWh net from fuel oil & gas-oil	0.485	0.261	0.165	0.108	0.259	-46.6	139.8
EN22 **Waste recovery**								
Coal and brown-coal ash	% of production	92.3	84	87.5	83.6	84.5	-8.5	1.1
bottom ash	*% of production*	*99.7*	*103*	*97.7*	*91.1*	*94.7*	*-5.0*	*4.0*
flyash	*% of production*	*92.1*	*83.6*	*87.4*	*83.4*	*84.2*	*-8.6*	*1.0*
Gypsum from desulfurization	% of production	95.8	99.4	93	101	96	0.2	-5.0
Other non-hazardous special waste								
electricity generation & geothermal drilling	% of production	58.6	64.4	62.4	34.5	41.1	-29.9	19.1
electricity distribution	% of production	98.1	98.3	96.4	93.3	88.6	-9.7	-5.0
fuel storage & handling, gas distribution	% of production	89.4	98.1	93.5	95.9	100	11.9	4.3
Total	**% of production**	**64.8**	**70**	**67.9**	**39.4**	**45.4**	**-29.9**	**15.2**

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Total non-hazardous special waste								
electricity generation & geothermal drilling	% of production	89.4	84.5	86.7	81.7	82.7	-7.5	1.2
electricity distribution	% of production	98.1	98.3	96.4	93.3	88.6	-9.7	-5.0
fuel storage & handling, gas distribution	% of production	89.4	98.1	93.5	95.9	100	11.9	4.3
Total	**% of production**	**89.5**	**84.8**	**86.8**	**81.8**	**82.7**	**-7.6**	**1.1**
Oil flyash	% of production	1.85	6.54	0	0	0	-100.0	0.0
Other hazardous special waste								
electricity generation & geothermal drilling	% of production	9.68	13.3	14.8	5.07	3.54	-63.4	-30.2
electricity distribution	% of production	52.4	53.7	62.8	76.6	70	33.6	-8.6
fuel storage & handling, gas distribution	% of production	25.4	0.311	1.25	0	3.28	-87.1	0.0
Total	**% of production**	**31.8**	**38.3**	**44.2**	**25.5**	**22.2**	**-30.2**	**-12.9**
Total hazardous special waste								
electricity generation & geothermal drilling	% of production	7.09	12.5	13.8	5.02	3.51	-50.5	-30.1
electricity distribution	% of production	52.4	53.7	62.8	76.6	70	33.6	-8.6
fuel storage & handling, gas distribution	% of production	25.4	0.311	1.25	0	3.28	-87.1	0.0
Total	**% of production**	**26.1**	**36.8**	**43**	**25.4**	**22**	**-15.7**	**-13.4**
Total special waste								
electricity generation & geothermal drilling	% of production	88.2	83.9	86.2	80.2	80.9	-8.3	0.9
electricity distribution	% of production	82	79.4	81.1	85.2	79.2	-3.4	-7.0
fuel storage & handling, gas distribution	% of production	87.1	26.6	42.3	85.6	86.4	-0.8	0.9
Total	**% of production**	**88**	**83.7**	**86.1**	**80.3**	**80.9**	**-8.1**	**0.7**

Highlights of 2010

Enel operates in Italy through Enel Produzione (thermal and renewable power generation), Enel Green Power (renewable power generation), Enel Distribuzione and Deval (electricity distribution) and the Sales Division (sale of electricity and gas).

In 2010, electricity generation continued to fall owing to the contraction of demand due to the economic crisis; the decrease in thermal generation from fossil fuels was in part offset by the increase in generation from renewables (~+3%, hydro ~+1 TWh, wind ~+200 GWh).

EN1 As regards expendables, it is worth noting the increase in the use of limestone for flue-gas desulfurization (employed in a larger number of coal-fired plants).

EN1 EN3 The consumption of non-fossil fuels in thermal generation grew from 67,000 to 78,380 toe in a single year.
This contribution includes:

> refuse-derived fuel (RDF), co-fired with coal;
> solid biomass, used as main fuel or co-fired with coal;
> biodiesel, used in some gas-turbine units in small islands;
> hydrogen, used in the new, dedicated, combined-cycle plant of Fusina (a by-product coming from the petrochemical hub of Porto Marghera).

In contrast, the consumption of fossil fuels in thermal generation was down (from 11,191 to 10,333 ktoe) on 2009. In the fossil fuel mix, the percentages of fuels used in the more efficient plants (natural gas in combined-cycle plants and coal in the new Torre Nord plant) rose, whereas the percentages of gas-oil and fuel oil declined. In particular, the contribution of VLS and LS fuel oil was up by about 2 percentage points, to the expense of MS fuel oil (~-4 percentage points).

EN5 Installation efficiency improvements.

Electricity distribution

> In Italy, Enel Distribuzione is engaged in a program to enhance the efficiency of the power grid. The installation of new HV/MV and MV/LV substations in the distribution grid rationalizes and optimizes the lower-voltage grid, reducing the average length of and the average load on the grid and thus energy losses.
For MV and LV lines, the renovation program generally involves the replacement of existing conductors with other conductors with a larger cross-section, reducing energy losses, which are proportional to the resistance and square of the current. The main renovations were as follows: i) on MV lines, replacement of 16-mm^2 conductors of old offtakes or sections of overhead lines with conductors or overhead cables with a larger electrical cross-section; ii) on LV lines, replacement of 16- or 25-mm^2 bare copper conductors

with 35-mm^2 overhead aluminum cables.

As part of the 2011-2013 development plan, about 30,000 additional low-loss MV/LV transformers will replace those currently used in the distribution grid. The new transformers reduce losses: i) under no-load conditions, by an estimated about 30% on average vs. current transformers for 24 hrs/day; ii) under on-load conditions, by an estimated 10% on average vs. current transformers for about 1,800 hrs/yr; the reduction coefficient takes into account the original oversizing of transformers with respect to the load at which they are operated.

Finally, the mode of operation of the grid is very important to minimize grid losses. Careful management of the configuration of the grid (in particular, the MV grid) may significantly decrease the power dissipated in conductors through the Joule effect. Enel Distribuzione is adopting advanced systems to monitor the grid, operate switching points in remote mode, compute and simulate electrical data both on line and off line. These systems will make it possible to achieve the above goal, while satisfying other operating constraints (often of a priority nature).

- Enel Distribuzione entered into agreements with the Ministry of Economic Development and the Regions of Calabria, Campania, Apulia and Sicily to carry out structural works on the distribution grid, so as to enable the connection of renewable power installations thereto. The company will make considerable investments in upgrades of existing installations and construction of 8 new HV/MV substations in Apulia, 10 in Sicily, 6 in Campania and 7 in Calabria by 2014.

Thermal generation

- In unit 3 of the Brindisi Sud plant, the rotors of the low-pressure turbines were replaced with other rotors with improved last-stage 43" blade profile to increase mechanical efficiency by 15.4 MW.
- In the combined-cycle plant of Pietrafitta, the gas turbines were upgraded by replacing their burners.
- At the Cuneo hydro Business Unit, the use of water resources for hydro power generation was rationalized and made more efficient and the Lamie plant was improved to conform to hydro power lease requirements. A study is under way to use the residual head of the flows intercepted by existing hydro plants for the Sampeyre mini-hydro plant.

As a result of efficiency enhancements of the thermal generating mix, the heat rate was down by over 54 kcal/kWh (~-2%).

EN5 EN6 EN18 Enel Green Power put into service: i) the wind power plants of San Floro, Serra Tre Confini, Regenco Contrada Coniglia and expanded those already in service of Maida, Colobraro and Sa Turrina Manna (net maximum capacity: 103 MW); ii) the geothermal power plants of Radicondoli 2 (net maximum capacity: 16 MW) and of Chiusdino (net maximum capacity: 17 MW) in the homonymous municipalities in the province of Siena, with a relative net maximum capacity of 33 MW; and iii) the photovoltaic plant of Serragiumenta (province of Cosenza), which was built by the new joint venture (ESSE) with

Sharp (5 MW divided in equal shares), with a net maximum capacity of 2.5 MW.
At steady state, these plants will generate over 407 GWh (i.e. the consumption of 163,000 households), displace roughly 300,000 tonnes of CO_2 emissions into the atmosphere and save about 90,000 tonnes of oil-equivalent (toe)/yr of fossil fuels.
Low-voltage grids were extended by roughly 5,000 km, in line with their trend in the past 5 years.
In 2010, Enel Produzione inaugurated its combined-cycle thermal plant in Fusina (gas-turbine units with existing coal-fired plant). The plant has a net maximum capacity of 16 MW and is fired with hydrogen, a by-product from the petrochemical hub of Porto Marghera. It has very low emissions of NO_X and an efficiency of 41.6%.
In Priolo Gargallo (Syracuse), Enel Produzione completed the construction of its Archimede demonstration thermodynamic solar facility (~6 MW) and began its commissioning.
Enel Green Power commenced the construction of its wind farm of Portoscuso (net maximum capacity: about 100 MW) and of some photovoltaic plants (overall net maximum capacity: about 23 MW) at the following sites: Adrano (Catania), where Enel built the first CSP plant in the world in 1981; Serre Persano (Salerno), with a view to doubling its present plant; Strambino (Turin); and fully integrated rooftop systems on the industrial buildings of the Marcegaglia Group in Taranto.
Enel.si and Poste Italiane made an agreement to foster the installation of turn-key photovoltaic facilities. The facilities will be built by Enel.si's franchising distribution network. A special financing program will cover the purchase cost of the facilities.
Enel Energia, the company which sells electricity and gas in the open market, supplied RECS (Renewable Energy Certificate System)-certified electricity (i.e. all-renewable) to the Italian Song Festival of Sanremo. This initiative displaced about 50 tonnes of carbon dioxide emissions into the atmosphere.

EN6 EN7 EN18 Since 2010, the Sales Division has launched an all-inclusive green power offering, i.e. electricity generated by hydro power plants, with neutralization of CO_2 emissions from the invoicing process and from the consumption of electricity by power plant auxiliaries. The statement of CO_2 emissions was issued by Det Norske Veritas (DNV). The emissions will be offset through the purchase and subsequent cancellation of emission certificates (Verified Emission Reductions - VERs - and Certified Emission Reductions - CERs).
The Italian commercial activity is also centered on time-of-use rate plans, which shift electricity demand to night time, thus increasing the overall efficiency of the electricity sector and decreasing wastage and negative environmental impacts.
In 2010, the amount of green power and time-of-use power sold (the latter in both the open market and captive market) continued to go up (~+3,317 TWh and ~+11.6 TWh, respectively).

EN8 EN10 With respect to 2009, specific consumption of water improved considerably (~-16%, including waste waters and excluding the contribution of as-is sea water). This result adds to waste water recovery, whose contribution to the coverage of overall requirements sharply increased (~+6 percentage points) thanks to the progressive entry into operation of crystallizers in coal power plants. In absolute terms, the recovered waste waters amounted to about 8 million m^3. This figure excludes the make-up water for the closed-cycle cooling system of the Fusina thermal plant (Venice), as it comes entirely from the waste water treatment system of the local municipally-owned company (about 469,100 m^3 in 2010).

Interesting results were obtained in terms of specific emissions of all the major pollutants into the atmosphere.

EN16 Total net specific CO_2 emissions (i.e. referred to total electricity generation) continued to have a downward trend (425 g/kWh, -19%) thanks to the increase of natural gas in the fuel mix and to the growing generation from renewables; this result is all the more remarkable if it is compared with the value of 618 g/kWh net of 1990, i.e. the base year of the Kyoto Protocol targets;

EN20 net specific emissions of macro-pollutants from thermal generation alone were down by ~25% (SO_2), ~18% (NO_X) and ~17% (particulates) on 2009. Specific emissions of H_2S from geothermal generation remained practically unaltered as against 2009. In spite of their natural origin, they are abated via AMIS systems;

EN18 in 2010, the emissions of CO_2 displaced by electricity generation from renewables and hydrogen at the Fusina power plant amounted to roughly 22.6 million tonnes (about 2.5% more than in the previous year).

EN22 In 2010, the Infrastructure and Networks Division went on with its special project (started in 2005) of decontamination/disposal of equipment containing oil with PCBs. Decontamination/disposal of equipment containing oil with a PCB content exceeding 500 ppm was completed as early as in 2007, ahead of the legislative time limit (2009). From the start of the project to the end of 2010, the contaminated equipment (power transformers, but also measuring transformers, capacitors, bushing insulators, circuit-breakers, etc.) covered by the plan dropped by about 28,000 units.
Waste recovery efforts continued. The percentage of recovery of waste delivered to authorized operators in 2010 was above 81%.
Ash and gypsum from desulfurization, produced in coal-fired thermal plants, are the only items of waste whose production is significantly correlated with the volume of activities. These items showed very high percentages of recovery: 95% for coal flyash and 96% for gypsum.

EN19 Ozone-depleting substances:

R22
Amount: **13,333 kg**
Emissions: **400 kg**
Place: this gas (withdrawn from the market last year) is used in the air conditioning/heating systems of about 1,000 office buildings, which are occupied by the personnel and managed by Enel Servizi. Investigations are being conducted on a replacement gas to be progressively introduced.

EN23 Spills:

Italy	*Description of the spill*	*Impact and mitigation*
Caltavuturo wind farm Amount: **0.15 m^3**	In the wind farm site, spill of atomized mineral oil over a 6,500-m^2 farm area (apple orchard).	Analyses showed that the oil concentration was much below the contamination threshold. A preliminary inspection indicated no need for remediation. A Conference of Services was planned to identify possible actions and damages were paid to the farmer.
Distribution grids Amount: **0.052 m^3**	Spill of mineral oil from equipment.	Enel took all the required safety and remediation measures, under a simplified procedure applicable to surface areas of less than 1,000 m^2 – Legislative Decree 152/06, Title IV. It is worth noting that these incidents are concentrated in sites where thefts of in-service equipment (to extract valuable materials, e.g. copper) are frequent. Generally, given the low amounts of spilt oil, the contaminated areas are decontaminated within 30 days from the incident (without requiring a formal rehabilitation procedure).
Genova power plant Amount: **1 m^3**	At the Genova power plant (on October 28, 2010), spill of coal flyash (CER 100102, non-hazardous waste) from silos upon loading. During an inspection to detect the cause of and remove an obstruction in the unloading systems, flyash was suddenly spilled. The event, which caused the dispersion of flyash, had an approximate duration of 20 minutes.	Safety measures were taken in the presence of representatives from the following control bodies: fire-fighters; State police; Guardia di Finanza; port authorities; coast guards; local health service agency; ARPAL. The event caused the dispersion of flyash, which was blown southwards, in the sea area extending from the Ex Idroscalo bridge to the sea-wall. In the period of time under review, a strong northern wind was blowing (as indicated by the weather station on the plant roof), giving rise to a narrow and elongated plume, which did not extend to built-up areas or external work areas. The wet flyash (deposited over the asphalt road of access to the wharf) was collected and temporarily stored into special roll-off containers. Nearby roads were vacuum-cleaned. All the sprinklers placed on the walls of the coal bunker near the affected area were activated to further minimize the dust. The flyash deposition did not extend to non-asphalted soil areas.
Sicily Business Unit, Petino power plant Quantity: **0.1 m^3**	Spill of transformer oil after copper theft.	In detail: 4 m^3 recovered from the transformer-oil collection tank; 0.1 m^3 were spilled over the soil; the soil was timely remediated in accordance with art. 249 of Legislative Decree 152/2006 (spill over permeable solid surface).

EN26 Environmental enhancements.

Emissions

> Improvement of emission abatement systems in thermal power plants: use of very low-sulfur coals to reduce SO_2; replacement of burners with other new, low-NO_X burners (Priolo Gargallo, Pietrafitta); use of new burner heads to reduce particulates (Porto Empedocle); replacement of electrostatic precipitators with bag filters (Brindisi Sud); roofing of coal bunkers; pneumatic handling of flyash from the abatement system to the storage silos (Sulcis); and improvement of coal landing infrastructures. The installation of AMIS systems to abate H_2S in geothermal plants continued. As regards the vehicle fleet, Euro 4 service vehicles were replaced with Euro 5 ones; emissions of CO_2 were curbed by about 10% thanks to the higher efficiency of the new cars. The issuing of carbon emission offset certificates is planned.

Water

> Water was saved by: increasing the recovery of waste waters by improving the maintenance of water treatment and recycling systems; reusing waste waters as make-up waters in cooling towers; continuing the program of construction of crystallization systems for the waste waters coming from desulfurizer drains in coal-fired plants; and installing systems to treat waste waters by osmosis.

Waste

> Asbestos-containing materials, where present, continued to be removed. The search for new opportunities for recovery of waste and packaging materials from all activities continued. The production of flyash was reduced by using coals with a lower content of unburnt particles.

Soil

> In some plants, improvement of hazardous-substance storage basins; elimination and remediation of dense fuel-oil tanks; replacement of single-chamber underground tanks with double-chamber ones equipped with leak detectors.

Materials

> In the liquid-release treatment system: use of sludges in place of ferric chloride in the secondary neutralizer and of brine from vaporizers for pH balancing (Priolo Gargallo plant). Progressive replacement of polluting and toxic products with alternative, biodegradable and atoxic ones (hydrazine with carbohydrazide, biodegradable oil in place of mineral oil). Optimized dosage of hypochlorite in water treatment.

Noise

> Preliminary studies, noise measuring surveys and mitigation of noise emissions at various sites.

Renewables

> In the thermal plant of Sulcis, enlargement of the biomass storage deposit; this measure was justified by the need for having a higher amount of stored material to cover increases in generation. Design of new mini-hydro plants for recovering energy from the release of the minimum in-stream flow from major installations.

Landscape

> Environmental regeneration of the areas adjoining the plants (Gleno dam, Priolo Gargallo plant); visual mitigation of the downstream sloping face of the Gleno dam, by covering it with local stones; demolition of 14 km of steam pipelines (geothermal energy); demolition of disused structures (Bastardo and Pietrafitta plants).

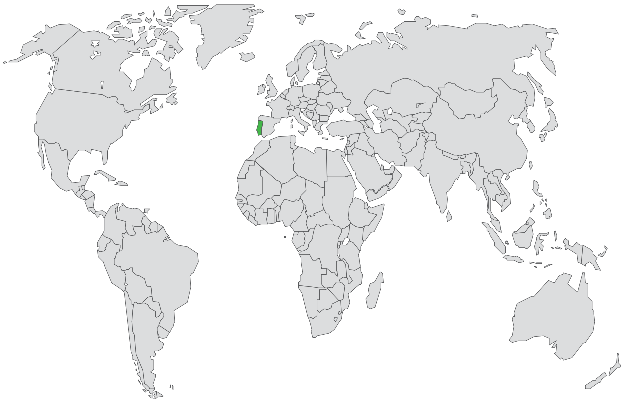
Other

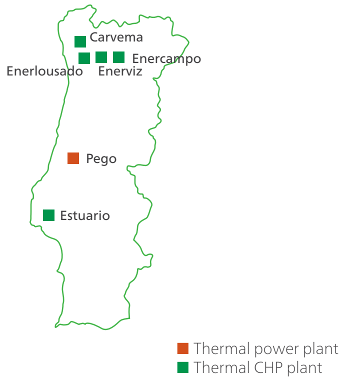
> In the course of 2010, Enel continued its environmental management system awareness and training courses for employees and stakeholders, in order to improve environmental protection.

Portugal

Thermal and combined heat & power generation

Endesa SA
Enel Unión Fenosa Renovables SA





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
6	268	815

Power installations

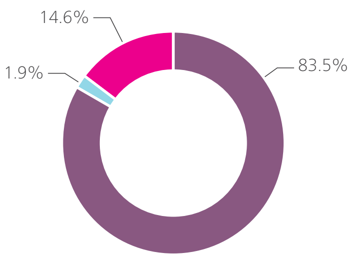
	Power plants no.	Units no.	Net maximum electrical capacity MW	Useful thermal capacity 10^6 kcal/h
Steam (condensing)	1	2	224	-
Gas turbines for CHP	0	0	5	13
Alternative engines for CHP	5	9	39	15
	6	**11**	**268**	**28**

The Pego power plant has an ISO 14001-certified environmental management system.

Net electricity generation
Total: 815 million kWh

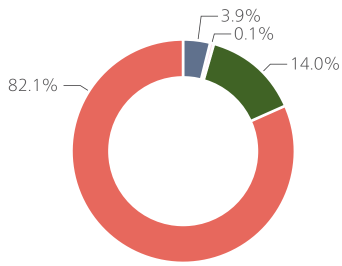
Useful heat output (combined with power generation)
Total: 74,047 million kcal (equal to 86 million kWh)

Net maximum electrical capacity
Total: 268 MW



Steam (condensing)
Gas turbines
Alternative engines

Fuel consumption
Total: 191,822 t of oil-equivalent



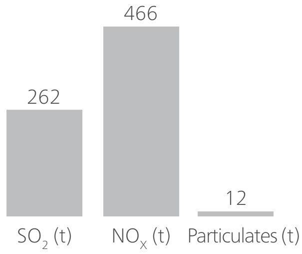
Fuel oil
Gas-oil
Natural gas
Coal

Waste waters

Discharged: **275,931 m³**

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Emissions into the atmosphere

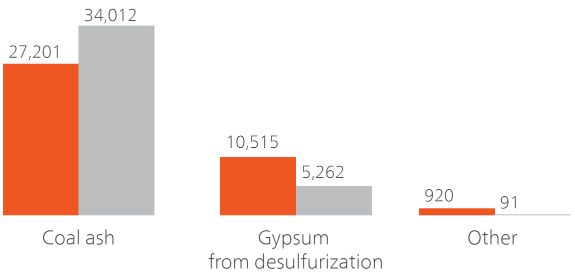


CO_2 (t)	706,024
from combustion	*703,901*
from desulfurization	*2,125*

Special waste

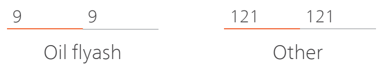
Total production: **38,820 t**
Total delivery to recovery operators: **39,555 t**

Non-hazardous
Production: 38,636 t
Delivery to recovery operators: 39,365 t



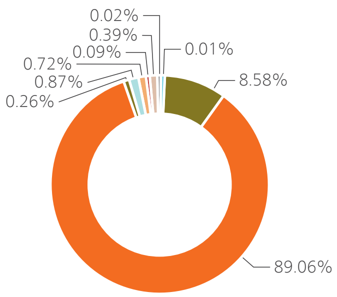
Production Delivery to recovery operators

Hazardous
Production: 184 t
Delivery to recovery operators: 190 t



Expendables

Total: 5,424 t



- Resins, hydrazine, carbohydrazide & hydrogen peroxide
- Ammonia
- Limestone for flue-gas desulfurization
- Sodium hypochlorite, chlorine dioxide, ferrous sulphate, ferrous chloride and trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride and polyelectrolyte
- Lubricating oil
- Dielectric oil

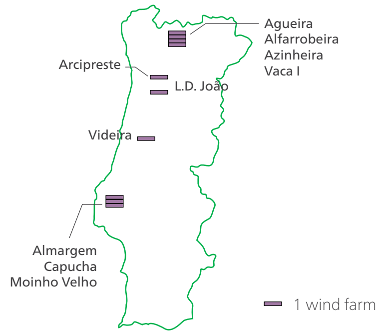
Water for industrial uses

Total requirements: 3,642.53 m³
Total abstraction from inland waters: 3,642.53 m³

Portugal

Wind power generation

Enel Green Power SpA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
10	75	153

Power installations

	Power plants no.	Net maximum electrical capacity MW
WIND	**10**	**75**

Net electricity generation

Total: 153 million kWh

Avoided CO_2 emissions

Due to wind generation: **146,546 t**

Emissions from the otherwise necessary fossil-fired thermal generation

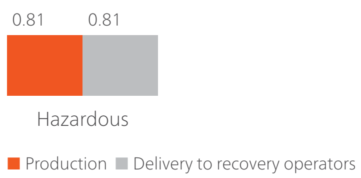
Equivalent yearly hours of utilization*

Wind: **2,056 hours**

* Yearly generation/capacity ratio. For Endesa, generation is considered to refer to the entire year.

Special waste

Total production: **0.81 t**
Total delivery to recovery operators: **0.81 t**



Environmental Results

Status data

		2007	2008	2009	2010
Power-generating installations					
Power plants	no.	19	17	11	11
thermal	no.	1	1	1	1
wind	no.	18	16	10	10
Net maximum electrical capacity	MW	258	258	295	299
thermal	MW	148	148	221	224
wind	MW	110	110	74.5	74.5
Combined heat & power installations					
Power plants (thermal)	no.	-	4	5	5
Net maximum electrical capacity (thermal)	MW	-	22	25.7	44.4
Useful thermal capacity (thermal)	million kcal/h	-	18.7	27.9	27.9

Resources

		2007	2008	2009	2010
EN1 EN3 **Fossil fuels**					
Thermal generation					
fuel oil (LS)	thousand t	0.276	1.80	4.41	3.04
	thousand toe	0.265	1.74	4.25	3.10
gas-oil	thousand t	0	0.002	0.002	0.002
	thousand toe	0	0.002	0.002	0.002
coal	thousand t	87.6	355	461	265
	thousand toe	55.9	209	274	157
Total	**thousand toe**	**56.2**	**210**	**278**	**161**
	TJ	**2,352**	**8,810**	**11,637**	**6,720**
Thermal generation combined with heat production					
fuel oil (LS)	thousand t	0	5.76	4.99	4.49
	thousand toe	0	5.67	4.91	4.42
gas-oil	thousand t	0	0.030	0.003	0.150
	thousand toe	0	0.033	0.004	0.136
natural gas	million m^3	0	26.3	31.9	29.7
	thousand toe	0	23.8	29.2	26.8
technologically captive use	*million m^3*	*0*	*16.2*	*14.6*	*16.7*
	thousand toe	*0*	*14.7*	*13.6*	*15*
non-technologically captive use	*million m^3*	*0*	*10.1*	*17.3*	*13*
	thousand toe	*0*	*9.11*	*15.7*	*11.8*
Total	**thousand toe**	**0**	**29.5**	**34.2**	**31.3**
	TJ	**0**	**1,233**	**1,430**	**1,311**
Grand total	**thousand toe**	**56.2**	**240**	**312**	**192**
	TJ	**2,352**	**10,043**	**13,067**	**8,031**

		2007	2008	2009	**2010**
EN8 Water for industrial uses					
From rivers (including meteoric waters from secondary rainfall)	million m^3	0.594	2.73	4.73	3.64
From wells	million m^3	0	0.001	0.001	0.001
Total abstraction from inland waters	**million m^3**	**0.594**	**2.73**	**4.73**	**3.64**
for thermal generation	million m^3	0.594	2.73	4.73	3.64
EN1 Expendables					
Hydrazine	t	0	1.30	1.10	0.854
Ammonia	t	0	894	958	466
Limestone for flue-gas desulfurization	t	0	3,335	8,740	4,831
Sodium hypochlorite	t	0	121	26.2	13.7
Trisodium phosphate	t	0	0.024	0.075	0.227
Lime	t	0	0.536	87.4	1.65
Ferric chloride	t	0	1.30	2.28	2.57
Polyelectrolyte	t	0	14.7	22.8	0.778
Sulfuric & hydrochloric acids	t	0	150	113	47.5
Caustic soda	t	0	193	152	38.9
Lubricating oil	t	0	51.2	51.1	21.1
Dielectric oil	t	0	0.050	0.286	0.743
Total	**t**	**0**	**4,762**	**10,154**	**5,424**
for thermal generation	t	0	4,695	10,116	5,412
for thermal generation combined with heat generation	t		66.3	36.8	12.4
for wind generation	t	0	0	0.576	0.043

Processes and products

		2007	2008	2009	**2010**
Electricity generation (net)					
From fossil fuels	**million kWh**	**231**	**998**	**1,300**	**815**
simple (coal)	million kWh	231	915	1,195	658
combined with heat generation	million kWh	0	83.6	105	156
fuel oil & gas-oil	*million kWh*	*0*	*18.3*	*31.1*	*35.8*
natural gas	*million kWh*	*0*	*65.3*	*73.7*	*121*
From renewables (wind)	**million kWh**	**44.4**	**202**	**188**	**153**
Total	**million kWh**	**275**	**1,200**	**1,488**	**968**
simple	million kWh	275	1,117	1,383	811
combined with heat generation	million kWh	0	83.6	105	156
Useful heat output (combined with power generation)					
From fossil fuels	**million kcal**	**0**	**128,746**	**111,781**	**74,047**
	million kWh	**0**	**150**	**130**	**86.1**

Emissions

	Source		2007	2008	2009	2010
Emissions into the atmosphere						
EN20 SO_2	thermal generation	thousand t	1.11	2.35	0.511	0.262
EN20 NO_x	thermal generation	thousand t	0.680	1.60	0.843	0.466
EN20 Particulates	thermal generation	thousand t	0.040	0.096	0.035	0.012
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	208	838	1,068	628
	fossil-fired thermal generation (from desulfurization)	thousand t	0	1.47	9.63	2.12
	total fossil-fired thermal generation	thousand t	208	839	1,077	630
	fossil-fired thermal generation – CHP (from combustion)	thousand t	0	70	81.6	76.6
	Total	**thousand t**	**208**	**909**	**1,159**	**706**
EN16 SF_6	electricity generation	kg	0	0.003	0	0
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		thousand t of CO_2-equivalent	208	915	1,162	706
EN18 Avoided CO_2 emissions						
Due to wind generation		thousand t	40.1	185	170	147
EN21 Waste waters (discharged quantity)	thermal generation	million m³	0	0.973	3.57	0.276
	thermal generation combined with heat generation	million m³	0	0.113	0	0
	Total electricity generation	**million m³**	**0**	**1.09**	**3.57**	**0.276**
EN21 Conventional polluting load of waste waters discharged by installations						
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	0	0	0	54.1
	in some plants with an overall capacity of	MW	0	0	0	224
Total nitrogen (expressed as N)	thermal generation	kg	0	0	0	1,242
	in some plants with an overall capacity of	MW	0	0	0	224
Total phosphorus (expressed as P)	thermal generation	kg	0	0	0	226
	in some plants with an overall capacity of	MW	0	0	0	224
COD	thermal generation	kg	0	0	0	18,478
	in some plants with an overall capacity of	MW	0	0	0	224
BOD	thermal generation	kg	0	0	0	5,941
	in some plants with an overall capacity of	MW	0	0	0	224
EN22 Non-hazardous special waste						
Coal bottom ash	fossil-fired thermal generation (simple and CHP)					
production		t	0	2,745	3,834	2,167
delivery to recovery operators		t	0	56.1	70.8	11,197
Coal flyash	fossil-fired thermal generation (simple and CHP)					
production		t	810	3,225	61,123	25,034
delivery to recovery operators		t	22.7	289	44,777	22,814
Gypsum from desulfurization	fossil-fired thermal generation (simple and CHP)					
production		t	0	3,964	16,015	10,515
delivery to recovery operators		t	0	1,224	14,102	5,262

	Source		2007	2008	2009	2010
Other	electricity generation					
production		t	721	26.5	149	920
delivery to recovery operators			129	25.7	3.03	91.4
Total	**electricity generation**					
production		t	1,531	9,960	81,501	38,636
delivery to recovery operators		t	152	1,595	59,287	39,365
EN22 **Hazardous special waste**						
Other ash	fossil-fired thermal generation (simple and CHP)					
production		t	0	0	7.98	8.60
delivery to recovery operators		t	0	0	0	8.60
Other	electricity generation					
production		t	15.6	238	11.2	176
of which with PCBs		*t*	*8.15*	*35.1*	*7.96*	*10.2*
delivery to recovery operators		t	0	205	18.6	183
of which with PCBs		*t*	*0*	*6.60*	*16.3*	*16.5*
Total	**electricity generation**					
production		t	15.6	238	19.2	185
delivery to recovery operators		t	0	205	18.6	191
EN22 **Total special waste**	electricity generation					
production		t	1,547	10,199	81,520	38,821
delivery to recovery operators		t	152	1,800	59,305	39,556

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
Resource conservation and quality						
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	2,437	2,300	2,325	2,439	4.9
EN1 EN3 Net heat rate of thermal generation (CHP)	$kcal/kWh_{eq.}$	0	1,263	1,454	1,291	-11.2
EN8 Net specific requirements of water for industrial uses in thermal generation						
including contribution of as-is sea water	liters/kWh	2.58	2.99	3.96	5.54	39.9
excluding contribution of as-is sea water	liters/kWh	2.58	2.99	3.96	5.54	39.9
EN8 Coverage of requirements of water for industrial uses						
from rivers (including meteoric waters from secondary rainfall)	% of requirements	100	100	100	100	0.0
from wells	% of requirements	0	0.037	0.021	0.027	28.6
Total from inland waters	**% of requirements**	**100**	**100**	**100**	**100**	**0.0**
EN1 EN3 Fossil fuel consumption for thermal generation						
fuel oil	% of total fuel consumption	0.472	3.09	2.93	3.92	33.8
gas-oil	% of total fuel consumption	0	0.015	0.002	0.072	3,500.0
natural gas	% of total fuel consumption	0	9.91	9.37	14	49.4
coal	% of total fuel consumption	99.5	87	87.7	82.1	-6.4
LS fuel oil	% of total fuel-oil consumption	100	100	100	100	0.0
natural gas, technologically captive use	% of total natural-gas consumption	0	61.7	46.4	55.9	20.5
natural gas, non-technologically captive use	% of total natural-gas consumption	0	38.3	53.6	44.1	-17.7

		2007	2008	2009	2010	% ('10-'09)/'09
Electricity generation from renewables						
wind	% of total generation	16.2	16.8	12.6	15.8	25.4
Specific emissions into the atmosphere						
EN20 SO_2 (simple thermal generation)	g/kWh thermal net	4.79	2.57	0.428	0.398	-7.0
EN20 NO_X (simple thermal generation)	g/kWh thermal net	2.95	1.75	0.705	0.708	0.4
EN20 Particulates (simple thermal generation)	g/kWh thermal net	0.174	0.105	0.029	0.018	-37.9
EN16 CO_2 (simple thermal generation)	g/kWh thermal net	903	917	901	957	6.2
EN16 CO_2 (simple thermal generation - CHP)	g/kWh thermal net	0	300	347	316	-9
EN20 SO_2 (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	4.02	1.74	0.316	0.249	-21.2
EN20 NO_X (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	2.47	1.19	0.521	0.442	-15.2
EN20 Particulates (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	0.145	0.071	0.022	0.011	-50.0
EN16 CO_2 (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	757	673	716	670	-6.7
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0	0.230	0	0	0.0
EN22 **Specific production of waste**						
Coal ash (thermal generation)	g/kWh net from coal and brown coal	3.51	6.53	54.3	41.3	-23.9
EN22 **Waste recovery**						
Coal ash	% of production	2.81	5.78	69	125	81.2
bottom ash	*% of production*	*0*	*2.04*	*1.85*	*517*	*27,845.9*
flyash	*% of production*	*2.81*	*8.95*	*73.3*	*91.1*	*24.3*
Gypsum from desulfurization	% of production	0	30.9	88.1	50	-43.2
Other non-hazardous special waste						
electricity generation	% of production	17.9	97.2	2.03	9.94	389.7
Total non-hazardous special waste						
electricity generation	% of production	9.91	16	72.7	102	40.3
Other hazardous special waste						
electricity generation	% of production	0	85.9	96.7	103	6.5
Total special waste						
electricity generation	% of production	9.81	17.6	72.7	102	40.3

Highlights of 2010

EN1 EN3 In the fossil fuel mix, the shares of natural gas in combined-cycle units and of low-sulfur fuel oil were up by ~+5% and ~+1%, respectively, to the expense of coal (~-6%).

The consumption of limestone for flue-gas desulfurization reflected the trend of coal-fired generation in the power plant of Pego, which rose in 2009 with respect to the other years of the series.

Enel operates in Portugal through Endesa and Enel Green Power (thermal and wind power generation).

EN5 EN6 EN18 In 2010, Enel Green Power commissioned the new wind farm of Alvaiázere, with a net maximum capacity of 10 MW (the plant was not consolidated in 2010). At steady state, the new wind farm will produce 28 GWh, corresponding to the consumption of almost 11,000 households. This stage of the project will be followed by a second one, involving the installation of an additional 8 MW, which will bring the total net maximum capacity to 18 MW.

Interesting results were achieved in terms of specific emissions into the atmosphere:

EN16 total net specific emissions of CO_2, i.e. referred to total electricity generation, dropped from 716 to 670 g/kWh (~-7%) thanks to a higher share of natural gas in the fuel mix and to generation from renewables.

EN18 In 2010, electricity generation from renewables displaced about 147,000 tonnes of CO_2 (about 14% less than in the previous year).

EN20 Net specific emissions of macro-pollutants (referred to kWh from thermal generation alone) fell by ~7% (SO_2) and ~38% (particulates) on 2009, whereas specific emissions of NO_X stood steady.

EN26 Environmental enhancements.

Pego power plant: environmental management program for 2010.

Emissions

> Continuous monitoring of CO_2 emissions and their comparison with fuel consumption.

Releases

> Continuous monitoring of the treatment of waste waters before their release into the Tejo river.

Water

> Reuse of drainage from the closed-cycle cooling system in the desulfurization process.

Waste

> Waterproofing of the landfill and improvement of related systems of surface drainage of the percolate; monitoring of the process of combustion and transformation of gypsum, with a view to obtaining ash and gypsum suitable for reuse.

Materials

> Use of biodegradable oils.

Soil

> Fine-tuning of the internal environmental emergency plan in order to take timely actions upon spills of substances.

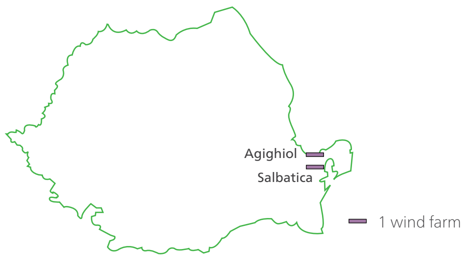
Other

> Yearly assessment of service providers’ environmental performance.

Romania

Wind power generation

Enel Green Power SpA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
2	64	4

Power installations

	Power plants no.	Net maximum electrical capacity MW
WIND	2	64

Net maximum electrical capacity

Total: 64 MW

Equivalent yearly hours of utilization*

Wind: **62 hours**

* Yearly generation/capacity ratio.

Other data

Wind generation

Wind systems

Surface area occupied by platforms, service roads and buildings: **20 ha**

Total surface area affected by the installations: **from 20 to 100 times larger**

Net electricity generation

Total: 4 million kWh

Avoided CO_2 emissions

Due to wind generation: **3,033 t**

Emissions from the otherwise necessary fossil-fired thermal generation

Romania

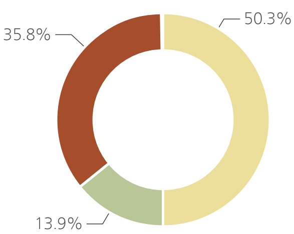
Electricity distribution

Enel Electrica Banat SA
Enel Electrica Dobrogea SA
Enel Electrica Muntenia Sud SA

Provinces (and corresponding company districts) served
- Enel Distributie Banat
- Enel Distributie Dobrogea
- Enel Distributie Muntenia
- Headquarters

The Numbers

Substations	Capacity (MVA)	Total lines (km)
20,408	20,759	89,240



Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	274	12,717
Satellite substations and MV units	220	136
MV/LV	19,774	7,116
MV/MV	140	790
	20,408	**20,759**

LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	**Total**
HV	6,336	-	247	**6,583**
MV	22,644	30	11,766	**34,439**
LV	15,880	12,407	19,931	**48,218**
	44,860	**12,437**	**31,944**	**89,240**

Enel Distributie Banat and Enel Distributie Dobrogea have an ISO 14001-certified environmental management system in place, extended to their entire organization.

General data

Municipalities served (no.): **2,115**

Surface area served: **61,799 km²**

Customers connected to the grid:**2,609,029** (of which supplied by companies of the Group: **2,609,029**)

Resource consumption

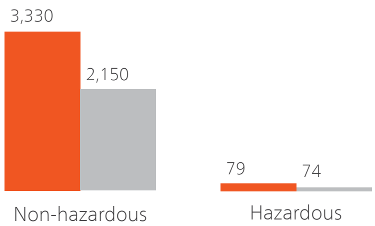
Expendables: **96 t**

Gas-oil: **22 toe**

Special waste

Total production: **3,404 t**

Total delivery to recovery operators: **2,229 t**



Electricity

Total electricity distributed: **13,827 million kWh**

Own consumption for grid operation: **21 million kWh**

Emissions into the atmosphere

SF_6: **15 kg (322 t of CO_2-equivalent)**

CO_2: **68 t**

Total greenhouse gases: **390 t of CO_2-equivalent**

Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants (wind)	no.					2
Net maximum electrical capacity (wind)	MW					64
Power lines (circuit-length)						
Total	km	52,972	53,228	90,240	91,550	89,240
high-voltage	km	4,112	4,114	5,090	6,023	6,583
medium-voltage	km	23,347	23,523	37,591	37,761	34,439
low-voltage	km	25,513	25,591	47,559	47,766	48,218
EN29 **Service & real-estate management**						
Vehicle fleet						
service vehicles	no.				1,162	1,161
special vehicles	no.				79	101
vehicles for both private and service use	no.				61	62
Gross real-estate surface area	thousand m^2				93.5	91.8

Resources

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Various activities	thousand toe	-	-	-	1.94	2.31
	TJ	-	-	-	81.3	96.5
EN4 **Primary electricity**						
Various activities	million kWh	-	-	-	10.9	5.37
Water for non-industrial uses						
Service & real-estate management	million m^3	-	-	-	0.150	0.160
EN1 **Expendables**						
Lubricating oil	t	0.001	-	0.240	0.830	1.80
Dielectric oil	t	-	277	164	91.9	94.6
Printing paper	t	-	-	-	74.2	100
Total	t	**0.001**	**277**	**165**	**167**	**197**
for electricity distribution	t	0.001	277	165	92.7	96.4
EN1 **PCB survey**						
Equipment & transformers with PCBs > 50 ppm and ≤ 500 ppm (excluding their oil)	t	-	34.9	49	36	3.83
Oil with PCBs > 50 ppm and ≤ 500 ppm contained in equipment & transformers	t	-	2.09	6.79	3.09	0.202

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From renewables (wind)	million kWh	0	0	0	0	3.97
Electricity distribution						
Electricity distributed	million kWh	7,259	7,253	10,909	13,224	13,827
EN4 Electricity consumption for grid operation	million kWh	23.7	23.5	34.3	23.7	21.3
EN6 Sales						
Open market						
Business segment						
Time-of-use offerings						
Customers	no.	0	0	20	39	41
Power sold	million kWh	0	0	3.17	11.3	6.41
Total						
Customers	no.	0	0	1,138	1,589	4,053
Power sold	million kWh	0	0	209	466	563
Large customers' segment						
Time-of-use offerings						
Customers	no.	0	0	7	6	4
Power sold	million kWh	0	0	33.8	20	22.1
Total						
Customers	no.	0	0	157	172	146
Power sold	million kWh	0	0	411	557	361
Universal-service market						
Household customers' segment						
Time-of-use offerings						
Customers	no.	0	0	3,885	9,065	6,263
Power sold	million kWh	0	0	9.94	18.1	17.9
Total						
Customers	no.	0	0	1,337,079	2,384,698	2,430,676
Power sold	million kWh	0	0	1,872	3,889	4,017
Non-household customers' segment						
Time-of-use offerings						
Customers	no.	0	0	5,122	14,310	11,216
Power sold	million kWh	0	0	262	3,124	1,656
Total						
Customers	no.	0	0	112,055	171,946	170,470
Power sold	million kWh	0	0	2,336	4,687	4,085
Overall power sold						
high-voltage	million kWh	0	0	212	369	294
medium-voltage	million kWh	0	0	579	2,153	1,630
low-voltage	million kWh	0	0	3,417	7,077	7,102
Total	**million kWh**	**0**	**0**	**4,208**	**9,599**	**9,026**

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN16 CO_2	various activities	thousand t	0	0	0	5.62	6.71
EN16 SF_6	electricity distribution	kg	0	0	18.5	122	14.5
		thousand t of CO_2-equivalent	0	0	0.422	2.79	0.331
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		**thousand t of CO_2-equivalent**	**0**	**0**	**0.422**	**8.41**	**7.05**
EN18 Avoided CO_2 emissions							
Due to wind generation		thousand t	0	0	0	0	3.03
EN22 **Non-hazardous special waste**							
production	electricity distribution	t	2,409	2,215	2,447	2,112	3,330
delivery to recovery operators	electricity distribution	t	901	1,347	1,526	812	2,150
EN22 **Hazardous special waste**							
production	electricity distribution	t	399	215	70.5	93.9	73.6
of which with PCBs		*t*	*151*	*77.4*	*62.8*	*78.4*	*34.6*
delivery to recovery operators	electricity distribution	t	312	53	65.4	50.7	78.8
of which with PCBs		*t*	*148*	*53*	*57.7*	*46*	*74*
EN22 **Total special waste**	electricity distribution						
production		t	2,808	2,430	2,518	2,206	3,404
delivery to recovery operators		t	1,214	1,400	1,591	862	2,229

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN29 **Land**								
LV cable lines								
overhead	% of entire LV grid	15.6	17.5	21.5	24.1	25.7	64.7	6.6
underground	% of entire LV grid	22.7	22.8	40.9	41.6	41.3	81.9	-0.7
Total	**% of entire LV grid**	**38.4**	**40.2**	**62.4**	**65.6**	**67.1**	**74.7**	**2.3**
MV cable lines								
overhead	% of entire MV grid	0	0	0	0.098	0.086	0.0	-12.2
underground	% of entire MV grid	16.6	16.9	36.4	36.9	34.2	106.0	-7.3
Total	**% of entire MV grid**	**16.6**	**16.9**	**36.4**	**37**	**34.2**	**106.6**	**-7.3**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	25.9	26.9	48.3	49.8	49.7	91.9	-0.2
Resource conservation and quality								
EN4 Consumption of electricity for distribution grid operation	% of electricity distributed	0.327	0.325	0.314	0.179	0.154	-52.9	-14.0
Electricity generation from renewables								
wind	% of total generation	0	0	0	0	100	0.0	0.0

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN6 Sales								
Open market								
Business segment								
Time-of-use power sold	% of power sold			1.52	2.43	1.14		-53.1
Large customers' segment								
Time-of-use power sold	% of power sold			8.22	3.59	6.13		70.8
Universal-service market								
Household customers' segment								
Time-of-use power sold	% of power sold			0.531	0.466	0.445		-4.5
Non-household customers' segment								
Time-of-use power sold	% of power sold			11.2	66.7	40.5		-39.3
Overall power sold								
high-voltage	% of power sold			5.05	3.85	3.26		-15.3
medium-voltage	% of power sold			13.8	22.4	18.1		-19.2
low-voltage	% of power sold			81.2	73.7	78.7		6.8
Total time-of-use power sold	**% of power sold**			**7.33**	**33.1**	**18.9**		**-42.9**
Specific emissions into the atmosphere								
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0	0	0.100	0.494	0.050	0.0	-89.9
EN22 Waste recovery								
Other non-hazardous special waste								
electricity distribution	% of production	37.4	60.8	62.3	38.4	64.6	72.7	68.2
Other hazardous special waste								
electricity distribution	% of production	78.2	24.6	92.7	54	107	36.8	98.1
Total special waste								
electricity distribution	% of production	43.2	57.6	63.2	39.1	65.5	51.6	67.5

Highlights of 2010

In Romania, Enel is active in electricity distribution (through Enel Distributie Banat, Enel Distributie Dobrogea and Enel Distributie Muntenia) and sales.

EN5 EN6 EN18 In 2010, Enel Green Power commissioned two wind farms, Salbatica I and Agighiol, with a net maximum capacity of 30 and 34 MW, respectively. Their yearly generation (estimated at about 103 GWh) will cover the consumption of over 40,000 households, displacing about 80,000 tonnes/yr of CO_2 emissions into the atmosphere and saving 23,000 toe (tonnes of oil-equivalent) of fossil fuels.

EN5 Enel adopted solutions to enhance the efficiency of the overall power grid, such as: revamping of low- and medium-voltage lines; replacement of bare conductors with twisted cables; increase of the cross section of conductors in medium-voltage lines; refurbishment of satellite substations through the installation of low-loss transformers; and, finally, modernization of metering systems and installation of smart meters.

EN4 As a result of these solutions, electricity consumption for grid operation continued to have a positive trend; electricity consumption as a percentage of distributed electricity was down by 10%.

EN6 Commercial activities included the offering of time-of-use rate plans, encouraging night-time power usage; this enhances the overall efficiency of the electricity sector, diminishing wastage and negative impacts on the environment. In 2010, the percentage of power sold under these rate plans in the total power sold was down by about 43% (~-1.5 TWh of time-of-use power sold).

EN18 Generation by new renewable-power plants displaced over 3,000 tonnes of CO_2 emissions.

EN22 The percentage of recovery of waste mounted to 65% as a result of separate collection and appropriate recovery policies. The 2009 decrease is to be ascribed to lower generation and consequent recovery of waste from construction and demolition activities and cables.

EN26 Environmental enhancements.

PCBs

> Muntenia. End of the program of removal of PCBs from PCB-containing equipment.

Waste

> Banat. An agreement was entered into with Recolamp (non-profit organization) to recover disused lighting components (lamps and bulbs).

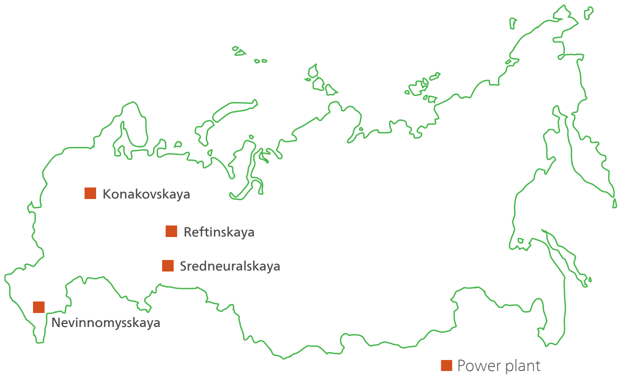
Noise

> Replacement and repair of defective transformer fans in some substations. Insulation of transformers located near buildings.

EN29 A further change was made to the method adopted for measuring the length of low-voltage overhead lines consisting of bare conductors; the new method, unlike the one used in 2009, excludes the last section of the line, which extends from the junction box to the point of delivery. As a result, with regard to land and landscape protection efforts, the percentage of overhead and underground cables in power lines was calculated to be up by 1.5 percentage points in 2009 and practically unchanged in 2010.

Russia

Combined heat & power generation OGK-5



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
4	8,198	42,835

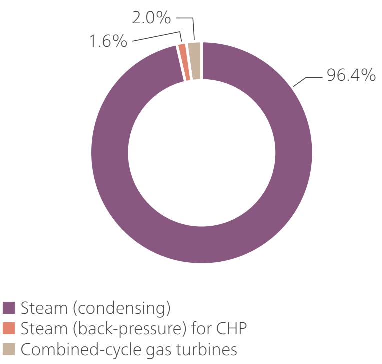
Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW	Useful thermal capacity 10^6 kcal/h
Steam (condensing)	4	33	7,902	1,778
Steam (back-pressure) for CHP	0	5	133	628
Combined-cycle gas turbines	0	1	164	0
	4	**39**	**8,198**	**2,406**

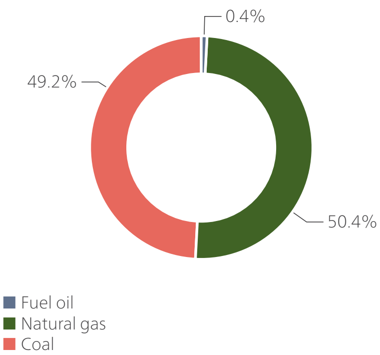
Net electricity generation
Total: 42,835 million kWh

Useful heat output (combined with power generation)
Total: 6,519,608 million kcal
(equal to: 7,582 million kWh)

Net maximum electrical capacity
Total: 8,198 MW



Fuel consumption
Total: 10,823,028 t of oil-equivalent

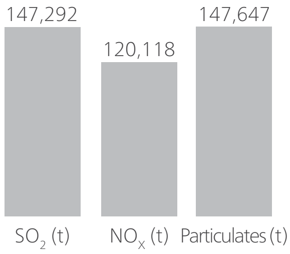


Waste waters

Discharged: **34,176,840 m³**
Used inside plants: **7,674,000 m³**

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Emissions into the atmosphere

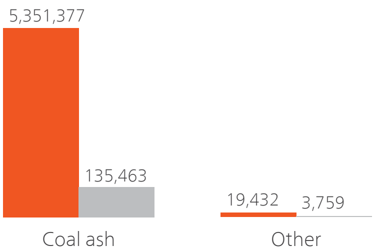


CO_2: **33,987,909 t**

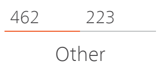
Special waste

Total production: **5,371,272 t**
Total delivery to recovery operators: **139,444 t**

Non-hazardous
Production: 5,370,809 t
Delivery to recovery operators: 139,222 t



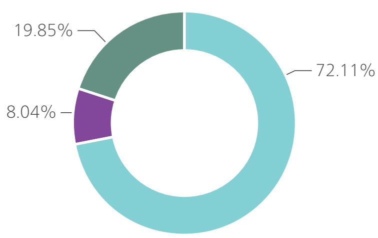
Hazardous
Production: 462 t
Delivery to recovery operators: 223 t



Production ▪ Delivery to recovery operators

Water for industrial uses

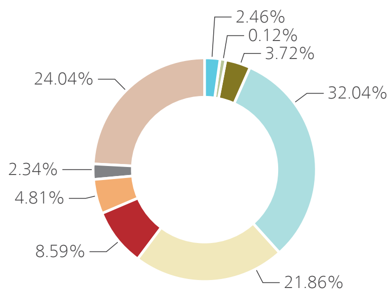
Total requirements: 38,668,060 m³
Total abstraction from inland waters: 30,994,060 m³



- From rivers
- From wells
- From waste waters (used inside plants)

Expendables

Total: 7,104 t



- Resins, hydrazine, carbohydrazide & hydrogen peroxide
- Ammonia
- Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride and trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride and polyelectrolyte
- Lubricating oil
- Dielectric oil
- Other

Environmental Results

Status data

		2008	2009	2010
Combined heat & power installations				
Power plants (thermal)	no.	4	4	4
Net maximum electrical capacity (thermal)	MW	8,183	8,198	8,198
Useful thermal capacity (thermal)	million kcal/h	2,373	2,406	2,406
Mining & extracting activities				
Extracting activities				
Areas occupied by excavations, drilling and other activities	ha	500	-	-
EN29 **Service & real-estate management**				
Vehicle fleet				
service vehicles	no.	na	na	14

Resources

		2008	2009	2010
EN1 EN3 **Fossil fuels**				
Thermal generation (CHP)				
fuel oil (MS)	thousand t	55.4	59.7	50
	thousand toe	53.6	56.4	48.4
natural gas	million m^3	3,738	6,092	6,628
	thousand toe	3,154	4,976	5,449
technologically captive use in combined-cycle units	*million m^3*	*168*	*51*	*88.4*
	thousand toe	*139*	*42.5*	*73.1*
non-technologically captive use	*million m^3*	*3,738*	*6,092*	*6,628*
	thousand toe	*3,015*	*4,933*	*5,376*
coal	thousand t	7,280	11,630	13,654
	thousand toe	2,806	4,852	5,325
Total	**thousand toe**	**6,014**	**9,884**	**10,823**
	TJ	**251,792**	**413,825**	**453,139**
Various activities	thousand toe	1.31	0	0.059
Grand total	**thousand toe**	**6,015**	**9,884**	**10,823**
	TJ	**251,847**	**413,825**	**453,141**
EN8 **Water for industrial uses**				
From rivers (including meteoric waters from secondary rainfall)	million m^3	36	35	27.9
From wells	million m^3	0.310	2.94	3.11
Total abstraction from inland waters	**million m^3**	**36.4**	**38**	**31**
EN10 From waste waters (used inside plants)	million m^3	8.46	8.48	7.67
Total requirements	**million m^3**	**44.8**	**46.4**	**38.7**
for thermal generation (CHP)	million m^3	44.8	46.4	38.7
for mining & extracting activities	million m^3	0.025	0	0

		2008	2009	2010
EN8 EN21 Open-cycle cooling water				
For thermal generation (CHP)	million m^3	4,012	6,463	7,735
EN1 Expendables				
Resins	t	64.1	345	173
Hydrazine	t	1.99	1.70	1.53
Hydrogen peroxide	t	0.001	0	0
Ammonia	t	14.2	11	8.40
Sodium hypochlorite	t	0	0	2.93
Ferrous sulfate	t	213	200	253
Trisodium phosphate	t	7.17	11.6	8.51
Lime	t	384	735	611
Sulfuric & hydrochloric acids	t	1,583	2,704	2,276
Caustic soda	t	1,080	1,632	1,553
Lubricating oil	t	225	452	342
Dielectric oil	t	97	162	166
Printing paper	t	0	0	15
Other	t	1,009	1,849	1,708
Total	**t**	**4,678**	**8,103**	**7,119**
for thermal generation (CHP)	t	4,678	8,103	7,104

Processes and products

		2008	2009	2010
Electricity generation (net)				
From fossil fuels (combined with heat generation)	**million kWh**	**23,752**	**39,112**	**42,835**
natural gas	million kWh	12,148	19,066	20,844
coal	million kWh	11,605	20,046	21,991
Useful heat output (combined with power generation)				
In thermal power plants	**million kcal**	**3,982,193**	**6,766,684**	**6,519,608**
	million kWh	**4,631**	**7,870**	**7,582**
EN6 Sales				
Open market				
Residential segment				
Time-of-use offerings				
Customers	no.	0	9,323	0
Power sold	million kWh	0.010	42.1	0
Total				
Customers	no.	0	202,703	192,335
Power sold	million kWh	0.440	450	482

		2008	2009	2010
Business segment				
Time-of-use offerings				
Customers	no.	0	36	0
Power sold	million kWh	0.020	8.79	0
Total				
Customers	no.	0	9,057	9,550
Power sold	million kWh	1.42	6,717	618
Large customers' segment				
Total				
Customers	no.	0	0	199
Power sold	million kWh	2.55	0	1,860
Very large customers' segment				
Total				
Customers	no.	0	1	62
Power sold	million kWh	30.5	32,462	39,629
Overall power sold				
high-voltage	million kWh	30.5	35,857	39,203
medium-voltage	million kWh	3.67	2,838	2,716
low-voltage	million kWh	0.810	934	670
Total	**million kWh**	**34.9**	**39,629**	**42,590**

Emissions

	Source		2008	2009	2010
Emissions into the atmosphere					
EN20 SO_2	thermal generation (CHP)	thousand t	80.8	124	147
EN20 NO_X	thermal generation (CHP)	thousand t	49.3	93.5	120
EN20 Particulates	thermal generation (CHP)	thousand t	93.5	120	148
EN16 CO_2	fossil-fired thermal generation - CHP (from combustion)	thousand t	19,136	31,202	33,988
	various activities	thousand t	3.90	0	0.181
EN16 SF_6	electricity generation	kg	42.5	47.2	18.7
		thousand t of CO_2-equivalent	0.968	1.08	0.427
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		**thousand t of CO_2-equivalent**	**19,141**	**31,203**	**33,989**
EN21 **Waste waters (discharged quantity)**	thermal generation (CHP)	million m³	17.8	34.6	34.2
EN21 **Conventional pollutant load in waste waters discharged by plants**					
Metals and compounds (expressed as metal equivalents)	thermal generation (CHP)	kg	89,549	53,085	42,430
	in some plants with an overall capacity of	MW	8,813	6,979	6,979
BOD	thermal generation (CHP)	kg	0	694	0
	in some plants with an overall capacity of	MW	0	2,252	0

	Source		2008	2009	2010
EN22 **Non-hazardous special waste**					
Coal bottom ash	fossil-fired thermal generation (CHP)				
production		t	144,032	214,636	274,951
Coal flyash	fossil-fired thermal generation (CHP)				
production		t	2,736,606	4,078,082	5,076,426
delivery to recovery operators		t	119,673	93,584	135,463
Other	electricity generation				
production		t	12,343	19,455	19,432
delivery to recovery operators		t	0	5,338	3,759
Total	**electricity generation**				
production		t	2,892,981	4,312,173	5,370,809
delivery to recovery operators		t	119,673	98,922	139,222
EN22 **Hazardous special waste**	electricity generation				
production		t	1,607	399	462
of which with PCBs		*t*	*158*	*258*	*199*
delivery to recovery operators		t	2.40	364	223
of which with PCBs		*t*	*0*	*307*	*207*
EN22 **Total special waste**	electricity generation				
production		t	2,894,588	4,312,572	5,371,272
delivery to recovery operators			119,676	99,285	139,444

Indicators

		2008	2009	2010	% ('10-'09)/'09
Resource conservation and quality					
EN1 EN3 Net heat rate of thermal generation (CHP)	$kcal/kWh_{eq.}$	2,119	2,104	2,147	2.0
EN8 Net specific requirements of water for industrial uses in thermal generation (CHP)	$liters/kWh_{eq.}$	1.58	0.988	0.767	-22.4
EN8 Coverage of requirements of water for industrial uses					
from rivers (including meteoric waters from secondary rainfall)	% of requirements	80.4	75.4	72.1	-4.4
from wells	% of requirements	0.683	6.33	8.04	27.0
Total from inland waters	**% of requirements**	**81.1**	**81.7**	**80.2**	**-1.8**
EN10 from waste waters (used inside plants)	% of requirements	18.9	18.3	19.8	8.2

		2008	2009	2010	% ('10-'09)/'09
EN1 EN3 Fossil fuel consumption for thermal generation					
fuel oil	% of total fuel consumption	0.891	0.571	0.448	-21.5
natural gas	% of total fuel consumption	52.4	50.3	50.4	0.2
coal	% of total fuel consumption	46.7	49.1	49.2	0.2
MS fuel oil	% of total fuel consumption	100	100	100	0.0
natural gas, technologically captive use	% of total natural-gas consumption	4.41	0.855	1.34	56.7
of which in combined-cycle units	*% of total natural-gas consumption*	*4.41*	*0.855*	*1.34*	*56.7*
natural gas, non-technologically captive use	% of total natural-gas consumption	95.6	99.1	98.7	-0.4
EN6 Sales					
Residential segment					
Time-of-use power sold	% of power sold	2.27	9.35	0	-100.0
Business segment					
Time-of-use power sold	% of power sold	1.41	0.131	0	-100.0
Overall power sold					
high-voltage	% of power sold	87.2	90.5	92	1.7
medium-voltage	% of power sold	10.5	7.16	6.38	-10.9
low-voltage	% of power sold	2.32	2.36	1.57	-33.5
Total time-of-use power sold	**% of power sold**	**0.086**	**0.128**	**0**	**-100.0**
Specific emissions into the atmosphere					
EN20 SO_2 (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	2.85	2.63	2.92	11.0
EN20 NO_X (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	1.74	1.99	2.38	19.6
EN20 Particulates (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	3.29	2.54	2.93	15.4
EN16 CO_2 (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	674	664	674	1.5
EN20 SO_2 (total from thermal generation - CHP)	g/kWh$_{eq.}$ total net	2.85	2.63	2.92	11.0
EN20 NO_X (total from thermal generation - CHP)	g/kWh$_{eq.}$ total net	1.74	1.99	2.38	19.6
EN20 Particulates (total from thermal generation - CHP)	g/kWh$_{eq.}$ total net	3.29	2.54	2.93	15.4
EN16 CO_2 (total from thermal generation - CHP)	g/kWh$_{eq.}$ total net	674	664	674	1.5
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0.919	1.10	0.267	-75.7
EN22 Specific production of waste					
Coal and brown-coal ash (thermal generation - CHP)	g/kWh$_{eq.}$ net from coal and brown-coal	242	209	238	13.9
EN22 Waste recovery					
Coal and brown-coal ash	% of production	4.15	2.18	2.53	16.1
Other non-hazardous special waste					
electricity generation	% of production	0	27.4	19.3	-29.6
Total non-hazardous special waste					
electricity generation	% of production	4.14	2.29	2.59	13.1
Other hazardous special waste					
electricity generation	% of production	0.149	91.2	48.1	-47.3
Total special waste					
electricity generation	% of production	4.13	2.30	2.60	13.0

Highlights of 2010

EN1 EN3 The fuel mix remained practically unaltered with respect to 2009, while generation was up by ~3.7 TWh.

EN5 Plant efficiency improvements.

Thermal generation - CHP

- Modernization of unit 5 of the Reftinskaya power plant: the project, initiated on November 15 of last year, will be completed at the end of 2011; it will increase the installed capacity and efficiency of the plant and improve its technical, economical and environmental performance. Capacity will be up by 25 MW and efficiency by 3%. The pieces of equipment which are planned to be installed are as follows: new steam turbine, 325-MW generator, modern combustion system and automatic control system.
- Revamping of cooling-cycle and feedwater pumps, air pre-heaters and the wiring system for lighting; installation of energy-efficient light bulbs; adoption of a condenser ball cleaning system; optimized consumption of pressurized air.
- Utilization of the more efficient generating units for generation of electricity.

EN8 EN10 In thermal generation, net specific requirements of water for industrial uses continued to progressively decrease (~-22%), reaching a value of 0.767 liters/kWh$_{eq.}$ (0.988 liters/kWh$_{eq.}$ in 2009), thanks to the optimization of machinery performance and of the current modes of operation. This result is even more significant when considering the trend of the contribution of waste waters to the coverage of water requirements: up by about 20% in 2010 (vs. a little more than 18% in 2009).

EN20 The increase in specific emissions of macro-pollutants was due: for SO_2 and particulate matter, to the combustion of low-quality coal with low calorific value and high ash content; and, for NO_X, to increased utilization of the Reftinskaya power plant, which has on average higher specific NO_X emissions.

In Russia, Enel is involved in thermal power generation (through OGK-5) and electricity sales (through RusEnergoSbyt).

EN22 The low percentage of non-hazardous waste recovery in 2009 is due to the fact that coal ash recovery was lower than in the other years of the time series. The high production of hazardous waste in 2008 is mostly due to the significant amounts of insulating materials and solid waste that were generated, the low recovery of which contributed to the high percentage of hazardous waste recovery in 2009.

EN26 Environmental enhancements.

Emissions

- Reftinskaya: to mitigate the environmental impact of the plant, electrostatic precipitators will be replaced with bag filters, which are more efficient and reduce emissions of particulates into the atmosphere by as much as 95%. A system abating NO_X by 40% will also be installed.

Water

- Nevinnomiskaya and Konakovskaya: management of waters to progressively reduce specific consumption.

Waste

- Approval of a project for dry removal of ash at the Reftinskaya plant: the project will make it possible to conserve considerable amounts of freshwater and to increase the recovery of the ash produced.

Materials

- Nevinnomiskaya and Sredneuralskaya: oil regeneration yielded substantial savings.

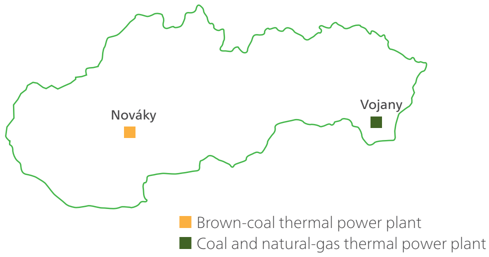
Environmental management

- OGK-5: activities are under way to achieve the ISO 14001 certification of the company's business operations over the next several months.
- Over 2,000 employees received basic training on environmental management.

Slovakia

Thermal combined
heat & power generation

Slovenské elektrárne AS



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
2	1,254	2,255

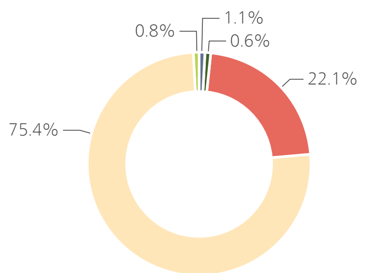
Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW	Useful thermal capacity 10^6 kcal/h
Steam (condensing) with intermediate extraction of fluid for combined heat & power generation	**2**	**13**	**1,254**	**423**

The two power plants have an ISO 14001-certified environmental management system in place.

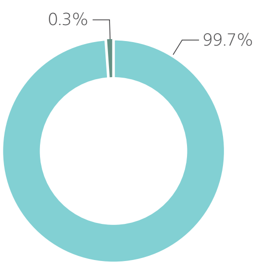
Fuel consumption

Total: 763,144 t of oil-equivalent



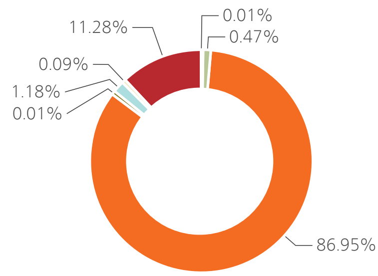
Water for industrial uses

Total requirements: 28,627,580 m^3
Total abstraction from inland waters: 14,313,790 m^3



Expendables

Total: 83,517 t



Net electricity generation

2,255 million kWh

Useful heat output (combined with power generation)

382,203 million kcal
equal to 445 million kWh

Waste waters

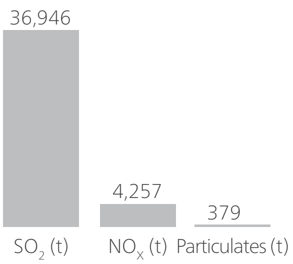
Discharged: **5,491,749 m³**
Used inside plants: **37,404 m³**

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Avoided CO_2 emissions

Due to generation from biomass and biodegradable fraction of waste: **21,257 t**

Emissions into the atmosphere



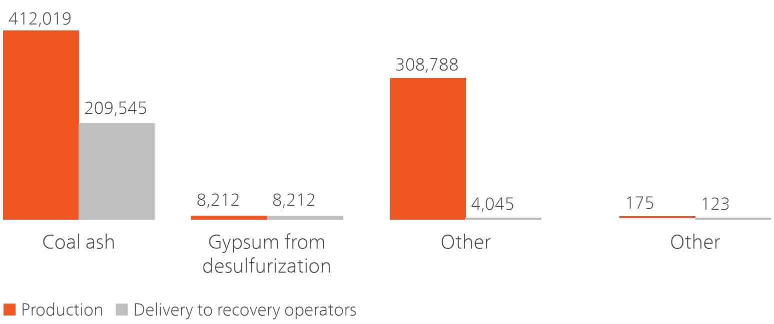
CO_2 (t)	3,004,904
from combustion	*2,972,952*
from desulfurization	*31,952*

Special waste

Total production: **729,193 t**
Total delivery to recovery operators: **221,925 t**

Non-hazardous
Production: 729,018 t
Delivery to recovery operators: 221,802 t

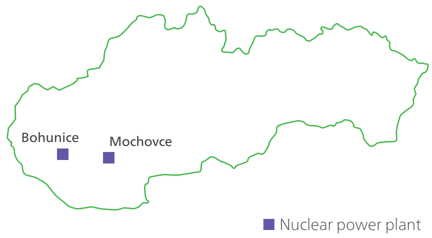
Hazardous
Production: 175 t
Delivery to recovery operators: 123 t



Slovakia

Nuclear combined
heat & power generation

Slovenské elektrárne AS



The Numbers

Power plants	Net capacity (MW)	Generation (million kcal)
2	1,816	13,534

Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW	Useful thermal capacity 10^6 kcal/h
Steam (condensing)	**2**	**4**	**1,816**	**423**

The two power plants have an ISO 14001-certified environmental management system in place.

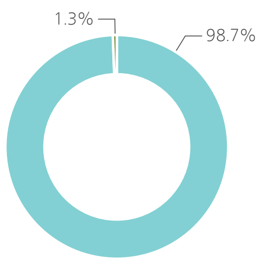
Useful heat output (combined with power generation)

Total: 596,857 million kcal (equal to 694 million kWh)

The heat is supplied to district heating systems and to industrial consumers.

Water for industrial uses

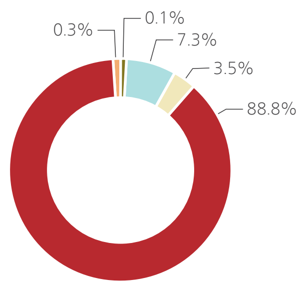
Total requirements: 41,001,464 m^3
Abstraction from inland waters: 40,468,871 m^3



- From rivers
- From waste waters (used inside plants)

Expendables

Total: 6,081 t



- Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride and trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride and polyelectrolyte
- Lubricating oil

Radionuclides in discharged waste waters

Tritium

19,359 GBq

Waste waters

Discharged: **9,061,048 m³**
Used inside plants: **532,593 m³**

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Avoided CO_2 emissions

Due to nuclear generation: **14,231,564 t**

Radioactive emissions into the atmosphere

Noble gases 8.51 TBq

Iodine 131 0.608 MBq

Aerosol β & γ 18.7 MBq

Aerosol α 6.49 kBq

Strontium 89 and 90 74.7 kBq

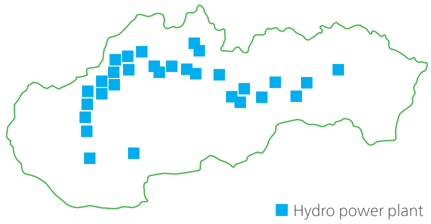
Emissions into the atmosphere

SF_6: **0.50 kg** (11.10 t of CO_2-equivalent)
Total greenhouse gases: **11.10** t of CO_2-equivalent

Slovakia

Hydro power generation

Slovenské elektrárne AS



The Numbers

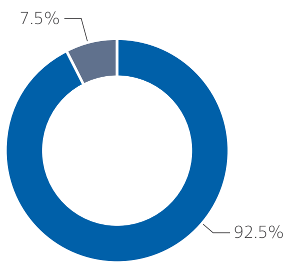
Power plants	Net capacity (MW)	Generation (million kWh)
34	2,329	5,179

Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	16	43	1,042
Pondage/reservoir	14	31	279
Pure/mixed pumped storage	4	15	1,007
	34	**89**	**2,329**

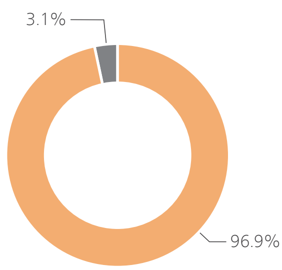
All the power plants have an ISO-certified environmental management system in place.

Net electricity generation
Total: 5,179 million kWh



- Hydro from natural flows
- Hydro from pumped storage

Expendables
Total: 81 t



- Lubricating oil
- Dielectric oil

Equivalent yearly hours of utilization*

3,627 Hydro

* Yearly generation/capacity ratio (excluding hydro generation from pumped storage).

Avoided CO_2 emissions

Due to hydro generation from natural flows: **5,040,324 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Other data

Fish ladders : **5**

Emissions into the atmosphere

SF_6 - all types of generation (kg)		56
	(t of CO_2-equivalent)	1,253

Gas-oil

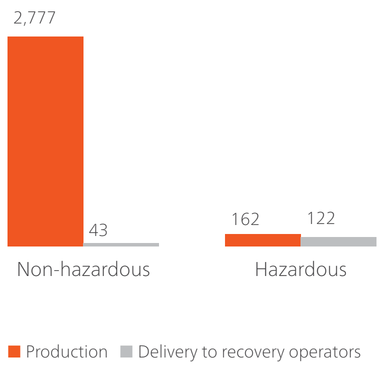
9 toe

Total consumption

Used for feeding emergency generating sets.

Special waste

Total production: **2,939 t**
Total delivery to recovery operators: **165 t**



Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants (hydro)	no.	30	30	30	30	34
Net maximum electrical capacity (hydro)	MW	1,606	1,589	1,590	1,590	2,329
Combined heat & power installations						
Power plants	no.	4	4	4	4	4
thermal	no.	2	2	2	2	2
nuclear	no.	2	2	2	2	2
Net maximum electrical capacity	MW	3,240	2,894	2,966	3,012	3,070
thermal	MW	1,600	1,254	1,254	1,250	1,254
nuclear	MW	1,640	1,640	1,712	1,762	1,816
Useful thermal capacity	million kcal/h	623	428	787	887	887
thermal	million kcal/h	262	39.7	373	423	423
nuclear	million kcal/h	361	389	413	464	464
EN29 **Service & real-estate management**						
Vehicle fleet						
service vehicles	no.				395	422
special vehicles	no.				208	159

Resources

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Combined heat & power generation						
fuel oil (LS)	thousand t	6.04	5.17	5.37	5.42	8.42
	thousand toe	6	5.14	5.34	5.35	8.37
natural gas - non-technologically captive use	million m^3	29.9	11.8	5.17	3.89	5.87
	thousand toe	24.5	9.67	4.23	3.19	4.83
coal	thousand t	1,093	837	656	363	279
	thousand toe	657	502	398	221	169
brown coal	thousand t	2,036	1,981	2,318	2,308	2,273
	thousand toe	501	505	585	571	575
Total	**thousand toe**	**1,189**	**1,021**	**992**	**801**	**757**
	TJ	**49,760**	**42,745**	**41,550**	**33,523**	**31,698**
Various activities	thousand toe	0.592	0.564	1.33	1.72	1.88
Grand total	**thousand toe**	**1,189**	**1,022**	**994**	**802**	**759**
	TJ	**49,785**	**42,769**	**41,605**	**33,595**	**31,777**

		2006	2007	2008	2009	2010
EN1 EN3 Biomass and waste						
Combined heat & power generation						
solid biomass	t	0	0	350	8,311	22,286
	toe	0	0	66.9	2,190	6,055
Grand total	thousand toe	0	0	0.067	2.19	6.06
	TJ	0	0	2.81	91.7	254
EN1 EN3 Nuclear fuel						
Nuclear combined heat & power generation						
Uranium	t	33	36.6	37.5	36	37.4
	thousand toe	0	0	0	3,727	3,782
	TJ	0	0	0	156,043	158,364
EN4 Primary electricity						
Various activities	million kWh	0	0	0	1.41	1.94
EN8 Water for industrial uses						
From rivers (including meteoric waters from secondary rainfall)	million m^3	48.6	52.6	55.2	55	54.1
EN10 From waste waters (used inside plants)	million m^3	0.305	0.291	0.543	0.432	0.570
Total requirements	million m^3	48.9	52.9	55.7	55.4	54.7
for thermal generation (CHP)	million m^3	13.6	15.8	17.2	15	13.7
for nuclear generation (CHP)	million m^3	35.3	37	38.5	40.4	41
EN8 EN21 Open-cycle cooling water						
For thermal generation (CHP)	million m^3	0	0	3.26	0.428	0.636
Water for non-industrial uses						
Real-estate & service management	million m^3	0	0	0	0.419	0.440
EN1 Expendables						
Resins	t	0	0	0	2.50	26.5
Hydrazine	t	0	57.1	12.5	15.3	15.5
Ammonia	t	0	2,357	1,464	835	416
Limestone for flue-gas desulfurization	t	95,600	77,568	84,861	85,377	72,619
Sodium hypochlorite	t	0	17.3	28.2	23.8	6.11
Chlorine dioxide	t	0	0	0	0.514	0.875
Trisodium phosphate	t	0	7.19	6.86	7.92	8.07
Lime	t	0	15,832	23,218	18,545	14,681
Ferric chloride	t	0	61.1	119	105	108
Polyelectrolyte	t	0	0	0	0	36.9
Sulfuric & hydrochloric acids	t	0	1,386	1,563	1,530	1,430
Caustic soda	t	0	861	470	439	288
Lubricating oil	t	1,155	40.5	165	125	105
Dielectric oil	t	2,117	9.66	133	4.46	2.92
Printing paper	t	0	0	0	54	61.2
Other	t	192	2.10	3.49	0	0
Total	t	99,064	98,200	112,044	107,065	89,804
for thermal generation (CHP)	t	95,600	92,403	106,077	100,593	83,517
for nuclear generation (CHP)	t	0	5,771	5,738	6,361	6,145
for hydro generation	t	3,464	25.2	229	57	81.4

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From fossil fuels (combined with heat generation)	**million kWh**	**3,633**	**3,123**	**2,996**	**2,400**	**2,235**
fuel oil & gas-oil	million kWh	0	14.5	15.5	15.5	23.8
natural gas	million kWh	43.7	-8.076	-7.569	10.6	13.9
coal	million kWh	2,192	1,693	1,348	734	558
brown coal	million kWh	1,397	1,424	1,640	1,640	1,639
From renewables	**million kWh**	**1,607**	**1,881**	**1,715**	**1,830**	**4,813**
biomass and biodegradable fraction of waste	million kWh	0	0	0	7.31	20.2
hydro from natural flows	million kWh	1,607	1,881	1,715	1,823	4,793
Hydro from pumped storage	**million kWh**	**132**	**171**	**195**	**235**	**386**
Nuclear generation (combined with heat generation)	**million kWh**	**10,902**	**11,395**	**12,164**	**13,055**	**13,534**
Total	**million kWh**	**16,273**	**16,569**	**17,069**	**17,521**	**20,968**
simple	million kWh	1,738	2,051	1,910	2,058	5,179
combined with heat generation	million kWh	14,534	14,518	15,159	15,463	15,789
Electricity consumption for pumping	million kWh	229	224	275	321	528
Useful heat output (combined with power generation)						
In thermal systems (fossil fuels)	million kcal	367,364	431,998	401,871	359,842	382,203
In nuclear power plants	million kcal	397,752	454,001	478,592	541,146	596,857
Total	**million kcal**	**765,117**	**885,999**	**880,463**	**900,988**	**979,060**
	million kWh	**890**	**1,030**	**1,024**	**1,048**	**1,139**

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN20 SO_2	thermal generation (CHP)	thousand t	40.4	33.2	35.9	32.9	36.9
EN20 NO_X	thermal generation (CHP)	thousand t	7.80	6.53	5.69	5.21	4.53
EN20 Particulates	thermal generation (CHP)	thousand t	7.17	0.748	0.626	0.543	0.379
EN16 CO_2	*fossil-fired thermal generation (CHP) (from combustion)*	*thousand t*	*4,630*	*4,069*	*4,042*	*3,362*	*2,973*
	fossil-fired thermal generation (CHP) (from desulfurization)	*thousand t*	*42.1*	*34.1*	*37.3*	*37.6*	*32*
	Total from fossil-fired thermal generation (CHP)	thousand t	4,672	4,103	4,079	3,400	3,005
	non-fossil-fired thermal generation (from fossil carbon)	thousand t	42.1	34.1	37.3	37.6	35
	Total from thermal generation (CHP)	thousand t	4,714	4,137	4,116	3,438	3,040
	Various activities	thousand t	1.39	1.40	0	2.88	2.64
	Total	**thousand t**	**4,715**	**4,138**	**4,116**	**3,440**	**3,043**

	Source		2006	2007	2008	2009	2010
EN16 SF_6	electricity generation	kg	129	244	246	198	83
		thousand t of CO_2-equivalent	2.95	5.57	5.62	4.52	1.89
EN16 **Total greenhouse gases (CO_2, SF_6, CH_4)**		**thousand t of CO_2-equivalent**	**4,718**	**4,144**	**4,122**	**3,445**	**3,044**
EN18 **Avoided CO_2 emissions**							
Due to hydro generation from natural flows		thousand t	1,912	2,238	2,003	2,129	5,040
Due to electricity generation from biomass and biodegradable fraction of waste		thousand t	0	0	0	8.54	21.3
Due to generation from renewables		**thousand t**	**1,912**	**2,238**	**2,003**	**2,138**	**5,062**
Due to nuclear generation		**thousand t**	**13,525**	**14,191**	**14,857**	**15,983**	**14,962**
Total		**thousand t**	**15,437**	**16,429**	**16,861**	**18,121**	**20,023**
EN20 **Radioactive emissions into the atmosphere**	nuclear generation (CHP)						
Noble gases		TBq	13.5	9.17	6.52	6.56	8.51
Iodine 131		MBq	20.7	10.6	0.648	0.556	0.608
Aerosol β & γ		MBq	34.5	20.5	18.1	20.8	18.7
Aerosol α		kBq	108	26.8	13.7	22.6	6.49
Strontium 89 and 90		kBq	201	183	133	91.5	74.7
EN21 **Waste waters (discharged quantity)**	thermal generation (CHP)	million m^3	63.5	12.6	9.42	5.91	5.49
	nuclear generation (CHP)	million m^3	39.6	7.30	8.14	8.22	9.06
	Total	**million m^3**	**103**	**19.9**	**17.6**	**14.1**	**14.6**
EN21 **Conventional polluting load of waste waters discharged by plants**							
Metals and compounds (expressed as metal equivalents)	nuclear generation (CHP)	kg	383	169	168	158	366
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
Total nitrogen (expressed as N)	nuclear generation (CHP)	kg	93,764	86,596	40,295	34,566	32,130
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
Total phosphorus (expressed as P)	nuclear generation (CHP)	kg	3,608	2,387	2,319	2,213	2,491
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
COD	thermal generation (CHP)	kg	1,657,206	222,085	117,379	71,867	75,484
	in some plants with an overall capacity of	MW	1,600	1,254	1,254	1,234	1,254
	nuclear generation (CHP)	kg	149,668	117,003	105,591	111,648	140,870
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
	Total	**kg**	**1,806,874**	**339,088**	**222,970**	**183,515**	**216,354**
BOD	thermal generation (CHP)	kg	237,619	30,618	12,450	12,405	11,696
	in some plants with an overall capacity of	MW	1,600	1,254	1,254	1,234	1,254
	nuclear generation (CHP)	kg	17,710	15,290	15,497	17,605	16,021
	on an overall capacity of	MW	1,640	1,640	1,712	1,762	1,816
	Total	**kg**	**255,329**	**45,908**	**27,947**	**30,009**	**27,717**

	Source		2006	2007	2008	2009	**2010**
EN21 Radionuclides in waste waters discharged by plants	nuclear generation (CHP)						
Tritium		GBq	14,579	12,970	12,444	21,621	19,359
Corrosion and fission products		GBq	0.067	0.029	0.034	0.032	0.035
EN22 Non-hazardous special waste							
Coal bottom ash	fossil-fired thermal generation (CHP)						
production		t	150,127	134,980	141,754	108,238	56,970
delivery to recovery operators		t	0	0	0	59,087	45,187
Coal flyash	fossil-fired thermal generation (CHP)						
production		t	370,980	317,066	312,060	316,529	355,049
delivery to recovery operators		t	184,664	185,303	213,436	165,057	164,358
Gypsum from desulfurization	fossil-fired thermal generation (CHP)						
production		t	24,071	46,013	23,127	7,673	8,212
delivery to recovery operators		t	24,071	27,747	18,359	7,673	8,212
Other							
production	*electricity generation*	*t*	*580,518*	*464,519*	*513,498*	*386,088*	*332,789*
	various activities	*t*	*0*	*0*	*0*	*149*	*35.9*
	Total	t	580,518	464,519	513,498	386,237	332,825
delivery to recovery operators	electricity generation	t	15,519	4,542	12,160	15,358	19,979
Total							
production	***electricity generation***	***t***	***1,125,696***	***962,578***	***990,439***	***818,528***	***753,020***
	various activities	***t***	***0***	***0***	***0***	***149***	***35.9***
	Total	**t**	**1,125,696**	**962,578**	**990,439**	**818,677**	**753,056**
delivery to recovery operators	**electricity generation**	**t**	**224,255**	**217,593**	**243,955**	**247,174**	**237,735**
EN22 Hazardous special waste							
production	electricity generation	t	7,208	9,434	769	1,017	490
	various activities	t	0	0	0	1,017	0.023
of which with PCBs	*electricity generation*	*t*	*245*	*235*	*404*	*400*	*306*
	various activities	*t*	*0*	*0*	*0*	*400*	*0*
delivery to recovery operators	electricity generation	t	2,092	1,542	280	584	377
of which with PCBs	*electricity generation*	*t*	*177*	*170*	*164*	*397*	*304*
EN22 Total special waste							
production	electricity generation	t	1,132,904	972,012	991,208	819,545	753,510
	various activities	t	0	0	0	1,166	35.9
delivery to recovery operators	electricity generation	t	226,347	219,135	244,235	247,758	238,112

	Source		2006	2007	2008	2009	2010
EN22 **Radioactive waste**							
Low- , intermediate- and high-level: stored inside plants	nuclear generation (CHP)						
liquid		m3	3,054	2,923	2,778	2,585	2,508
solid		t	441	346	338	310	307
Low-, intermediate- and high-level: production	nuclear generation (CHP)						
liquid		m3	161	121	118	90.2	76.2
solid		t	44.6	37.9	39.4	31.7	29.3
High-level: production	nuclear generation (CHP)						
solid		t	0.901	0.108	4.93	1.01	1.92

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Resource conservation and quality								
EN1 EN3 Net heat rate of thermal generation (CHP)	kcal/kWh$_{eq.}$	2,927	2,816	2,866	2,841	2,827	-3.4	-0.5
EN1 EN3 Net efficiency of hydro generation from pumped storage	%	57.5	76.2	70.7	73.3	73	27.0	-0.4
EN8 Net specific requirements of water for industrial uses in thermal generation (CHP)	liters/kWh$_{eq.}$	3.35	4.37	4.98	5.31	5.08	51.6	-4.3
EN8 Net specific requirements of water for industrial uses in nuclear generation (CHP)	liters/kWh$_{eq.}$	3.11	3.11	3.02	2.95	2.88	-7.4	-2.4
EN8 Coverage of requirements of water for industrial uses								
from rivers (including meteoric waters from secondary rainfall)	% of requirements	99.4	99.4	99	99.2	99	-0.4	-0.2
EN10 from waste waters (used inside plants)	% of requirements	0.624	0.551	0.975	0.780	1.04	66.7	33.3
EN1 EN3 Fossil fuel consumption for thermal generation								
fuel oil	% of total fuel consumption	0.505	0.503	0.538	0.668	1.11	119.8	66.2
natural gas	% of total fuel consumption	2.07	0.947	0.427	0.398	0.637	-69.2	60.1
coal	% of total fuel consumption	55.3	49.1	40.1	27.7	22.3	-59.7	-19.5
brown coal	% of total fuel consumption	42.2	49.4	59	71.3	76	80.1	6.6
LS fuel oil	% of total fuel consumption	100	100	100	100	100	0.0	0.0
natural gas, non-technologically captive use	% of total natural-gas consumption	100	100	100	100	100	0.0	0.0
Electricity generation from renewables								
thermal generation from biomass and biodegradable fraction of waste	% of total generation	0	0	0	0.042	0.096	0.0	128.6
hydro generation from natural flows	% of total generation	9.87	11.4	10	10.4	22.9	132.0	120.2
Total	% of total generation	9.87	11.4	10	10.4	23	133.0	121.2

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Specific emissions into the atmosphere								
EN20 SO_2 (CHP)	g/kWh$_{eq.}$ thermal net	9.94	9.15	10.4	11.6	13.7	37.8	18.1
EN20 NO_X (CHP)	g/kWh$_{eq.}$ thermal net	1.92	1.80	1.64	1.84	1.68	-12.5	-8.7
EN20 Particulates (CHP)	g/kWh$_{eq.}$ thermal net	1.77	0.206	0.181	0.192	0.140	-92.1	-27.1
EN16 CO_2 (CHP)	g/kWh$_{eq.}$ thermal net	1,161	1,141	1,189	1,216	1,126	-3.0	-7.4
EN20 SO_2 (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	2.35	1.89	1.99	1.77	1.67	-28.9	-5.6
EN20 NO_X (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	0.455	0.371	0.314	0.280	0.205	-54.9	-26.8
EN20 Particulates (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	0.418	0.043	0.035	0.029	0.017	-95.9	-41.4
EN16 CO_2 (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	275	235	228	185	138	-49.8	-25.4
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0.349	0.658	0.696	0.553	0.229	-34.4	-58.6
Net specific conventional polluting load of waste waters discharged by plants (CHP)								
COD	mg/kWh$_{eq.}$	408	61.3	33.9	25.4	28	-93.1	10.2
BOD	mg/kWh$_{eq.}$	58.5	8.45	3.60	4.39	4.33	-92.6	-1.4
EN20 **Specific radioactive emissions into the atmosphere**								
Nuclear generation (CHP)								
Noble gases	kBq/kWh$_{eq.}$	1	1	1	0	1	0.0	0.0
Aerosol β & γ	mBq/kWh$_{eq.}$	3	2	1	2	1	-66.7	-50.0
Aerosol α	µBq/kWh$_{eq.}$	10	2	1	2	0	-100.0	-100.0
Strontium 89 and 90	µBq/kWh$_{eq.}$	18	15	10	7	5	-72.2	-28.6
EN21 **Net specific conventional polluting load of waste waters discharged by plants (nuclear generation - CHP)**								
Metals and compounds (expressed as metal equivalents)	mg/kWh$_{eq.}$	0.034	0.014	0.013	0.012	0.026	-23.5	116.7
Total nitrogen (expressed as N)	mg/kWh$_{eq.}$	8.25	7.26	3.17	2.53	2.26	-72.6	-10.7
Total phosphorus (expressed as P)	mg/kWh$_{eq.}$	0.317	0.200	0.182	0.162	0.175	-44.8	8.0
COD	mg/kWh$_{eq.}$	13.2	9.81	8.30	8.16	9.90	-25.0	21.3
BOD	mg/kWh$_{eq.}$	1.56	1.28	1.22	1.29	1.13	-27.6	-12.4
EN21 **Net specific polluting load of radionuclides in waste waters (nuclear generation - CHP)**								
Tritium	kBq/kWh$_{eq.}$	1.28	1.09	0.978	1.58	1.36	6.3	-13.9
Coal and brown-coal ash (thermal generation - CHP)	g/kWh$_{eq.}$ net from coal & brown coal	130	125	132	153	157	20.8	2.6
EN22 **Specific production of radioactive waste**								
low- and intermediate-level								
liquid	mm³/kWh$_{eq.}$ net	14	10	9	7	5	-64.3	-28.6
solid	mg/kWh$_{eq.}$ net	4	3	3	2	2	-50.0	0.0

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN22 Low-, intermediate- and high-level radioactive waste stored inside plants	% in volume of production since the start of operation							
liquid		73.8	92	64.2	57.8	53.6	-27.4	-7.3
solid		55.8	87.9	37.1	32.8	30.8	-44.8	-6.1
EN22 Waste recovery								
Coal and brown-coal ash	% of production	35.4	41	47	52.8	50.9	43.8	-3.6
bottom ash	*% of production*	*0*	*0*	*0*	*54.6*	*79.3*	*0.0*	*45.2*
flyash	*% of production*	*49.8*	*58.4*	*68.4*	*52.1*	*46.3*	*-7.0*	*-11.1*
Gypsum from desulfurization	% of production	100	60.3	79.4	100	100	0.0	0.0
Other non-hazardous special waste electricity generation	% of production	2.67	0.978	2.37	3.98	6	124.7	50.8
Total non-hazardous special waste electricity generation	% of production	19.9	22.6	24.6	30.2	31.6	58.8	4.6
Other hazardous special waste electricity generation	% of production	29	16.3	36.4	57.4	76.9	165.2	34.0
Total special waste electricity generation	% of production	20	22.5	24.6	30.2	31.6	58.0	4.6

Highlights of 2010

Overall electricity generation was up about 20% (~+3.5 TWh). This result is mainly due to: i) an about 160% increase in generation from renewables (~+3 TWh) thanks to the consolidation of the four hydro plants of Gabacikovo (which will be owned by Slovenské elektrárne until 2020), having a net maximum capacity of 739 MW and covering roughly 23% of overall generation; and ii) an about 3.7% increase in nuclear generation (~+0.5 TWh). Thermal generation combined with heat production was down by about 7% (~-170 GWh).

EN1 EN2 As regards expendables, the consumption of limestone and ammonia in flue-gas treatment declined progressively owing to the constant decrease of coal-fired thermal generation in the five-year period. The reuse of by-products from decarbonization of industrial waste waters (see Green procurement) helped reduce limestone consumption.

EN22 The above justifies the increase in the production of gypsum in 2010, in spite of the lower amount of limestone purchased in the market. The rise in the production of hazardous special waste in 2009 is due to higher amounts of oils (subsequently recovered), asbestos and of other minor waste items.

In Slovakia, Enel is active in thermal and nuclear (both CHP) and hydro generation through Slovenské elektrárne.

EN1 EN3 The net heat rate of thermal combined heat & power generation diminished owing to higher utilization of the more efficient units of Nováky with respect to the remaining generating mix (~-14 kcal/kWh). In the fuel mix, local brown coal (replacing imported coal) was up by ~5 percentage points.

EN8 Net specific requirements of water for industrial uses in nuclear and thermal generation, combined with heat generation, improved thanks to more efficient management of consumption.

EN5 Plant efficiency improvements.

Nuclear generation with heat generation

> Slovenské elektrárne completed the program of improvement of its nuclear plant of Bohunice V2. The program involved modernization, safety improvements and increase of the gross capacity of each of the two units from 440 to 505 MW.

Real estate

> Workspace optimization in the offices of the Vojani plant.

As regards specific emissions into the atmosphere:

EN16 total net specific emissions of CO_2 (i.e. referred to overall electricity generation) continued to have a downward trend, reaching 137.5 g/kWh (-26%) owing, in particular, to higher generation from renewables;

EN20 net specific emissions of macro-pollutants from thermal generation were down by ~9% (NO_X) and ~27% (particulates) and up by ~18% (SO_2) on 2009, owing to a higher share of local high-sulfur brown coal in the generating mix;

EN20 specific radioactive emissions into the atmosphere in the five-year period had a downward trend, in line with the reduction program – an additional benefit from the investments described in EN22.

EN18 In 2010, avoided CO_2 emissions totaled 20 million tonnes (roughly 11% more than in the previous year). The contribution of generation from renewables amounted to approximately 5.1 million tonnes, whereas the one of nuclear generation was equal to about 15 million tonnes.

EN22 The production of intermediate- and low-level radioactive waste had a declining trend, in line with the reduction program: retrofits of the sewage and drainage system made it possible to recirculate liquid radioactive waste (containing boric acid) inside the plants and avoid its discharge.
The overall recovery of special waste was up by about 1.5 percentage points.

EN26 Environmental enhancements.

Waste

> Nováky: sale of sludges from industrial water treatment for agricultural uses (soil-amending agent).

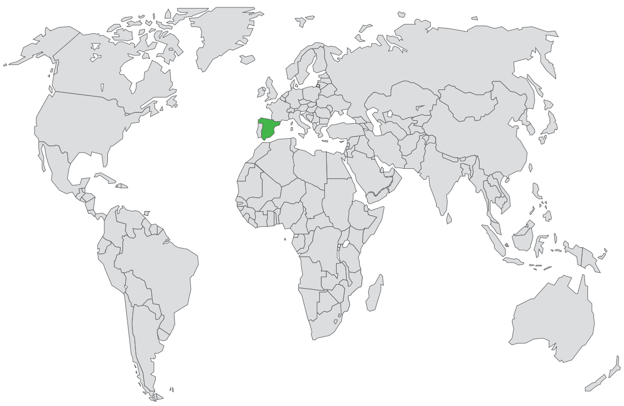
Releases

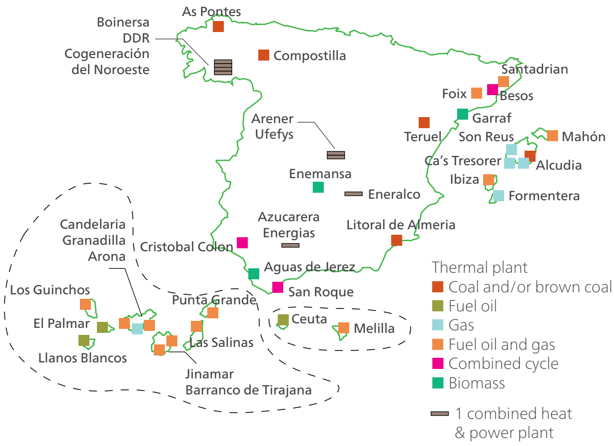
> Vojany: installation of systems to measure the volumes of waters discharged into the Laborec river.
> Installation of systems to monitor and capture oily substances in the rainwater collection system.

Spain

Thermal power generation
(simple and CHP)

Endesa SA
Enel Unión Fenosa Renovables SA





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
40	13,960	29,267

Net electricity generation
Total: 29,267 million kWh

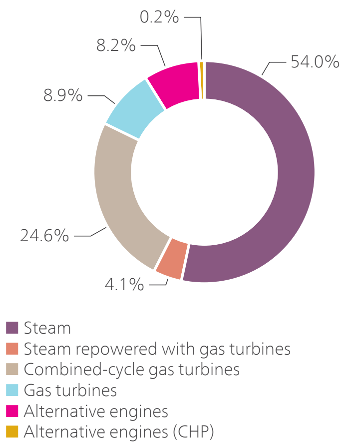
Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW	Useful thermal capacity 10^6 kcal/h
Steam (condensing)	10	34	7,539	
Steam (condensing) repowered with gas turbines	0	3	568	
Combined-cycle gas turbines	8	16	3,441	
Gas turbines	3	37	1,244	
Alternative engines	11	115	1,142	
Alternative engines (CHP)	8	25	26	2.6
	40	**230**	**13,960**	**2.6**

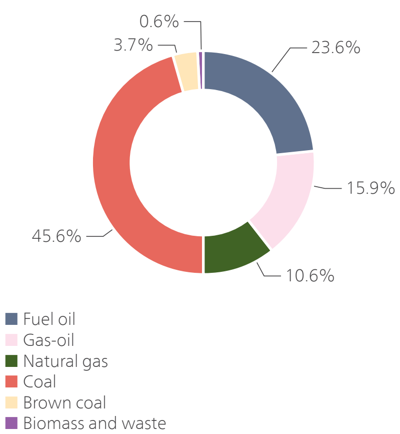
Power plants with a total net maximum capacity of about 11,672 MW are ISO 14001-certified.

Useful heat output
(combined with power generation)
Total: 9,124 million kcal
equal to 11 million kWh

Net maximum electrical capacity
Total: 13,960 MW



Fuel consumption
Total: 6,664,227 t of oil-equivalent



Waste waters

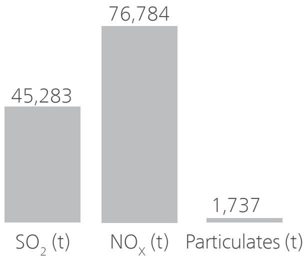
Discharged: **23,016,583 m³**
Used inside plants: **20,900 m³**

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Avoided CO_2 emissions

Due to CHP generation: **67,821 t**

Emissions into the atmosphere



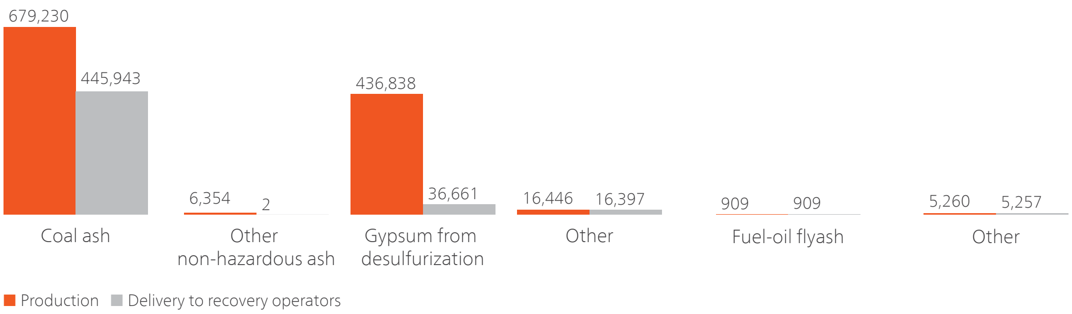
CO_2 (t)	23,239,196
from combustion	*23,169,722*
from desulfurization	*86,776*
SF_6 (kg)	109
(t of CO_2-equivalent)	2,429
Total (t of CO_2-equivalent)	23,241,625

Special waste

Total production: **1,145,129 t**
Total delivery to recovery operators: **505,231 t**

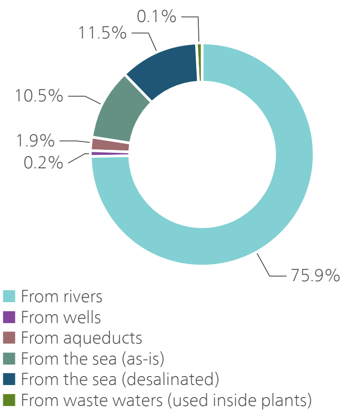
Non-hazardous
Production: 1,138,953 t
Delivery to recovery operators: 499,060 t

Hazardous
Production: 6,177 t
Delivery to recovery operators: 6,171 t



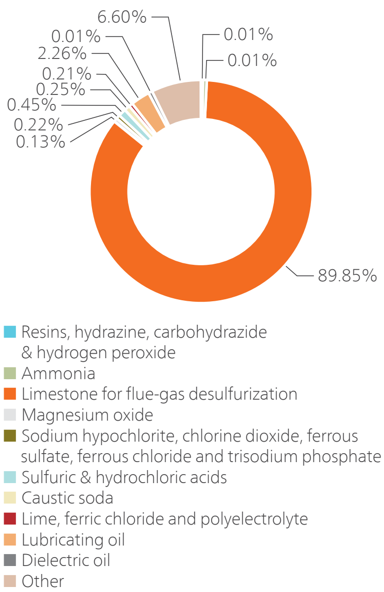
Water for industrial uses

Total requirements: 25,085,826 m³
Total abstraction from inland waters: 19,570,030 m³



Expendables

Total: 219,499 t



Coal storage & handling

Endesa manages three port terminals in Ferrol, Carboneras and Los Barrios for the storage & handling of coal to be used by its plants of As Pontes (Ferrol) and Almería (Carboneras) and by E.On's thermal plant of Los Barrios.
Coal is usually transferred to the plants by trucks.

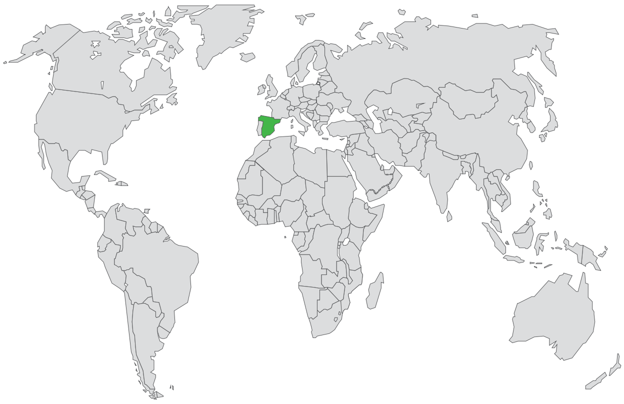
Distance from Ferrol to As Pontes: about **60 km**
Distance from Carboneras to Almería: about **1 km**
Distance from Los Barrios to E.On's plant: about **3 km**
Total coal transferred to the plants: **2,359,293 t**
Total electricity consumption: **5.5 million kWh**

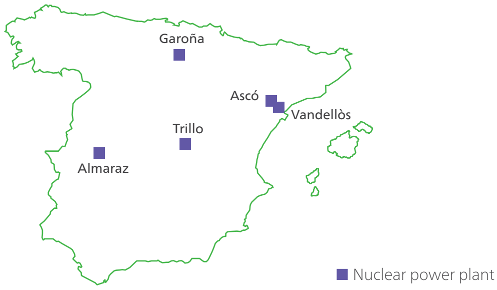
In the following pages, the other flow data (consumption of natural gas and gas-oil, expendables, water for industrial uses, waste waters, releases into the atmosphere and into water bodies, waste) are included among the thermal generation data.

Spain

Nuclear power generation

Endesa SA





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
5	3,514	27,620

Power installations

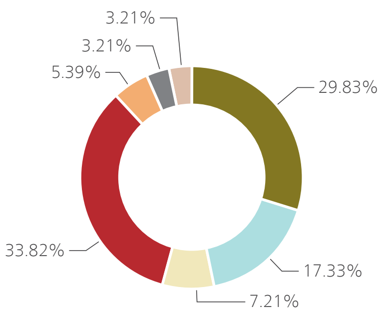
	Power plants no.	Units no.	Net maximum electrical capacity MW
Steam (condensing)	**5**	**7**	**3,514**

All the power plants are ISO 14001-certified.

Net electricity generation
Total: 27,620 million kWh

Water for industrial uses
Total requirements: 174,913,479 m^3
Total abstraction from inland waters: 174,906,836 m^3

Expendables
Total: 1,108 t



- Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride & trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride & polyelectrolyte
- Lubricating oil
- Dielectric oil
- Other

Radionuclides in discharged waste waters

Tritium

71,013 GBq

Corrosion and fission products

10 GBq

Waste waters

Discharged: **158,300,085 m³**
Used inside plants: **6,643 m³**

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Avoided CO_2 emissions

Due to nuclear generation: **22,099,880 t**

Radioactive emissions into the atmosphere

Noble gases 15 TBq

Iodine 131 89 MBq

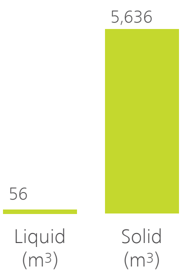
Aerosol β & γ 6,567 MBq

Aerosol α 31 kBq

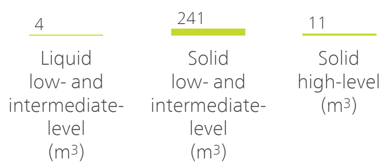
Strontium 89 and 90 2,896 kBq

Radioactive waste

Production since the start of operation

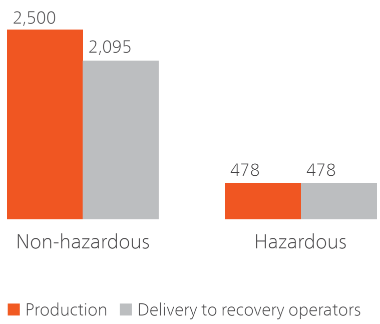


Production in the year



Special waste

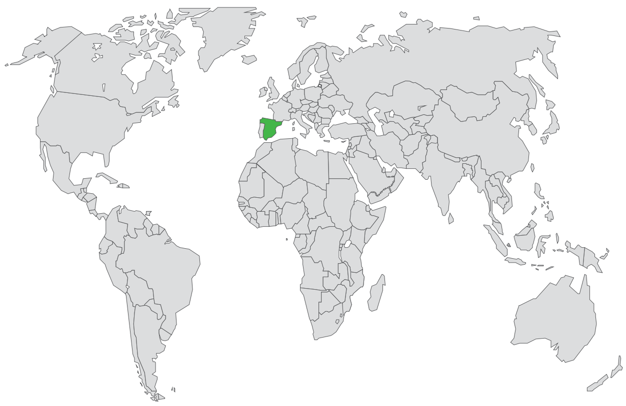
Total production: **2,978 t**
Total delivery to recovery operators: **2,574 t**

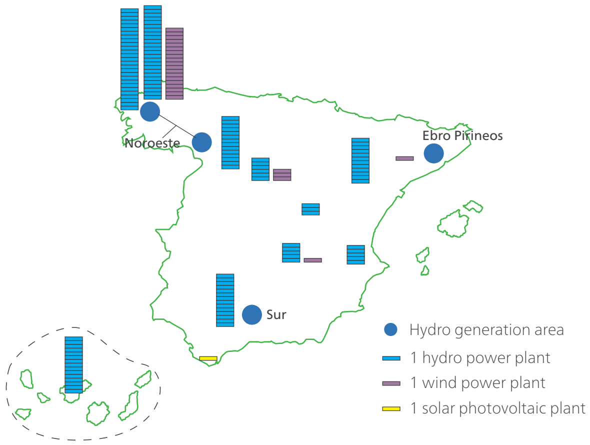


Spain

Hydro, wind and solar photovoltaic power generation

Endesa SA
Enel Unión Fenosa Renovables SA





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
210	5,992	11,597

About 4,668 MW of hydro power plants (Endesa + Eufer) and 679 MW of wind power plants (Eufer) are ISO 14001-certified.

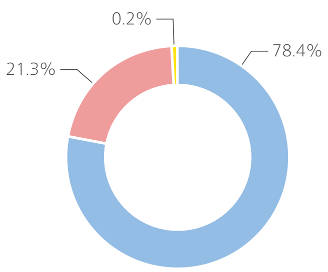
Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	64	97	480
Pondage/reservoir	74	145	2,869
Pure/mixed pumped storage	6	17	1,351
	144	**259**	**4,700**

WIND	Power plants no.	Net maximum electrical capacity MW
	65	**1,279**

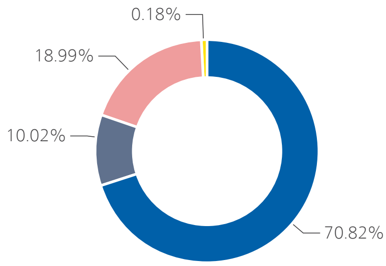
SOLAR PHOTOVOLTAIC	Power plants no.	Net maximum electrical capacity MW
	1	**13**

Net maximum electrical capacity
Total: 5,992 MW



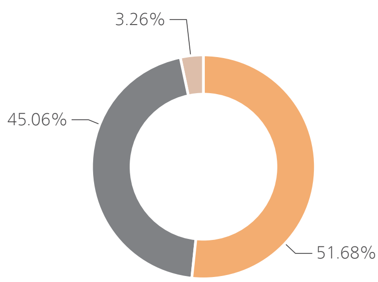
- Hydro
- Wind
- Solar photovoltaic

Net electricity generation
Total: 11,597 million kWh



- Hydro from natural flows
- Hydro from pumped storage
- Wind
- Solar photovoltaic

Expendables
Total: 178 t



- Lubricating oil
- Dielectric oil
- Other

Equivalent yearly hours of utilization*

2,452 hydro

1,721 wind

1,584 solar photovoltaic

* Yearly generation/capacity ratio (excluding hydro generation from pumped storage).

Avoided CO_2 emissions (t)

Due to hydro generation from natural flows	6,571,033
Due to wind generation	1,761,734
Due to solar photovoltaic generation	16,893
Due to generation from biomass and biodegradable fraction of waste	67,821
Total	**8,417,480**

Emissions from the otherwise necessary fossil-fired thermal generation.

Emissions into the atmosphere

SF_6 - all types of generation (kg)	1
(t of CO_2-equivalent)	29
CO_2 (t)	27

Carbon dioxide emissions from gas-oil combustion.

Total

56 t

of CO_2 equivalent

Gas-oil

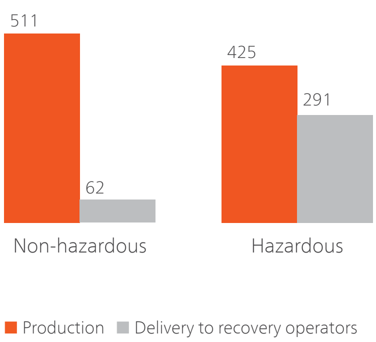
9 toe

Total consumption

Used for feeding emergency generating sets.

Special waste

Total production: **936 t**
Total delivery to recovery operators: **353 t**



Other data

Hydro generation

Emptied reservoirs

Quantity: **2**

Alluvial sediments removed by flushing them out through bottom outlets:
11 m³

Fish ladders : **15**

Wind and photovoltaic generation

Wind power plants

Surface area occupied by platforms, service roads and buildings: **1,721 ha**

Total surface area affected by the installations:
from 20 to 100 times larger

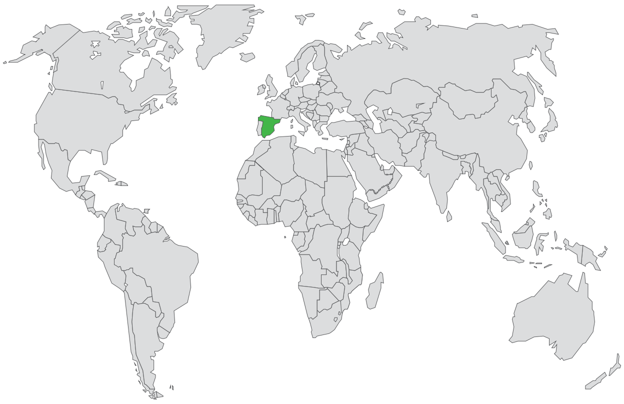
Photovoltaic solar systems

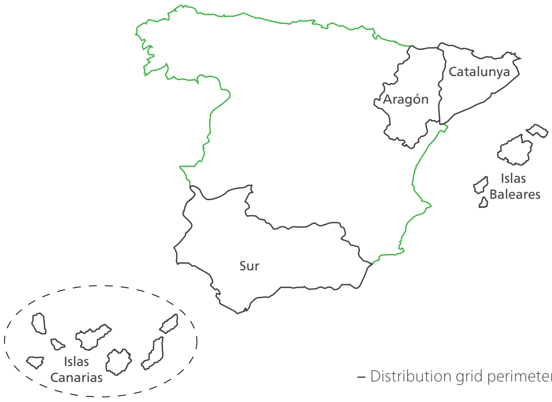
Total surface area affected by the installations:
35 ha

Spain

Electricity distribution

Endesa SA



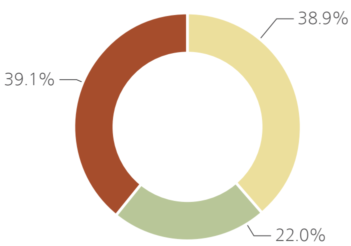


The Numbers

Substations	Capacity (MVA)	Total lines (km)
128,979	139,227	317,275

Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	972	79,992
Satellite substations and MV units	7	63
MV/LV	127,795	56,987
MV/MV	205	2,185
	128,979	**139,227**



LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	Total
HV	18,197	-	683	**18,880**
MV	78,849	1,312	38,507	**118,668**
LV	26,314	68,440	84,973	**179,727**
	123,360	**69,752**	**124,163**	**317,275**

The organization is ISO 14001-certified.

General data

Municipalities served (no.): **3,077**

Surface area served: **196,556 km²**

Customers connected to the grid: **6,003,807** (of which supplied by companies of the Group: **5,096,120**)

Electricity

Total electricity distributed:
103,943 million kWh

Resource consumption

Expendables: **201 t**

Gas-oil: **4 toe**

Emissions into the atmosphere

SF_6: **139 kg** (3,078 t of CO_2-equivalent)

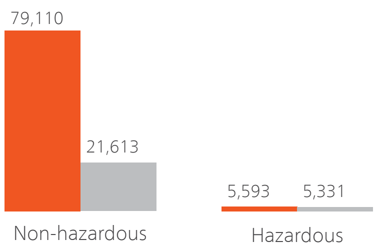
CO_2: **1,211 t**

Total greenhouse gases:
4,290 t of CO_2-equivalent

Special waste

Total production: **84,704 t**

Total delivery to recovery operators: **26,944 t**



Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants	no.	54	361	342	215	247
thermal	no.	6	38	32	32	32
nuclear	no.	-	5	5	5	5
hydro	no.	36	214	204	102	144
wind	no.	12	104	101	75	65
solar (photovoltaic)	no.	-	-	-	1	1
Net maximum electrical capacity	MW	2,624	17,280	15,690	21,744	23,441
thermal	MW	1,592	9,204	8,040	12,441	13,934
nuclear	MW	-	2,441	2,442	3,522	3,514
hydro	MW	728	4,390	3,791	4,688	4,700
wind	MW	304	1,244	1,417	1,080	1,279
solar (photovoltaic)	MW	-	-	-	12.3	13.3
Combined heat & power installations						
Power plants (thermal)	no.	6	7	8	8	8
Net maximum electrical capacity (thermal)	MW	79.1	79.1	26	26.3	26.3
Useful thermal capacity (thermal)	million kcal/h	50.5	40.9	13.8	13.5	2.60
Power lines (circuit-length)						
Total	km	30,008	233,586	204,421	313,158	317,275
high-voltage	km	2,049	15,400	14,177	21,352	18,880
medium-voltage	km	9,703	84,981	77,091	117,238	118,668
low-voltage	km	18,257	133,205	113,154	174,568	179,727
Gas pipelines (1)						
Total	km				3,440	-
high-pressure	km				1,007	-
medium-pressure	km				1,596	-
low-pressure	km				837	-
Mining & extracting activities (2)						
Mining activities						
Mines	no.			5	5	5
coal	no.			5	5	4
other	no.			0	0	1
Amount of fuel extractable since the start of activities	Mt			0	0	339
Areas occupied by excavations and other activities	ha			2,714	5,341	4,438
coal mines	ha			2,714	5,341	4,438
EN29 **Service & real-estate management**						
Vehicle fleet						
service vehicles	no.				1,229	1,375
special vehicles	no.				10	65
vehicles for both private and service use	no.				152	0
Gross real-estate surface area	thousand m^2				281	1,093

-: no data due to absence of activities in the year.
(1) These activities have been surveyed since 2009.
(2) These activities have been surveyed since 2008.

Resources

		2006	2007	2008	2009	2010
EN1 EN3 Fossil fuels						
Thermal generation						
fuel oil	thousand t	45.2	297	1,133	1,660	1,620
	thousand toe	44.3	278	1,111	1,627	1,572
LS	*thousand t*	*45.2*	*295*	*1,127*	*1,660*	*1,610*
	thousand toe	*44.3*	*276*	*1,109*	*1,626*	*1,563*
VLS	*thousand t*	*0*	*1.81*	*6.37*	*0.242*	*9.47*
	thousand toe	*0*	*1.35*	*1.44*	*0.236*	*9.39*
gas-oil	thousand t	2.01	256	751	1,063	1,020
	thousand toe	2.12	198	766	1,079	1,060
natural gas	million m^3	38.1	264	1,228	1,229	753
	thousand toe	35.2	244	1,130	1,097	697
technologically captive use	*million m^3*	*0*	*240*	*1,133*	*1,143*	*725*
	thousand toe	*0*	*222*	*1,042*	*1,017*	*671*
of which in combined-cycle units	million m^3	0	240	1,133	1,143	725
	thousand toe	0	222	1,042	1,017	671
non-technologically captive use	*million m^3*	*38.1*	*23.5*	*95.4*	*86.3*	*28.3*
	thousand toe	*35.2*	*21.8*	*88.6*	*80.2*	*26.2*
coal	thousand t	1,788	4,985	7,210	7,830	5,647
	thousand toe	856	2,346	3,787	4,245	3,036
brown coal	thousand t	466	577	1,413	1,213	780
	thousand toe	159	148	434	370	247
Total	**thousand toe**	**1,097**	**3,213**	**7,228**	**8,416**	**6,612**
	TJ	**45,913**	**134,525**	**302,635**	**352,363**	**276,845**
Thermal generation (CHP)						
fuel oil (LS)	thousand t	41.1	50.5	17.9	19.3	0
	thousand toe	39.5	47.5	18.6	20.3	0
natural gas	million m^3	44.8	48	10.7	6.19	12.7
	thousand toe	41.2	44.4	9.99	9.90	11.7
technologically captive use	*million m^3*	*18.1*	*21.4*	*0*	*0*	*0*
	thousand toe	*16.7*	*19.7*	*0*	*0*	*0*
of which in combined-cycle units	million m^3	0.258	0	0	0	0
	thousand toe	0.237	0	0	0	0
non-technologically captive use	*million m^3*	*26.7*	*26.6*	*10.7*	*6.19*	*12.7*
	thousand toe	*24.6*	*24.7*	*9.99*	*9.90*	*11.7*
Total	**thousand toe**	**80.7**	**92**	**28.6**	**30.2**	**11.7**
	TJ	**3,380**	**3,851**	**1,198**	**1,264**	**488**
Various activities	thousand toe	0.001	0.681	17.2	24.8	11.4
Grand total	**thousand toe**	**1,177**	**3,306**	**7,274**	**8,471**	**6,635**
	TJ	**49,293**	**138,405**	**304,554**	**354,664**	**277,812**
EN1 EN3 Biomass and waste						
Thermal generation						
solid biomass	t	0	0	0	69,774	66,260
	toe	0	0	0	26,733	25,386
	TJ	0	0	0	1,119	1,063
biogases	thousand m^3	0	0	0	33,104	37,442
	toe	0	0	0	13,197	14,846
	TJ	0	0	0	553	622
Thermal generation (CHP)	thousand toe	0	0	0	39.9	40.2
	TJ	0	0	0	1,672	1,684
EN1 EN3 Nuclear fuel						
Nuclear generation						
Uranium	t	0	16.2	25.6	79.7	36.4
	thousand toe	0	0	0	6,191	6,040
	TJ	0	0	0	259,215	252,883
Nuclear generation (CHP)	thousand toe	0	0	0	6,191	6,040
	TJ	0	0	0	259,215	252,883

		2006	2007	2008	2009	2010
EN4 Primary electricity						
Various activities	million kWh	0	0	0	20.4	51.5
EN8 Water for industrial uses						
From rivers (including meteoric waters from secondary rainfall)	million m^3	2.54	36.4	136	202	194
From wells	million m^3	3.31	2.45	1.20	1.84	2.82
From aqueducts	million m^3	0.291	0.355	0.158	1.12	0.495
Total abstraction from inland waters	**million m^3**	**6.15**	**39.2**	**137**	**205**	**197**
From the sea (as-is)	million m^3	0	0.126	3.02	2.73	2.62
From the sea (desalinated)	million m^3	0	0.072	1.39	2.55	2.87
EN10 From waste waters (used inside plants)	million m^3	0	0	0.005	0.008	0.028
Total requirements	**million m^3**	**6.15**	**39.4**	**142**	**210**	**203**
for thermal generation	million m^3	6.15	15.4	33.7	36.5	25.1
for nuclear generation	million m^3	-	24	106	171	175
for fuel storage & handling	million m^3	0	0	0	0.026	0.029
for mining & extracting activities (1)	million m^3			2.22	3.09	2.92
EN8 EN21 Open-cycle cooling water						
For thermal generation (simple and CHP)	million m^3	241	842	2,518	3,574	3,405
For nuclear generation	million m^3	-	433	1,827	2,435	2,988
Total	**million m^3**	**241**	**1,275**	**4,345**	**6,009**	**6,392**
Water for non-industrial uses						
Real-estate & service management (2)	million m^3				2.74	0.046
EN1 Expendables						
Resins	t	0.425	0.119	11.9	18.9	22.3
Hydrazine	t	16.8	18.3	21.2	43.7	19.5
Carbohydrazide	t	0	0	6.98	36.2	12.8
Hydrogen peroxide	t	0	0	0.136	0.198	0.537
Ammonia	t	1.65	0.600	31.3	47.4	67.7
Limestone for flue-gas desulfurization	t	0	0	398,825	354,569	197,218
Magnesium oxide	t	0	0	136	318	279
Sodium hypochlorite	t	454	558	2,731	858	830
Ferrous sulfate	t	0	0	0	0	0.100
Trisodium phosphate	t	1.03	1.10	8.48	6.09	6.96
Lime	t	209	235	4,258	6,202	445
Ferric chloride	t	2.10	0	172	240	294
Polyelectrolyte	t	0.075	0.200	17.9	18	8.85
Sulfuric & hydrochloric acids	t	1,269	1,228	1,752	2,035	1,156
Caustic soda	t	383	291	706	995	629
Lubricating oil	t	56.7	44.4	3,429	3,288	5,398
Dielectric oil	t	18.5	36.4	294	164	321
Printing paper	t	0	0	0	17.6	14.9
Other	t	423	487	4,413	5,670	17,560
Total	**t**	**2,835**	**2,900**	**416,815**	**374,527**	**224,284**
for thermal generation	t	2,800	2,830	410,607	367,401	219,315
for thermal generation (CHP)	t	0	0	0	30	15.3
for nuclear generation	t	-	0	2,433	1,047	1,108
for hydro generation	t	23.3	28.9	56.2	98.6	158
for wind generation	t	6.60	15.9	60.1	52.1	19.6
for fuel storage & handling	t	0	0	0	711	169
for electricity distribution	t	5.04	25.4	159	103	201
EN1 PCB survey (3)						
Equipment & transformers with PCBs > 500 ppm (excluding their oil)	t				997	46
Oil with PCBs > 500 ppm contained in equipment & transformers	t				309	4.92
Equipment & transformers with PCBs > 50 ppm and ≤ 500 ppm (excluding their oil)	t				6,100	7,447
Oil with PCBs > 50 ppm and ≤ 500 ppm contained in equipment & transformers	t				1,307	2,791

-: no data due to absence of activities in the year.
(1) These activities have been surveyed since 2008.
(2) These activities have been surveyed since 2009.
(3) The survey began in 2009.

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From fossil fuels	million kWh	4,549	14,033	33,381	37,446	29,182
simple	million kWh	4,186	13,615	33,245	37,347	29,007
fuel oil & gas-oil	*million kWh*	*164*	*1,945*	*8,191*	*11,291*	*11,597*
natural gas	*million kWh*	*121*	*1,425*	*7,053*	*6,569*	*3,904*
of which in combined-cycle units	million kWh	0	1,353	6,728	6,292	3,815
coal	*million kWh*	*3,365*	*10,036*	*16,221*	*17,704*	*12,523*
brown coal	*million kWh*	*536*	*209*	*1,780*	*1,783*	*983*
combined with heat generation	million kWh	364	418	136	98.9	175
fuel oil & gas-oil	*million kWh*	*180*	*226*	*84.6*	*72.8*	*0*
natural gas	*million kWh*	*184*	*192*	*51.5*	*26.1*	*175*
From renewables	million kWh	1,379	2,830	7,137	10,268	10,520
biomass and biodegradable fraction of waste (simple)	million kWh	0	0	0	127	84.8
hydro from natural flows	million kWh	720	1,713	4,858	7,995	8,212
wind	million kWh	659	1,118	2,279	2,123	2,202
solar (photovoltaic)	million kWh	0	0	0	21.9	21.1
Hydro from pumped storage	million kWh	615	801	615	998	1,162
Nuclear (simple)	million kWh	-	4,132	17,508	22,630	27,620
Total	million kWh	6,543	21,797	58,641	71,341	68,483
simple	million kWh	6,180	21,379	58,505	71,242	68,308
combined with heat generation	million kWh	364	418	136	98.9	175
Electricity consumption for pumping	million kWh	879	1,144	765	1,409	1,592
Available generation	million kWh	5,665	20,653	57,876	69,932	66,891
Useful heat output (combined with power generation)						
In thermal power plants (fossil fuels)	million kcal	248,051	193,510	78,577	77,442	9,124
	million kWh	288	225	91.4	90.1	10.6
Electricity distribution						
Electricity distributed	million kWh	6,256	24,398	80,144	104,938	103,943
EN4 Electricity consumption for grid operation	million kWh	6.94	24.5	na	14.6	na
Natural-gas distribution (1)						
Natural gas distributed	million m^3				442	-
Mining & extracting activities (2)						
Mining activities						
Fuel extracted in the year	million t			1.38	1.90	1.84
Areas restored in the year (geomorphology, hydrogeology and landscape)						
Areas revegetated with plant, shrub and tree species	ha			69.9	23.1	0
Areas occupied by water bodies	ha			157	234	0
Areas restored since the start of activities (geomorphology, hydrogeology and landscape)						
Areas revegetated with plant, shrub and tree species	ha			1,532	2,287	0
Areas of high landscape-cultural value	ha			88.7	132	0
Areas occupied by water bodies	ha			198	509	0
Areas occupied by infrastructure (roads, canals, aqueducts, power lines)	ha			65.7	97.9	0
Areas awaiting final restoration	ha			168	271	0

-: no data due to absence of activities in the year.
(1) These activities have been surveyed since 2008.
(2) These activities have been surveyed since 2009.
na: not available.

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN20 SO_2	thermal generation	thousand t	56.3	126	66.4	64.2	45.3
EN20 NO_X	thermal generation	thousand t	16.2	47	95.4	111	76.8
EN20 Particulates	thermal generation	thousand t	4.26	6.31	3.05	3.02	1.74
EN16 CO_2	*fossil-fired thermal generation (from combustion)*	*thousand t*	*4,158*	*12,112*	*26,631*	*29,778*	*23,141*
	fossil-fired thermal generation (from desulfurization)	*thousand t*	*0*	*0*	*305*	*125*	*69.5*
	Total fossil-fired thermal generation	thousand t	4,158	12,112	26,936	29,903	23,210
	non-fossil-fired thermal generation (from fossil carbon)	thousand t	0	0.263	0	0	0
	Total from thermal generation	thousand t	4,158	12,112	26,936	29,903	23,210
	Fossil-fired thermal generation - CHP (from combustion)	thousand t	223	264	100	85.8	29
	Various activities	thousand t	0	2	9.87	74.7	51.8
	Total	**thousand t**	**4,381**	**12,378**	**27,046**	**30,064**	**23,291**
EN16 SF_6	electricity generation	kg	60	40	432	47.7	111
		thousand t of CO_2-equivalent	1.37	0.912	9.84	1.09	2.52
	electricity distribution	kg	44.6	26	228	196	139
		thousand t of CO_2-equivalent	1.02	0.593	5.20	4.48	3.16
	Total	**kg**	**105**	**66**	**660**	**244**	**249**
		thousand t of CO_2-equivalent	**2.38**	**1.51**	**15**	**5.57**	**5.69**
EN16 CH_4	gas distribution, mining & extracting activities	thousand t	0	0	1.14	1.57	1.52
		thousand t of CO_2-equivalent	0	0	28.6	39.3	38
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		**thousand t of CO_2-equivalent**	**4,383**	**12,379**	**27,090**	**30,108**	**23,335**
EN18 Avoided CO_2 emissions							
Due to hydro generation from natural flows		thousand t	715	1,523	3,936	6,401	6,571
Due to wind and solar (photovoltaic) generation		thousand t	655	995	1,846	1,718	1,779
Due to generation from biomass & biodegradable fraction of waste		thousand t	0	0	0	102	67.8
Due to generation from renewables		thousand t	1,370	2,518	5,782	8,221	8,417
Due to nuclear generation		thousand t	0	3,676	14,185	18,119	22,100
Total		**thousand t**	**1,370**	**6,194**	**19,967**	**26,340**	**30,517**

	Source		2006	2007	2008	2009	**2010**
EN20 Radioactive emissions into the atmosphere	nuclear generation						
Noble gases		TBq	-	3.10	24.4	24	15.2
Iodine 131		MBq	-	2.93	158	258	88.8
Aerosol β & γ		MBq	-	1.87	20,132	18,401	6,567
Aerosol α		kBq	-	4.88	35.9	63.7	31.4
Strontium 89 and 90		kBq	-	681	2,781	8,482	2,896
EN21 Waste waters (discharged quantity)	*thermal generation*	*million m³*	*1.04*	*1.01*	*22.7*	*28.8*	*23*
	nuclear generation	*million m³*	*-*	*21.7*	*96.1*	*158*	*158*
	Total in electricity generation	million m³	1.04	22.7	119	187	181
	Fuel storage & handling	million m³	0	0	0	0	0.013
	Total	**million m³**	**1.04**	**22.7**	**119**	**187**	**181**
EN21 Conventional polluting load of waste waters discharged by installations							
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	264	11,575	0	58,684	68,367
	in some plants with an overall capacity of	MW	1,081	8,758	0	4,622	4,344
	nuclear generation	kg	-	111	49.7	70.3	104
	on an overall capacity of	MW	-	2,441	2,442	3,522	3,514
	Total in electricity generation	kg	264	11,686	49.7	58,754	68,471
Total nitrogen (expressed as N)	thermal generation	kg	9,426	28,647	10,204	221,409	284,571
	in some plants with an overall capacity of	MW	496	8,698	2,622	1,588	5,265
	nuclear generation	kg	-	2,213	7,407	17,612	5,888
	on an overall capacity of	MW	-	2,441	2,442	3,522	3,514
	Total in electricity generation	kg	9,426	30,860	17,611	239,021	290,459
Total phosphorus (expressed as P)	thermal generation	kg	2,247	9,934	119	10,028	19,028
	in some plants with an overall capacity of	MW	1,227	8,698	2,064	488	3,593
	nuclear generation	kg	-	76.6	99.4	118	1,189
	on an overall capacity of	MW	-	2,441	2,442	3,522	3,514
	Total in electricity generation	kg	2,247	10,011	218	10,146	20,217
COD	thermal generation	kg	24,335	6,153	26,083	77,778	16,365
	in some plants with an overall capacity of	MW	496	290	3,466	2,705	4,094
	nuclear generation	kg	-	1,734	2,064	2,714	24,125
	on an overall capacity of	MW	-	2,441	2,442	3,522	3,514
	Total in electricity generation	kg	24,335	7,887	28,147	80,492	40,491
	Fuel storage & handling	kg	0	0	0	265	0
	Total	**kg**	**24,335**	**7,887**	**28,147**	**80,757**	**40,491**
BOD	thermal generation	kg	16,420	1,107	1,882	4,912	2,783
	in some plants with an overall capacity of	MW	350	144	759	1,096	2,076
	nuclear generation	kg	-	297	1,376	1,792	4,623
	on an overall capacity of	MW	-	2,441	2,442	3,522	3,514
	Total in electricity generation	kg	16,420	1,404	3,258	6,704	7,406
	Fuel storage & handling	kg	0	0	0	114	0
	Total	**kg**	**16,420**	**1,404**	**3,258**	**6,818**	**7,406**

-: no data due to absence of activities in the year.

	Source		2006	2007	2008	2009	2010
EN21 Radionuclides in waste waters discharged by plants	nuclear generation						
Tritium		GBq	-	9,028	58,777	57,746	71,013
Corrosion and fission products		GBq	-	3.08	12.8	21.7	9.82
EN22 Non-hazardous special waste							
Coal bottom ash	fossil-fired thermal generation (simple and CHP)						
production		t	108,450	217,529	208,742	133,769	77,428
delivery to recovery operators		t	13,692	58,423	59,697	8,556	7,376
Coal flyash	fossil-fired thermal generation (simple and CHP)						
production		t	581,947	1,116,985	1,177,396	1,050,321	601,802
delivery to recovery operators		t	474,579	1,064,305	1,080,210	860,169	438,567
Oil bottom ash	fossil-fired thermal generation (simple and CHP)						
production		t	0	0	0	0	1.84
delivery to recovery operators		t	0	0	0	0	1.84
Other non-hazardous ash	fossil-fired thermal generation (simple and CHP)						
production		t	0	0	0	3,508	6,352
Gypsum from desulfurization	fossil-fired thermal generation (simple and CHP)						
production		t	0	134,358	749,817	727,750	436,838
delivery to recovery operators		t	0	180	879	9,549	36,661
Other							
production	electricity generation	t	860	56,698	34,568	203,426	19,457
	electricity distribution	t	83	7,058	98,615	115,842	79,110
	various activities	t	0	0	292	1,620	1,059
	Total	**t**	**943**	**63,757**	**133,476**	**320,889**	**99,626**
delivery to recovery operators	electricity generation	t	785	4,412	3,470	2,062	18,554
	electricity distribution	t	0	288	5,100	7,355	21,613
	various activities	t	0	0	1,551	1,360	878
	Total	**t**	**785**	**4,700**	**10,121**	**10,777**	**41,045**
Total							
production	**electricity generation**	**t**	**691,257**	**1,525,570**	**2,170,523**	**2,118,774**	**1,141,878**
	electricity distribution	**t**	**83**	**7,058**	**98,615**	**115,842**	**79,110**
	various activities	**t**	**0**	**0**	**292**	**1,620**	**1,059**
	Total	**t**	**691,340**	**1,532,628**	**2,269,431**	**2,236,236**	**1,222,047**
delivery to recovery operators	**electricity generation**	**t**	**489,056**	**1,127,319**	**1,144,256**	**880,335**	**501,160**
	electricity distribution	**t**	**0**	**288**	**5,100**	**7,355**	**21,613**
	various activities	**t**	**0**	**0**	**1,551**	**1,360**	**878**
	Total	**t**	**489,056**	**1,127,607**	**1,150,907**	**889,051**	**523,651**

-: no data due to absence of activities in the year.

	Source		2006	2007	2008	2009	2010
EN22 **Hazardous special waste**							
Oil flyash	fossil-fired thermal generation (simple and CHP)						
production		t	0	103	535	753	909
delivery to recovery operators		t	0	0	0	753	909
Other ash	fossil-fired thermal generation (simple and CHP)						
production		t	0	0	0	0.190	0.300
delivery to recovery operators		t	0	0	0	0.190	0
Other							
production	electricity generation	t	396	2,172	5,976	9,124	6,164
	electricity distribution	t	220	1,426	18,414	4,865	5,593
	various activities	t	0	0	142	317	110
	Total	**t**	**616**	**3,599**	**24,532**	**14,306**	**11,867**
of which with PCBs	*electricity generation*	*t*	*84*	*579*	*1,413*	*1,976*	*2,661*
	electricity distribution	*t*	*80.6*	*137*	*646*	*348*	*301*
	various activities	*t*	*0*	*0*	*0*	*2.20*	*1.07*
	Total	***t***	***165***	***717***	***2,059***	***2,326***	***2,962***
delivery to recovery operators	electricity generation	t	389	348	1,920	2,152	6,026
	electricity distribution	t	0	423	5,212	4,382	5,331
	various activities	t	0	0	85.7	310	13.5
	Total	**t**	**389**	**771**	**7,218**	**6,845**	**11,371**
of which with PCBs	*electricity generation*	*t*	*81.4*	*85.7*	*1,412*	*1,962*	*2,545*
	electricity distribution	*t*	*0*	*0*	*641*	*348*	*282*
	various activities	*t*	*0*	*0*	*0*	*0*	*0.574*
	Total	***t***	***81.4***	***85.7***	***2,052***	***2,310***	***2,827***
Total							
production	electricity generation	t	396	2,275	6,511	9,878	7,073
	electricity distribution	t	220	1,426	18,414	4,865	5,593
	various activities	t	0	0	142	317	110
	Total	**t**	**616**	**3,701**	**25,067**	**15,060**	**12,776**
delivery to recovery operators	electricity generation	t	389	348	1,920	2,906	6,935
	electricity distribution	t	0	423	5,212	4,382	5,331
	various activities	t	0	0	85.7	310	13.5
	Total	**t**	**389**	**771**	**7,218**	**7,598**	**12,279**

	Source		2006	2007	2008	2009	2010
EN22 **Total special waste**							
production	electricity generation	t	691,653	1,527,845	2,177,034	2,128,652	1,148,951
	electricity distribution	t	303	8,485	117,029	120,707	84,704
	various activities	t	0	0	434	1,937	1,169
	Total	**t**	**691,956**	**1,536,330**	**2,294,497**	**2,251,296**	**1,234,823**
delivery to recovery operators	electricity generation	t	489,445	1,127,667	1,146,176	883,241	508,095
	electricity distribution	t	0	711	10,312	11,738	26,944
	various activities	t	0	0	1,636	1,670	892
	Total	**t**	**489,445**	**1,128,378**	**1,158,125**	**896,649**	**535,930**
EN22 **Radioactive waste**							
Low- , intermediate- and high-level: stored inside plants	nuclear generation						
liquid		m^3	0	0	16.6	58.5	32.1
Low-, intermediate- and high-level: production	nuclear generation						
liquid		m^3	0	3.50	1.25	3.31	3.97
solid		t	0	43.3	0	0	0
of which fraction not storable in off-site surface or subsurface sites		*t*	*0*	*12.8*	*0*	*0*	*0*
High-level: production	nuclear generation						
liquid		m^3	0	0	0	0	4.02
solid		t	0	14.3	0	0	0.208

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN29 Land								
LV cable lines								
overhead	% of entire LV grid	89.1	71.3	24.2	21.7	38.1	-57.2	75.6
underground	% of entire LV grid	10.9	27.3	45.2	46.2	47.3	333.9	2.4
Total	**% of entire LV grid**	**100**	**98.6**	**69.3**	**67.9**	**85.4**	**-14.6**	**25.8**
MV cable lines								
overhead	% of entire MV grid	0	1.02	1.13	1.11	1.11	0.0	0.0
underground	% of entire MV grid	12.3	27.5	30.6	31.6	32.4	163.4	2.5
Total	**% of entire MV grid**	**12.3**	**28.5**	**31.7**	**32.7**	**33.6**	**173.2**	**2.8**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	64.9	66.8	50.7	50.4	61.1	-5.9	21.2
Resource conservation and quality								
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	2,620	2,360	2,174	2,253	2,280	-13.0	1.2
EN1 EN3 Net heat rate of thermal generation (CHP)	$kcal/kWh_{eq.}$	1,238	1,430	1,258	1,598	1,919	55	20.1
EN1 EN3 Net efficiency of hydro generation from pumped storage	%	70	70	80.4	70.8	73	4.3	3.1
EN4 Consumption of electricity for distribution grid operation	% of electricity distributed	0.111	0.101	0	0.014	0	-100.0	-100.0
EN8 Net specific requirements of water for industrial uses in thermal generation								
including contribution of as-is sea water	liters/kWh	1.47	1.13	1.01	0.974	0.861	-41.4	-11.6
excluding contribution of as-is sea water	liters/kWh	1.47	1.12	0.924	0.901	0.771	-47.6	-14.4
EN8 Net specific requirements of water for industrial uses in nuclear generation (CHP)	liters/kWh	-	5.82	6.04	7.55	6.33	0.0	-16.2
EN8 Coverage of requirements of water for industrial uses								
from rivers (including meteoric waters from secondary rainfall)	% of requirements	41.3	92.4	96.7	96.9	97	134.9	0.1
from wells	% of requirements	53.9	6.21	0.017	0.032	0.027	-99.9	-15.6
from aqueducts	% of requirements	4.74	0.901	0.113	0.472	0.236	-95.0	-50.0
Total from inland waters	**% of requirements**	**100**	**99.5**	**96.8**	**97.5**	**97.2**	**-2.8**	**-0.3**
from the sea (as-is)	% of requirements	0	0.320	2.16	1.32	1.31	0.0	-0.8
from the sea (desalinated)	% of requirements	0	0.183	0.995	1.23	1.44	0.0	17.1
EN10 from waste waters (used inside plants)	% of requirements	0	0	0.004	0.004	0.014	0.0	250.0
EN1 EN3 Fossil fuel consumption for thermal generation								
fuel oil	% of total fuel consumption	7.12	9.84	15.6	19.5	23.7	232.9	21.5
gas-oil	% of total fuel consumption	0.180	5.99	10.6	12.8	16	8,788.9	25.0
natural gas	% of total fuel consumption	6.50	8.72	15.7	13.1	10.7	64.6	-18.3
coal	% of total fuel consumption	72.7	71	52.2	50.3	45.8	-37.0	-8.9
brown coal	% of total fuel consumption	13.5	4.47	5.97	4.38	3.74	-72.3	-14.6
LS fuel oil	% of total fuel-oil consumption	100	99.6	99.9	100	99.4	-0.6	-0.6
VLS fuel oil	% of total fuel-oil consumption	0	0.415	0.127	0.014	0.597	0.0	4,164.3
natural gas, technologically captive use	% of total natural-gas consumption	21.8	83.8	91.4	91.9	94.7	334.4	3.0
of which in combined-cycle units	*% of total natural-gas consumption*	*0.310*	*77*	*91.4*	*91.9*	*94.7*	*30,448.4*	*3.0*
natural gas, non-technologically captive use	% of total natural-gas consumption	78.2	16.2	8.65	8.14	5.34	-93.2	-34.4

-: no data due to absence of activities in the year.

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Electricity generation from renewables								
thermal from biomass & biodegradable fraction of waste	% of total generation	0	0	0	0.179	0.124	0.0	-30.7
hydro from natural flows	% of total generation	11	7.86	8.28	11.2	12	9.1	7.1
wind and solar (photovoltaic)	% of total generation	10.1	5.13	3.89	3.01	3.25	-67.8	8.0
Total	**% of total generation**	**21.1**	**13**	**12.2**	**14.4**	**15.4**	**-27.0**	**6.9**
Specific emissions into the atmosphere								
EN20 SO_2 (thermal generation)	g/kWh thermal net	13.5	9.29	2	1.71	1.56	-88.4	-8.8
EN20 NO_X (thermal generation)	g/kWh thermal net	3.88	3.45	2.87	2.97	2.64	-32.0	-11.1
EN20 Particulates (thermal generation)	g/kWh thermal net	1.02	0.463	0.092	0.081	0.060	-94.1	-25.9
EN16 CO_2 (thermal generation)	g/kWh thermal net	993	890	810	798	798	-19.6	0.0
EN16 CO_2 (thermal generation - CHP)	$g/kWh_{eq.}$ thermal net	342	410	441	454	156	-54.4	-65.6
EN20 SO_2 (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	8.24	5.74	1.13	0.899	0.661	-92.0	-26.5
EN20 NO_X (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	2.38	2.13	1.62	1.56	1.12	-52.9	-28.2
EN20 Particulates (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	0.624	0.286	0.052	0.042	0.025	-96.0	-40.5
EN16 CO_2 (total from thermal generation - simple and CHP)	$g/kWh_{eq.}$ total net	641	562	460	420	339	-47.1	-19.3
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	1.35	0.419	0.201	0.051	0.271	-79.9	431.4
EN20 Specific radioactive emissions into the atmosphere								
Nuclear generation								
Noble gases	kBq/kWh	-	1	1	1	1	0.0	0.0
Iodine 131	kBq/kWh	-	1	9	11	3	0.0	-72.7
Aerosol β & γ	mBq/kWh	-	0	1,150	813	238	0.0	-70.7
Aerosol α	µBq/kWh	-	1	2	3	1	0.0	-66.7
Strontium 89 and 90	µBq/kWh	-	165	159	375	105	0.0	-72.0
EN22 Specific production of waste								
Coal and brown-coal ash (thermal generation)	g/kWh net from coal & brown coal	177	130	77	60.8	50.3	-71.6	-17.3
Oil flyash (thermal generation)	g/kWh net from fuel oil & gas-oil	0	0.053	0.065	0.067	0.078	0.0	16.4
Oil bottom ash (thermal generation)	g/kWh net from fuel oil & gas-oil	0	0.053	0.065	0.067	0.079	0.0	17.9
EN22 Specific production of radioactive waste								
low- and intermediate-level								
liquid	mm^3/kWh net	-	1	0	0	0	0.0	0.0
solid	mg/kWh net	-	10	0	0	0	0.0	0.0
	mm^3/kWh	-	10	7	10	9	0.0	-10.0
high-level								
solid	mg/kWh net	-	3	0	0	0	0.0	0.0
	mm^3/kWh	-	0	0	1	0	0.0	-100.0

-: no data due to absence of activities in the year.

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN22 Low-, intermediate- and high-level radioactive waste stored inside plants	% in volume of production since the start of operation							
liquid		-	0	78.7	89.7	57.1	0.0	-36.3
solid		-	0	21.5	69.9	27.1	0.0	-61.2
EN22 Waste recovery								
Coal and brown-coal ash	% of production	70.7	84.1	82.2	73.4	65.7	-7.1	-10.5
bottom ash	*% of production*	*12.6*	*26.9*	*28.6*	*6.40*	*9.53*	*-24.4*	*48.9*
flyash	*% of production*	*81.6*	*95.3*	*91.7*	*81.9*	*72.9*	*-10.7*	*-11.0*
Gypsum from desulfurization	% of production	0	0.134	0.117	1.31	8.39	0.0	540.5
Other non-hazardous special waste								
electricity generation	% of production	91.2	7.78	10	0.996	71.9	-21.2	7,118.9
electricity distribution	% of production	0	4.08	5.17	6.35	27.3	0.0	329.9
fuel storage & handling, gas distribution	% of production	0	0	0	0	67.1	0.0	0.0
Total	**% of production**	**83.2**	**7.37**	**6.44**	**2.92**	**38.3**	**-54.0**	**1,211.6**
Total non-hazardous special waste								
electricity generation	% of production	70.7	73.9	52.7	41.5	43.9	-37.9	5.8
electricity distribution	% of production	0	4.08	5.17	6.35	27.3	0.0	329.9
fuel storage & handling, gas distribution	% of production	0	0	0	0	67.1	0.0	0.0
Total	**% of production**	**70.7**	**73.6**	**50.7**	**39.7**	**42.8**	**-39.5**	**7.8**
Oil flyash	% of production	0	0	0	100	100	0.0	0.0
Other hazardous special waste								
electricity generation	% of production	98.4	16	32.1	1.37	97.8	-0.6	7,038.7
electricity distribution	% of production	0	29.6	28.3	90.1	95.3	0.0	5.8
fuel storage & handling, gas distribution	% of production	0	0	0	0	72.8	0.0	0.0
Total	**% of production**	**63.2**	**21.4**	**29.2**	**4.04**	**96.6**	**52.8**	**2,291.1**
Total hazardous special waste								
electricity generation	% of production	98.4	15.3	29.5	1.84	98.1	-0.3	5,231.5
electricity distribution	% of production	0	29.6	28.3	90.1	95.3	0.0	5.8
fuel storage & handling, gas distribution	% of production	0	0	0	0	72.8	0.0	0.0
Total	**% of production**	**63.2**	**20.8**	**28.6**	**4.49**	**96.8**	**53.2**	**2,055.9**
Total special waste								
electricity generation	% of production	70.8	73.8	52.6	38.8	44.2	-37.6	13.9
electricity distribution	% of production	0	8.37	8.81	9.72	31.8	0.0	227.2
fuel storage & handling, gas distribution	% of production	0	0	0	0	67.5	0.0	0.0
Total	**% of production**	**70.7**	**73.4**	**50.4**	**37.3**	**43.4**	**-38.6**	**16.4**
Mining & extracting activities (1)								
Yield of the site (open-pit mine)	million m^3 of moved soil/ million t of extracted mineral			172	57.5	70.2	0.0	22.1
Percentage of extracted soil used to restore the area	%			0	0	7.79		0.0

-: no data due to absence of activities in the year.
(1) These activities have been surveyed since 2008.

Highlights of 2010

In Spain, Enel operates through Endesa (thermal, nuclear and renewable power generation, electricity distribution and sales) and Enel Green Power (renewable power generation and combined heat & power generation in small plants). In 2010, Eufer's assets were divided between Gas Natural Fenosa and Enel Green Power (two units with a net maximum capacity of about 550 MW).

The change in renewable power generation assets in 2009 vs. 2008 is due to the transfer of some assets to Acciona in connection with the deal under which Acciona sold its stake in Endesa to Enel.

Generation continued to shrink in 2010 (~-3 TWh) owing to the contraction of demand due to the economic crisis. Lower thermal generation from fossil fuels (-~8 TWh, -~22%) was in part offset by higher nuclear generation (~+5 TWh, i.e. ~+22%, with a consequent change in the generating mix), renewable power generation (~+250 GWh, mostly hydro) and non-renewable hydro generation from pumped storage (~+150 GWh).

EN1 As regards expendables, the consumption of limestone for flue-gas desulfurization diminished owing to a sharp decrease in generation from coal and brown coal.

EN1 EN3 The use of non-fossil fuels in thermal generation grew slightly. This generation comes from:

> solid biomass from the processing of olive stones (used as main fuel), whose amount dropped from 26,700 to 25,400 toe;

> biogases from landfills and waste water treatment, which mounted from ~13,200 to ~14,800 toe.

Conversely, the consumption of fossil fuel in thermal generation was lower than in 2009, passing from 8,439 ktoe to 6,816 ktoe. In the fossil fuel mix, the percentages of coal, brown coal and natural gas were down by ~6%, ~1% and ~2%, respectively, whilst those of gas-oil and fuel oil (almost exclusively with low-sulfur content, since very low-sulfur fuel oil accounted for as little as 0.5%) were up by ~3% and ~6%, respectively.

EN5 As to efficiency enhancements, Endesa focuses its activities on the following projects.

Thermal generation

> Development of the supercritical bed technology, in order to convert various boilers to new-fuel firing with increased efficiency.

Nuclear generation

> EPRI nuclear program, in order to reach excellence in plant operation.

Solar photovoltaic generation

> Development of new systems for harnessing solar thermal energy and for generating steam.

Electricity distribution

> Phase-in of smart meters to enhance the efficiency of and automate distribution grids.

EN5 EN6 EN18 The net maximum capacity of wind farms climbed by about 200 MW as a result of: i) total consolidation of part of the assets of Endesa and Eufer (transferred to Enel Green Power); and iii) commissioning of the new plants of Cogollos (50 MW), Valdesamario (12 MW), Valdelín (12 MW) and El Puntal (13 MW). The overall, new, net maximum capacity will be equal to 119 MW for wind farms, 1 MW for hydro plants and over 13 MW for photovoltaic ones (Guadarranque). The yearly generation from these plants will amount to approximately 210 GWh, covering the consumption of about 84,000 households, displacing 170,000 tonnes/yr of CO_2 emissions into the atmosphere and saving approximately 50,000 toe of fossil fuels.

EN5 EN6 Endesa launched a major training scheme in view of rolling out smart meters and remote management systems, with the goal of replacing all meters of household customers with a subscribed demand of up to 15 kW by 2015.

EN8 EN10 Specific consumption of water (withdrawn almost exclusively from rivers) in thermal and nuclear plants recorded a substantial improvement with respect to 2009. Consumption by thermal plants was down by roughly 14% (excluding the contribution of as-is sea water), while the one of nuclear plants was down by about 1%.

EN16 Interesting results were achieved in terms of specific emissions of all major pollutants into the atmosphere. Total net specific emissions of CO_2 (i.e. referred to total electricity generation) continued to have a declining trend, reaching a value of 348 g/kWh (-17%) thanks, above all, to higher nuclear generation. The increase in SF_6 emissions in 2008 and 2010 is to be attributed to replenishments of this gas in the plants of Teruel and Accudia in 2008 and Almería and Barranco in 2010;

EN20 net specific emissions of macro-pollutants from simple thermal generation were down by ~7% (SO_2), ~5% (NO_X) and ~24% (particulates) on 2009;

EN20 specific radioactive emissions into the atmosphere have had a downward trend in the past few years thanks to the high emphasis placed on the environmental management of nuclear plants.

EN18 In 2010, the emissions of CO_2 displaced by carbon-free generation amounted to roughly to 31.3 million tonnes, of which 22.7 due to nuclear generation and 8.6 due to generation from renewables (about 19% more than in the previous year).

EN19 Ozone-depleting substances:

Amount: **na**
Emission: **0 kg**
Place: chlorofluorocarbons are used in the heating & air conditioning systems of office buildings. However, in the course of 2010, no leaks were detected.

EN22 In 2010, the recovery of gypsum from desulfurization increased (from 1 to 8%), while the one of coal and brown-coal reached 66%. Between 2008 and 2009, specific production of coal and brown-coal ash fell from 70 to about 51 g/kWh net from coal.

EN26 Environmental enhancements.

Emissions

> Design and development of a system for continuous monitoring of heavy metals.

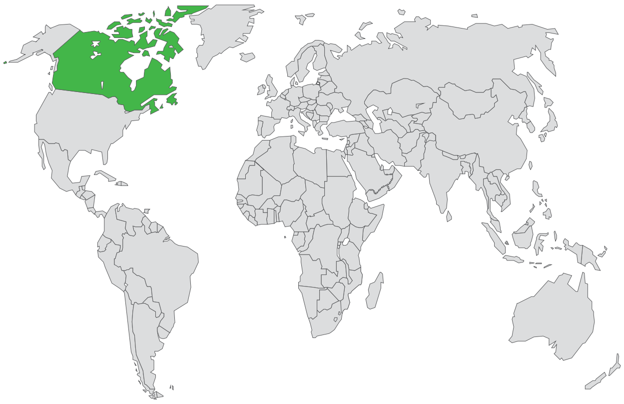
EN29 As regards land and landscape protection efforts, the use of underground or overhead cables in power lines was up by about 11 percentage points in 2010. This result is to be ascribed to the sale of all the high-voltage lines of the Balearic and Canary Islands to the Spanish power grid.

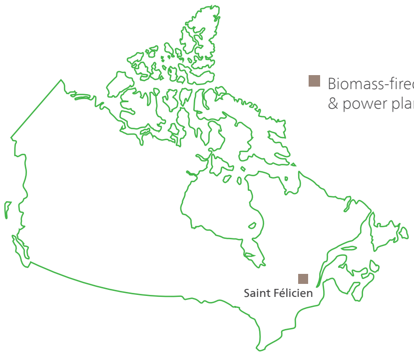
North America

Canada

Biomass-fired combined heat & power generation

Enel North America Inc.





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
1	21	182

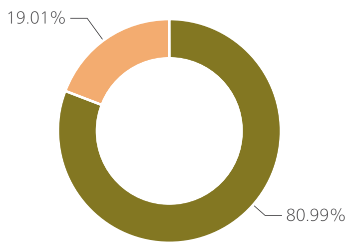
Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW	Useful thermal capacity 10^6 kcal/h
Steam (condensing)	**1**	**1**	**21**	**6**

Fuel consumption
Total: 89,651 toe
100% from biomass

Net electricity generation
Total: 182 million kWh

Expendables
Total: 13 t



Useful heat output (combined with power generation)

32,524 million kcal
equal to 38 million kWh

Waste waters

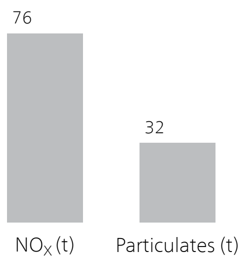
104,684 m^3
Discharged

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Water for industrial uses

764,610 m^3
Abstraction from inland waters (from aqueducts only)

Emissions into the atmosphere



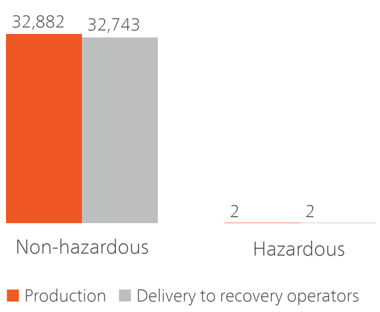
Avoided CO_2 emissions

129,688 t
Due to thermal generation from biomass

Emissions from the otherwise necessary fossil-fired thermal generation.

Special waste

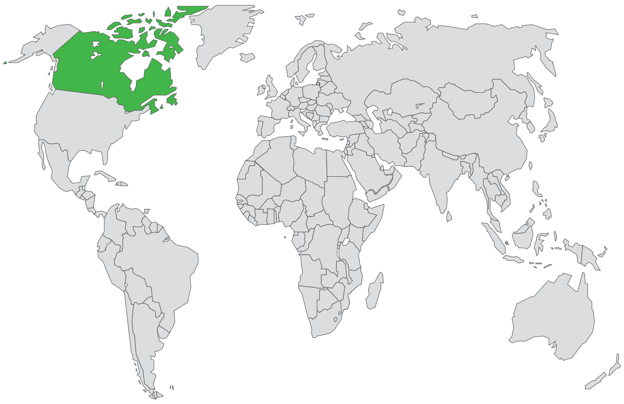
Total production: **32,884 t**
Total delivery to recovery operators: **32,745 t**

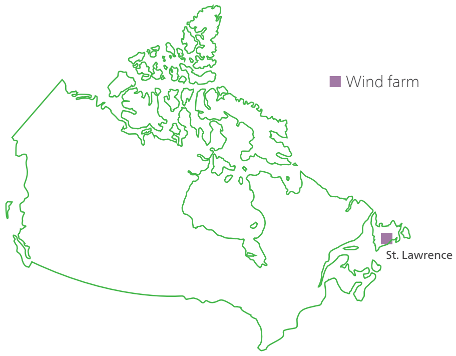


Canada

Wind power generation

Enel North America Inc.





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
1	27	99

Power installations

Power plants no.	Net maximum electrical capacity MW
1	27

Net maximum electrical capacity

Total: 27 MW

Equivalent yearly hours of utilization*

Wind: **3,668 hours**

* Yearly generation/capacity ratio.

Net electricity generation

Total: 99 million kWh

Avoided CO_2 emissions

Due to wind generation: **70,694 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Special waste

Total production: **2 t**

Total delivery to recovery operators: **0 t**

Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants	no.	-	1	1	1	1
hydro	no.	-	1	-	-	-
wind	no.	-	-	1	1	1
Net maximum electrical capacity	MW	-	8.40	27	27	27
hydro	MW	-	8.40	-	-	-
wind	MW	-	-	27	27	27
Combined heat & power installations						
Power plants (thermal)	no.	1	1	1	1	1
Net maximum electrical capacity (thermal)	MW	21.4	21.4	21.4	21.4	21.4
Useful thermal capacity (thermal)	million kcal/h	7.36	7.36	5.78	5.78	5.68

Resources

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Combined heat & power generation						
gas-oil	thousand t	0.043	0.031	0	0	0
	thousand toe	0.044	0.032	0	0	0
	TJ	1.84	1.34	0	0	0
EN1 EN3 **Biomass and waste**						
Combined heat & power generation						
solid biomass	t	403,901	400,458	450,889	402,877	402,568
	toe	89,948	89,181	100,412	89,720	89,651
	TJ	3,766	3,734	4,204	3,756	3,753
EN8 **Water for industrial uses**						
From aqueducts	million m^3	0.704	0.715	0.638	0.621	0.765
for thermal generation (CHP)	million m^3	0.704	0.715	0.638	0.621	0.765
EN1 **Expendables**						
Resins	t	0.700	0.350	0.300	0	0
Sodium hypochlorite	t	10.5	12.2	13.2	10.1	10.2
Sulfuric & hydrochloric acids	t	53.8	56.4	58.4	5.10	0
Lubricating oil	t	1.90	3.55	3.14	2.23	2.38
Dielectric oil	t	0	0	0	0	0.171
Total	t	66.9	72.5	75	17.5	12.7
for thermal generation (CHP)	t	66.9	72.2	75	17.5	12.5
for hydro generation	t	0	0.350	0	0	0
for wind generation	t	0	0	0	0	0.171

-: no data due to absence of activities in the year.

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From renewables	million kWh	171	323	180	251	281
biomass and biodegradable fraction of waste	million kWh	171	175	172	149	182
combined with heat generation	million kWh	171	175	172	149	182
hydro from natural flows	million kWh	-	148	-	-	-
wind	million kWh	-	-	7.82	102	99
Total	**million kWh**	**171**	**323**	**180**	**251**	**281**
simple	million kWh	0	148	7.82	102	99
combined with heat generation	million kWh	171	175	172	149	182
Useful heat output (combined with power generation)						
In thermal plants (biomass and biodegradable fraction of waste)	million kcal	32,215	29,626	30,149	23,042	32,524
	million kWh	37.5	34.5	35.1	26.8	37.8

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN20 SO_2	thermal generation (CHP)	thousand t	0.001	0.001	0.009	0.002	0
EN20 NO_X	thermal generation (CHP)	thousand t	0.131	0.017	0.048	0.087	0.076
EN20 Particulates	thermal generation (CHP)	thousand t	0.151	0.080	0.029	0.040	0.032
EN16 CO_2	fossil-fired thermal generation - CHP (from combustion)	thousand t	0.270	0.195	0	0	0
	various activities	thousand t	0	0.004	0	0	0
	Total	**thousand t**	**0.270**	**0.199**	**0**	**0**	**0**
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		thousand t of CO_2-equivalent	0.270	0.199	0	0	0
EN18 **Avoided CO_2 emissions**							
Due to wind generation		thousand t	0	0	0	72.9	70.7
Due to generation from biomass and biodegradable fraction of waste		thousand t	0	0	0	107	130
Due to generation from renewables		thousand t	0	0	0	179	200
EN21 **Waste waters (discharged quantity)**	thermal generation (CHP)	million m^3	0.281	0.201	0.130	0.116	0.105

-: no data due to absence of activities in the year.

	Source		2006	2007	2008	2009	2010
EN21 Conventional polluting load of waste waters discharged by plants							
COD	thermal generation (CHP)	kg	10,330	7,368	14,335	439	4,331
	in some plants with an overall capacity of	MW	21.4	21.4	21.4	21.4	21.4
BOD	thermal generation (CHP)	kg	3,989	2,845	5,717	1,109	4,178
	in some plants with an overall capacity of	MW	21.4	21.4	21.4	21.4	21.4
EN22 Non-hazardous special waste							
Biomass bottom ash	fossil-fired thermal generation (simple and CHP)						
production		t	0	0	12,350	14,129	10,100
delivery to recovery operators		t	0	0	12,350	14,129	10,100
Biomass flyash	fossil-fired thermal generation (simple and CHP)						
production		t	0	0	25,438	24,023	22,592
delivery to recovery operators		t	0	0	25,438	24,023	22,592
Other	electricity generation and geothermal drilling						
production		t	31,195	27,471	0.005	0	191
delivery to recovery operators		t	28,058	27,087	0.005	0	50.7
Total	**electricity generation and geothermal drilling**						
production		t	31,195	27,471	37,788	38,152	32,882
delivery to recovery operators		t	28,058	27,087	37,788	38,152	32,742
EN22 Hazardous special waste	electricity generation and geothermal drilling						
production		t	2	0.959	0	0.408	3.57
of which with PCBs		*t*	*2*	*0.959*	*0*	*0.387*	*2.45*
delivery to recovery operators		t	0	0.078	0	0.408	2.55
of which with PCBs		*t*	*0*	*0.009*	*0*	*0.387*	*2.45*
EN22 Total special waste	electricity generation and geothermal drilling						
production		t	31,197	27,472	37,788	38,153	32,886
delivery to recovery operators		t	28,058	27,087	37,788	38,153	32,745

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Resource conservation and quality								
EN1 EN3 Net heat rate of thermal generation (CHP)	kcal/kWh$_{eq.}$	4,327	4,254	4,845	5,093	4,084	-5.6	-19.8
EN8 Net specific requirements of water for industrial uses in thermal generation (CHP)	liters/kWh$_{eq.}$	3.39	3.41	3.08	3.53	3.49	2.9	-1.1
EN8 Coverage of requirements of water for industrial uses								
from aqueducts	% of requirements	100	100	100	100	100	0.0	0.0
EN1 EN3 Fossil fuel consumption for thermal generation								
gas-oil	% of total fuel consumption	100	100	0	0	0	-100.0	0.0
Electricity generation from renewables								
thermal from biomass and biodegradable fraction of waste	% of total generation	100	54.2	95.7	59.4	64.7	-35.3	8.9
hydro from natural flows	% of total generation	0	45.8	0	0	0	0.0	0.0
wind	% of total generation	0	0	4.34	40.6	35.3	0.0	-13.1
Specific emissions into the atmosphere								
EN20 SO_2 (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	0.005	0.005	0.043	0.011	0	-100.0	-100.0
EN20 NO_X (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	0.630	0.081	0.232	0.494	0.346	-45.1	-30.0
EN20 Particulates (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	0.726	0.382	0.140	0.227	0.146	-79.9	-35.7
EN16 CO_2 (thermal generation - CHP)	g/kWh$_{eq.}$ thermal net	1.30	0.930	0	0	0	-100.0	0.0
EN20 SO_2 (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	0.005	0.003	0.042	0.007	0	-100.0	-100.0
EN20 NO_X (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	0.630	0.048	0.223	0.313	0.239	-62.1	-23.6
EN20 Particulates (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	0.726	0.224	0.135	0.144	0.100	-86.2	-30.6
EN16 CO_2 (total from thermal generation - simple and CHP)	g/kWh$_{eq.}$ total net	1.30	0.545	0	0	0	-100.0	0.0
Net specific conventional polluting load of waste waters discharged by plants (CHP)								
COD	mg/kWh$_{eq.}$	49.7	35.1	69.2	2.49	19.7	-60.4	691.2
BOD	mg/kWh$_{eq.}$	19.2	13.6	27.6	6.30	19	-1.0	201.6

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN22 Waste recovery								
Biomass ash	% of production	0	0	100	100	100	0.0	0.0
bottom ash	*% of production*	*0*	*0*	*100*	*100*	*100*	*0.0*	*0.0*
flyash	*% of production*	*0*	*0*	*100*	*100*	*100*	*0.0*	*0.0*
Other non-hazardous special waste								
electricity generation and geothermal drilling	% of production	89.9	98.6	100	0	26.5	-70.5	0.0
Total non-hazardous special waste								
electricity generation and geothermal drilling	% of production	89.9	98.6	100	100	99.6	10.8	-0.4
Other hazardous special waste								
electricity generation and geothermal drilling	% of production	0	8.13	0	100	71.4	0.0	-28.6
Total special waste								
electricity generation and geothermal drilling	% of production	89.9	98.6	100	100	99.6	10.8	-0.4

Highlights of 2010

In Canada, Enel operates through Enel North America (thermal CHP and wind power generation).

EN18 In 2010, CO_2 emissions displaced by carbon-free generation amounted to about 200,000 tonnes (roughly 12% more than in the previous year), of which 130,000 due to combined heat & power generation and 70,000 due to wind power generation. The increase may be ascribed to higher thermal generation from biomass (+32.5 GWh from biomass – 13 GWh from wind energy).

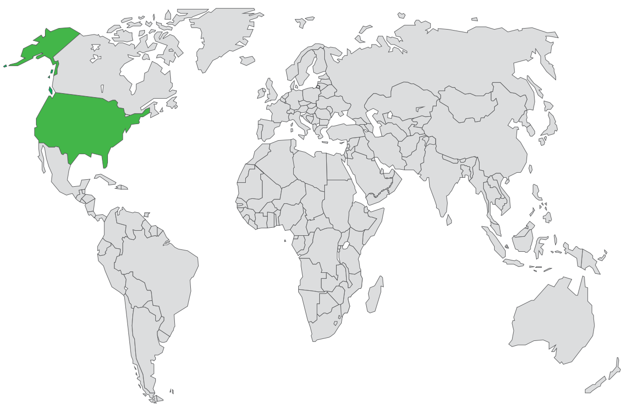
EN20 The erratic trends of total and specific emissions of NO_X and particulates may be attributed to the irregular monitoring of emissions and to the subsequent computation of the annual mass quantities by multiplying the average concentrations by the annual flue-gas volumes. This inevitably involves inaccuracies which are due to fluctuating concentrations associated with the variable generating outputs of the plants.

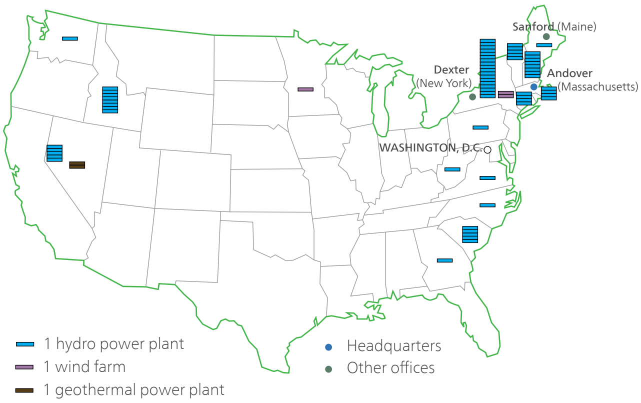
EN22 The recovery of hazardous and non-hazardous waste mounted from about 60 to about 100%, since the fraction of other waste in 2010 consisted entirely of recoverable waste items (iron and aluminum).

United States

Hydro and wind power generation
& geothermal activities

Enel North America Inc.





The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
88	740	2,366

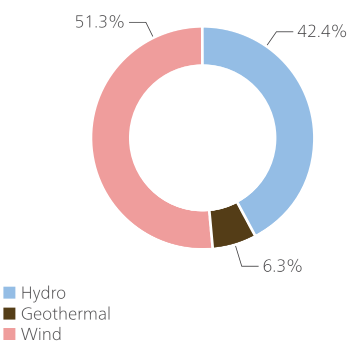
Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	64	75	287
Pondage/reservoir	1	1	27
	65	**76**	**314**

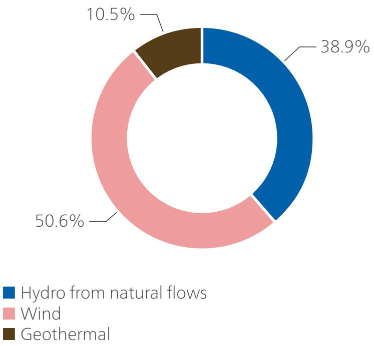
GEOTHERMAL	Power plants no.	Generating units no.	Net maximum electrical capacity MW
Binary cycle	**2**	**6**	**47**

WIND	Power plants no.	Net maximum electrical capacity MW
	21	**379**

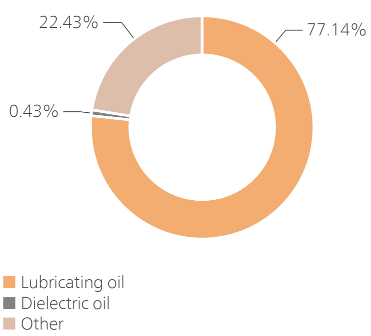
Net maximum electrical capacity
Total: 740 MW



Net electricity generation
Total: 2,366 million kWh



Expendables
Total: 12 t



Equivalent yearly hours of utilization*

5,339 geothermal

2,929 hydro

3,159 wind

* Yearly generation/capacity ratio (excluding hydro from pumped storage).

Avoided CO_2 emissions (t)

Due to hydro generation from natural flows	809,089
Due to geothermal generation	218,469
Due to wind generation	1,054,361
Total	**2,081,918**

Emissions from the otherwise necessary fossil-fired thermal generation.
The contribution of geothermal generation has been calculated on the assumption that the related CO_2 emissions are of natural origin.

Emissions into the atmosphere

SF_6 - all types of generation (kg)	1
(t of CO_2-equivalent)	32

A large debate is under way on the natural or anthropogenic origin of emissions of incondensible gases from geothermal fluid.

Geothermal fluid

Total fluid extracted: **45,473,000 t**

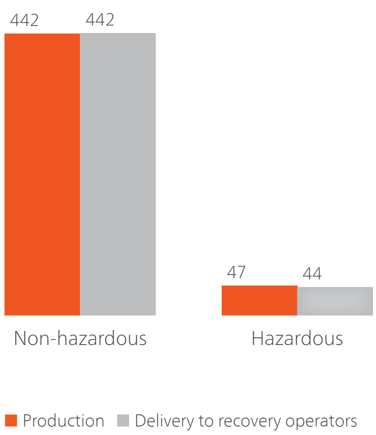
Steam used for electricity generation: **45,473,000 t**

Geothermal fluid may not have or may have lost the thermodynamic properties that make it suitable for geothermal generation. In this case, the fluid is used for supply of heat, especially for greenhousing and district heating.

Special waste

Total production: **490 t**

Total delivery to recovery operators: **487 t**



Other data

Hydro

Emptied reservoirs

Quantity: **1**

Alluvial sediments removed by mechanical equipment : **400 m³**
(of which reused locally: **382 m³**)

Fish ladders : 10

Fish restocking campaigns

Quantity: **19**

Restocked fish:
1,790,331 individuals
in addition to **2,009 kg**

Geothermal activities

In-service wells: 34

for steam production: **17**

for reinjection: **17**

Wind generation

Wind systems

Surface area occupied by platforms, service roads and buildings : **127 ha**

Total surface area affected by the installations:
from 20 to 100 times larger

Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants	no.	67	70	72	88	88
hydro	no.	64	65	65	65	65
geothermal	no.	-	1	1	2	2
wind	no.	3	4	6	21	21
Net maximum electrical capacity	MW	372	443	701	740	740
hydro	MW	305	306	306	314	314
geothermal	MW	-	7	16	46.5	46.5
wind	MW	67	130	379	379	379

Resources

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Various activities	thousand toe	0	0.002	0.015	-	-
	TJ	0	0.084	0.628	-	-
EN1 EN3 **Geothermal fluid**						
Total fluid extracted	thousand t		11,597	9,199	29,597	45,473
Used for electricity generation	thousand t		11,597	9,199	29,597	45,473
EN8 **Water for industrial uses**						
From wells	million m^3		0	0	0.136	0
From aqueducts	million m^3		0	0	0.006	0
Total abstraction from inland waters (for geothermal drilling)	**million m^3**		0	0	**0.142**	0
EN1 **Expendables**						
Sulfuric & hydrochloric acids	t		-	-	22	0
Caustic soda	t		-	-	0.400	0
Bentonite	t		-	-	380	0
Barite	t		-	-	260	0
Geothermal cement	t		-	0	1,230	0
Lubricating oil	t		22.8	9.18	8.01	8.91
Dielectric oil	t		0	2.69	0	0.050
Other	t		0	0.217	0.115	2.59
Total	**t**		**22.8**	**12.1**	**1,901**	**11.6**
for hydro generation	t		9.85	11.1	7.47	10.6
for geothermal activities	t		13	1	1,892	0
for wind generation	t		0	0	0.653	1

-: no data due to absence of activities in the year.

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From renewables	million kWh	1,161	1,046	1,651	2,172	2,366
geothermal	million kWh	0	49.4	36.6	150	248
hydro from natural flows	million kWh	981	810	926	997	919
wind	million kWh	180	187	689	1,025	1,198
Geothermal drilling						
Extent	m	0	0	1,588	12,992	0

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN16 CO_2	various activities	thousand t	0	0.006	0	0	0
EN16 SF_6	electricity generation	kg	0	0	0.005	1.46	1.45
		thousand t of CO_2-equivalent	0	0	0	0.033	0.033
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		thousand t of CO_2-equivalent	0	0.006	0	0.033	0.033
EN18 **Avoided CO_2 emissions**							
Due to hydro generation from natural flows		thousand t	853	704	815	877	809
Due to geothermal generation		thousand t	0	42.9	32.2	132	218
Due to wind generation		thousand t	157	163	606	902	1,054
Due to generation from renewables		thousand t	1,010	910	1,453	1,911	2,082
EN22 **Non-hazardous special waste**							
production	electricity generation & geothermal drilling	t	0	0	3	5.01	442
delivery to recovery operators	electricity generation & geothermal drilling	t	0	0	3	5.01	442
EN22 **Hazardous special waste**	electricity generation & geothermal drilling						
production		t	0	33.9	19.7	17.8	47.4
of which with PCBs		*t*	*0*	*17.9*	*19.1*	*10.7*	*44.1*
delivery to recovery operators		t	0	33.9	12.4	18.2	44.2
of which with PCBs		*t*	*0*	*17.9*	*11.8*	*11.3*	*42.2*
EN22 **Total special waste**	electricity generation & geothermal drilling						
production		t	0	33.9	22.7	22.9	490
delivery to recovery operators		t	0	33.9	15.4	23.2	487

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Resource conservation and quality								
EN1 EN3 Net heat rate of geothermal generation	kcal/kWh	0	39,083	41,313	28,651	25,928	0.0	-9.5
EN8 Coverage of requirements of water for industrial uses								
from wells	% of requirements	0	0	0	95.8	0	0.0	-100.0
from aqueducts	% of requirements	0	0	0	4.23	0	0.0	-100.0
EN1 EN3 Fossil fuel consumption for thermal generation								
geothermal fluid used for electricity generation	% of total geothermal fluid extracted	0	100	100	100	100	0.0	0.0
Electricity generation from renewables								
geothermal	% of total generation	0	4.72	2.21	6.90	10.5	0.0	52.2
hydro from natural flows	% of total generation	84.5	77.4	56.1	45.9	38.9	-54.0	-15.3
wind	% of total generation	15.5	17.9	41.7	47.2	50.6	226.5	7.2
Specific emissions into the atmosphere								
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0	0	0.006	0.298	0.228	0.0	-23.5
EN22 **Waste recovery**								
Other non-hazardous special waste								
electricity generation & geothermal drilling	% of production	0	0	100	100	100	0.0	0.0
Other hazardous special waste								
electricity generation & geothermal drilling	% of production	0	100	63.2	102	93.4	0.0	-8.4
Total special waste								
electricity generation & geothermal drilling	% of production	0	100	68.1	102	99.3	0.0	-2.6

Highlights of 2010

Total generation from renewables rose by about 9% on 2009 thanks to a higher contribution of geothermal and wind power generation.

EN2 EN8 The lack of data on the consumption of some materials and water in 2010 vs. 2009 is due to the fact that no geothermal drilling activities were carried out in the course of 2010.

EN5 The heat rate of geothermal plants continued to have an upward trend – from 28,651 kcal/kWh in 2009 to 25,929 in 2010 (~-9%) – thanks to the commissioning of two new, more efficient low-enthalpy plants in 2009.

EN5 EN6 EN18 Enel North America and NRG Energy reached an agreement enabling the US subsidiary of Enel Green Power to acquire Padoma Wind Power. This company, specializing in wind power facilities, is headquartered in La Jolla (California), where it is developing about 4,000 MW of projects. The completion of these projects will help achieve the 33% target of sale of renewable power to final customers by 2020, as established in the State of California's Renewables Portfolio Standard.
The Gauley river hydroelectric project (Summersville, West Virginia, US) recently won an award for its environmental conservation measures at the 10th edition of the Environmental Awards of the West Virginia Department of Environmental Protection; the ceremony was held in Charleston, the State's capital.

EN5 EN6 EN18 Enel Green Power and TradeWind are building a 200-MW wind farm over a surface of about 5,600 ha in the central-western area of Elk County (Kansas), about 160 km south-east of Wichita. The plant is scheduled to go into service by the end of 2011.

EN18 In 2010, CO_2 emissions displaced by carbon-free generation amounted to roughly 2.1 million tonnes (about 9% more than in 2009). The increase is due to higher geothermal and wind power generation.

EN22 The recovery of waste continued to be high (nearly 100%). The increase in production and recovery of non-hazardous waste is due to materials removed from hydro power plant trashracks. These materials, mostly of organic origin, are removed on a regular basis.

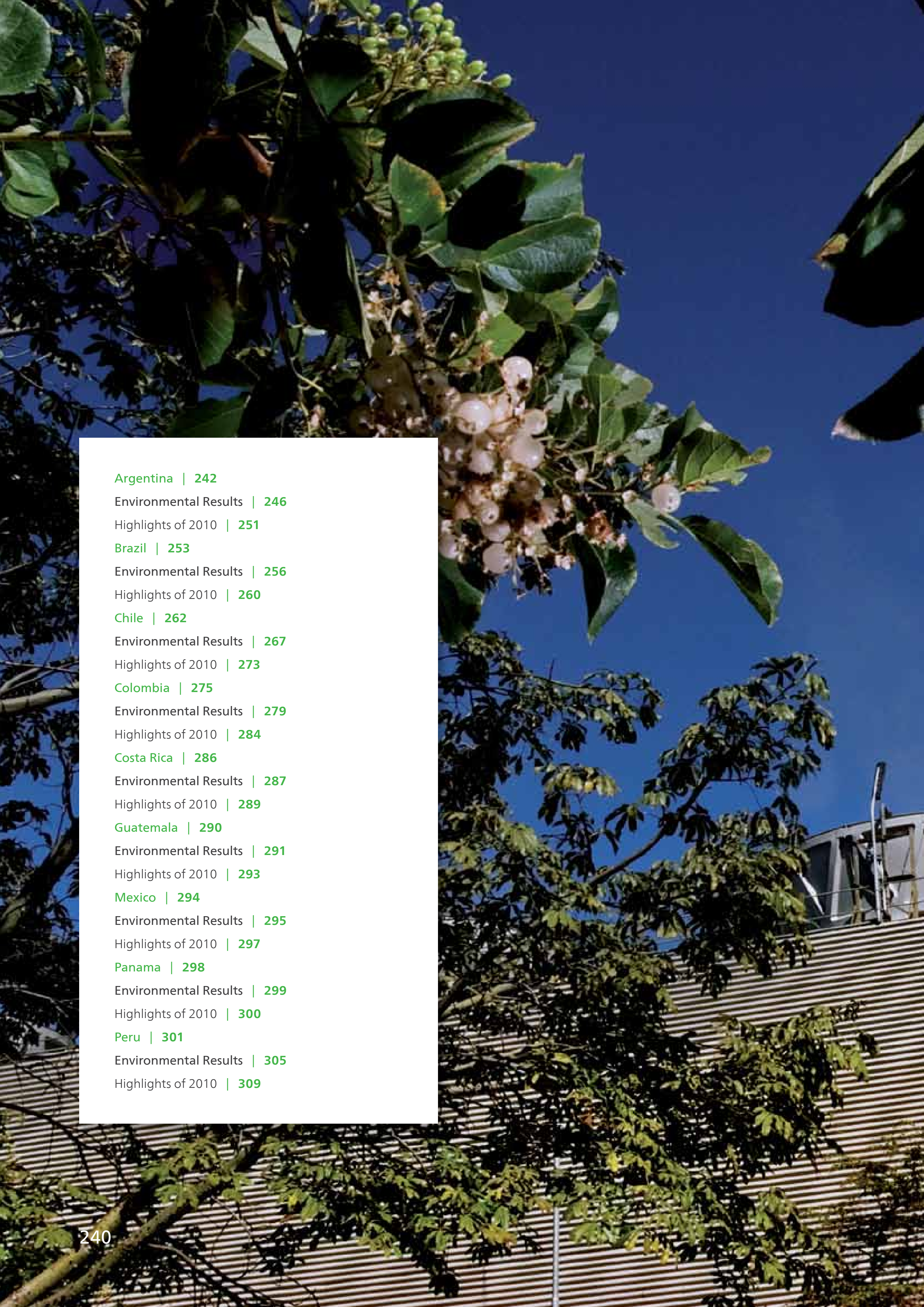
EN26 Environmental enhancements.

Noise

> Geothermal plant of Stillwater (Nevada): some silencers were mounted on 4 discharge outlets to abate noise and related immissions.

Other

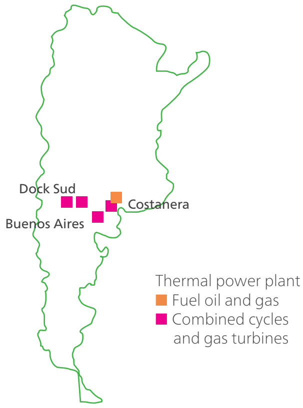
> Voluntary auditing to verify compliance with the applicable legislation under a three-year agreement with the US Environmental Protection Agency.
> Barber's dam, Idaho: construction of an earth embankment to protect the property from potential floods.



Latin America

Argentina

Thermal power generation Endesa SA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
5	3,075	13,016

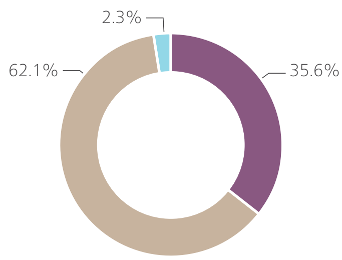
Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Steam (condensing)	1	6	1,096
Repowered with gas turbines	3	7	1,910
Gas turbines	1	2	69
	5	**15**	**3,075**

All the power plants are ISO 14001-certified.

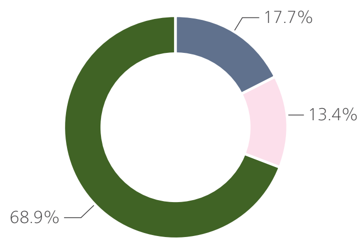
Net electricity generation
Total: 13,016 million kWh

Net maximum electrical capacity
Total: 3,075 MW



Steam (condensing)
Combined-cycle gas turbines
Gas turbines

Fuel consumption
Total: 2,587,891 t of oil-equivalent



Fuel oil
Gas-oil
Natural gas

Water for industrial uses

2,826,406 m^3

Abstraction from inland waters

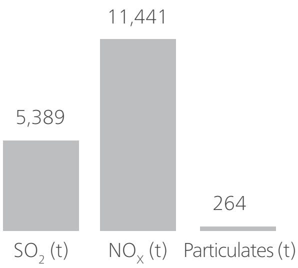
Waste waters

1,087,446 m^3

Discharged

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

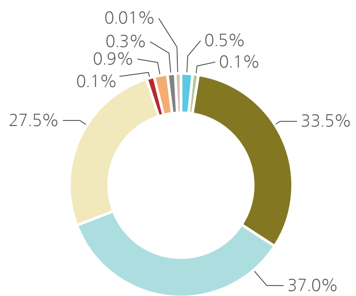
Emissions into the atmosphere



CO_2: **6,590,443 t**

Expendables

Total: 5,447 t



- Resins, hydrazine, carbohydrazide & hydrogen peroxide
- Ammonia
- Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride and trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride and polyelectrolyte
- Lubricating oil
- Dielectric oil
- Other

Special waste

Total production: **1,875 t**

Total delivery to recovery operators: **45.3 t**

Non-hazardous

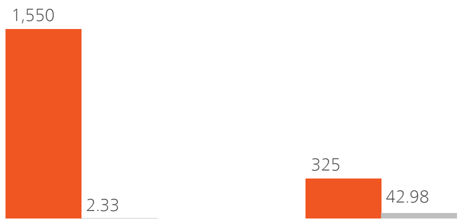
Production: 1,550 t

Delivery to recovery operators: 2.33 t

Hazardous

Production: 325 t

Delivery to recovery operators: 42.98 t

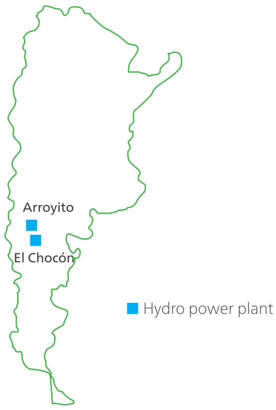


Production Delivery to recovery operators

Argentina

Hydro power generation

Endesa SA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
2	1,328	2,975

Power installations

	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Pondage/reservoir	**2**	**9**	**1,328**

Both plants are ISO 14001-certified.

Net maximum electrical capacity
Total: 1,328 MW

Net electricity generation
Total: 2,975 million kWh

Avoided CO_2 emissions

Due to hydro generation from natural flows: **1,506,533 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Equivalent yearly hours of utilizzation*

Hydro: **2,240 hours**

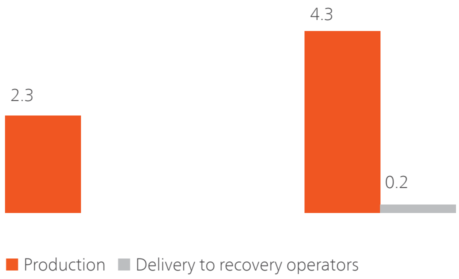
* Yearly generation/capacity ratio. For Endesa generation is considered to refer to the entire year.

Special waste

Total production: **6.6 t**
Total delivery to recovery operators: **0.2 t**

Non-hazardous
Production: 2.3 t
Delivery to recovery operators: 0 t

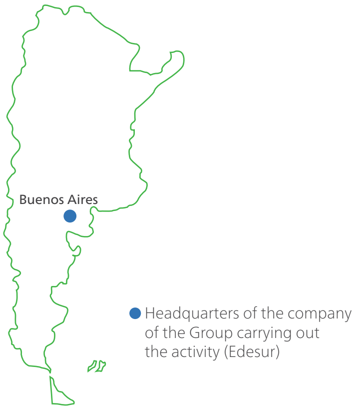
Hazardous
Production: 4.3 t
Delivery to recovery operators: 0.2 t



Argentina

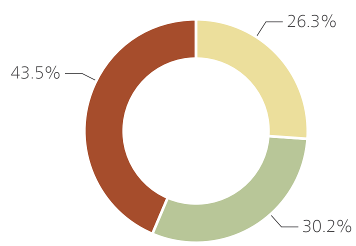
Electricity distribution

Endesa SA



The Numbers

Substations	Capacity (MVA)	Total lines (km)
23,756	16,989	24,417



Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	173	11,481
MV/LV	23,583	5,508
	23,756	**16,989**

LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	Total
HV	546	-	616	**1,162**
MV	3,195	123	4,000	**7,318**
LV	2,676	7,244	6,017	**15,937**
	6,417	**7,367**	**10,633**	**24,417**

The organization has an ISO 14001-certified environmental management system in place.

General data

Municipalities served (no.): **13**
Surface area served: **3,309 km²**
Customers connected to the grid: **2,352,720**
(of which supplied: **2,352,085**)

Resource consumption

Expendables: **3 t**

Special waste

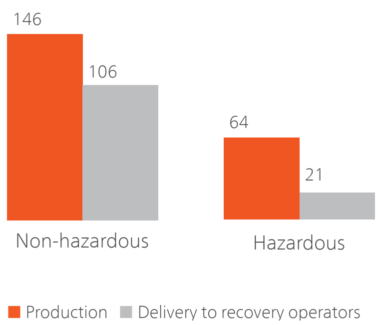
Total production: **210 t**
Total delivery to recovery operators: **127 t**

Electricity

Total electricity distributed:
16,759 million kWh
Own consumption for grid operation:
26 million kWh

Emissions into the atmosphere

SF_6: **46 kg (1,010 t of CO_2-equivalent)**



Environmental Results

Status data

		2007	2008	2009	**2010**
Power installations					
Power plants	no.	8	8	7	7
thermal	no.	6	6	5	5
hydro	no.	2	2	2	2
Net maximum electrical capacity	MW	3,026	3,032	4,403	4,403
thermal	MW	2,141	2,141	3,075	3,075
hydro	MW	885	890	1,328	1,328
Power lines (circuit-length)					
Total	km	15,867	16,124	24,256	24,417
high-voltage	km	795	779	1,162	1,162
medium-voltage	km	4,587	4,774	7,223	7,318
low-voltage	km	10,486	10,570	15,871	15,937

Resources

		2007	2008	2009	**2010**
EN1 EN3 **Fossil fuels**					
Thermal generation					
fuel oil (LS)	thousand t	79.4	287	333	466
	thousand toe	76.2	284	328	458
gas-oil	thousand t	47.3	169	131	339
	thousand toe	47.9	174	133	346
natural gas	million m^3	354	1,391	2,208	2,044
	thousand toe	330	1,165	1,851	1,783
technologically captive use	*million m^3*	*292*	*1,120*	*1,771*	*1,696*
	thousand toe	*272*	*938*	*1,486*	*1,492*
of which in combined-cycle units	million m^3	291	1,093	1,753	1,696
	thousand toe	271	915	1,470	1,492
non-technologically captive use	*million m^3*	*62.4*	*271*	*437*	*348*
	thousand toe	*58.1*	*227*	*366*	*291*
Total	thousand toe	454	1,623	2,313	2,588
	TJ	19,007	67,961	96,834	108,350
Various activities	thousand toe	0.072	0	0	0
Grand total	**thousand toe**	**454**	**1,623**	**2,313**	**2,588**
	TJ	**19,010**	**67,961**	**96,834**	**108,350**
EN8 **Water for industrial uses**					
From rivers (including meteoric waters from secondary rainfall)	million m^3	0.304	0	0	0
From aqueducts	million m^3	0.024	1.57	2.68	2.83
Total abstraction from inland waters	**million m^3**	**0.328**	**1.57**	**2.68**	**2.83**
for thermal generation	million m^3	0.328	1.57	2.68	2.83

		2007	2008	2009	2010
EN8 EN21 **Open-cycle cooling water**					
For thermal generation	million m^3	292	1,368	1,348	1,519
EN1 **Expendables**					
Resins	t	0	6.66	7.50	11.8
Hydrazine	t	0	12.4	13.4	16
Carbohydrazide	t	0	0.229	0	0
Ammonia	t	0	0.786	4.18	5.71
Sodium hypochlorite	t	0	1,652	2,781	1,823
Trisodium phosphate	t	0	1.67	3.50	2.57
Ferric chloride	t	0	2.29	2.54	4.04
Sulfuric & hydrochloric acids	t	0	1,202	1,886	2,015
Caustic soda	t	0	991	1,428	1,500
Lubricating oil	t	0.369	50.9	50.2	51.6
Dielectric oil	t	3.20	211	14.3	19.6
Other	t	0	1.48	0.520	0.418
Total	**t**	**3.57**	**4,132**	**6,191**	**5,450**
for thermal generation	t	0	4,129	6,187	5,447
for hydro generation	t	0.325	1.45	0.818	0
for electricity distribution	t	3.24	1.61	3	2.50
EN1 **PCB survey**					
Oil with PCBs > 500 ppm contained in equipment & transformers	t	0	0	0	31.5

Processes and products

		2007	2008	2009	2010
Electricity generation (net)					
From fossil fuels (simple)	**million kWh**	**2,165**	**8,321**	**12,024**	**13,016**
fuel oil and gas-oil	million kWh	1,138	2,047	1,926	3,558
natural gas	million kWh	1,027	6,275	10,098	9,458
of which in combined-cycle units	*million kWh*	*828*	*5,378*	*8,695*	*8,468*
From renewables (hydro from natural flows)	**million kWh**	**620**	**1,300**	**3,782**	**2,975**
Total	**million kWh**	**2,785**	**9,622**	**15,806**	**15,991**
Electricity distribution					
Electricity distributed	million kWh	2,658	12,125	17,899	16,759
EN4 Electricity consumption for grid operation	million kWh	3.69	14.1	24.4	26.4

Emissions

	Source		2007	2008	2009	2010
Emissions into the atmosphere						
EN20 SO_2	thermal generation	thousand t	0.884	3.84	3.72	5.39
EN20 NO_X	thermal generation	thousand t	0.943	5.30	7.16	11.4
EN20 Particulates	thermal generation	thousand t	0.091	0.231	0.161	0.264
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	1,116	4,185	5,817	6,590
	various activities	thousand t	0.219	0	0	0
	Total	**thousand t**	**1,116**	**4,185**	**5,817**	**6,590**
EN16 SF_6	electricity distribution	kg	3.16	15.4	117	45.5
		thousand t of CO_2-equivalent	0.072	0.352	2.67	1.04
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		thousand t of CO_2-equivalent	**1,116**	**4,186**	**5,820**	**6,591**
EN18 **Avoided CO_2 emissions**						
Due to hydro generation from natural flows		thousand t	319	1,308	1,830	1,507
EN21 **Waste waters (discharged quantity)**	thermal generation	million m^3	0	0.537	0.923	1.09
EN21 **Conventional polluting load of waste waters discharged by installations**						
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	0	0	169	229
	in some plants with an overall capacity of	MW	0	0	870	870
Total nitrogen (expressed as N)	thermal generation	kg	0	0	536	726
	in some plants with an overall capacity of	MW	0	0	870	870
Total phosphorus (expressed as P)	thermal generation	kg	0	0	117	118
	in some plants with an overall capacity of	MW	0	0	870	870
COD	thermal generation	kg	0	0	9,000	44,550
	in some plants with an overall capacity of	MW	0	0	870	3,194
BOD	thermal generation	kg	0	0	1,815	2,457
	in some plants with an overall capacity of	MW	0	0	870	870
EN22 **Non-hazardous special waste**						
production	electricity generation	t	146	670	834	1,552
	electricity distribution	t	78.1	1,401	213	146
	Total	**t**	**224**	**2,071**	**1,048**	**1,699**
delivery to recovery operators	electricity generation	t	0	1.12	2.15	2.33
	electricity distribution	t	44.8	763	103	106
	Total	**t**	**44.8**	**764**	**105**	**109**

	Source		2007	2008	2009	2010
EN22 Hazardous special waste						
production	electricity generation	t	170	679	300	329
	electricity distribution	t	14.1	537	220	63.6
	Total	**t**	**184**	**1,216**	**520**	**393**
of which with PCBs	*electricity generation*	*t*	*0*	*35.9*	*49.6*	*62*
	electricity distribution	*t*	*0*	*316*	*194*	*56.4*
	Total	***t***	***0***	***352***	***243***	***118***
delivery to recovery operators	electricity generation	t	0	36.2	43.6	43.2
	electricity distribution	t	0	128	75	20.7
	Total	**t**	**0**	**164**	**119**	**63.9**
of which with PCBs	*electricity generation*	*t*	*0*	*35.9*	*43.4*	*43*
	electricity distribution	*t*	*0*	*125*	*73*	*20.7*
	Total	***t***	***0***	***161***	***116***	***63.7***
EN22 Total special waste						
production	electricity generation	t	316	1,349	1,135	1,882
	electricity distribution	t	92.2	1,938	433	210
	Total	**t**	**408**	**3,287**	**1,568**	**2,091**
delivery to recovery operators	electricity generation	t	0	37.3	45.8	45.5
	electricity distribution	t	44.8	891	178	127
	Total	**t**	**44.8**	**928**	**224**	**172**

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
EN29 Land						
LV cable lines						
overhead	% of entire LV grid	45.1	44.9	45.5	45.5	0.0
underground	% of entire LV grid	37.5	37.6	37.6	37.8	0.5
Total	**% of entire LV grid**	**82.7**	**82.5**	**83.2**	**83.2**	**0.0**
MV cable lines						
overhead	% of entire MV grid	0.687	1.37	1.69	1.68	-0.6
underground	% of entire MV grid	54.7	54.2	54.5	54.7	0.4
Total	**% of entire MV grid**	**55.4**	**55.6**	**56.2**	**56.3**	**0.2**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	73.3	73.1	73.7	73.7	0.0
Resource conservation and quality						
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	2,097	1,951	1,924	1,988	3.3
EN4 Consumption of electricity for distribution-grid operation	% of electricity distributed	0.139	0.117	0.136	0.157	15.4
EN8 Net specific requirements of water for industrial uses in thermal generation						
including contribution of as-is sea water	liters/kWh	0.151	0.189	0.223	0.217	-2.7
excluding contribution of as-is sea water	liters/kWh	0.151	0.189	0.223	0.217	-2.7

		2007	2008	2009	2010	% ('10-'09)/'09
EN8 Coverage of requirements of water for industrial uses						
from rivers (including meteoric waters from secondary rainfall)	% of requirements	92.7	0	0	0	0.0
from aqueducts	% of requirements	7.32	100	100	100	0.0
Total from inland waters	**% of requirements**	**100**	**100**	**100**	**100**	**0.0**
EN1 EN3 **Fossil fuel consumption for thermal generation**						
fuel oil	% of total fuel consumption	16.8	17.5	14.2	17.7	24.6
gas-oil	% of total fuel consumption	10.6	10.7	5.77	13.4	132.2
natural gas	% of total fuel consumption	72.7	71.8	80	68.9	-13.9
LS fuel oil	% of total fuel-oil consumption	100	100	100	100	0.0
natural gas, technologically captive use	% of total natural-gas consumption	82.4	80.5	80.2	83.7	4.4
of which in combined-cycle units	*% of total natural-gas consumption*	*82*	*78.6*	*79.4*	*83.7*	*5.4*
natural gas, non-technologically captive use	% of total natural-gas consumption	17.6	19.5	19.8	16.3	-17.7
Electricity generation from renewables						
hydro from natural flows	% of total generation	22.2	13.5	23.9	18.6	-22.2
Specific emissions into the atmosphere						
EN20 SO_2 (thermal generation)	g/kWh thermal net	0.408	0.462	0.309	0.414	34.0
EN20 NO_X (thermal generation)	g/kWh thermal net	0.436	0.636	0.596	0.879	47.5
EN20 Particulates (thermal generation)	g/kWh thermal net	0.042	0.028	0.013	0.020	53.8
EN16 CO_2 (thermal generation)	g/kWh thermal net	515	503	484	506	4.5
EN20 SO_2 (total from thermal generation)	g/kWh total net	0.317	0.399	0.235	0.337	43.4
EN20 NO_X (total from thermal generation)	g/kWh total net	0.339	0.550	0.453	0.715	57.8
EN20 Particulates (total from thermal generation)	g/kWh total net	0.033	0.024	0.010	0.017	70.0
EN16 CO_2 (total from thermal generation)	g/kWh total net	401	435	368	412	12.0
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0.056	0.200	0.729	0.344	-52.8
EN22 **Waste recovery**						
Other non-hazardous special waste						
electricity generation	% of production	0	0.167	0.257	0.150	-41.6
electricity distribution	% of production	57.3	54.5	48.3	72.6	50.3
Total	**% of production**	**20**	**36.9**	**10**	**6.39**	**-36.1**
Other hazardous special waste						
electricity generation	% of production	0	5.33	14.5	13.1	-9.7
electricity distribution	% of production	0	23.8	34.1	32.6	-4.4
Total	**% of production**	**0**	**13.5**	**22.8**	**16.3**	**-28.5**
Total special waste						
electricity generation	% of production	0	2.77	4.03	2.42	-40.0
electricity distribution	% of production	48.5	46	41.1	60.5	47.2
Total	**% of production**	**11**	**28.2**	**14.3**	**8.25**	**-42.3**

Highlights of 2010

In Argentina, Enel operates through Endesa (thermal and hydro power generation, electricity distribution and sales).

EN1 EN3 The fuel mix changed again in favor of oil (~+3.5 percentage points) and gas-oil (~+7.5 percentage points) and to the expense of natural gas (~-11 percentage points) owing to problems of procurement of the latter fuel. The contribution of renewables to total generation in 2010 fell from 24% to 19%.

EN5 Plant efficiency improvements.

Thermal generation

> In combined-cycle gas-turbine plants, clean-up of compressors and reheat of exhaust gases from the gas turbines.

EN8 Net specific requirements of water for industrial uses in thermal generation were down by about 3%.

Owing to the change in the fuel mix:

EN16 total net specific emissions of CO_2 (i.e. vs. total electricity generation) were up by 44 g/kWh (+12%);

EN20 net specific emissions of macro-pollutants from simple thermal generation alone were equal to ~34% (SO_2), ~48% (NO_X) and ~54% (particulates).

EN18 CO_2 emissions displaced by hydro generation amounted to roughly 1.5 million tonnes (about 18% less than in the previous year) owing to lower generation from renewables.

EN19 Ozone-depleting substances.

Freon
Quantity: **na**
Emissions: **472 kg**
It is contained in the air conditioning and heating systems of the Edesur distribution company.

Halon1301
Quantity: **816 kg**
Emissions: **0**
It is contained in the firefighting sprinkler systems of the Arroyito plant and in the control panel of the same plant. This gas (withdrawn from the market) will be progressively replaced.

EN23 Spills

Argentina	*Description of the spill*	*Impact and mitigation*
Thermal plant of Costanera Amount: 0.1 m^3	Spill of mineral oil after rainfall. The spill was due to the breakage of the system for automatic switching-off of water discharge from the hydrocarbon-separation tank (fuel-oil tank no. 2 containment basin).	No impact. To avoid recurrence of the event, the existing pumps were replaced with other pumps of higher capacity and a new pipe was installed to transfer the waste from the separation tank to two other separation tanks placed in series (with a capacity of about 90 m^3), thus minimizing the risk of accidental hydrocarbon spills.

EN26 Environmental enhancements.

Emissions

> CBA plant: to curb emissions of particulates and NO_X, particular emphasis is placed on better control of operating parameters and more frequent maintenance of burners. To abate NO_X, a system injecting water into combustion chambers was developed. Civil works are under way in preparation of the new system which will produce demineralized water for injection.

Release

> CBA and Costanera plants: construction of a sewage and pumping system to collect waters susceptible to pollution and treat them.

PCBs

> Edesur: remediation and recovery of 1,500 liters of PCB-containing oil.

Asbestos

> Costanera plant: remediation (planned from 2011 to 2013) and replacement with allowed materials.

Noise

> Costanera plant: revamping of units 1, 2, 3, 4, 6 and 7 covering a three-year period; the project also involves the mounting of silencers on generating units.

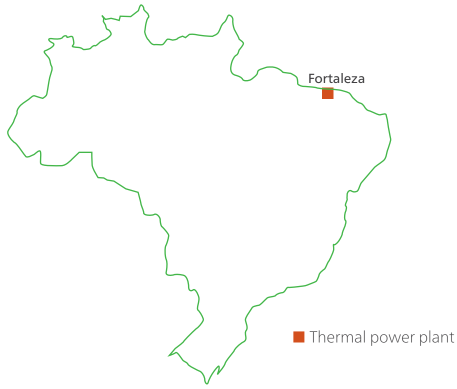
Efficiency

> Costanera plant: control of efficiency by detecting deviations from operating parameters and monitoring heat exchange effectiveness, fuel consumption and greenhouse-gas emission trends.

Brazil

Thermal power generation

Endesa SA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
1	307	1,665

Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Repowered with gas turbines	**1**	**3**	**307**

The Fortaleza power plant has an ISO 14001-certified environmental management system.

Net electricity generation

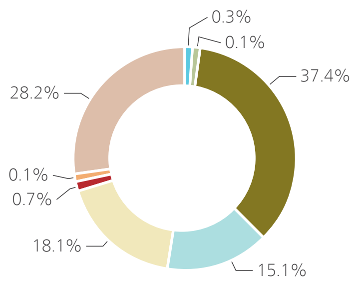
Total: 1,665 million kWh

Fuel consumption

Total: 293,296 t of oil-equivalent

Expendables

Total: 141 t



- Resins, hydrazine, carbohydrazide & hydrogen peroxide
- Ammonia
- Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride and trisodium phosphate
- Sulfuric & hydrochloric acids
- Caustic soda
- Lime, ferric chloride and polyelectrolyte
- Lubricating oil
- Other

Emissions into the atmosphere

NO_X: **190 t**

CO_2: **563,058 t**

Water for industrial uses

Total requirements: 2,211,345 m³

Total abstraction from inland waters: 2,211,345 m³

Waste waters

Discharged: 414,890 m³

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Special waste

Total production: **551 t**

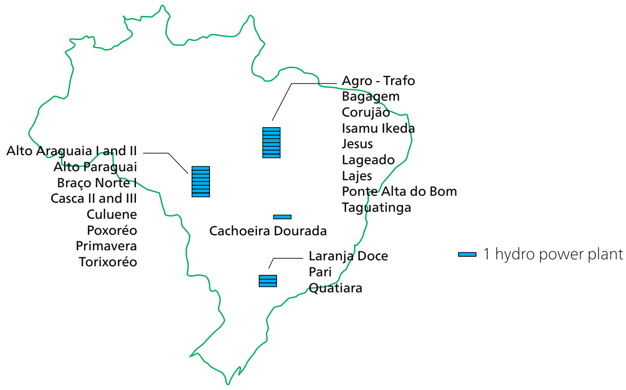
Non-hazardous
Production: 543 t

Hazardous
Production: 8 t

Brazil

Hydro power generation

Endesa SA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
21	743	3,950

Power installations

	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	**21**	**30**	**743**

The hydro power plant of Cachoeira Dourada is ISO 14001-certified.

Equivalent yearly hours of utilization*

Hydro: **5,315 hours**

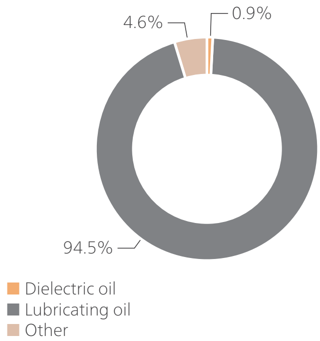
* Yearly generation/capacity ratio. Endesa's generation is considered to refer to the entire year.

Gas-oil

Total consumption: **2 toe**

Expendables

Total: 22 t



Avoided CO_2 emissions

Due to hydro generation from natural flows: **1,335,704 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

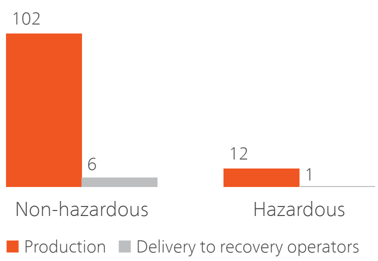
Emissions into the atmosphere

SF_6: **6 kg (133 t of CO_2-equivalent)**
CO_2: **7 t**

CO_2 emissions from gas-oil combustion.

Special waste

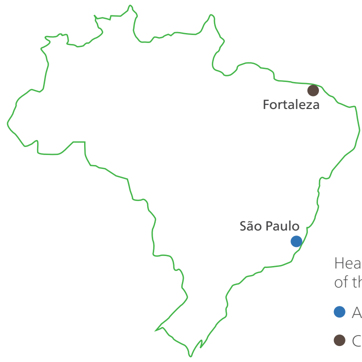
Total production: **114 t**
Total delivery to recovery operators: **7 t**



Brazil

Electricity distribution

Endesa SA

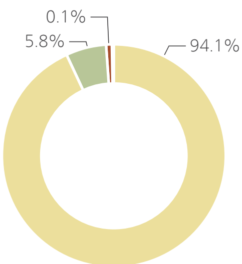


Headquarters of the companies of the Group which carry out the activity

- Ampla
- Coelce

The Numbers

Substations	Capacity (MVA)	Total lines (km)
120,959	8,958	180,388



Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	214	6,180
MV/LV	120,745	2,778
	120,959	**8,958**

LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	Total
HV	8,068	-	53	**8,120**
MV	108,716	1,033	61	**109,810**
LV	52,936	9,492	30	**62,458**
	169,720	**10,525**	**144**	**180,388**

The organization has an ISO 14001-certified environmental management system in place.

General data

Municipalities served (no.): **250**

Surface area served: **181,014 km²**

Customers connected to the grid: **5,665,195** (of which supplied: **5,665,195**)

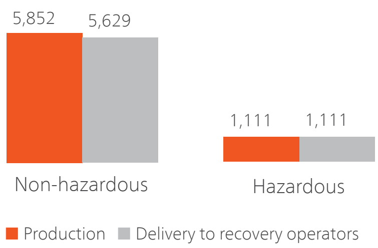
Resource consumption

Expendables: **526 t**

Special waste

Total production: **6,964 t**

Total delivery to recovery operators: **6,741 t**



Electricity

Total electricity distributed: **18,777 million kWh**

Own consumption for grid operation: **35 million kWh**

Emissions into the atmosphere

SF_6: **98 kg** (2,165 t of CO_2-equivalent)

CO_2: **6 t**

Total greenhouse gases: **2,171 t of CO_2-equivalent**

Environmental Results

Status data

		2007	2008	2009	**2010**
Power-generating installations					
Power plants	no.	22	22	22	22
thermal	no.	1	1	1	1
hydro	no.	21	21	21	21
Net maximum electrical capacity	MW	751	754	1,064	1,050
thermal	MW	216	216	313	307
hydro	MW	535	539	752	743
Power lines (circuit-length)					
Total	km	111,137	111,137	176,404	180,389
high-voltage	km	4,410	4,410	8,081	8,120
medium-voltage	km	67,032	67,032	106,881	109,810
low-voltage	km	39,695	39,695	61,443	62,458

Resources

		2007	2008	2009	**2010**
EN1 EN3 **Fossil fuels**					
Thermal generation					
gas-oil	thousand t	0	0.001	0.001	0
	thousand toe	0	0	0.001	0
natural gas	million m^3	0.513	11.7	108	344
	thousand toe	0.478	10.1	91.1	293
technologically captive use	*million m^3*	*0.513*	*11.7*	*108*	*344*
	thousand toe	*0.478*	*10.1*	*91.1*	*293*
of which in combined-cycle units	million m^3	0.513	11.7	108	344
	thousand toe	0.478	10.1	91.1	293
Total	thousand toe	0.478	10.1	91.1	293
	TJ	20	422	3,814	12,280
Various activities	thousand toe	0.357	0.001	0.001	0.002
Grand total	**thousand toe**	**0.835**	**10.1**	**91.1**	**293**
	TJ	**35**	**422**	**3,814**	**12,280**
EN8 **Water for industrial uses**					
From rivers (including meteoric waters from secondary rainfall)	million m^3	0.003	0.138	0.665	2.21
for thermal generation	million m^3	0.003	0.138	0.665	2.21
EN8 EN21 **Open-cycle cooling water**					
For thermal generation (simple and CHP)	million m^3	0	122	0	0

		2007	2008	2009	2010
EN1 Expendables					
Resins	t	0	0	3.80	0
Hydrazine	t	0	0	0.232	0.237
Carbohydrazide	t	0	0	0.050	0.237
Ammonia	t	0	0	0.170	0.172
Sodium hypochlorite	t	0	27.5	16.1	40.8
Ferrous sulfate	t	0	0	0	11.2
Trisodium phosphate	t	0	0.050	0.292	0.547
Polyelectrolyte	t	0	0.166	0.260	1.01
Sulfuric & hydrochloric acids	t	0	23.6	17	21.5
Caustic soda	t	0	20.3	23.3	25.6
Lubricating oil	t	11.4	42.6	20.8	20.5
Dielectric oil	t	22.9	89.4	217	526
Other	t	0	3.16	2	41
Total	**t**	**34.3**	**207**	**301**	**689**
for thermal generation	t	0	72.1	61.5	141
for hydro generation	t	21.4	26.6	24	21.6
for electricity distribution	t	12.9	108	216	526
EN1 PCB survey					
Equipment & transformers with PCBs > 50 ppm and ≤ 500 ppm (excluding their oil)	t	0	0	0	48.5
Oil with PCBs > 50 ppm and ≤ 500 ppm contained in equipment & transformers	t	0	0	0	7.16

Processes and products

		2007	2008	2009	2010
Electricity generation (net)					
From fossil fuels (simple)	**million kWh**	**2.40**	**54.3**	**500**	**1,665**
fuel oil and gas-oil	million kWh	0	0	0.002	0
natural gas	million kWh	2.40	54.3	500	1,665
of which in combined-cycle units	*million kWh*	*2.40*	*54.3*	*500*	*1,665*
From renewables (hydro from natural flows)	**million kWh**	**1,128**	**2,726**	**3,369**	**3,950**
Total	**million kWh**	**1,131**	**2,781**	**3,869**	**5,615**
Electricity distribution					
Electricity distributed	million kWh	3,000	13,413	17,254	18,777
EN4 Electricity consumption for grid operation	million kWh	3.19	0	11	34.6

Emissions

	Source		2007	2008	2009	2010
Emissions into the atmosphere						
EN20 NO_X	thermal generation	thousand t	0	0.011	0.192	0.190
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	0.986	18.9	177	563
	various activities	thousand t	1.09	0.763	0	0.013
	Total	thousand t	2.08	19.6	177	563
EN16 SF_6	electricity generation	kg	0	0	4	6
		thousand t of CO_2-equivalent	0	0	0.091	0.137
	electricity distribution	kg	21.8	60.9	94.8	97.5
		thousand t of CO_2-equivalent	0.497	1.39	2.16	2.22
	Total	kg	21.8	60.9	98.8	104
		thousand t of CO_2-equivalent	0.497	1.39	2.25	2.36
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		thousand t of CO_2-equivalent	2.57	21	179	565
EN18 Avoided CO_2 emissions						
Due to hydro generation from natural flows		thousand t	463	947	1,193	1,336
EN21 Waste waters (discharged quantity)	thermal generation	million m³	0	0.053	0.175	0.415
EN21 Conventional polluting load of waste waters discharged by installations						
Total nitrogen (expressed as N)	thermal generation	kg	0	0	75.3	373
	in some plants with an overall capacity of	MW	0	0	322	322
COD	thermal generation	kg	0	0	68.8	43,763
	in some plants with an overall capacity of	MW	0	0	322	322
BOD	thermal generation	kg	0	0	55.3	24,230
	in some plants with an overall capacity of	MW	0	0	322	322
EN22 Non-hazardous special waste						
production	electricity generation	t	149	153	196	645
	electricity distribution	t	896	431	2,052	5,852
	Total	**t**	**1,046**	**584**	**2,248**	**6,497**
delivery to recovery operators	electricity generation	t	7.65	6.47	114	6.32
	electricity distribution	t	0	318	2,700	5,629
	Total	**t**	**7.65**	**325**	**2,814**	**5,636**
EN22 Hazardous special waste						
production	electricity generation	t	9.26	33.3	9.21	20.5
	electricity distribution	t	54.1	173	619	1,111
	Total	**t**	**63.3**	**207**	**629**	**1,132**
of which with PCBs	*electricity generation*	*t*	*0*	*6.16*	*6.35*	*1.08*
	electricity distribution	*t*	*18.8*	*82.2*	*204*	*364*
	Total	***t***	***18.8***	***88.4***	***210***	***365***
delivery to recovery operators	electricity generation	t	4.10	17.2	11.3	0.430
	electricity distribution	t	18.8	82.2	143	1,111
	Total	t	22.9	99.4	155	1,112
of which with PCBs	*electricity generation*	*t*	*0*	*6.16*	*2.92*	*0*
	electricity distribution	*t*	*18.8*	*82.2*	*3.86*	*364*
	Total	***t***	***18.8***	***88.4***	***6.78***	***364***
EN22 Total special waste						
production	electricity generation	t	159	187	205	665
	electricity distribution	t	951	604	2,671	6,964
	Total	**t**	**1,109**	**790**	**2,877**	**7,629**
delivery to recovery operators	electricity generation	t	11.8	23.7	125	6.75
	electricity distribution	t	18.8	400	2,844	6,741
	Total	**t**	**30.5**	**424**	**2,969**	**6,747**

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
EN29 Land						
LV cable lines						
overhead	% of entire LV grid	15.1	15.1	15.3	15.2	-0.7
underground	% of entire LV grid	0.043	0.043	0.093	0.049	-47.3
Total	**% of entire LV grid**	**15.2**	**15.2**	**15.4**	**15.2**	**-1.3**
MV cable lines						
overhead	% of entire MV grid	0.965	0.965	0.951	0.941	-1.1
underground	% of entire MV grid	0.052	0.052	0.055	0.056	1.8
Total	**% of entire MV grid**	**1.02**	**1.02**	**1.01**	**0.997**	**-1.3**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	6.04	6.04	6	5.91	-1.5
Resource conservation and quality						
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	1,988	1,855	1,823	1,762	-3.3
EN4 Consumption of electricity for distribution-grid operation	% of electricity distributed	0.106	0	0.064	0.184	187.5
EN8 Net specific requirements of water for industrial uses in thermal generation						
including contribution of as-is sea water	liters/kWh	1.25	2.54	1.33	1.33	0.0
excluding contribution of as-is sea water	liters/kWh	1.25	2.54	1.33	1.33	0.0
EN8 Coverage of requirements of water for industrial uses						
from rivers (including meteoric waters from secondary rainfall)	% of requirements	100	100	100	100	0.0
EN1 EN3 Fossil fuel consumption for thermal generation						
gas-oil	% of total fuel consumption	0	0	0.001	0	-100.0
natural gas	% of total fuel consumption	100	100	100	100	0.0
natural gas, technologically captive use	% of total natural-gas consumption	100	100	100	100	0.0
of which in combined-cycle units	*% of total natural-gas consumption*	*100*	*100*	*100*	*100*	*0.0*
Electricity generation from renewables						
hydro from natural flows	% of total generation	99.8	98	87.1	70.3	-19.3
Specific emissions into the atmosphere						
EN20 NO_X (thermal generation)	g/kWh thermal net	0	0.203	0.384	0.114	-70.3
EN16 CO_2 (thermal generation)	g/kWh thermal net	410	347	354	338	-4.5
EN20 NO_X (total from thermal generation)	g/kWh total net	0	0.004	0.050	0.034	-32.0
EN16 CO_2 (total from thermal generation)	g/kWh total net	0.872	6.78	45.7	100	118.8
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	2.53	4.56	3.05	1.89	-38.0

		2007	2008	2009	2010	% ('10-'09)/'09
EN22 Waste recovery						
Other non-hazardous special waste						
electricity generation and geothermal drilling	% of production	5.12	4.23	58.1	0.980	-98.3
electricity distribution	% of production	0	73.9	132	96.2	-27.1
Total	**% of production**	**0.732**	**55.6**	**125**	**86.7**	**-30.6**
Other hazardous special waste						
electricity generation and geothermal drilling	% of production	44.3	51.7	123	2.10	-98.3
electricity distribution	% of production	34.7	47.5	23.1	100	332.9
Total	**% of production**	**36.1**	**48.1**	**24.6**	**98.2**	**299.2**
Total special waste						
electricity generation and geothermal drilling	% of production	7.40	12.7	61	1.01	-98.3
electricity distribution	% of production	1.98	66.3	106	96.8	-8.7
Total	**% of production**	**2.75**	**53.6**	**103**	**88.4**	**-14.2**

Highlights of 2010

In Brazil, Enel operates through Endesa (thermal and hydro power generation, electricity distribution and sales) and Enel Green Power (hydro power generation).

EN1 EN3 The net heat rate of simple thermal generation improved by 3.3% (~-61 kcal/kWh) thanks to a more regular operation of the Fortaleza CCGT plant.

Overall generation significantly increased (~+2.7 TWh), mostly as a result of higher thermal generation. Consequently, in the generating mix, the share of thermal generation was up by 17 percentage points.

EN5 Plant efficiency improvements.

Electricity distribution

> Ampla and Coelce implemented an efficiency program involving 69,925 customers in 2010. The program yielded considerable savings and also decreased peak demand. Actions included the replacement of over 16,000 old refrigerators and about 145,000 incandescent lamps. Ampla also achieved savings by investing in programs of replacement of incandescent lamps, improvement of air conditioning systems and installation of solar thermal systems in 20 hospitals and 7 schools.

EN5 EN6 EN18 In the state of Bahia, Enel Green Power will build three wind power plants (Cristal, Primavera and São Judas), each with a net maximum capacity of 30 MW. The plants are expected to generate over 150,000 MWh/yr, equal to the consumption of about 58,000 households, avoiding over 50,000 tonnes of CO_2 emissions into the atmosphere.

The constant operation of the CCGT plant of Fortaleza gave rise to the following improvements:

EN16 net specific emissions of CO_2 from thermal generation dropped by 16 g/kWh (~-5%);

EN20 net specific emissions of NO_X were down by ~70%.

EN18 CO_2 emissions displaced by generation from renewables amounted to roughly 1.3 million tonnes, about 12% more than in 2009, owing to the related increase of hydro power generation.

EN26 Environmental enhancements.

Vehicle emissions

> Ampla and Coelce. Monitoring of exhaust gases from diesel transport vehicles and maintenance of vehicles exceeding the applicable limits.

Noise and electromagnetic fields

> Ampla and Coelce. Monitoring of noise emissions and electromagnetic fields to check compliance with the applicable limits.

Land and landscape

> Ampla and Coelce. Construction of 1.98 km of grid in Fortaleza by using helically-twisted and pre-assembled insulated cables, with advantages in terms of lower visual impact, more safety and less need for removing vegetation.

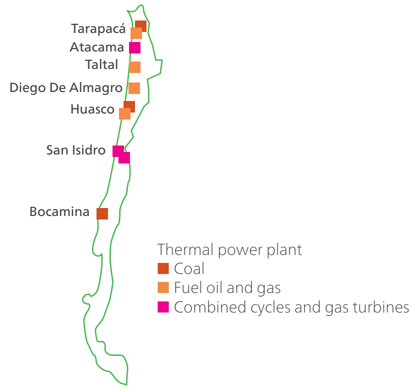
Training

> Ampla and Coelce. Training of the personnel on pruning practices which do not cause harm to the vegetation. Training on periodical inspections to detect oil leaks from machinery.

Chile

Thermal power generation

Endesa SA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
10	2,067	8,146

Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Steam (condensing)	2	2	286
Repowered with gas turbines	3	10	1,168
Gas turbines	5	10	613
	10	**22**	**2,066**

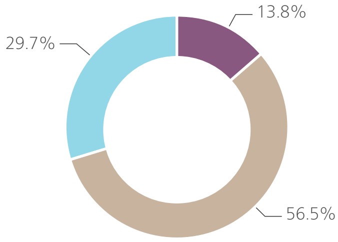
The thermal power plants of Atacama, Bocamina, San Isidro, Taltal, Tarapacá Vapor and Tarapacá, totaling 2,067 MW, are ISO 14001-certified.

Net electricity generation

Total: 8,146 million kWh

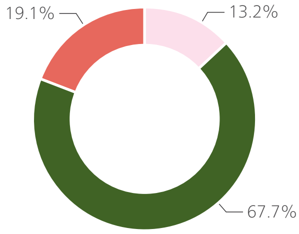
Net maximum electrical capacity

Total: 2,067 MW



Fuel consumption

Total: 1,501,447 t of oil-equivalent



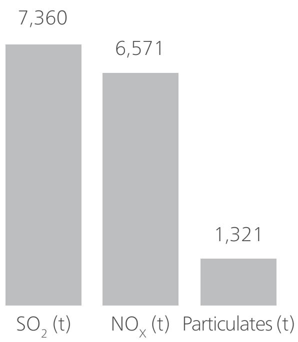
Waste waters

2,706,278 m^3

Discharged

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Emissions into the atmosphere

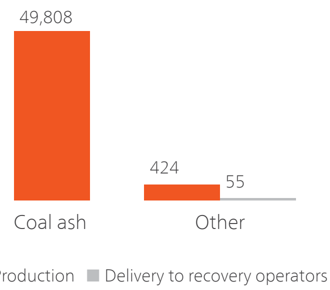


CO_2: **4,128,307 t**

Special waste

Total production: **50,550 t**
Total delivery to recovery operators: **282 t**

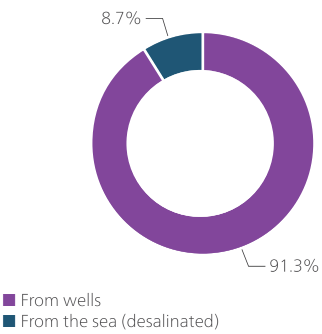
Non-hazardous
Production: 50,233 t
Delivery to recovery operators: 55 t



Hazardous
Production: 318 t
Delivery to recovery operators: 227 t

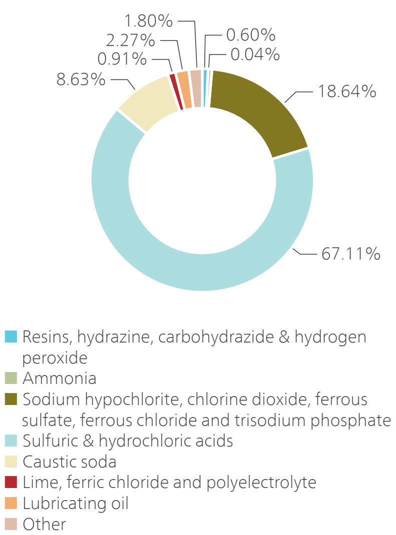
Water for industrial uses

Total requirements: 6,885,481 m^3
Total abstraction from inland waters: 6,287,430 m^3



Expendables

Total: 1,279 t



Chile

Hydro and wind power generation

Endesa SA
Enel Latin America LLC

The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
20	3,612	13,227

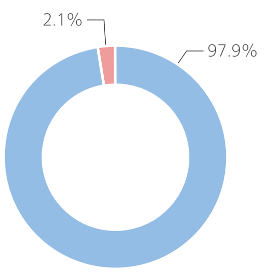
Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	12	24	956
Pondage/reservoir	6	16	2,579
	18	**40**	**3,535**

WIND	Power plants no.	Net maximum electrical capacity MW
	2	**77**

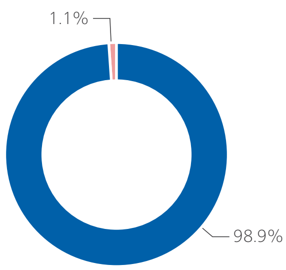
The power plants of Abanico, Antuco, Canela I, Cipreses, Curillinque, El Toro, Isla, Loma Alta, Los Molles, Ojos de Agua, Palmucho, Pangue, Pehuenche, Ralco, Rapel, Sauzal and Sauzalito (3,479 MW) are ISO 14001-certified.

Net maximum electrical capacity
Total: 3,612 MW



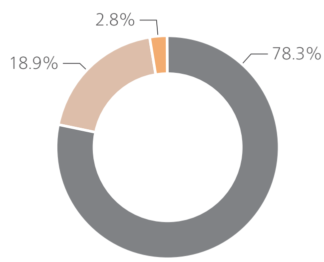
Hydro
Wind

Net electricity generation
Total: 13,227 million kWh



Hydro from natural flows
Wind

Expendables
Total: 51 t



Lubricating oil
Dielectric oil
Other

Equivalent yearly hours of utilization*

3,701 hydro

1,856 wind

* Yearly generation/capacity ratio (excluding hydro from pumped storage).

Avoided CO_2 emissions (t)

Due to hydro generation from natural flows	6,631,404
Due to wind generation	72,439
Total	**6,703,843**

Emissions from the otherwise necessary fossil-fired thermal generation.
The contribution of geothermal generation has been calculated on the assumption that the related CO_2 emissions are of natural origin.

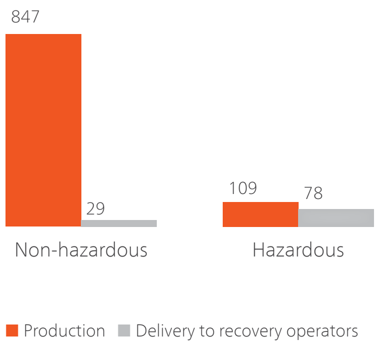
Emissions into the atmosphere

SF_6 - all types of generation (kg)	11
(t of CO_2-equivalent)	33
CO_2 (t)	63

Emissions from gas-oil combustion.

Special waste

Total production: **955 t**
Total delivery to recovery operators: **107 t**



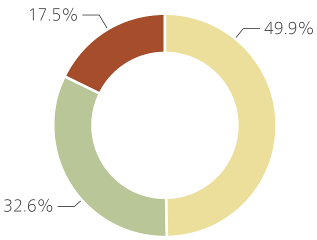
Chile

Electricity distribution

Endesa SA

The Numbers

Substations	Capacity (MVA)	Total lines (km)
22,403	10,542	15,155



Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	50	6,874
MV/LV	22,350	3,638
MV/MV	3	30
	22,403	**10,542**

LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	Total
HV	344	-	11	**355**
MV	2,881	1,056	891	**4,828**
LV	4,335	3,885	1,753	**9,972**
	7,560	**4,941**	**2,655**	**15,155**

The organization has an ISO 14001 certification for its environmental management system.

General data

Municipalities served (no.): **33**
Surface area served: **2,037 km²**
Customers connected to the grid: **1,609,652** (of which supplied: **1,609,648**)

Emissions into the atmosphere

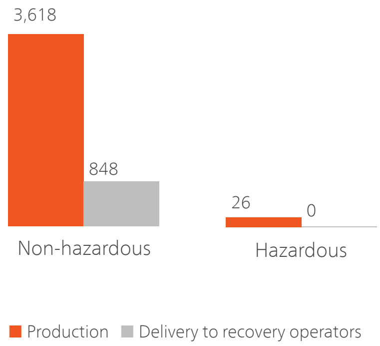
SF_6: **113 kg** (**2,511 t of CO_2-equivalent**)

Electricity

Total electricity distributed: **13,098 million kWh**
Own consumption for grid operation: **8 million kWh**

Special waste

Total production: **3,644 t**
Total delivery to recovery operators: **848 t**



Environmental Results

Status data

		2006	2007	2008	2009	2010
Power-generating installations						
Power plants	no.	2	26	13	30	30
thermal	no.	-	10	10	10	10
hydro	no.	2	16	2	18	18
wind	no.	-	-	1	2	2
Net maximum electrical capacity	MW	87.7	3,614	3,632	5,461	5,679
thermal	MW	-	1,210	1,210	1,850	2,067
hydro	MW	87.7	2,404	2,410	3,534	3,535
wind	MW	-	-	12.2	77.2	77
Power lines (circuit-length)						
Total	km	-	10,206	10,049	15,155	15,155
high-voltage	km	-	246	238	355	355
medium-voltage	km	-	3,280	3,202	4,828	4,828
low-voltage	km	-	6,680	6,610	9,972	9,972
EN29 **Service & real-estate management** (1)						
Vehicle fleet						
service vehicles	no.					8
special vehicles	no.					2
vehicles for both private and service use	no.					3
Gross real-estate surface area	thousand m^2					0.388

(1) The survey started in 2010.
-: no data due to absence of activities in the year.

Resources

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Thermal generation						
fuel oil	thousand t	0	0.103	42.6	11.2	0.090
	thousand toe	0	0.099	39.8	10.9	0.089
MS	*thousand t*	*0*	*0*	*0*	*0.004*	*0*
	thousand toe	*0*	*0*	*0*	*0.004*	*0*
LS	*thousand t*	*0*	*0.103*	*42.6*	*9.69*	*0*
	thousand toe	*0*	*0.099*	*39.8*	*9.40*	*0*
VLS	*thousand t*	*0*	*0*	*0*	*1.51*	*0.090*
	thousand toe	*0*	*0*	*0*	*1.50*	*0.089*
gas-oil	thousand t	0	177	615	650	196
	thousand toe	0	179	560	674	199
natural gas	million m^3	0	48.4	140	366	1,192
	thousand toe	0	45.1	115	360	1,015
technologically captive use	*million m^3*	*0*	*48.4*	*140*	*366*	*1,192*
	thousand toe	*0*	*45.1*	*115*	*360*	*1,015*
of which in combined-cycle units	million m^3	0	36.1	121	288	1,098
	thousand toe	0	33.6	99	297	935

		2006	2007	2008	2009	2010
coal	thousand t	0	131	510	756	476
	thousand toe	0	83.8	293	434	287
Total	**thousand toe**	**0**	**308**	**1,007**	**1,479**	**1,501**
	TJ	**0**	**12,915**	**42,163**	**61,935**	**62,863**
Thermal generation (CHP - various activities)	thousand toe	0	0.004	0	0.002	0.027
Grand total	**thousand toe**	**0**	**308**	**1,007**	**1,479**	**1,501**
	TJ	**0**	**12,915**	**42,163**	**61,935**	**62,864**
EN4 **Primary electricity**						
Various activities	million kWh	0	0	0	0	0.142
EN8 **Water for industrial uses**						
From wells	million m^3	0	0.116	3.01	2.64	6.29
From aqueducts	million m^3	0	0.020	0	0.157	0
Total abstraction from inland waters	**million m^3**	**0**	**0.136**	**3.01**	**2.79**	**6.29**
From the sea (desalinated)	million m^3	0	0	0.373	0.587	0.598
Total requirements	**million m^3**	**0**	**0.136**	**3.39**	**3.38**	**6.89**
for thermal generation	million m^3	0	0.136	3.39	3.38	6.89
EN8 EN21 **Open-cycle cooling water**						
For thermal generation	million m^3	0	125	327	928	414
Water for non-industrial uses						
Real-estate & service management	million m^3	0	0	0	0	0.717
EN1 **Expendables**						
Resins	t	0	0	3.89	0.208	0
Hydrazine	t	0	0.366	5.56	3.31	7.65
Ammonia	t	0	0.017	1.81	0.827	0.474
Sodium hypochlorite	t	0	94.5	287	301	227
Ferrous sulfate	t	0	10.2	42	65.1	10.5
Trisodium phosphate	t	0	0.162	1.37	1.65	1.15
Lime	t	0	0.201	0.778	3.64	1.86
Ferric chloride	t	0	1.34	15.4	10.4	9.19
Polyelectrolyte	t	0	0	0.304	0.678	0.636
Sulfuric & hydrochloric acids	t	0	86.7	499	596	858
Caustic soda	t	0	32.7	212	253	110
Lubricating oil	t	0.016	0.365	10.7	27.7	69
Dielectric oil	t	0	0.073	3.49	357	11.9
Printing paper	t	0	0	0	0	0.412
Other	t	0	0.220	22.4	7.23	24.5
Total	**t**	**0.016**	**227**	**1,105**	**1,626**	**1,333**
for thermal generation	t	0	226	1,095	1,260	1,279
for hydro generation	t	0.016	0.501	9.70	365	47.4
for wind generation	t	0	0	0	0.465	3.77
for electricity distribution	t	0	0	1.17	0	2.18
EN1 **PCB survey**						
Oil with PCBs > 500 ppm contained in equipment & transformers	t	0	0	0	0.060	0.060
Equipment & transformers with PCBs > 50 ppm and ≤ 500 ppm (excluding their oil)	t	0	0	0	5.79	3.72
Oil with PCBs > 50 ppm and ≤ 500 ppm contained in equipment & transformers	t	0	0	0	5.21	1.48

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From fossil fuels (simple)	**million kWh**	**0**	**1,230**	**4,997**	**7,297**	**8,146**
fuel oil and gas-oil	million kWh	0	726	3,114	3,282	1,034
natural gas	million kWh	0	202	687	2,189	5,890
of which in combined-cycle units	*million kWh*	*0*	*167*	*619*	*2,016*	*5,603*
coal	million kWh	0	302	1,196	1,826	1,221
From renewables	**million kWh**	**531**	**2,411**	**9,712**	**15,332**	**13,227**
hydro from natural flows	million kWh	531	2,411	9,691	15,275	13,084
wind	million kWh	0	0	20.4	57	143
Hydro from pumped storage	**million kWh**	**0**	**0**	**0**	**2.26**	**0**
Total	**million kWh**	**531**	**3,640**	**14,708**	**22,632**	**21,373**
Electricity distribution						
Electricity distributed	million kWh	0	2,076	8,937	12,585	13,098
EN4 Electricity consumption for grid operation	million kWh	0	2.01	0	12	7.86

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN20 SO_2	thermal generation	thousand t	0	2.60	10.5	10.9	7.36
EN20 NO_X	thermal generation	thousand t	0	1.67	7.49	8.45	6.57
EN20 Particulates	thermal generation	thousand t	0	0.974	0.531	1.14	1.32
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	0	1,044	3,595	4,663	4,128
	various activities	thousand t	0	0.012	0.395	0	0.144
	Total	**thousand t**	**0**	**1,044**	**3,596**	**4,663**	**4,128**
EN16 SF_6	electricity generation	kg	0	0	0	0	10.5
		thousand t of CO_2-equivalent	0	0	0	0	0.239
	electricity distribution	kg	0	1.34	0.335	6.70	113
		thousand t of CO_2-equivalent	0	0.031	0.008	0.153	2.58
	Total	**kg**	**0**	**1.34**	**0.335**	**6.70**	**124**
		thousand t of CO_2-equivalent	**0**	**0.031**	**0.008**	**0.153**	**2.82**
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		**thousand t of CO_2-equivalent**	**0**	**1,044**	**7,191**	**4,663**	**4,131**
EN18 **Avoided CO_2 emissions**							
Due to hydro generation from natural flows		thousand t	325	2,046	6,973	9,761	6,631
Due to wind generation		thousand t	0	0	14.7	36.4	72.4
Due to generation from renewables		**thousand t**	**325**	**2,046**	**6,988**	**9,798**	**6,704**
EN21 **Waste waters (discharged quantity)**	thermal generation	million m^3	0	0	0.980	1.49	2.71

	Source		2006	2007	2008	2009	2010
EN21 Conventional polluting load of waste waters discharged by installations							
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	0	0	0	2,968	8,123
	in some plants with an overall capacity of	MW	0	0	0	128	128
Total nitrogen (expressed as N)	thermal generation	kg	0	0	0	266	0
	in some plants with an overall capacity of	MW	0	0	0	399	0
Total phosphorus (expressed as P)	thermal generation	kg	0	0	0	476	0
	in some plants with an overall capacity of	MW	0	0	0	399	0
BOD	thermal generation	kg	0	0	0	6,085	0
	in some plants with an overall capacity of	MW	0	0	0	399	0
EN22 Non-hazardous special waste							
Coal bottom ash	fossil-fired thermal generation						
production		t	0	0	0	14,550	5,688
Coal flyash	fossil-fired thermal generation	t	0	17,538	70,501	66,665	44,120
Other							
production	electricity generation	t	4.75	211	356	935	1,271
	electricity distribution	t	0	1,819	49	36,098	3,618
	Total	**t**	**4.75**	**2,029**	**405**	**37,033**	**4,889**
delivery to recovery operators	electricity generation	t	0	0	2.74	56.5	84.3
	electricity distribution	t	0	0	14.1	12,415	848
	Total	**t**	**0**	**0**	**16.9**	**12,472**	**933**
Total							
production	**electricity generation**	**t**	**4.75**	**17,749**	**70,857**	**82,150**	**51,080**
	electricity distribution	**t**	**0**	**1,819**	**49**	**36,098**	**3,618**
	Total	**t**	**4.75**	**19,568**	**70,906**	**118,248**	**54,698**
delivery to recovery operators	**electricity generation**	**t**	**0**	**0**	**2.74**	**56.5**	**84.3**
	electricity distribution	**t**	**0**	**0**	**14.1**	**12,415**	**848**
	Total	**t**	**0**	**0**	**16.9**	**12,472**	**933**
EN22 Hazardous special waste							
production	electricity generation	t	0	47.7	375	400	426
	electricity distribution	t	0	2.55	106	138	26.1
	various activities	t	0	0	0	0	0.020
	Total	**t**	**0**	**50.2**	**481**	**538**	**452**
of which with PCBs	*electricity generation*	*t*	*0*	*0*	*63.1*	*135*	*112*
	electricity distribution	*t*	*0*	*0*	*4.56*	*5.63*	*8.71*
	Total	*t*	*0*	*0*	*67.7*	*140*	*120*

	Source		2006	2007	2008	2009	2010
delivery to recovery operators	electricity generation	t	0	0	65.7	16.3	305
	electricity distribution	t	0	0	6.34	6.71	0
	Total	**t**	**0**	**0**	**72**	**23**	**305**
of which with PCBs	*electricity generation*	*t*	*0*	*0*	*62*	*0.384*	*98.2*
	electricity distribution	*t*	*0*	*0*	*2.39*	*0.800*	*0*
	Total	***t***	***0***	***0***	***64.4***	***1.18***	***98.2***
EN22 Total special waste							
production	electricity generation	t	4.75	17,797	71,232	82,550	51,506
	electricity distribution	t	0	1,821	155	36,236	3,644
	various activities	t	0	0	0	0	0.020
	Total	**t**	**4.75**	**19,618**	**71,387**	**118,785**	**55,150**
delivery to recovery operators	electricity generation	t	0	0	68.4	72.8	389
	electricity distribution	t	0	0	20.5	12,422	848
	Total	**t**	**0**	**0**	**88.9**	**12,495**	**1,237**

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN29 Land								
LV cable lines								
overhead	% of entire LV grid	0	38.9	41.1	43	39	0.0	-9.3
underground	% of entire LV grid	0	16.8	17.4	18	17.6	0.0	-2.2
Total	% of entire LV grid	0	55.8	58.5	61	56.5	0.0	-7.4
MV cable lines								
overhead	% of entire MV grid	0	15.7	18	19.1	21.9	0.0	14.7
underground	% of entire MV grid	0	18.4	18.3	20.1	18.5	0.0	-8.0
Total	% of entire MV grid	0	34.1	36.3	39.2	40.3	0.0	2.8
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	0	47.5	50.1	52.7	50.1	0.0	-4.9
Resource conservation and quality								
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	0	2,509	2,016	2,027	1,843	0.0	-9.1
EN4 Consumption of electricity for distribution-grid operation	% of electricity distributed	0	0.097	0	0.095	0.060	0.0	-36.8
EN8 Net specific requirements of water for industrial uses in thermal generation								
including contribution of as-is sea water	liters/kWh	0	0.111	0.678	0.463	0.845	0.0	82.5
excluding contribution of as-is sea water	liters/kWh	0	0.111	0.678	0.463	0.845	0.0	82.5

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
EN8 Coverage of requirements of water for industrial uses								
from wells	% of requirements	0	85.3	89	78	91.3	0.0	17.1
from aqueducts	% of requirements	0	14.7	0	4.65	0	0.0	-100.0
Total from inland waters	**% of requirements**	**0**	**100**	**89**	**82.6**	**91.3**	**0.0**	**10.5**
from the sea (desalinated)	% of requirements	0	0	11	17.4	8.69	0.0	-50.1
EN1 EN3 Fossil fuel consumption for thermal generation								
fuel oil	% of total fuel consumption	0	0.032	3.95	0.737	0.006	0.0	-99.2
gas-oil	% of total fuel consumption	0	58.2	55.6	45.6	13.2	0.0	-71.1
natural gas	% of total fuel consumption	0	14.6	11.4	24.4	67.6	0.0	177.0
coal	% of total fuel consumption	0	27.2	29.1	29.3	19.1	0.0	-34.8
MS fuel oil	% of total fuel-oil consumption	0	0	0	0.037	0	0.0	-100.0
LS fuel oil	% of total fuel-oil consumption	0	100	100	86.2	0	0.0	-100.0
VLS fuel oil	% of total fuel-oil consumption	0	0	0	13.7	100	0.0	629.9
natural gas, technologically captive use	% of total natural-gas consumption	0	100	100	100	100	0.0	0.0
of which in combined-cycle units	*% of total natural-gas consumption*	*0*	*74.6*	*86.4*	*82.3*	*92*	*0.0*	*11.8*
natural gas, non-technologically captive use	% of total natural-gas consumption	0	0	0	0	0.004	0.0	0.0
Electricity generation from renewables								
hydro from natural flows	% of total generation	100	66.2	65.9	67.5	61.2	-38.8	-9.3
wind	% of total generation	0	0	0.139	0.252	0.669	0.0	165.5
Total	**% of total generation**	**100**	**62.2**	**66.0**	**67.7**	**61.9**	**-38.1**	**-8.6**
Specific emissions into the atmosphere								
EN20 SO_2 (thermal generation)	g/kWh thermal net	0	2.12	2.09	1.49	0.904	0.0	-39.3
EN20 NO_X (simple thermal generation)	g/kWh thermal net	0	1.36	1.50	1.16	0.807	0.0	-30.4
EN20 Particulates (thermal generation)	g/kWh thermal net	0	0.792	0.106	0.156	0.162	0.0	3.8
EN16 CO_2 (thermal generation)	g/kWh thermal net	0	849	720	639	507	0.0	-20.7
EN20 SO_2 (total from thermal generation)	g/kWh total net	0	0.715	0.710	0.481	0.344	0.0	-28.5
EN20 NO_X (total from thermal generation)	g/kWh total net	0	0.458	0.509	0.373	0.307	0.0	-17.7
EN20 Particulates (total from thermal generation)	g/kWh total net	0	0.268	0.036	0.050	0.062	0.0	24.0
EN16 CO_2 (total from thermal generation)	g/kWh total net	0	287	244	206	193	0.0	-6.3
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0	0.036	0.009	0.037	0.155	0.0	318.9
EN22 **Specific production of waste**								
Coal ash (thermal generation)	g/kWh net from coal	0	58.1	59	44.5	40.8	0.0	-8.3
EN22 **Waste recovery**								
Other non-hazardous special waste								
electricity generation	% of production	0	0	0.770	6.04	6.63	0.0	9.8
electricity distribution	% of production	0	0	28.9	34.4	0	0.0	-100.0
Total	**% of production**	**0**	**0**	**4.17**	**33.7**	**1.72**	**0.0**	**-94.9**
Other hazardous special waste								
electricity generation	% of production	0	0	17.5	4.08	71.6	0.0	1,654.9
electricity distribution	% of production	0	0	5.98	4.88	0	0.0	-100.0
Total	**% of production**	**0**	**0**	**15**	**4.28**	**67.4**	**0.0**	**1,474.8**
Total special waste								
electricity generation	% of production	0	0	0.096	0.088	0.756	0.0	759.1
electricity distribution	% of production	0	0	13.2	34.3	0	0.0	-100.0
Total	**% of production**	**0**	**0**	**0.125**	**10.5**	**0.706**	**0.0**	**-93.3**

Highlights of 2010

Fossil-fired thermal generation was up by ~0.9 TWh (~+12%), whereas hydro generation was down by ~2 TWh. In the generating mix, the share of thermal generation was up by more than 6 percentage points.

EN1 EN3 The fuel mix changed in favor of natural gas (~+43 percentage points) to the expense of oil (all VLS, ~-1 percentage point), gas-oil (~-32 percentage points) and coal (~-10 percentage points).

EN1 EN3 EN5 The net heat rate of simple thermal generation improved considerably (-9%, -184 kcal/kWh) as an effect of higher utilization of the more efficient combined-cycle units and of the plant efficiency gains described below.

Hydro generation

> In 2010, the generator of one of the units of the hydro plant of Rapel was replaced and works were initiated to replace two turbines in the hydro plant of Antuco. The program will end in 2011. Expected result: an efficiency gain translating into 18 MW of additional capacity.

> Introduction of remote and telecontrol systems for operating hydro plants. Determination of the optimum time for maintenance and overhaul of machinery.

Thermal generation

> Determination of the optimum time for replacement of turbocompressor suction filters (combined-cycle thermal power plants of San Isidro and San Isidro 2); identification of the most appropriate clean-up intervals and monitoring schemes for the make-up water system (Bocamina thermal plant). As a result, in 2010, the average energy saving at the above three sites was equal to 38 kcal/kWh generated.

> Monitoring, processing and recording of variables to permit a better and error-free utilization of the generating mix.

In Chile, Enel operates through Endesa (thermal, wind and hydro power generation, electricity distribution and sales) and Enel Green Power (hydro power generation).

Real estate

> Training & education of the personnel.

Electricity distribution

> End-use efficiency campaign based on commercials.

EN5 EN6 EN18 Investments in the geothermal sector are planned to be increased by participating in a tender for obtaining leases over 21 new areas. This activity would add to those carried out by the subsidiary Geotermica del Norte, which embarked on the most advanced geothermal project in the country.
Thanks to higher utilization of CCGTs and to plant efficiency measures, the following improvements were obtained:

EN16 net specific emissions of CO_2 in thermal generation were down by 56 g/kWh (~-9%);

EN20 net specific emissions of SO_2, NO_X and particulates decreased (SO_2 by ~40%, NO_X by ~30%).

EN18 CO_2 emissions displaced by electricity generation from renewables amounted to roughly 6.7 million tonnes, about 31% less than in 2009, owing to lower hydro generation.

EN22 The decrease in coal ash production in 2010 is due to the strong contraction of generation by the thermal plant of Bocamina. In particular, the peak in production and recovery of non-hazardous special waste in electricity distribution in 2008 was due to demolitions. It is worth noting that for the year 2006 and for three fourths of 2007, Enel's assets did not include those of Endesa, acquired in October 2007.

EN23 Spills

Chile	*Description of the spill*	*Impact and mitigation*
Hydro power plant of El Toro Amount: **0.04** m^3	Oil was spilled into the Polcura river during plant outage due to breakage of the cooling system of unit 4.	The leak was sealed. During the next plant outage, the cooling system will be replaced. As a preventive measure, the cooling systems of the other plant units were overhauled and their replacement is under consideration.

EN26 Environmental enhancements.

Water

> Pilmaiquén and Pullinque: installation of systems to treat gray and black waters from the plants.

Waste

> Pilmaiquén and Pullinque: program of collection of waste ("Patio limpio") – hazardous, non-hazardous electronic and bulky (household appliances) – at the premises of plant employees.

Soil

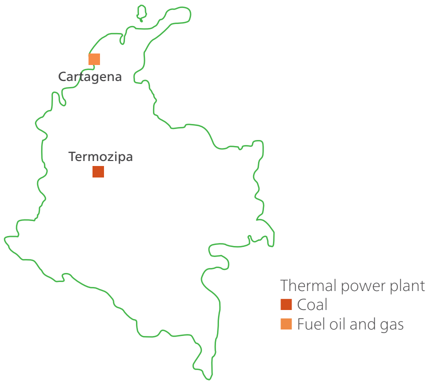
> Chilectra: use of a trap-tank system to reduce pollution due to oil spills from substations (81 tanks installed in 50 substations).

Waste

> Chilectra: management of 77 m^3 of disused materials (waste liability) from the substations of Chilectra, Altamirano, Chacabuco, Florida, Dominican, Quilicura, San Pablo, Santa Helena (old machinery, empty cable reels and drums, damaged high-voltage poles, unused guard cabins, disused water pumps, etc.).

Colombia

Thermal power generation Endesa SA



The Numbers

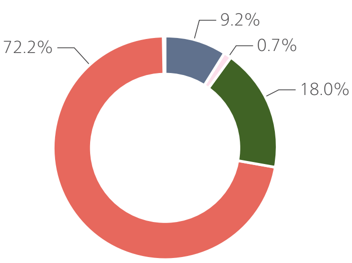
Power plants	Net capacity (MW)	Generation (million kWh)
2	411	1,030

Power installations

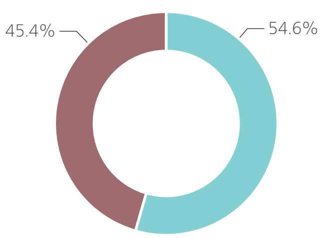
	Power plants no.	Units no.	Net maximum electrical capacity MW
Steam (condensing)	**2**	**7**	**411**

The thermal power plants of Cartagena and Termozipa are both ISO 14001-certified.

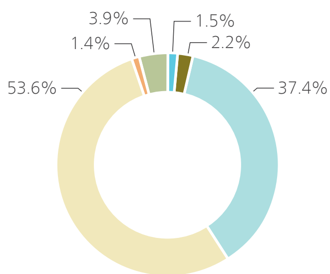
Fuel consumption
Total: 326,807 t of oil-equivalent



Water for industrial uses
Total requirements: 255,696 m^3
Total abstraction from inland waters: 255,696 m^3



Expendables
Total: 321 t



Waste waters

49,376 m^3

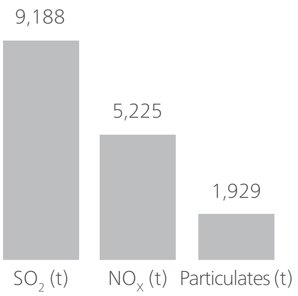
Discharged

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Net electricity generation

Total: **1,030 million kWh**

Emissions into the atmosphere



CO_2: **943,833 t**

Special waste

Total production: **57,911 t**

Total delivery to recovery operators: **156 t**

Non-hazardous

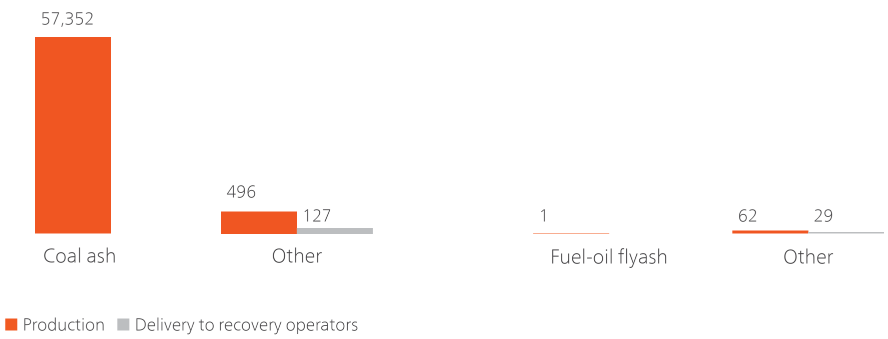
Production: 57,849 t

Delivery to recovery operators: 127 t

Hazardous

Production: 62 t

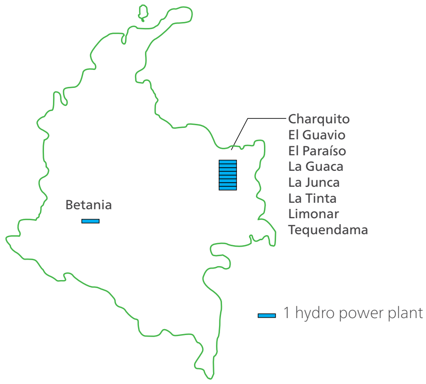
Delivery to recovery operators: 29 t



Colombia

Hydro power generation

Endesa SA



The Numbers

Power plants
10

Net capacity (MW)
2,455

Generation (million kWh)
10,253

Power installations

	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	8	13	712
Pondage/reservoir	2	10	1,743
	10	**23**	**2,455**

All the power plants are ISO 14001-certified.

Equivalent yearly hours of utilization*

Hydro: **4,176 hours**

* Yearly generation/capacity ratio. For Endesa generation is considered to refer to the entire year.

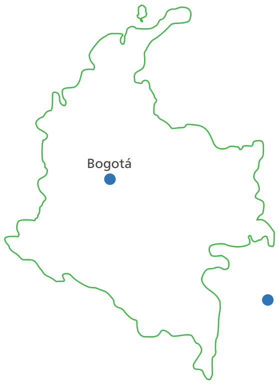
Net electricity generation

Total: 10,253 million kWh

Colombia

Electricity distribution

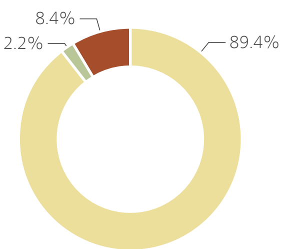
Endesa SA



● Headquarters of the company of the Group which carries out the activity (Codensa)

The Numbers

Substations	Capacity (MVA)	Total lines (km)
65,138	14,916	51,988



Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	56	6,530
MV/LV	65,023	8,055
MV/MV	59	331
	65,138	**14,916**

LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	Total
HV	1,275	-	0	**1,275**
MV	19,070	199	3,423	**22,692**
LV	26,154	925	941	**28,021**
	46,499	**1,124**	**4,364**	**51,988**

The organization has an ISO 14001-certified environmental management system in place.

General data

Municipalities served (no.): **103**
Surface area served: **14,087 km²**
Customers connected to the grid: **2,429,365** (of which supplied: **2,429,365**)

Electricity

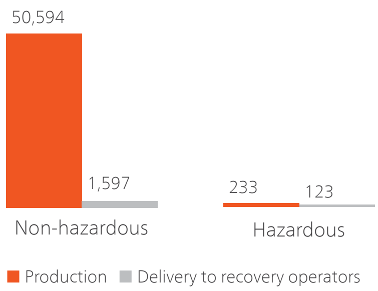
Total electricity distributed:
12,141 million kWh
Own consumption for grid operation:
9 million kWh

Emissions into the atmosphere

SF_6: **115 kg** (2,549 t of CO_2-equivalent)

Special waste

Total production: **50,827 t**
Total delivery to recovery operators: **1,720 t**



Environmental Results

Status data

		2007	2008	2009	2010
Power-generating installations					
Power plants	no.	10	10	11	12
thermal	no.	2	2	2	2
hydro	no.	8	8	9	10
Net maximum electrical capacity	MW	1,897	1,941	2,847	2,866
thermal	MW	253	297	411	411
hydro	MW	1,644	1,644	2,436	2,455
Power lines (circuit-length)					
Total	km	27,666	27,987	42,322	51,988
high-voltage	km	846	823	1,240	1,275
medium-voltage	km	12,078	12,349	18,881	22,692
low-voltage	km	14,742	14,815	22,201	28,021

Resources

		2007	2008	2009	2010
EN1 EN3 **Fossil fuels**					
Thermal generation					
fuel oil	thousand t	0.135	2.57	7.33	28.8
	thousand toe	0.129	2.39	7.39	30
MS	*thousand t*	*0.135*	*2.28*	*7.33*	*21.2*
	thousand toe	*0.129*	*2.17*	*7.39*	*22.1*
LS	*thousand t*	*0*	*0.290*	*0*	*7.60*
	thousand toe	*0*	*0.223*	*0*	*7.91*
gas-oil	thousand t	0.561	3.08	2.81	2.26
	thousand toe	0.568	2.85	3.08	2.30
natural gas	million m^3	2.06	5.58	76.2	73.6
	thousand toe	1.92	4.46	60.9	58.7
non-technologically captive use	*million m^3*	*2.06*	*5.58*	*76.2*	*73.6*
	thousand toe	*1.92*	*4.46*	*60.9*	*58.7*
coal	thousand t	44.8	198	428	406
	thousand toe	28.6	120	260	236
Total	thousand toe	31.2	130	332	327
	TJ	1,306	5,448	13,884	13,683
Various activities	thousand toe	0.087	0	0	0
Grand total	**thousand toe**	**31.3**	**130**	**332**	**327**
	TJ	**1,310**	**5,448**	**13,884**	**13,683**

		2007	2008	2009	2010
EN8 Water for industrial uses					
From rivers (including meteoric waters from secondary rainfall)	million m^3	0.034	0.093	0.338	0.140
From aqueducts	million m^3	0.014	0.039	0.097	0.116
Total abstraction from inland waters	**million m^3**	**0.048**	**0.132**	**0.435**	**0.256**
for thermal generation	million m^3	0.048	0.132	0.435	0.256
EN8 EN21 Open-cycle cooling water					
For thermal generation (simple and CHP)	million m^3	18.3	87.4	210	205
EN1 Expendables					
Hydrazine	t	0	0.952	2.89	4.69
Sodium hypochlorite	t	0	4.50	10	7.11
Ferrous sulfate	t	0	0.168	0	0
Trisodium phosphate	t	0	0.270	0.034	0.050
Sulfuric & hydrochloric acids	t	0	58.5	103	120
Caustic soda	t	0	27.4	158	172
Lubricating oil	t	2.60	9.50	19.3	12.7
Dielectric oil	t	14.4	44.9	1.18	25
Other	t	0	5,762	10.6	12.5
Total	**t**	**17**	**5,908**	**306**	**355**
for thermal generation	t	0	5,856	299	321
for hydro generation	t	1.79	7.60	6.80	8.32
for electricity distribution	t	15.2	44.9	0	25
EN1 PCB survey					
Equipment & transformers with PCBs > 500 ppm (excluding their oil)	t	0	0	33	35.6
Oil with PCBs > 500 ppm contained in equipment & transformers	t	0	0	0	0.740
Equipment & transformers with PCBs > 50 ppm and ≤ 500 ppm (excluding their oil)	t	0	0	54.5	36
Oil with PCBs > 50 ppm and ≤ 500 ppm contained in equipment & transformers	t	0	0	46	1.20

Processes and products

		2007	2008	2009	2010
Electricity generation (net)					
From fossil fuels (simple)	**million kWh**	**86.3**	**337**	**973**	**1,030**
fuel oil & gas-oil	million kWh	1.73	14.8	31.7	87.7
natural gas	million kWh	5.16	14.1	202	158
coal	million kWh	79.4	308	740	784
From renewables (hydro from natural flows)	**million kWh**	**1,914**	**8,316**	**11,701**	**10,253**
Total	**million kWh**	**2,000**	**8,653**	**12,674**	**11,283**
Electricity consumption for pumping	million kWh	0	0.070	96.6	99.2
Available generation	million kWh	2,000	8,653	12,577	11,184
Electricity distribution					
Electricity distributed	million kWh	1,918	7,927	4,418	12,141
EN4 Electricity consumption for grid operation	million kWh	0	3.79	7	9.37

Emissions

	Source		2007	2008	2009	2010
Emissions into the atmosphere						
EN20 SO_2	thermal generation	thousand t	0.812	4.39	8.51	9.19
EN20 NO_X	thermal generation	thousand t	0.140	0.404	2.39	5.23
EN20 Particulates	thermal generation	thousand t	0.138	0.859	1.69	1.93
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	82.2	472	1,124	944
	various activities	thousand t	0.007	0	0	0
	Total	**thousand t**	**82.2**	**472**	**1,124**	**944**
EN16 SF_6	electricity generation	kg	0	0	0	12.5
		thousand t of CO_2-equivalent	0	0	0	0.285
	electricity distribution	kg	52.3	139	83	115
		thousand t of CO_2-equivalent	1.19	3.18	1.89	2.62
	Total	**kg**	**52.3**	**139**	**83**	**127**
		thousand t of CO_2-equivalent	**1.19**	**3.18**	**1.89**	**2.90**
EN16 **Total greenhouse gases (CO_2, SF_6, CH_4)**		**thousand t of CO_2-equivalent**	**83.4**	**475**	**1,126**	**954**
EN18 **Avoided CO_2 emissions**						
Due to hydro generation from natural flows		thousand t	1,825	11,646	13,513	9,394
EN21 **Waste waters (discharged quantity)**	thermal generation	million m³	0	0.034	0.087	0.049
EN21 **Conventional polluting load of waste waters discharged by installations**						
Total nitrogen (expressed as N)	thermal generation	kg	0	0	2.62	762
	in some plants with an overall capacity of	MW	0	0	208	208
Total phosphorus (expressed as P)	thermal generation	kg	0	0	0.040	11.8
	in some plants with an overall capacity of	MW	0	0	208	208
COD	thermal generation	kg	0	0	1,622	9,860
	in some plants with an overall capacity of	MW	0	0	444	236
BOD	thermal generation	kg	0	0	885	30,973
	in some plants with an overall capacity of	MW	0	0	444	444
EN22 **Non-hazardous special waste**						
Coal bottom ash production	fossil-fired thermal generation	t	0	60,459	53,055	57,352
Coal flyash production	fossil-fired thermal generation	t	8,964	0	0	0
Other production	electricity generation	t	210	427	277	1,512
	electricity distribution	t	381	1,910	34,279	50,594
	Total	**t**	**591**	**2,337**	**34,556**	**52,106**
delivery to recovery operators	electricity generation	t	25.9	1.79	59.3	383
	electricity distribution	t	381	1,453	4,396	1,597
	Total	**t**	**407**	**1,455**	**4,456**	**1,980**

	Source		2007	2008	2009	2010
Total						
production	electricity generation	t	9,174	60,886	53,333	58,864
	electricity distribution	t	381	1,910	34,279	50,594
	Total	t	9,555	62,796	87,612	109,458
delivery to recovery operators	electricity generation	t	25.9	1.79	59.3	383
	electricity distribution	t	381	1,453	4,396	1,597
	Total	t	407	1,455	4,456	1,980
EN22 **Hazardous special waste**						
production	thermal generation	t	0	0	0	0.506
	electricity generation	t	11.7	30.3	84.3	86.2
	electricity distribution	t	23.9	115	220	233
	Total	**t**	**35.5**	**145**	**304**	**319**
of which with PCBs	*electricity generation*	*t*	*0*	*22.8*	*55.2*	*27.8*
	electricity distribution	*t*	*22.6*	*91.9*	*170*	*120*
	Total	***t***	***22.6***	***115***	***225***	***148***
delivery to recovery operators	electricity generation	t	0.962	27.3	26.7	43.3
	electricity distribution	t	15.9	101	216	123
	Total	**t**	**16.9**	**128**	**243**	**166**
of which with PCBs	*electricity generation*	*t*	*0*	*26.6*	*22.3*	*27.8*
	electricity distribution	*t*	*15.9*	*91.9*	*170*	*120*
	Total	***t***	***15.9***	***118***	***192***	***148***
EN22 **Total special waste**						
production	electricity generation	t	9,185	60,916	53,417	58,951
	electricity distribution	t	405	2,024	34,499	50,827
	Total	**t**	**9,590**	**62,941**	**87,916**	**109,778**
delivery to recovery operators	electricity generation	t	26.9	29.1	86	426
	electricity distribution	t	397	1,554	4,613	1,720
	Total	**t**	**424**	**1,583**	**4,699**	**2,146**

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
EN29 **Land**						
LV cable lines						
overhead	% of entire LV grid	2.80	2.86	3.31	3.30	-0.3
underground	% of entire LV grid	2.92	3.02	3.11	3.36	8.0
Total	**% of entire LV grid**	**5.72**	**5.88**	**6.42**	**6.66**	**3.7**
MV cable lines						
overhead	% of entire MV grid	0.855	0.869	0.879	0.876	-0.3
underground	% of entire MV grid	14.4	14.7	14.8	15.1	2.0
Total	**% of entire MV grid**	**15.3**	**15.6**	**15.7**	**16**	**1.9**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	9.71	10	10.4	10.6	1.9

		2007	2008	2009	2010	% ('10-'09)/'09
Resource conservation and quality						
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	3,616	3,862	3,407	3,172	-6.9
EN4 Consumption of electricity for distribution grid operation	% of electricity distributed	0	0.048	0.158	0.077	-51.3
EN8 Net specific requirements of water for industrial uses in thermal generation						
including contribution of as-is sea water	liters/kWh	0.557	0.392	0.447	0.249	-44.3
excluding contribution of as-is sea water	liters/kWh	0.557	0.392	0.447	0.249	-44.3
EN8 Coverage of requirements of water for industrial uses						
from rivers (including meteoric waters from secondary rainfall)	% of requirements	70.8	70.5	77.7	54.7	-29.6
from aqueducts	% of requirements	29.2	29.5	22.3	45.3	103.1
EN1 EN3 Fossil fuel consumption for thermal generation						
fuel oil	% of total fuel consumption	0.414	1.84	2.23	9.17	311.2
gas-oil	% of total fuel consumption	1.82	2.19	0.928	0.705	-24.0
natural gas	% of total fuel consumption	6.14	3.43	18.4	18	-2.2
coal	% of total fuel consumption	91.6	92.5	78.5	72.2	-8.0
MS fuel oil	% of total fuel-oil consumption	100	90.7	100	73.6	-26.4
LS fuel oil	% of total fuel-oil consumption	0	9.32	0	26.4	0.0
natural gas, non-technologically captive use	% of total natural-gas consumption	100	100	100	100	0.0
Electricity generation from renewables						
hydro from natural flows	% of total generation	95.7	96.1	92.3	90.9	-1.5
Specific emissions into the atmosphere						
EN20 SO_2 (thermal generation)	g/kWh thermal net	9.41	13	8.74	8.92	2.1
EN20 NO_X (thermal generation)	g/kWh thermal net	1.62	1.20	2.46	5.07	106.1
EN20 Particulates (thermal generation)	g/kWh thermal net	1.60	2.55	1.73	1.87	8.1
EN16 CO_2 (thermal generation)	g/kWh thermal net	953	1,400	1,155	916	-20.7
EN20 SO_2 (total from thermal generation)	g/kWh total net	0.406	0.507	0.671	0.814	21.3
EN20 NO_X (total from thermal generation)	g/kWh total net	0.070	0.047	0.189	0.463	145.0
EN20 Particulates (total from thermal generation)	g/kWh total net	0.069	0.099	0.133	0.171	28.6
EN16 CO_2 (total from thermal generation)	g/kWh total net	41.1	54.5	88.7	83.7	-5.6
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	2.25	4.60	0.297	0.460	54.9
EN22 **Specific production of waste**						
Coal ash (thermal generation)	g/kWh net from coal	113	196	71.7	73.1	2.0
Oil flyash (thermal generation)	g/kWh net from fuel oil & gas-oil	0	0	0	0.006	0.0
Oil bottom ash (thermal generation)	g/kWh net from fuel oil & gas-oil	0	0	0	0.006	0.0

		2007	2008	2009	2010	% ('10-'09)/'09
EN22 Waste recovery						
Other non-hazardous special waste						
electricity generation	% of production	12.4	0.419	21.4	25.3	18.2
electricity distribution	% of production	100	76.1	12.8	3.16	-75.3
Total	% of production	68.9	62.3	12.9	3.80	-70.5
Total non-hazardous special waste						
electricity generation	% of production	0.283	0.003	0.111	0.651	486.5
electricity distribution	% of production	100	76.1	12.8	3.16	-75.3
Total	% of production	4.26	2.32	5.09	1.81	-64.4
Other hazardous special waste						
electricity generation	% of production	8.25	90.1	31.7	50.2	58.4
electricity distribution	% of production	66.7	87.7	98.3	52.8	-46.3
Total	% of production	47.5	88.2	79.9	52.1	-34.8
Total hazardous special waste						
electricity generation	% of production	8.25	90.1	31.7	49.9	57.4
electricity distribution	% of production	66.7	87.7	98.3	52.8	-46.3
Total	% of production	47.5	88.2	79.9	52	-34.9
Total special waste						
electricity generation	% of production	0.293	0.048	0.161	0.723	349.1
electricity distribution	% of production	98	76.8	13.4	3.38	-74.8
Total	% of production	4.42	2.52	5.35	1.96	-63.4

Highlights of 2010

In Colombia, Enel operates through Endesa (thermal and hydro power generation, electricity distribution and sales).

Fossil-fired thermal generation was up by ~60 GWh, whereas hydro generation was down by ~1.5 TWh. In the generating mix, the share of thermal generation was up by ~1.5 percentage points.

EN1 EN3 The fuel mix changed in favor of fuel oil (~+7 percentage points) to the expense of coal (~-6 percentage points) and of small amounts of natural gas and gas-oil.

EN1 EN3 EN5 The net heat rate of simple thermal generation recorded a considerable improvement (-7%, -235 kcal/kWh) as a result of higher utilization of the more efficient units, as well as of efficiency gains.

Thermal generation

> Clean-up of condensers to increase the heat transfer efficiency of plants.

EN8 Net specific requirements of water for industrial uses in thermal generation were down by over 44% (from 0.45 to 0.25 liters/kWh) as a result of environmental enhancements focused on water use (see EN26).
Thanks to higher utilization of the more efficient units in the coal-fired plant of Termozipa, the following improvements were achieved:

EN16 net specific emissions of CO_2 in thermal generation were down by 232 g/kWh (~-20%).

EN20 For the same reason and owing to the consequent higher consumption of coal (of worse quality than in 2009), net specific emissions of SO_2 were up by ~2%, those of NO_X by ~106% and those of particulates by ~8%.

EN18 CO_2 emissions displaced by electricity generation from renewables amounted to approximately 9.5 million tonnes, roughly 30% less than in the previous year, owing to decreased hydro generation.

EN22 In 2007 and 2008, the waste items produced in electricity distribution and delivered to recovery operators were only those classified as materials and equipment. The reported amount of waste reflects Enel's stake in Endesa: 67.05% from October 2007 (when the company was purchased) to December 2008; 100% from 2009 on as a result of Enel's acquisition of Acciona's holding in Endesa. Therefore, the data for 2007 also account for one fourth of the total waste produced during the year, given that the acquisition of Endesa took place in October of the same year.

EN26 Environmental enhancements.

Emissions

> Termozipa plant: specific emissions of particulates dropped from 400 to 160 mg/Nmc in 2010 and are expected to be abated to 90 mg/Nmc by the end of 2011.

Water

> Termozipa plant: water use per person was down by 12% in 2010 and is expected to go down by another 5% in 2011. Decreased consumption of make-up water.

Releases

> Termozipa plant: installation of a safety system to avoid the accidental release of ash and coal.

PCBs

> Termozipa plant: in 2010, Enel disposed of 94% of the total amount of PCBs censused in 2006. In 2011, the figure is planned to reach 97%.

> Codensa: program of reduction of the amount of PCBs both internally and externally.

Waste

> Emgesa: program of segregation of the different types of waste in order to optimize recovery or improve disposal.

Noise

> Termozipa plant: monitoring of noise emissions to check compliance with the applicable limits.

Awareness, training & education

> Emgesa: initiatives on rational use of resources, waste management, management of chemical products, environmental legislation, environmental aspects, indicators and performance, environmental risk prevention and assessment.

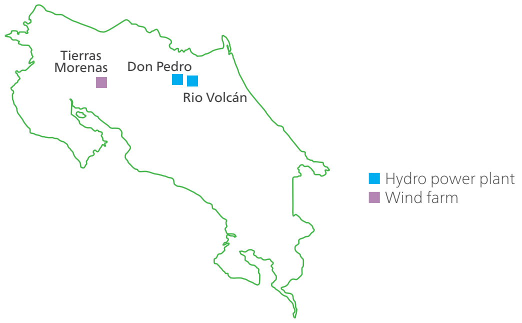
EN23 Spills

Colombia	*Description of the spill*	*Impact and mitigation*
Thermal plant of Cartagena Amount: 0.95 m^3	Four oil spills.	No impact; the affected soil was removed and treated. Oil-contaminated solid materials (filtering materials and soil) are treated as oily waste and delivered to authorized operators.
Thermal plant of Cartagena Amount: 0.1 m^3	Spill of hydrochloric acid.	No impact on the environment; the spill caused safety problems to the personnel involved.

Costa Rica

Hydro and wind power generation

Enel Latin America LLC



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
3	55	199

Power installations

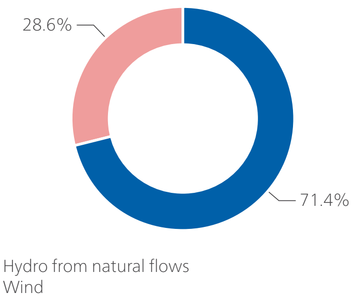
HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	**2**	**2**	**31**

WIND	Power plants no.	Net maximum electrical capacity MW
	1	**24**

All the power plants are ISO 14001-certified.

Net electricity generation

Total: 199 million kWh



Equivalent yearly hours of utilization*

Hydro: **4,584 hours**

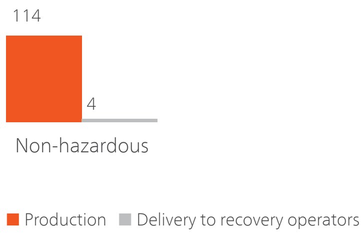
Wind: **2,378 hours**

* Yearly generation/capacity ratio.

Special waste

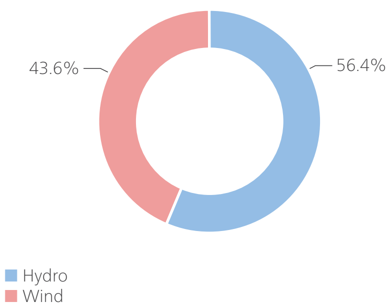
Total production: **114 t**

Total delivery to recovery operators: **4 t**



Net maximum electrical capacity

Total: 55 MW



Avoided CO_2 emissions

Due to hydro generation from natural flows	78,963
Due to wind generation	31,713
Total	**110,675**

Emissions from the otherwise necessary fossil-fired thermal generation.
The contribution of geothermal generation has been calculated on the assumption that the related CO_2 emissions are of natural origin.

Expendables

Total: 1.38 t

Other data

Wind generation

Wind system

Surface area occupied by platforms, service roads and buildings : **35 ha**

Total surface area affected by the installations: **from 20 to 100 times larger**

Environmental Results

Status data

		2006	2007	2008	2009	**2010**
Power-generating installations						
Power plants	no.	3	3	3	3	3
hydro	no.	2	2	2	2	2
wind	no.	1	1	1	1	1
Net maximum electrical capacity	MW	55	55	55	55	55
hydro	MW	31	31	31	31	31
wind	MW	24	24	24	24	24
EN29 **Service & real-estate management** (1)						
Vehicle fleet						
service vehicles	no.					20
special vehicles	no.					1
Gross real-estate surface area	thousand m^2					0.800

(1) These activities have been surveyed since 2010.

Resources

		2006	2007	2008	2009	**2010**
EN4 **Primary electricity**						
Various activities	million kWh	0	0	0	0	0.277
EN1 **Expendables**						
Lubricating oil	t	0.990	1.77	0.337	0.229	1.38
Dielectric oil	t	7.62	0	0	0	0
Other	t	0.035	0	0	0	0
Total	**t**	**8.64**	**1.77**	**0.337**	**0.229**	**1.38**
for hydro generation	t	7.50	0.792	0.156	0.119	0.922
for wind generation	t	1.14	0.975	0.181	0.110	0.460

Processes and products

		2006	2007	2008	2009	**2010**
Electricity generation (net)						
From renewables	million kWh	210	207	181	191	199
hydro from natural flows	million kWh	135	136	134	116	142
wind	million kWh	74.5	70.8	47.4	75.1	57.1

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN16 CO_2	various activities	thousand t	0.004	0	0	0	0
EN18 **Avoided CO_2 emissions**							
Due to hydro generation from natural flows		thousand t	82.9	83.2	81.9	71.2	79
Due to wind generation		thousand t	45.6	43.4	29	46	31.7
Due to electricity generation from renewables		thousand t	129	127	111	117	111
EN22 **Non-hazardous special waste**							
production	electricity generation	t	8.20	115	40.7	108	114
	various activities	t	0	0	0	0	0.010
	Total	t	8.20	115	40.7	108	114
delivery to recovery operators	electricity generation	t	4.80	109	0	4.48	3.61
EN22 **Hazardous special waste**	electricity generation						
production		t	0	0.051	700	0.664	0.001
delivery to recovery operators		t	0	0.014	0	0.664	0.001
EN22 **Total special waste**							
production	electricity generation	t	8.20	115	741	109	114
	various activities	t	0	0	0	0	0.010
	Total	t	8.20	115	741	109	114
delivery to recovery operators	electricity generation	t	4.80	109	0	5.15	3.62

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Electricity generation from renewables								
hydro from natural flows	% of total generation	64.5	65.7	73.8	60.7	71.3	10.5	17.5
wind	% of total generation	35.5	34.3	26.2	39.3	28.7	-19.2	-27.0
EN22 **Waste recovery**								
Other non-hazardous special waste								
electricity generation	% of production	58.5	94.8	0	4.15	3.18	-94.6	-23.4
Other hazardous special waste								
electricity generation	% of production	0	27.5	0	100	100	0.0	0.0
Total special waste								
electricity generation	% of production	58.5	94.8	0	4.73	3.18	-94.6	-32.8

Highlights of 2010

Total generation was up by ~8 GWh; in particular hydro generation mounted by ~26 GWh (+22%), whereas wind power generation declined by ~18 GWh (-24%). Therefore, in the generating mix, the share of hydro climbed by ~11 percentage points.

Enel operates in Costa Rica through Enel Green Power (hydro and wind power generation).

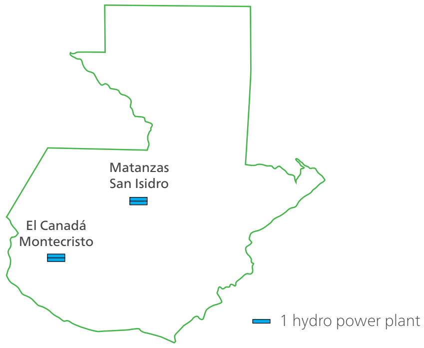
EN18 CO_2 emissions displaced by electricity generation from renewables amounted to about 111,000 tonnes (i.e. roughly 5% less than in 2009) in spite of increased generation, owing to the decrease of specific emissions of CO_2 in thermal generation in the Latin American countries where the Group operates.

EN23 Spills

Costa Rica	*Description of the spill*	*Impact and mitigation*
Amount: **0.035 m³**	Spill of mineral oil, owing to the detachment of a wind turbine blade.	No impact: the soil was removed and treated. Oil-contaminated solid materials, consisting of filtering substances and soil, are treated as oily waste and delivered to authorized operators.

Guatemala

Hydro power generation   Enel Latin America LLC



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
4	76	354

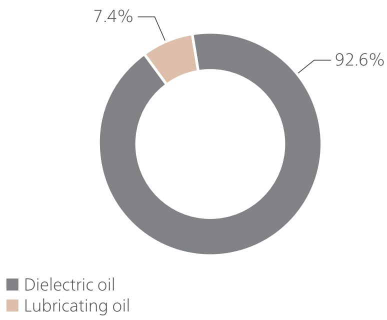
Net maximum electrical capacity
Total: 76 MW

Net electricity generation
Total: 354 million kWh

Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	1	1	3
Pondage/reservoir	3	3	73
	4	**4**	**76**

Expendables
Total: 9.18 t



Equivalent yearly hours of utilization*

Hydro: **4,635 hours**

* Yearly generation/capacity ratio.

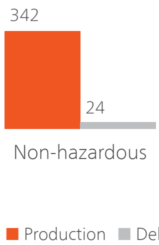
Avoided CO_2 emissions

Due to hydro generation from natural flows: **196,926 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Special waste

Total production: **342 t**
Total delivery to recovery operators: **24 t**



Environmental Results

Status data

		2006	2007	2008	2009	2010
Power installations						
Power plants (hydro)	no.	3	4	4	4	4
Net maximum electrical capacity (hydro)	MW	63	74	75.7	76.5	76.5
EN29 **Service & real-estate management** (1)						
Vehicle fleet						
vehicles for both private and service use	no.					8
Gross real-estate surface area	thousand m^2					0.700

(1) These activities have been surveyed since 2010.

Resources

		2006	2007	2008	2009	2010
EN1 EN3 **Fossil fuels**						
Various activities	thousand toe	0.002	0.002	0.004	0.001	0.014
	TJ	0.084	0.084	0.167	0.042	0.586
EN4 **Primary electricity**						
Various activities	million kWh	0	0	0	0	0.047
EN1 **Expendables**						
Lubricating oil	t	1.20	1.79	1.49	1.10	0.677
Dielectric oil	t	0	0	8.64	0	8.50
Printing paper	t	0	0	0	0	2.48
Other	t	0	1.42	0.131	0	0
Total	**t**	**1.20**	**3.21**	**10.3**	**1.10**	**11.7**
for hydro generation	t	1.20	3.21	10.3	1.10	9.18

Processes and products

		2006	2007	2008	2009	2010
Electricity generation (net)						
From renewables (hydro from natural flows)	**million kWh**	**205**	**274**	**343**	**287**	**354**

Emissions

	Source		2006	2007	2008	2009	2010
Emissions into the atmosphere							
EN16 CO_2	various activities	thousand t	0.005	0.004	0.011	0	0.022
EN18 **Avoided CO_2 emissions**							
Due to hydro generation from natural flows		thousand t	126	168	210	176	197
EN22 **Non-hazardous special waste**							
production	electricity generation	t	32,096	21,501	29,765	48.2	342
	various activities	t	0	0	0	0	0.014
	Total	**t**	**32,096**	**21,501**	**29,765**	**48.2**	**342**
delivery to recovery operators	electricity generation	t	0.470	0	24.5	25.2	24.1
EN22 **Hazardous special waste**	electricity generation						
production		t	0.072	0.083	0.240	0.895	0.071
of which with PCBs		*t*	*0*	*0*	*0.206*	*0.825*	*0.001*
delivery to recovery operators		t	0.036	0.083	0.017	0	0.020
EN22 **Total special waste**							
production	electricity generation	t	32,096	21,501	29,765	49.1	342
	various activities	t	0	0	0	0	0.014
	Total	**t**	**32,096**	**21,501**	**29,765**	**49.1**	**342**
delivery to recovery operators	electricity generation	t	0.506	0.083	24.5	25.2	24.1

Indicators

		2006	2007	2008	2009	2010	% ('10-'06)/'06	% ('10-'09)/'09
Electricity generation from renewables								
hydro from natural flows	% of total generation	100	100	100	100	100	0.0	0.0
EN22 **Waste recovery**								
Other non-hazardous special waste								
electricity generation	% of production	0.001	0	0.082	52.4	7.05	704,900.0	-86.5
Other hazardous special waste								
electricity generation	% of production	50	100	7.08	0	28.2	-43.6	0.0
Total special waste								
electricity generation	% of production	0.002	0	0.082	51.5	7.05	352,400.0	-86.3

Highlights of 2010

Total hydro generation was up by ~24 GWh (+8% on 2009).

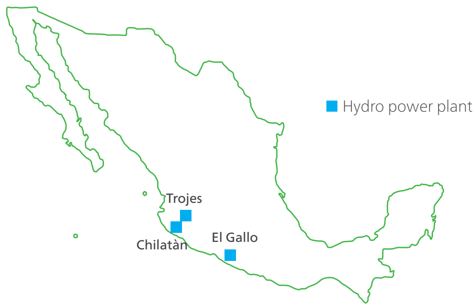
EN18 CO_2 emissions displaced by electricity generation from renewables amounted to about 198,000 tonnes, i.e. 7% more than in 2009.

Enel operates in Guatemala through Enel Latin America (hydro power generation).

Mexico

Hydro power generation

Enel Latin America LLC



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
3	53	277

Power installations

	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Pondage/reservoir	**3**	**3**	**53**

Net electricity generation

Total: 277 million kWh

Avoided CO_2 emissions

Due to hydro generation from natural flows: **154,158 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Equivalent yearly hours of utilization*

Hydro: **5,282 hours**

* Yearly generation/capacity ratio.

Expendables

Total: 1 t

100% lubricating oil

Environmental Results

Status data

		2007	2008	2009	2010
Power installations					
Power plants (hydro)	no.	3	3	3	3
Net maximum electrical capacity (hydro)	MW	56.3	52.5	52.4	52.5

Resources

		2007	2008	2009	2010
EN1 **Expendables**					
Lubricating oil	t	0.280	0.424	0.541	1.01
Dielectric oil	t	0.017	0.006	0	0
Other	t	0	0	0.006	0
Total	**t**	**0.297**	**0.430**	**0.547**	**1.01**
for hydro generation	t	0.297	0.430	0.547	1.01

Processes and products

		2007	2008	2009	2010
Electricity generation (net)					
From renewables (hydro from natural flows)	million kWh	229	235	178	277

Emissions

	Source		2007	2008	2009	2010
Emissions into the atmosphere						
EN16 CO_2	various activities	thousand t	0.001	0	0	0
EN18 **Avoided CO_2 emissions**						
Due to hydro generation from natural flows		thousand t	140	144	109	154
EN22 **Non-hazardous special waste**	electricity generation					
production		t	4.80	0.269	0	1.22
delivery to recovery operators		t	0	0.199	0.002	1.19
EN22 **Hazardous special waste**	electricity generation					
production		t	0.492	0.596	0	0.931
of which with PCBs			*0.297*	*0.402*	*0*	*0.883*
delivery to recovery operators		t	0.331	0.507	0	0.158
of which with PCBs		*t*	*0.208*	*0.339*	*0*	*0.158*
EN22 **Total special waste**	electricity generation					
production		t	5.29	0.865	0	2.15
delivery to recovery operators		t	0.331	0.706	0.002	1.35

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
Electricity generation from renewables						
hydro from natural flows	% of total generation	100	100	100	100	0.0
EN22 **Waste recovery**						
Other non-hazardous special waste						
electricity generation	% of production	0	74	0	97.5	0.0
Other hazardous special waste						
electricity generation	% of production	67.3	85.1	0	17	0.0
Total special waste						
electricity generation	% of production	6.26	81.6	0	62.7	0.0

Highlights of 2010

Enel operates in Mexico through Enel Green Power (hydro power generation in central Mexico).

Total hydro generation was up by ~100 GWh (+56%) on 2009.

EN18 CO_2 emissions displaced by electricity generation from renewables amounted to about 154,000 tonnes, roughly 38% more than in the previous year.

EN5 Plant efficiency enhancements.

Hydro power

> Application of operating-efficiency methodologies in the three hydro power plants.

EN5 EN6 EN18 Enel Green Power built a 130-kW photovoltaic power plant, capable of generating 220 MWh/yr. The plant covered the power requirements of the Moon Palace Hotel in Cancun, venue of the 16th session of the Conference of the Parties (COP16) to the Framework Convention on Climate Change (UNFCCC) and of the 6th session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP6); the sessions were held from November 29 to December 16, 2010 and 110 tonnes of CO_2 emissions into the atmosphere were displaced. Thanks to their technical features, the photovoltaic panels capture diffuse light and generate power even under critical climate conditions. They can be easily installed and can withstand high temperature and hurricanes.

EN22 It is worth noting that no waste was produced in 2009.

EN26 Environmental enhancements.

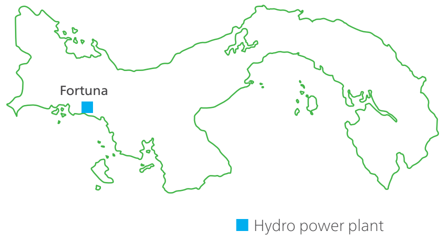
> Trojes plant: construction of a landslide-retaining structure made of concrete and steel nets. This initiative is planned to be extended in 2011 to other areas near the plant. During the rainy season, the area is exposed to recurrent landslides causing a major environmental impact.
Environmental audit to initiate the process of environmental certification of the three hydro plants.

EN22 The recovery of waste improved significantly, passing to about 63%.

Panama

Hydro power generation

Enel Latin America LLC



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
1	300	1,793

Power installations

	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	0	0	1
Pondage/reservoir	1	1	299
	1	**1**	**300**

The Fortuna power plant is ISO 14001-certified.

Net maximum electrical capacity

Total: 300 MW

Equivalent yearly hours of utilization*

Hydro: **5,977 hours**

* Yearly generation/capacity ratio.

Expendables

Total: 3.87 t

100% lubricating oil

Net electricity generation

Total: 1,793 million kWh

Avoided CO_2 emissions

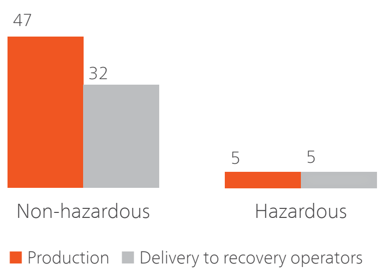
Due to hydro generation from natural flows: **996,270 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Special waste

Total production: **52 t**

Total delivery to recovery operators: **37 t**



Environmental Results

Status data

		2007	2008	2009	2010
Power installations					
Power plants (hydro)	**no.**	**1**	**1**	**1**	**1**
Net maximum electrical capacity (hydro)	**MW**	**300**	**300**	**300**	**300**
EN29 **Service & real-estate management**					
Vehicle fleet					
service vehicles	no.				47

Resources

		2007	2008	2009	2010
EN1 EN3 **Fossil fuels**					
Various activities	thousand toe	0.001	0.001	0	0.109
	TJ	0.042	0.042	0	4.56
Water for non-industrial uses					
Real-estate & service management	million m^3	0	0	0	0.010
EN1 **Expendables**					
Lubricating oil	t	8.86	8.86	4.07	3.87

Processes and products

		2007	2008	2009	2010
Electricity generation (net)					
From renewables (hydro from natural flows)	**million kWh**	**1,438**	**1,754**	**1,792**	**1,793**

Emissions

	Source		2007	2008	2009	2010
Emissions into the atmosphere						
EN16 CO_2	various activities	thousand t	0.002	0.002	0	0.336
EN18 **Avoided CO_2 emissions**						
Due to hydro generation from natural flows	thousand t		881	1,075	1,098	996
EN22 **Non-hazardous special waste**						
production	electricity generation	t	0	0	10.4	47.3
	various activities	t	0	0	0	0.754
	Total	**t**	**0**	**0**	**10.4**	**48**
delivery to recovery operators	electricity generation		0	0	8.75	31.7

	Source		2007	2008	2009	2010
EN22 **Hazardous special waste**						
production	electricity generation	t	1.50	12	0	4.81
	various activities	t	0	0	0	4.14
	Total	**t**	**1.50**	**12**	**0**	**8.95**
of which with PCBs			*0*	*0*	*0*	*2.64*
delivery to recovery operators	electricity generation	t	1.50	12	0	4.81
of which with PCBs		*t*	*0*	*0*	*0*	*2.64*
EN22 **Total special waste**						
production	electricity generation	t	1.50	12	10.4	52.1
	various activities	t	0	0	0	4.89
	Total	**t**	**1.50**	**12**	**10.4**	**57**
delivery to recovery operators	electricity generation	t	1.50	12	8.75	36.5

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
Electricity generation from renewables						
hydro from natural flows	% of total generation	100	100	100	100	0.0
EN22 **Waste recovery**						
Other non-hazardous special waste						
electricity generation	% of production	0	0	84.1	67	-20.3
Other hazardous special waste						
electricity generation	% of production	100	100	0	100	0.0
Total special waste						
electricity generation	% of production	100	100	84.1	70.1	-16.6

Highlights of 2010

Enel operates in Panama through Enel Latin America (hydro power generation in the Fortuna power plant, located in the Valle del Si-erpe, Chiriquí province).

Total hydro power generation was equal to 1,793 GWh, up by ~1 GWh from last year.

EN18 CO_2 emissions displaced by electricity generation from renewables amounted to about 996,000 tonnes, roughly 8% less than in the previous year owing to the reduction of specific CO_2 emissions from thermal generation in the Latin American countries where the Group operates.

EN22 The few items of waste produced and their limited amount cause relatively strong fluctuations in their production and recovery figures over the years.

Peru

Thermal power generation

Endesa SA

The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
3	1,036	4,728

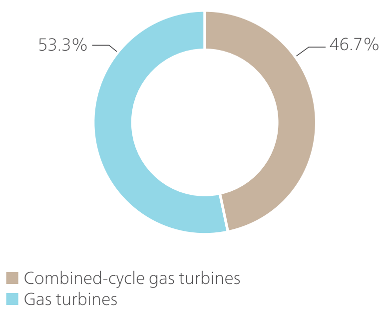
Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Repowered with gas turbines	1	3	484
Gas turbines	2	7	522
	3	**10**	**1,036**

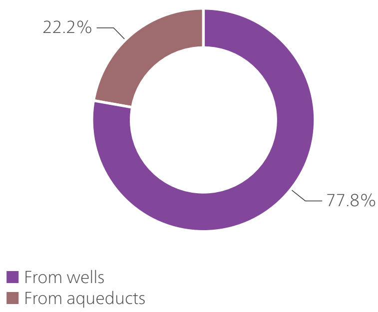
All the power plants are ISO 14001-certified.

Net electricity generation
Total: 4,728 million kWh

Net maximum electrical capacity
Total: 1,036 MW



Water for industrial uses
Total requirements: 187,091 m^3
Total abstraction from inland waters: 187,091 m^3



Waste waters

82,624 m^3

Discharged

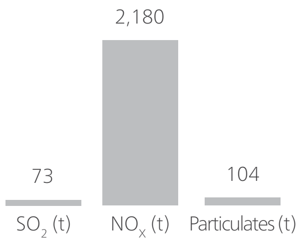
Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

Fuel consumption

Total: **961,011 t of oil-equivalent**

100% natural gas

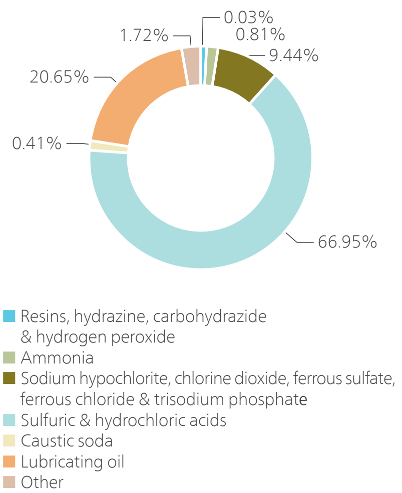
Emissions into the atmosphere



CO_2: **1,958,718 t**

Expendables

Total: 878 t



Special waste

Total production: **537 t**

Total delivery to recovery operators: **23 t**

Non-hazardous

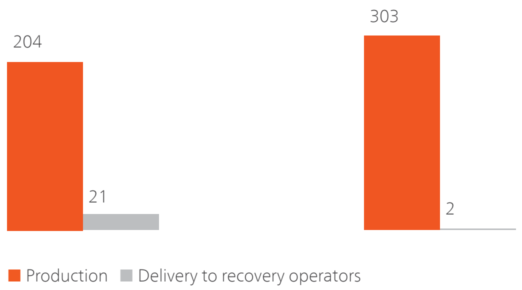
Production: 204 t

Delivery to recovery operators: 21 t

Hazardous

Production: 333 t

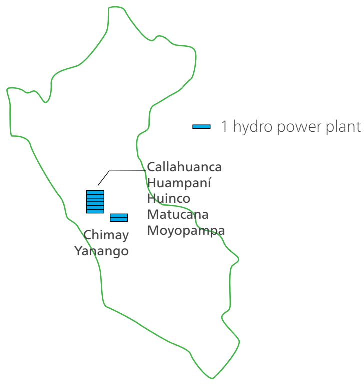
Delivery to recovery operators: 2 t



Peru

Hydro power generation

Endesa SA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
7	738	4,405

Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum electrical capacity MW
Run-of-river	5	12	344
Pondage/reservoir	2	6	394
	7	**18**	**738**

All the power plants have ISO 14001-certified environmental management systems in place.

Net electricity generation

Total: 4,405 million kWh

Equivalent yearly hours of utilization*

Hydro: **5,963 hours**

* Yearly generation/capacity ratio. For Endesa, generation is considered to refer to the entire year.

Expendables

Total: 9 t

100% lubricating oil

Avoided CO_2 emissions

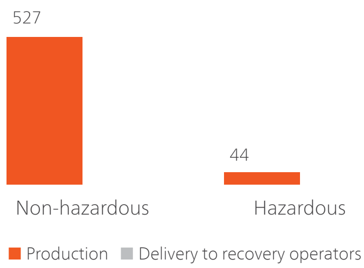
Due to hydro generation from natural flows: **1,824,973 t**

Emissions from the otherwise necessary fossil-fired thermal generation.

Special waste

Total production: **571 t**

Total delivery to recovery operators: **0 t**



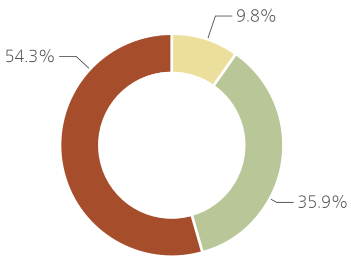
Peru

Electricity distribution

Endesa SA

The Numbers

Substations	Capacity (MVA)	Total lines (km)
8,374	2,742	23,377



Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	11	1,360
MV/LV	8,359	1,347
MV/MV	4	35
	8,374	**2,742**

LINES (length in km)	Overhead bare conductors	Overhead cables	Underground cables	Total
HV	413	-	36	**449**
MV	1,888	67	1,739	**3,694**
LV	0	8,319	10,916	**19,234**
	2,301	**8,386**	**12,691**	**23,377**

The organization has an ISO 14001-certified environmental management system in place.

General data

Municipalities served (no.): **52**

Surface area served: **2,440 km²**

Customers connected to the grid: **1,097,533** (of which supplied: **1,097,533**)

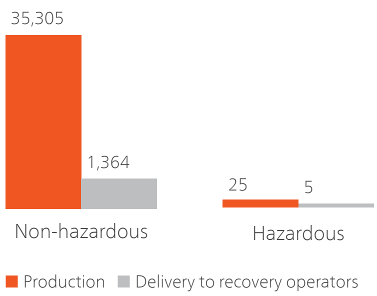
Resource consumption

Expendables: **5 t**

Special waste

Total production: **35,330 t**

Total delivery to recovery operators: **1,369 t**



Electricity

Total electricity distributed: **6,126 million kWh**

Own consumption for grid operation: **10 million kWh**

Emissions into the atmosphere

SF_6: **52 kg** (1,143 t of CO_2-equivalent)

CO_2: **86 t**

Total greenhouse gases: **1,229 t of CO_2-equivalent**

Environmental Results

Status data

		2007	2008	2009	2010
Power-generating installations					
Power plants	no.	7	10	10	10
thermal	no.	2	2	3	3
hydro	no.	5	8	7	7
Net maximum electrical capacity	MW	1,082	1,071	1,774	1,775
thermal	MW	583	572	1,037	1,037
hydro	MW	499	499	737	739
Power lines (circuit-length)					
Total	km	14,338	14,723	22,741	23,378
high-voltage	km	281	285	436	449
medium-voltage	km	2,249	2,333	3,597	3,694
low-voltage	km	11,808	12,104	18,708	19,234

Resources

		2007	2008	2009	2010
EN1 EN3 **Fossil fuels**					
Thermal generation					
gas-oil	thousand t	0.344	20	4.81	0.417
	thousand toe	0.348	20.6	4.73	0.461
natural gas	million m^3	151	701	942	1,106
	thousand toe	140	613	822	961
technologically captive use	*million m^3*	*151*	*701*	*942*	*1,085*
	thousand toe	*140*	*613*	*822*	*942*
of which in combined-cycle units	million m^3	0	454	609	596
	thousand toe	0	397	534	520
non-technologically captive use	*million m^3*	*0*	*0*	*0*	*21*
	thousand toe	*0*	*0*	*0*	*18.3*
Total	thousand toe	141	634	827	961
	TJ	5,890	26,536	34,614	40,236
EN8 **Water for industrial uses**					
From wells	million m^3	0.062	0.160	0.131	0.146
From aqueducts	million m^3	0	0	0.072	0.041
Total abstraction from inland waters	million m^3	0.062	0.160	0.203	0.187
for thermal generation	million m^3	0.062	0.160	0.203	0.187
EN8 EN21 **Open-cycle cooling water**					
For thermal generation	million m^3	0.494	0	3.17	2.83

		2007	2008	2009	2010
EN1 Expendables					
Hydrazine	t	0	0.198	0.220	0.230
Ammonia	t	0	4.94	6.37	7.09
Sodium hypochlorite	t	0	42.3	90.6	82.9
Sulfuric & hydrochloric acids	t	0	455	665	588
Caustic soda	t	0	2.29	10.5	3.57
Lubricating oil	t	0.300	8.75	17	191
Dielectric oil	t	0.707	1.11	1.33	2.50
Other	t	0	3.45	21.4	17.1
Total	**t**	**1.01**	**519**	**812**	**892**
for thermal generation	t	0	516	804	878
for hydro generation	t	0.300	1.62	7.21	9.27
for electricity distribution	t	0.707	0.925	1.33	4.50

Processes and products

		2007	2008	2009	2010
Electricity generation (net)					
From fossil fuels (simple)	**million kWh**	**644**	**3,078**	**4,164**	**4,728**
fuel oil & gas-oil	million kWh	1.37	87.7	15.9	2.17
natural gas	million kWh	643	2,991	4,148	4,726
of which in combined-cycle units	*million kWh*	*0*	*2,242*	*3,179*	*3,040*
From renewables (hydro from natural flows)	**million kWh**	**630**	**2,809**	**4,564**	**4,405**
Total	**million kWh**	**1,274**	**5,887**	**8,728**	**9,133**
Electricity distribution					
Electricity distributed	million kWh	773	4,090	5,716	6,126
EN4 Electricity consumption for grid operation	million kWh	1.26	5.81	10	9.76

Emissions

	Source		2007	2008	2009	2010
Emissions into the atmosphere						
EN20 SO_2	thermal generation	thousand t	0.009	0.136	0.096	0.073
EN20 NO_X	thermal generation	thousand t	0.420	1.88	2.48	2.18
EN20 Particulates	thermal generation	thousand t	0.014	0.069	0.087	0.104
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	287	1,473	1,671	1,959
	various activities	thousand t	0	0.056	0	0.086
EN16 SF_6	electricity distribution	kg	0.335	0	5.50	51.5
		thousand t of CO_2-equivalent	0.008	0	0.125	1.17
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		**thousand t of CO_2-equivalent**	**287**	**1,473**	**1,671**	**1,960**
EN18 **Avoided CO_2 emissions**						
Due to hydro generation from natural flows		thousand t	280	1,343	1,832	1,825
EN21 **Waste waters (discharged quantity)**	thermal generation	million m³	0	0.065	0.039	0.083
EN22 **Non-hazardous special waste**						
production	electricity generation	t	49.9	164	798	731
	electricity distribution	t	88.1	307	2,489	35,305
	Total	**t**	**138**	**471**	**3,287**	**36,036**
delivery to recovery operators	electricity generation	t	0.180	0.020	0.762	21
	electricity distribution	t	84.8	291	555	1,364
	Total	**t**	**85**	**291**	**556**	**1,385**
EN22 **Hazardous special waste**						
production	electricity generation	t	37.6	72.3	217	377
	electricity distribution	t	6.13	7.35	17.8	25.1
	Total	**t**	**43.7**	**79.7**	**235**	**402**
of which with PCBs	*electricity generation*	*t*	*0*	*12.3*	*5.57*	*54.6*
	electricity distribution	*t*	*0*	*2.73*	*2.91*	*5.26*
	Total	***t***	***0***	***15.1***	***8.48***	***59.8***
delivery to recovery operators	electricity generation	t	1	12.4	76.5	1.86
	electricity distribution	t	0.671	2.73	2.91	5.21
	Total	**t**	**1.67**	**15.2**	**79.4**	**7.07**
of which with PCBs	*electricity generation*	*t*	*0*	*12.3*	*5.06*	*1.86*
	electricity distribution	*t*	*0*	*2.73*	*2.91*	*5*
	Total	***t***	***0***	***15.1***	***7.97***	***6.86***
EN22 **Total special waste**						
production	electricity generation	t	87.5	236	1,015	1,108
	electricity distribution	t	94.2	314	2,507	35,330
	Total	**t**	**182**	**550**	**3,522**	**36,438**
delivery to recovery operators	electricity generation	t	1.18	12.4	77.3	22.9
	electricity distribution	t	85.5	294	558	1,369
	Total	**t**	**86.7**	**306**	**635**	**1,392**

Indicators

		2007	2008	2009	2010	% ('10-'09)/'09
EN29 Land						
LV cable lines						
overhead	% of entire LV grid	40.9	41.9	42.6	43.2	1.4
underground	% of entire LV grid	59.1	58.1	57.4	56.8	-1.0
Total	**% of entire LV grid**	**100**	**100**	**100**	**100**	**0.0**
MV cable lines						
overhead	% of entire MV grid	2.21	1.86	1.86	1.81	-2.7
underground	% of entire MV grid	46.1	46.7	47.5	47.1	-0.8
Total	**% of entire MV grid**	**48.4**	**48.6**	**49.4**	**48.9**	**-1.0**
Overhead and underground cables in HV+MV+LV distribution lines	% of total distribution grid	90.1	90	90.2	90.2	0.0
Resource conservation and quality						
EN1 EN3 Net heat rate of thermal generation	kcal/kWh	2,183	2,059	1,986	2,033	2.4
EN4 Consumption of electricity for distribution grid operation	% of electricity distributed	0.163	0.142	0.175	0.159	-9.1
EN8 Net specific requirements of water for industrial uses in thermal generation						
including contribution of as-is sea water	liters/kWh	0.096	0.052	0.049	0.040	-18.4
excluding contribution of as-is sea water	liters/kWh	0.096	0.052	0.049	0.040	-18.4
EN8 Coverage of requirements of water for industrial uses						
from wells	% of requirements	100	100	64.5	78.1	21.1
from aqueducts	% of requirements	0	0	35.5	21.9	-38.3
Total from inland waters	**% of requirements**	**100**	**100**	**100**	**100**	**0.0**
EN1 EN3 Fossil fuel consumption for thermal generation						
gas-oil	% of total fuel consumption	0.247	3.25	0.572	0.048	-91.6
natural gas	% of total fuel consumption	99.8	96.8	99.4	100	0.6
natural gas, technologically captive use	% of total natural-gas consumption	100	100	100	98.1	-1.9
of which in combined-cycle units	*% of total natural-gas consumption*	*0*	*64.7*	*64.9*	*54.1*	*-16.6*
natural gas, non-technologically captive use	% of total natural-gas consumption	0	0	0	1.90	0.0
Electricity generation from renewables						
hydro from natural flows	% of total generation	49.4	47.7	52.3	48.2	-7.8
Specific emissions into the atmosphere						
EN20 SO_2 (thermal generation)	g/kWh thermal net	0.014	0.044	0.023	0.015	-34.8
EN20 NO_X (thermal generation)	g/kWh thermal net	0.652	0.609	0.597	0.461	-22.8
EN20 Particulates (thermal generation)	g/kWh thermal net	0.022	0.022	0.021	0.022	4.8
EN16 CO_2 (thermal generation)	g/kWh thermal net	445	478	401	414	3.2
EN20 SO_2 (total from thermal generation)	g/kWh total net	0.007	0.023	0.011	0.008	-27.3
EN20 NO_X (total from thermal generation)	g/kWh total net	0.330	0.319	0.285	0.239	-16.1
EN20 Particulates (total from thermal generation)	g/kWh total net	0.011	0.012	0.010	0.011	10.0
EN16 CO_2 (total from thermal generation)	g/kWh total net	225	250	191	214	12.0
EN16 SF_6 (electric activities)	% of SF_6 in equipment or in stock	0.035	0	0.297	2.39	704.7
EN22 Waste recovery						
Other non-hazardous special waste						
electricity generation	% of production	0.360	0.012	0.095	2.88	2,931.6
electricity distribution	% of production	96.3	94.7	22.3	3.86	-82.7
Total	**% of production**	**61.6**	**61.8**	**16.9**	**3.84**	**-77.3**
Other hazardous special waste						
electricity generation	% of production	2.66	17.2	35.3	0.492	-98.6
electricity distribution	% of production	10.9	37.1	16.4	20.8	26.8
Total	**% of production**	**3.82**	**19**	**33.9**	**1.76**	**-94.8**
Total special waste						
electricity generation	% of production	1.35	5.27	7.62	2.07	-72.8
electricity distribution	% of production	90.7	93.4	22.3	3.87	-82.6
Total	**% of production**	**47.7**	**55.6**	**18**	**3.82**	**-78.8**

Highlights of 2010

Fossil-fired thermal generation was up by ~564 GWh, whereas hydro generation was down by ~160 GWh; consequently, the share of thermal generation in the generating mix was up by about 4 percentage points.

EN1 EN3 The fuel mix (gas and gas-oil, the latter only for plant start-up) remained practically unaltered.

EN1 EN3 EN5 The net heat rate of simple thermal generation slightly worsened (+47 kcal/kWh, i.e. ~+2%) owing to higher utilization of gas turbines (less efficient) than of combined-cycle units.

EN5 Plant efficiency improvements.

Thermal generation

> Clean-up of compressors in all the generating units.

EN8 The net specific requirements of water for industrial uses in thermal generation decreased by about 20% (from 0.49 to 0.40 liters/kWh).

EN16 Owing to higher utilization of less efficient thermal units and to lower hydro generation, specific emissions of CO_2 were up by 23 g/kWh total net (~+12%).

EN20 Net specific emissions of NO_X were down by ~8% thanks to the better abatement capability of the gas turbines with higher utilization.

EN18 Emissions of CO_2 avoided as a result of generation from renewables amounted to approximately 1.8 million tonnes, in line with their value in 2009.

EN19 Ozone-depleting substances:

Freon
Amount: **na**
Emissions: **0 kg**
Place: air conditioning and heating systems.

Enel operates in Peru through Endesa (hydro and thermal power generation, electricity distribution and sales).

EN22 In the course of 2010, demolition works significantly increased the amount of non-hazardous waste produced in the distribution activity. The production of hazardous waste in 2009 was very high as compared to the other years of the time series, owing to the disposal of oily waters coming from systems treating waters susceptible to oil pollution.

EN26 Environmental enhancements.

Emissions

> Monitoring of emissions from the vehicles of the company and of suppliers to check compliance with the applicable limits.

Soil

> Installation of tanks to contain oil leakage from transformers.

PCBs

> Disposal of equipment and transformers containing PCBs and internal monitoring of compliance with waste management procedures.

Training & education

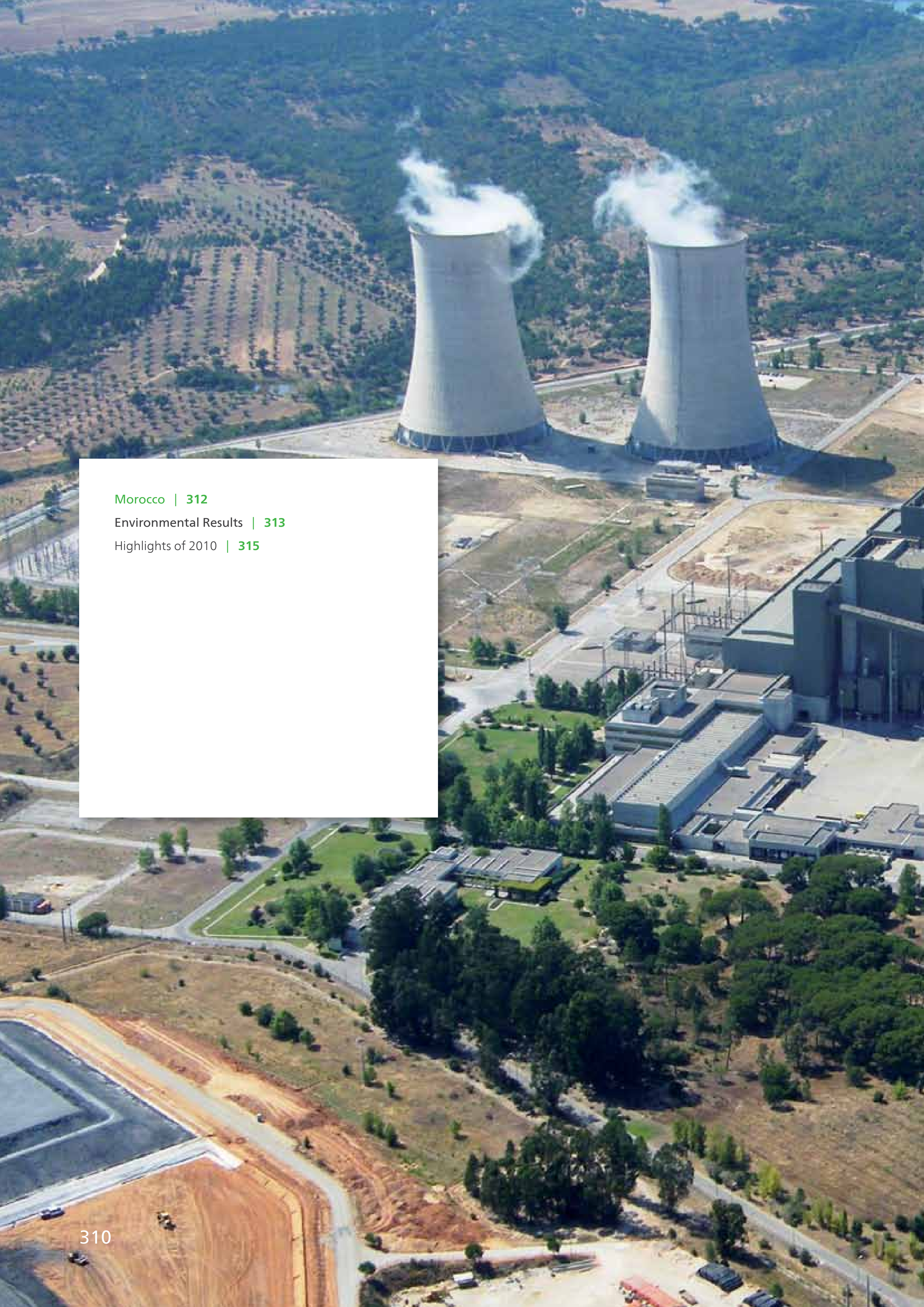
> Environmental training & education of internal personnel.

Monitoring

> Water quality, noise and electromagnetic field monitoring.

Other

> Auditing of suppliers and supervision of works of subcontractors to check compliance with waste management procedures.

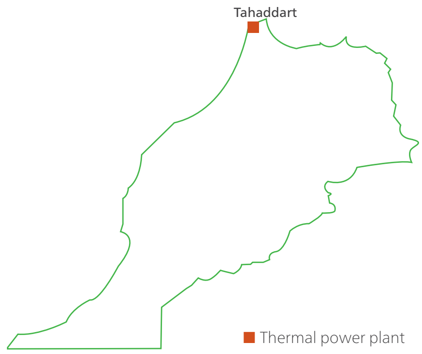


Africa

Morocco

Thermal power generation

Endesa SA



The Numbers

Power plants	Net capacity (MW)	Generation (million kWh)
1	123	689

Power installations

	Power plants no.	Units no.	Net maximum electrical capacity MW
Combined-cycle gas turbines	**1**	**1**	**123**

The Tahaddart power plant is ISO 14001-certified for a total capacity of 123 MW.

Net electricity generation

Total: 689 million kWh

Water for industrial uses

Total requirements: 213,034 m3

Total abstraction from inland waters: 18,650 m3

Fuel consumption

Total: 106,648 t of oil-equivalent

Waste waters

Discharged: 7,324 m3

Waste waters include those meteoric waters that are susceptible to pollution and are therefore fed to treatment systems before being discharged or used.

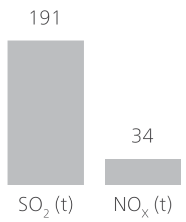
Special waste

Total production: **17 t**

Non-hazardous
Production: 16 t

Hazardous
Production: 1t

Emissions into the atmosphere



CO_2: **266,552.96 t**

Environmental Results

Status data

		2010
Power-generating installations		
Power plants (thermal)	no.	1
Net maximum electrical capacity (thermal)	MW	123

Resources

		2010
EN1 EN3 **Fossil fuels**		
Thermal generation		
natural gas - technologically captive use in combined-cycle units	million m^3	119
	thousand toe	107
	TJ	4,465
EN8 **Water for industrial uses**		
From aqueducts	million m^3	0.019
Total abstraction from inland waters	**million m^3**	**0.019**
From the sea (as-is)	million m^3	0.194
Total requirements	**million m^3**	**0.213**
for thermal power generation	million m^3	0.213
EN1 **Expendables**		
Resins	t	0.016
Hydrazine	t	0.096
Ammonia	t	0.640
Sodium hypochlorite	t	41.9
Trisodium phosphate	t	0.064
Sulfuric & hydrochloric acids	t	2.24
Caustic soda	t	2.24
Other	t	7.68
Total	**t**	**54.9**
for thermal generation	t	54.9

Processes and products

		2010
Electricity generation (net)		
From fossil fuels (natural gas)	million kWh	689

Emissions

	Source		2010
Emissions into the atmosphere			
EN20 SO_2	thermal generation	thousand t	0.191
EN20 NO_X	thermal generation	thousand t	0.034
EN16 CO_2	fossil-fired thermal generation (from combustion)	thousand t	267
EN16 Total greenhouse gases (CO_2, SF_6, CH_4)		thousand t of CO_2-equivalent	267
EN21 **Waste waters (discharged quantity)**	thermal generation	million m^3	0.007
EN21 **Conventional polluting load of waste waters discharged by plants**			
Metals and compounds (expressed as metal equivalents)	thermal generation	kg	4,187
	in some plants with an overall capacity of	MW	371
EN22 **Non-hazardous special waste**			
production	electricity generation	t	16
EN22 **Hazardous special waste**			
production	electricity generation	t	0.506
of which with PCBs		*t*	*0.506*
EN22 **Total special waste**			
production	electricity generation	t	16.5

Indicators

		2010
Resource conservation and quality		
EN1 EN3 Net specific heat rate of thermal generation (simple)	kcal/kWh	1,547
EN8 Net specific requirements of water for industrial uses in thermal generation		
including contribution of as-is sea water	liters/kWh	0.309
excluding contribution of as-is sea water	liters/kWh	0.028
EN8 Coverage of requirements of water for industrial uses		
from aqueducts	% of requirements	8.92
Total from inland waters	% of requirements	8.92
from the sea (as-is)	% of requirements	91.1
EN1 EN3 Fossil fuel consumption for thermal generation		
natural gas	% of total fuel consumption	100
natural gas, technologically captive use	% of total natural-gas consumption	100
of which in combined-cycle units	*% of total natural-gas consumption*	*100*
Specific emissions into the atmosphere		
EN20 SO_2 (thermal generation)	g/kWh thermal net	0.277
EN20 NO_X (thermal generation)	g/kWh thermal net	0.049
EN16 CO_2 (thermal generation)	g/kWh thermal net	387
EN20 SO_2 (total from thermal generation)	g/kWh total net	0.277
EN20 NO_X (total from thermal generation)	g/kWh total net	0.049
EN16 CO_2 (total from thermal generation)	g/kWh total net	387

Highlights of 2010

EN5 Initiatives of efficiency improvement: replacement of lighting systems with low-consumption ones.

EN6 Renewable-energy initiatives: installation of photovoltaic panels to cover electricity consumption by auxiliaries.

EN8 Water requirements were mainly covered by sea water (91% of the total).

EN26 Environmental enhancements.

Emissions

> Tuning-up of the compressor and burners to obtain a more homogeneous temperature profile in the combustion chamber, thus reducing NO_X and increasing efficiency.

Enel operates in Morocco through Endesa (thermal power generation in the combined-cycle gas-turbine plant of Tahaddart, having a net maximum capacity of about 370 MW – 32% – consolidated by the Group).

Independent Limited Assurance Report on the Environmental Report

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(Translation from the Italian original which remains the definitive version)

Limited assurance report on the environmental report

To the board of directors of
Enel S.p.A.

1 We have reviewed the 2010 environmental report of the Enel Group (the "Group"), exclusively in relation to the indicators summarised in the "GRI Content Index" section. The parent's directors are responsible for the preparation of the environmental report in accordance with the qualitative and quantitative environmental performance disclosures required by the "Sustainability Reporting Guidelines & Electric Utility Sector Supplement" issued in 2009 by GRI - Global Reporting Initiative, as set out in the "Methodological note" section. They are also responsible for determining the Group's objectives in respect of environmental development performance and reporting, including the identification of stakeholders and material issues, and for establishing and maintaining appropriate performance management and internal control systems from which the reported performance information is derived. Our responsibility is to issue this report based on our review.

2 We carried out our work in accordance with the criteria established for review engagements by "International Standard on Assurance Engagements 3000 - Assurance Engagements other than Audits or Reviews of Historical Financial Information (ISAE 3000)", issued by the International Auditing and Assurance Standards Board (IAASB). That Standard requires that we comply with applicable ethical requirements (the Code of Ethics for Professional Accountants issued by the International Federation of Accountants, IFAC), including independence requirements, and that we plan and perform the engagement to obtain limited assurance about whether the report is free from material misstatement. A limited assurance engagement on an environmental report consists of making inquiries, primarily of persons responsible for the preparation of information presented in the environmental report, and applying analytical and other evidence gathering procedures, as appropriate. These procedures included:

- analysing how the processes underlying the generation, recording and management of quantitative data included in the environmental report operate. In particular, we have performed the following procedures:
  - interviews and discussions with management personnel of Enel S.p.A. and personnel of other group companies (Endesa SA, Enel Distribuzione S.p.A., Enel Green Power S.p.A., Enel Produzione S.p.A., Enel OGK-5 OJSC and Slovenské elektrárne AS), to gather information on the IT, accounting and reporting systems used in preparing the environmental report, and on the processes and internal control procedures used to gather, combine, process and transmit data and information to the office that prepares the environmental report;

- sample-based analysis of documentation supporting the preparation of the environmental report to confirm the effectiveness of processes, their adequacy in relation to the objectives described, and that the internal control system correctly manages data and information;

- analysing the compliance of the qualitative information included in the environmental report in relation to the qualitative and quantitative environmental performance disclosures required by the guidelines referred to in paragraph 1 and its overall consistency, in particular with reference to the environmental strategy and policies;
- obtaining the representation letter signed by the legal representative of Enel S.p.A. on the compliance of the environmental report with the qualitative and quantitative environmental performance disclosures required by the guidelines indicated in paragraph 1 and on the reliability and completeness of the information and data contained therein.

A review is less in scope than an audit carried out in accordance with ISAE 3000 and, therefore, it offers a lower level of assurance that we have become aware of all significant matters and events that would be identified during an audit.

The environmental report includes the corresponding information and data of the prior year environmental report for comparative purposes, with respect to which reference should be made our report dated 26 April 2010.

3 Based on the procedures performed, nothing has come to our attention that causes us to believe that the 2010 environmental report of the Enel Group, exclusively in relation to the indicators summarised in the "GRI Content Index" section, is not prepared, in all material respects, in accordance with the qualitative and quantitative environmental performance disclosures required by the Sustainability Reporting Guidelines & Electric Utility Sector Supplement issued in 2009 by GRI - Global Reporting Initiative, as set out in the "Methodological note" section of the environmental report.

Rome, 20 April 2011

KPMG S.p.A.

(signed on the original)

Marco Maffei
Director of Audit

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