

## ENERGY IN TUNE WITH YOU



The history of Enel is a part of the history of Italy, just as Enel is an expression of the Italian flair for innovation, creativity and “getting the job done” that is so characteristic of the country's enterprise culture.

Today, however, Enel is even more: an international company that is driven by its values and their application in contexts beyond Italy's frontiers.

Enel is currently present in eleven countries. In each of these, Enel's concerns, such as the search for innovation, respect for the environment, ethical and social commitment, technological development and attention for our customers, are expressed differently in the local environment while maintaining their universal significance.

This is how Enel forges and promotes a single corporate identity in its operations around the world while embracing the principles of local integration, knowledge transfer and best practices. These principles are put into action through our most important resource: human capital.

It is to our people that we dedicate the images in this publication, which communicate Enel's care for the environment through true stories and real people. Our thanks go to them, who represent all of those working every day to make the company stand out.



The Environmental Report 2005 covers the industrial aspects of electricity generation and electricity and gas distribution activities that Enel carries out in and outside Italy (Spain, Bulgaria, Romania, Americas) with companies included (on a line-by-line basis or proportionally) in its scope of consolidation.

The status data reflect the situation of the companies as of December 31 of each of the reported years.

With regard to the flow data, the same companies are considered in their configuration as of December 31 of each of the reported years and with reference to the entire year, including acquisitions, if any, made in the course of the year.

All the reported data are equal to 100%, whatever the extent of Enel's holdings in the companies. Therefore, the data of the following companies are taken to be equal to 100%: Deval (51% owned by Enel SpA), Maritza East III Power Company (43.8%, through Maritza East III Power Holding), Enel Electrica Banat and Enel Electrica Dobrogea (51% stake in each of them), Barras Eléctricas Galaico Asturianas-BEGASA (54.95% owned by Electra de Viesgo Distribución, in which Enel has a 100% stake and which includes both electricity generation assets – owned through Barras Eléctricas Generación – and electricity distribution assets), and, generally, all the installations – provided that they are included in Enel's scope of consolidation – of Enel Unión Fenosa Renovables-EUFER (80%), Enel North America-ENA and Enel Latin America-ELA (100% stake in each of them). The latter three companies operate their installations through holdings of varying extent.

The Report opens with the organizational and operational framework of Enel's environmental activities.

Then, it reviews the environmental performance of Enel's Italian and non-Italian operations, passing from general information to detailed data.

A special section is devoted to initiatives and results in the area of occupational health & safety. The verifier's statement closes the publication.

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from time to time.

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## A decade of Environmental Report



Ten years have elapsed since the publication of Enel's first Environmental Report. Year after year, we have recorded and commented upon the evolution of the energy context, as well as the transition of Enel from a monopolist company to a key player in the energy arena.

In the past decade, a lot has changed in the relationship between Enel and the country, but care for the environment has remained pivotal in our strategy. Our Environmental Report has constantly reflected our commitment, because we feel that full and accurate disclosure of our environmental policies, targets and results can enhance the value and competitiveness of Enel in the various markets, as well as stakeholders' respect for what we do.

Over the years, the Environmental Report has evolved from a mere communication tool to an active environmental policy instrument, which measures Enel's environmental and industrial performance, enabling a growing number of experts, scholars and interested groups to monitor our progress. This year's edition of the Environmental Report substantiates the excellent results that we have attained in this decade, by implementing the principles and targets which underpin Enel's environmental policy.

Among our highlights:

- > 77% of our installations are ISO 14001 certified (and 43% of them are EMAS registered);
- > in ten years, we have curbed our specific emissions of sulfur dioxide by 77%, of nitrogen oxides by 68%, while those of particulates dropped from 0.3 g/kWh to 0.03 g/kWh;
- > recovery of special waste has practically reached 100%;
- > from 1996 to date, specific emissions of carbon dioxide have declined from 568 g/kWh to 501 g/kWh, i.e. a value lower than the target agreed with the Government and specified in the Voluntary Agreement on greenhouse gas emission reductions;
- > electricity generation from renewables has climbed to 21% of total generation and it will be further developed through an investment of 1.3 billion euro within 2010; the most substantial investment was made in wind generation, whose installed capacity was 277 MW at the end of 2005.

This commitment of excellence will be transferred to all the installations that Enel acquired outside Italy. The search for environmental excellence also involves Enel's research team, which is confronted with major issues concerning the development of the emission-free power plant of the future.

This year too, we reiterate our guiding principles: resource conservation, our first-line approach to environmental policy; major development of generation from renewables; improvement of our sites and of their environment; environmental and landscape awareness inside and outside Enel;

emphasis on research into and testing of innovative processes for energy-saving and environmentally-sustainable generation.

In conclusion, I would like to express special thanks to the women and men who have – for so many years – spent their time and efforts to achieve and effectively report these results. I also hope that the Environmental Report will continue to be a useful reference tool for investors, scientific institutions, environmental and trade associations, the public at large, as well as for all the workers of Enel.

The Chief Executive Officer

*Fulvio Conti*

A handwritten signature in blue ink, appearing to read 'F. Conti', with a stylized flourish at the end.

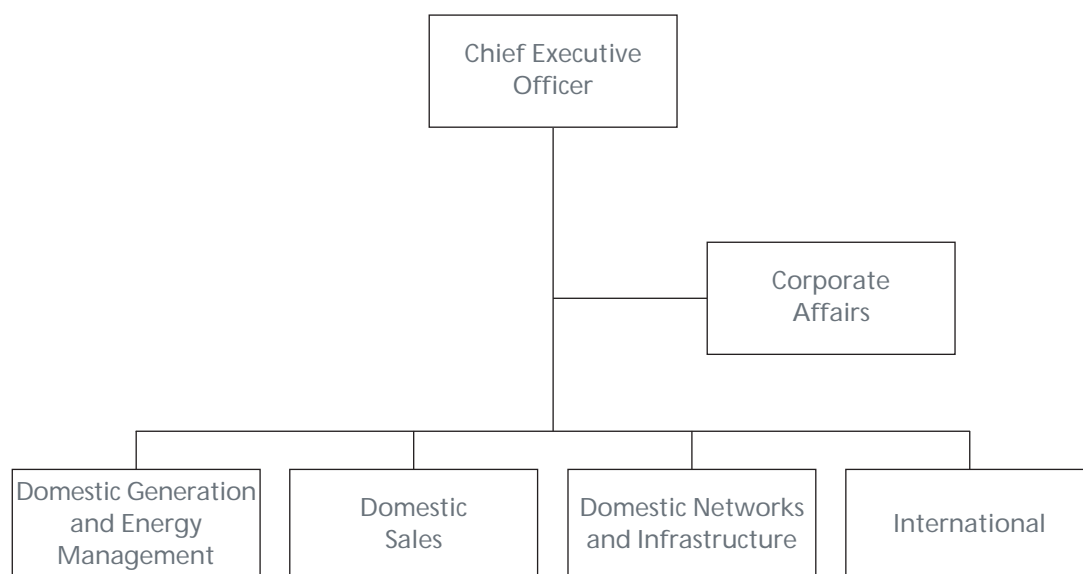
## Enel SpA

Enel's new organizational structure, which was adopted in November 2005, consists of the following Divisions: Domestic Generation and Energy Management, Domestic Sales, Domestic Networks and Infrastructure, and International.

In particular, the International Division was created with the mission of increasing Enel's penetration and activities in electricity and gas markets outside Italy and of formulating Enel's strategy for a balanced development of production capacity in foreign regional markets.

In the current organization, guidance, coordination, monitoring and support activities are centralized in the Parent Company (the so-called "Corporate"), whose mission is to leverage the synergies of the Group and optimize the management of activities that sustain its core business.

In the course of 2005, Enel sold Wind and, in compliance with Law no. 290 of October 27, 2003 (merger of ownership with management of the national transmission grid), Enel decreased its holding in Terna to 5%.



In line with the general principles stated at the beginning of the Report, the Domestic Sales Division – not engaged in industrial operations – is not covered in the Report.



## Environmental Policy

Enel's care for the environment and landscape is a well-established reality.

Mitigation of emissions, efficient use of resources, sustainable operation of installations and their integration into the landscape are priorities for Enel.

Environmental protection has thus become a strategic asset, which adds value to Enel's industrial policies and which has a high social relevance.

Good environmental performance over the years led Enel to reiterate its environmental policy and underlying principles also in 2005 and to propose the achievement of the related targets with renewed impetus.

### Principles

- > Protecting the environment and the health & safety of workers.
- > Safeguarding Enel's corporate value.
- > Raising environmental and product quality standards.

### Strategic targets

- > Use of processes and technologies which prevent and/or mitigate impacts on the environment and landscape.
- > Rational and efficient use of energy resources and raw materials.
- > Optimization of waste recovery.
- > Application of international environmental and safety management systems in the various activities.
- > Optimized integration of installations into the landscape.
- > Use of the best operating practices.
- > Communication of corporate environmental performance to the public at large and to institutions.
- > Environmental awareness, training & education of employees.

## Environmental Organization

Enel's "Corporate" Public and Regulatory Affairs includes the Environmental Policies Unit, having the mission of identifying Enel's strategic environmental targets and of ensuring their consistency with the Divisions' programs and initiatives.

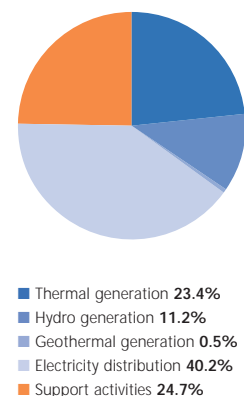
In particular, the Environmental Policies Unit:

- > promotes, implements and coordinates programs and agreements with environmental institutions and agencies;
- > identifies indicators and monitors and controls the progress of corporate initiatives in terms of environmental impact;
- > conducts analyses on specific environmental issues having particular repercussions on Enel's system and arousing public interest;
- > establishes relations with environment-focused institutions and agencies on particular technical matters;
- > prepares Enel's environmental balance.

Furthermore, depending on specific issues to be covered, each Division may have in-house environmental teams and/or specialists.

Enel's total human resources that are full- or part-time dedicated to environmental matters in Italy amount to about 200 equivalent full-time units. These human resources include support personnel at regional, divisional and "Corporate" level, i.e. the personnel providing services to multiple units, even if such units are engaged in the same industrial business activity. Indeed, the 'intellectual' tasks of an environmental nature that this personnel performs are supposed to give support to industrial operations only.

Environmental personnel as of Dec. 31, 2005  
**Total: 197 equivalent full-time units**



## Environmental Governance

In Enel's organizational model, the key responsibility of the Department of Corporate Affairs is governance of cross-cutting processes, with a view to maximizing effectiveness and efficiency in the performance of activities.

In this context, environmental governance helps raise the social credibility of Enel and is a measure of the competitiveness and value of its industrial policies vis-à-vis shareholders, customers and communities.

Enel's environmental governance is currently implemented via reporting, management, awareness, training & education schemes, through which such governance is also transferred to regional units in order to ensure consistent actions and behaviors.

Effective environmental governance also means careful management of financial resources. Although Enel has not yet an environment-dedicated accounting system, its environmental expenditure is recorded on a yearly basis in order to optimize investments of an environmental nature.

Moreover, the governance process is designed in such a way as to address the inevitable environmental criticalities that occasionally evolve into lawsuits.

## Environmental reporting

The reporting system is a key instrument for constantly monitoring the interactions of Enel's industrial activities with the environment. The effectiveness of the system was improved over the years, thanks to constant utilization and introduction of techniques and procedures that ensure data management reliability.

The formats for collection of both process and governance data are continuously updated to take into account the evolution of Enel's organizational configuration, legislation, technologies, growing internationalization and experience feedbacks. In 2005, the reporting system was *inter alia* updated to meet carbon dioxide emission monitoring requirements arising from the implementation of Directive 2003/87/EC ("Emissions Trading").

In 2005, experimental collection of governance and environmental expenditure data concerning Enel's activities outside Italy was also suggested.

In addition to formats for data collection, each business activity relies on tools which are provided by the Environmental Policies Unit and which contain a wide array of indicators (ratios between homogeneous or heterogeneous quantities). These tools make it possible to compare the data of different units, to monitor the performance of a single unit over time (regardless of variations of its volume of activity), to identify environmental performance deviations from average or target values and immediately assess data reliability and consistency.

Data reporting is an integral part of Enel's environmental management system and its methodology ensures the best homogeneity of the collected data.

The reporting system has become an instrument through which many Enel units periodically track their environmental performance vs. targets.

In this context, some years ago, the Power Grid Business Area of Enel's Domestic Networks and Infrastructure Division automated its environmental reporting system. With this system, the Division contributes, among others, to updating a software application, called "ambientesicurezza" (environment & safety), which runs on Enel's intranet (see next paragraph "Awareness, training & education").

## Environmental management systems

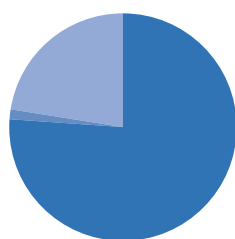
In 2005, Enel further extended the adoption of international standards for certifying its environmental management systems.

With regard to electricity generation in Italy, 77% of Enel's installed capacity (268 power plants) was certified under ISO 14001 and 43% of such capacity (130 power plants) was also registered under EMAS (Eco-Management and Audit Scheme) as of December 31, 2005.

The sites which are both ISO 14001-certified and EMAS-registered are: Thermal Generation Business Units of Fusina, La Casella, La Spezia, Leri Cavour, Montalto di Castro, Sulcis and Torrevaldaliga Nord; Hydro Generation Business Units of Bologna (Adige, Arno, Po, Reno and Serchio hydroelectric schemes), Bolzano, Cuneo, Montorio (excluding the Hydro Generation Area of Chieti and the former Business Unit of Ascoli, subsequently incorporated into the Business Unit of Montorio), Sardegna, Trento and Vittorio Veneto.

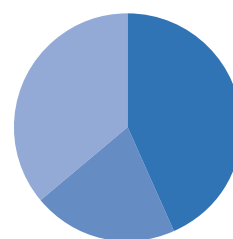
The sites which, for the time being, are only ISO 14001-certified are: Thermal Generation Business Units of Bastardo, Brindisi Sud, Genova, Pietrafitta, Porto Corsini, Porto Tolle and Priolo Gargallo; Geothermal Generation Unit; Hydro Generation Business Units of Bergamo (certification limited to the former Business Unit of Brescia, subsequently incorporated into the Business Unit of Bergamo), Domodossola, Napoli and Sondrio; the Hydro Generation Area of Chieti and the Ascoli Hydro

ISO 14001 in power plants as of Dec. 31, 2005  
With reference to overall capacity: 42,216 MW



■ Certified **77.3%**  
■ Certification under way **0.4%**  
■ Planned certification **22.3%**

EMAS in power plants as of Dec. 31, 2005  
With reference to overall capacity: 42,216 MW



■ Registered **43.4%**  
■ Registration under way **20.7%**  
■ Planned registration **35.9%**

Generation Group – both belonging to the Business Unit of Montorio. By 2009, Enel plans to extend the ISO 14001 certification and the EMAS registration to all of its hydro power plants in Italy. In October 2005, the Power Grid Business Area of Enel's Domestic Networks and Infrastructure Division passed the verification for maintaining the ISO 14001 certification of its environmental management system, obtained in 2004.

The Environmental Management System of the Power Grid is applied to the entire organization (headquarters, regional units – with their high-voltage centers, operation centers, zones and material storage & handling premises), as well as to high-, medium- and low-voltage installations.

The system ensures continuous monitoring & control of all significant environmental aspects related to design, construction, operation, development and maintenance of power grids.

The “ambientesicurezza” software application (described in the following paragraph “Awareness, training & education”) is a vital tool for the operation of the system.

## Awareness, training & education

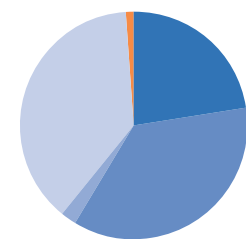
Environmental awareness, training & education initiatives have become core elements of the yearly plan for improving the skills and know-how of Enel's human resources.

In 2005, Enel developed education modules for its environment-dedicated personnel, delivering a total of over 43,600 man-hours of courses (a figure slightly above the one of 2004).

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 support personnel, i.e. the personnel that, at regional, divisional or “Corporate” level, renders 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 this personnel fulfills are assumed to provide support to industrial operations only.

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Environmental training & education in 2005  
**Total: 43,638 man-hours**



■ Thermal generation	22.6%
■ Hydro generation	36.1%
■ Geothermal generation	2.4%
■ Electricity distribution	38.0%
■ Support activities	0.9%

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

The Power Grid Business Area of Enel's Domestic Networks and Infrastructure Division uses a software application ("ambientesicurezza"), running on Enel's intranet, for gathering and handling process data, circulating sectoral documents, regulations and legislation and publishing a quarterly Environmental Report for internal use.

Enel's website ([www.enel.it](http://www.enel.it)) features an "Environment" channel, providing information about Enel's environmental and energy policies and representing a source of documentation and debate on the energy sector at national, Community and international level. The channel is focused on political, economic and industrial issues, health aspects and environmental impacts of production activities. In addition to its "Energy" and "Ecology" sections (with articles on topical issues), the homepage of this channel offers a rich menu of news and book reviews, as well as a calendar of conferences, a glossary and a newsletter, and provides access to:

- > "Energy Dashboard": updated data on Italian electricity consumption;
- > "Atlas" (interactive tool): environmental and energy data of all countries of the world;
- > "Enel's Documents": Enel's Environmental Reports of the past few years, EMAS Environmental Declarations and Environmental Product Declarations;
- > "Key documents": reasoned selection of documents and data on energy and the environment, produced by institutional entities.

In 2005, the "Environment" channel recorded a monthly average of about 16,600 "unique visitors"; as a whole, it was visited more than 411,000 times and "page views" were 1,687,000.

## Financial resources

In 2005, after previous preparatory work, Enel started to collect environmental expenditure data based on the classification criteria adopted by Istat (Italian statistical institute) in compliance with Regulations (EC) no. 58 of 1996 and no. 2056 of 2002 concerning structural business statistics. These Regulations require Istat (just as the other statistical institutes of EU member countries) to record, on a yearly basis, the main items of expenditure that companies incur for environmental protection.

Under Istat's criteria, "environmental protection expenditure" is defined as the costs incurred for preventing and mitigating environmental pollution and degradation and for restoring the quality of the environment, whatever the origin of such costs (legislation, agreements with local governments, corporate decisions, etc.). This expenditure includes current expenditure and investments whose primary purpose is to achieve one or more of the following targets: collection, processing, prevention, reduction, elimination and monitoring of pollution and any other form of environmental degradation. It excludes 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" always has an algebraic sense, as it may also refer to revenues, such as those deriving from waste delivery to disposal operators.

The new criteria put particular emphasis on:

- > in both current expenditure and investments – the difference (if any) between the actually incurred expenditure and the virtual expenditure for purchasing products and technologies that are functionally equivalent but have a higher environmental impact;
- > in taxation – the allocation to current environmental expenditure of "specific environmental taxes" only; these taxes should meet the following requirements:
  - payment without a specific consideration;
  - direct outlay, i.e. excluding taxes paid by suppliers or service providers, which are passed onto the industrial price of goods or services;
  - tax base included among those that Eurostat regards as environmentally relevant (emissions into the atmosphere, ozone-depleting substances, releases of polluting substances into water bodies, waste management, noise, energy products, transportation, resources);
  - use of the tax revenue to finance environmental protection expenditure, in the specified proportion (partially or totally);
- > generally – the exclusion (from environmental expenditure) of costs that are not directly incurred for prevention, reduction or restoration of environmental damage and that, therefore, are not considered as contributions to environmental protection expenditure proper (e.g. taxes that, while meeting the first three requirements for "specific environmental taxes", do not declaredly contribute to finance environmental protection expenditure); however, Istat recommends separate recording of these items.

Moreover, as regards the environmental purpose of the expenditure, the above-mentioned criteria refer to the Classification of Environmental Protection Activities (CEPA). CEPA is the operational component of the Environmental Protection Expenditure Account (EPEA) that Eurostat established for analyzing "environmental protection" activities. CEPA combines the classification criterion by "environmental domain" (first seven items) with the type of activity (last two items).

It is worth pointing out that, in the application of the above criteria to Enel, the requirements for classification of "specific environmental taxes" are never fully met. For instance, in the case of Enel, the most common environmental taxes (tax on sulfur dioxide and nitrogen oxide emissions under Art. 17 of Law no. 449 of December 27, 1997; consumption tax component of the carbon tax on fuels under Art. 8 of Law no. 448 of December 23, 1998; geothermal kWh contributions introduced by Law no. 896 of December 9, 1986) meet the first three requirements but not the fourth one. Indeed, in the above cases, the allocation of the tax revenue is indicated neither quantitatively nor qualitatively (tax on emissions), refers to parameters that are unknown to taxpayers (carbon tax) and is not specified quantitatively (geothermal contributions). Therefore, such taxes were separately recorded.

In view of the above, the financial resources that Enel allocated to environmental protection in Italy in 2005 were as follows:

- > 100 million euro of investments;
- > 344 million euro of current expenditure.

The near totality of the above figures refer to electric activities.

Electricity distribution accounts for 43% of environmental investments in existing installations (73% of the total), while electricity generation represents 57%. Among the latter investments:

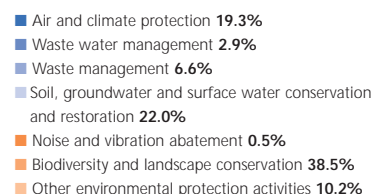
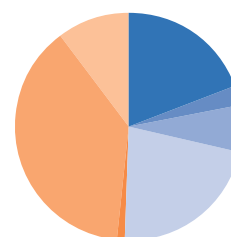
- > in the Fusina power plant – environmental improvement of units 1 and 2 and adoption of a system for crystallizing liquid waste from flue gas desulfurization;
- > in the Torrealvaldiga Nord power plant, being converted to coal firing – supply and installation of emission abatement systems;
- > as part of rehabilitation of contaminated sites in areas designated as of “national interest” by Law 426/98 – rehabilitation of the Augusta power plant and groundwater protection at the Fusina and Porto Marghera power plant sites;
- > in hydro power plants – installation or upgrading of systems for de-oiling of drain collection tanks; adoption of sound-proofing systems; replacement of trash-racks and gates; remediation of asbestos-containing materials;
- > in geothermal activities – continuing of the installation of mercury and hydrogen sulfide emission abatement systems and removal of asbestos from steam pipelines.

Electricity distribution has the dominant share (83%) of environmental investments in new installations (27% of the total). Electricity distribution investments mainly concern the construction of environmentally sustainable power lines (new or replacements). Considering that Enel, also for financial reasons, relies on well-established standard construction practices, only the following cost items are regarded as environmental investments:

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

#### Overall environmental investments in 2005 (by environmental protection activity)

**Total: 100.4 million euro**



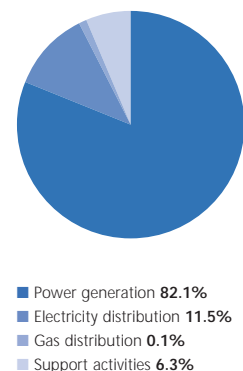


Electricity generation accounts for the largest proportion of Enel's current environmental expenditure in 2005.

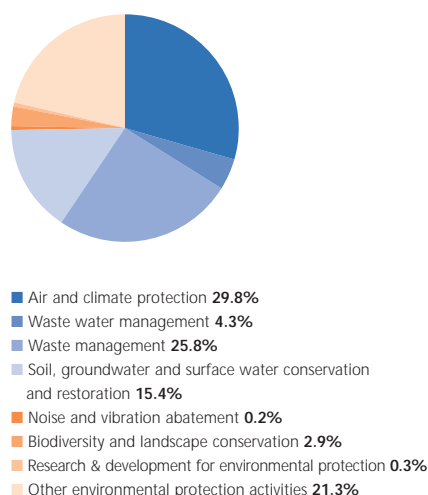
76% of this expenditure (263 million euro) is due to extra costs of fuels, i.e. costs incurred for using low-sulfur fuels in order to comply with environmental regulations, instead of using the originally planned fuels. These costs are computed by determining the difference between the cost of low- and very low-sulfur fuel oil or of natural gas and the cost of a corresponding quantity of medium-sulfur fuel oil, in each fuel-oil or fuel-oil/natural gas power plant.

The remaining items of current expenditure cover environmental protection activities that are conducted directly or outsourced: operation and maintenance of equipment and systems for environmental protection, waste disposal, installation and operation of environmental management systems, personnel of Enel and of contractors involved in these activities, environmental training & education, etc. They also include the costs of environment-dedicated support personnel, i.e. the personnel that, at regional, divisional or "Corporate" level,

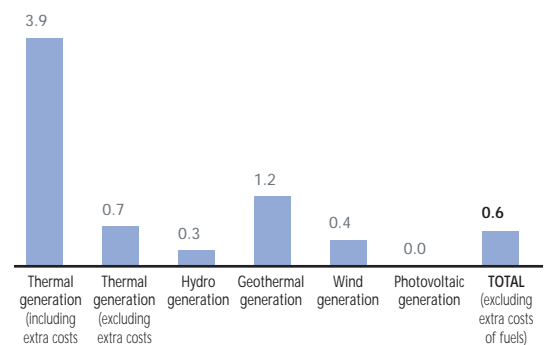
Current environmental expenditure in 2005 excluding extra fuel costs (by business activity)  
**Total: 81.0 million euro**



Current environmental expenditure in 2005 excluding extra fuel costs (by environmental protection activity)  
**Total: 81.0 million euro**



Current environmental expenditure per kWh generated in 2005  
**Comparison of different types of electricity generation** (thousandth euro/kWh net)



provides services to multiple units, even if they are engaged in the same industrial business activity. Indeed, the 'intellectual' tasks that this personnel performs in the environmental field are supposed to give support to industrial operations only.

In 2005, taxes with an "environmental tax base" (separately recorded as indicated above) were as follows:

- > taxes on SO<sub>2</sub> and NO<sub>x</sub> emissions – 6.8 million euro;
- > geothermal kWh contributions – 9.6 million euro;
- > coal consumption tax in the carbon tax – 6.1 million euro.

However, Enel had a burden of another 31 million euro for the other component of the carbon tax that is related to re-determination of excise duties on production/supply of all fuels.

Finally, it is worth mentioning the loss of revenues (as much as 52 million euro in 2005) due to reduced generation by some hydro power plants, which were required to release part of the diverted water into the original streambed (minimum in-stream flow) in order to protect ecosystems.

## Environmental criticalities

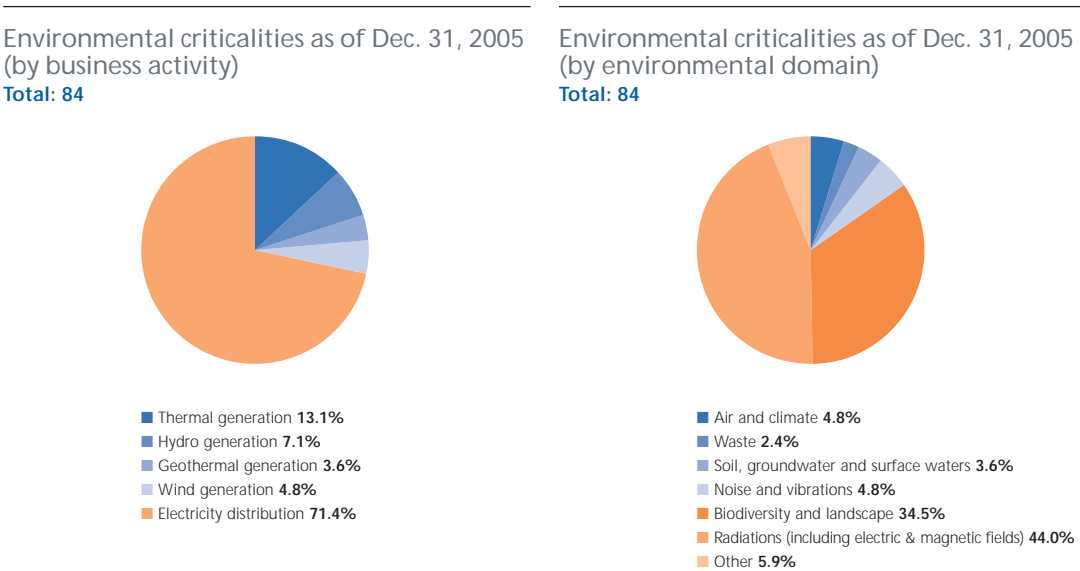
The use of the most rigorous and advanced organization and management measures cannot avoid the occurrence of environmental criticalities, which originate from various factors, including the excessive emphasis that the media place on some issues, thus inducing a wrong perception of reality and improper expectations among communities.

Environmental criticality is the rejection of or opposition to installations (and/or to the impact deriving from their operation). Such rejection or opposition is expressed – obviously for environmental 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 failed authorizations, suspension of works, modifications of installations, etc.

Examples are administrative measures, warning letters, written protests (direct or through the press), actions by mass media, as well as verbal complaints (when reception desks or on-site premises are available).

Each protest concerning the same installation corresponds to a different criticality.  
A criticality ends with the end of the circumstances generating it.  
However, environmental litigations are excluded from environmental criticalities.  
The most part of the 84 environmental criticalities existing as of December 31, 2005 and related to Enel's activities in Italy concerned the power distribution grid.  
With regard to the environmental domains, the most frequent criticalities involved electric & magnetic fields, biodiversity and landscape.



All of the criticalities regarding electric & magnetic fields concern the power grid, while those pertaining to biodiversity and landscape are distributed, by decreasing order, among the power grid, hydro, wind and geothermal generation.  
36% of the criticalities originated from administrative measures, 8% from warning letters and the remaining part from the above-mentioned initiatives.

Environmental litigations

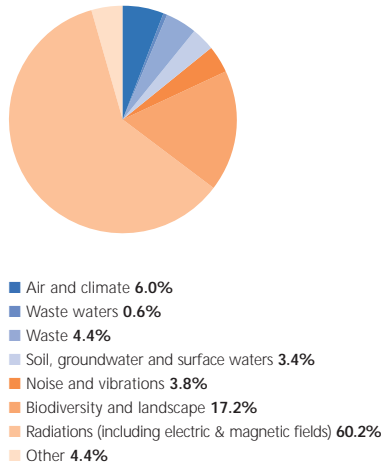
As of December 31, 2005, Enel had 319 pending lawsuits in Italy, of which 62% administrative, 29% civil and 9% criminal. Most of the judgments (85%) concern the electricity distribution grid.

The distribution of lawsuits by environmental domain shows that electric & magnetic fields are largely dominant (all pertaining to the power grid), while biodiversity and landscape (over 96% pertaining to the power grid) have a much smaller share.

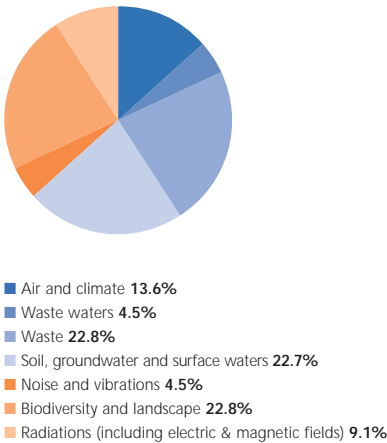
In 2005, 22 new lawsuits were filed and 12 were settled.

Among the grounds for the new lawsuits, electric & magnetic fields and those pertaining to the power grid dropped radically, whereas other causes of litigation (relevant to electricity generation only) rose.

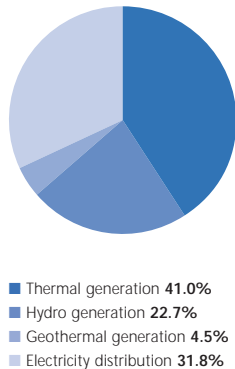
Environmental litigations pending as of Dec. 31, 2005 (by environmental domain)  
Total: 319



Environmental litigations initiated in 2005 (by environmental domain)  
Total: 22



Environmental litigations initiated in 2005 (by business activity)  
Total: 22



It should be pointed out that the above litigations are only those which originated from third parties' appeals seeking the quashing of administrative judgments in favor of Enel and the civil and criminal ones where Enel was sued ("passive litigation").

These litigations have a "dominant environmental component"; those concerning workplaces are excluded.



## Italy

Enel is present around the country with its infrastructure and power plants. Our local roots are also expressed through close cooperation with local communities in promoting tourism, sports and recreation in the areas around our power plants. One example is the hydroelectric facility in Presenzano, which today is integrated with the surrounding territory and available for use by local communities. The power station is host to an Enel Information Center and a Nautical Center. Both permit visitors to plan a learning experience on the operations of a power plant together with sporting activities with highly qualified instructors. Coordinated by the Olympic champion rower Davide Tizzano, the Nautical Center of Presenzano offers young people the chance to train and participate in sports such as rowing, sailing, windsurfing and canoeing.

**Giovanni Topo** Head of the Presenzano Hydroelectric Unit

*“Opening the Presenzano plant to the public through visits, events and competitions enabled us to bring an ever greater number of people, and especially young people, closer to the world of energy and Enel”*

## ENVIRONMENTAL RESULTS – Italian Operations

### Eco-Balance

Electricity generation (especially thermal) is the activity of Enel which has the most significant effects on and interactions with the environment.

However, with a rigorous technical approach, the Eco-Balance takes into consideration all the industrial activities that Enel carries out in Italy and quantifies their interactions with the environment in an integrated way.

The data of the Eco-Balance are divided into three parts:

- > resources;
- > processes and products;
- > emissions.

For each item, the Eco-Balance gives the data for the past five years and related comments, except for natural gas distribution (reported from the second year of the period) and fuel-oil storage & handling (from 2004).

It is worth recalling that, in the period considered (2001-2005), Enel recorded major changes in its assets:

- > With regard to electricity generation, Enel completed the divestiture of the so-called Gencos in 2003 with the sale of Interpower, later on called Tirreno Power, in accordance with Legislative Decree no. 79 of March 16, 1999, providing that each producer/importer shall not generate/import more than 50% of the total electricity generated in/imported to Italy. Therefore, the generation assets mentioned in the Environmental Report from 2003 are those presently owned by Enel.
- > In 2003 and 2004, some sections of the high-voltage power distribution grid were transferred from Enel Distribuzione to Terna, as per Ministerial Decree of December 23, 2002 (as amended on the basis of grid development plans); with the Decree, the Ministry of Production Activities changed the composition of the assets of the national transmission grid by incorporating elements of the high-voltage grid previously belonging to distribution grids.
- > In 2005, Enel continued its activities of sale (dominant with respect to acquisitions) of some of its power distribution grids, mainly as a consequence of Legislative Decree no. 79 of March 16, 1999 (provisions on rationalization of the electricity distribution business).
- > In 2005, Enel also continued its expansion into the natural gas distribution business.
- > Finally, always in 2005, Enel completed the sale of Terna and Wind, which are no longer included in its scope of consolidation. The following data thus exclude electricity transmission and telecommunications for the entire five-year period.

As a result of the changes in the size of the activities that Enel still performs in Italy, most of the variations in the data that occurred in the reported period are poorly significant or self-evident. Therefore, they have been omitted.



To facilitate the understanding and assessment of the Eco-Balance, the following table summarizes the key data of Enel's installations in Italy as of December 31 of each of the years elapsing from 2001 to 2005.

### Power generation

	2001	2002	2003	2004	2005
<b>Power plants (no.)</b>	<b>658</b>	<b>613</b>	<b>593</b>	<b>595</b>	<b>599</b>
> hydro	555	517	495	495	500
> thermal	59	48	45	46	46
> geothermal	33	34	34	31	32
> wind*	6	9	14	18	17
> solar (photovoltaic)**	5	5	5	5	4
* in addition to: wind test fields	1	0	0	0	0
** in addition to: isolated photovoltaic units	n.a.	201	201	200	200
<b>Net maximum capacity (MW)</b>	<b>49,981</b>	<b>43,752</b>	<b>41,847</b>	<b>42,047</b>	<b>42,216</b>
> hydro	15,061	14,344	14,330	14,318	14,363
> thermal	34,336	28,679	26,719	26,837	26,902
> geothermal	540	666	666	642	671
> wind	40	59	128	247	277
> solar (photovoltaic)	3.6	4.1	4.2	4.2	4.2

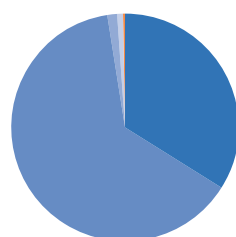
n.a.: not available

### Power lines circuit-length (km)

	2001	2002	2003	2004	2005
<b>Total</b>	<b>1,060,240</b>	<b>1,063,010</b>	<b>1,082,367</b>	<b>1,089,845</b>	<b>1,090,129</b>
> high voltage (40 to 380 kV)	20,154	20,316	19,336	19,114	18,951
> medium voltage (1 to 30 kV)	331,181	332,055	334,546	335,841	335,151
> low voltage (up to 380 V)	708,905	710,639	728,486	734,890	736,026

### Net maximum capacity of power plants as of Dec. 31, 2005

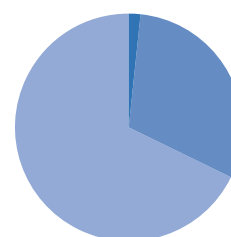
**Total: 42,216 MW**



■ Hydro **34.02%** ■ Wind **0.66%**  
 ■ Thermal **63.72%** ■ Solar (photovoltaic) **0.01%**  
 ■ Geothermal **1.59%**

### Circuit-length of power lines as of Dec. 31, 2005

**Total: 1,090,129 km**



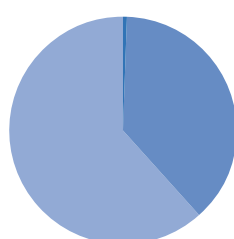
■ High voltage **1.7%**  
 ■ Medium voltage **30.7%**  
 ■ Low voltage **67.6%**

## Gas pipelines length (km)

	2001	2002	2003	2004	2005
<b>Total</b>	<b>1,300</b>	<b>24,890</b>	<b>27,194</b>	<b>29,379</b>	<b>29,372</b>
> high pressure ( $p > 5$ bar)	n.a.	137	123	184	191
> medium pressure ( $0.04 < p \leq 5$ bar)	n.a.	9,370	10,566	11,052	11,315
> low pressure ( $p \leq 0.04$ bar)	n.a.	15,383	16,505	18,144	17,866

n.a.: not available

## Length of pipelines as of Dec. 31, 2005

**Total: 29,372 km**

■ High pressure **0.7%**  
 ■ Medium pressure **38.5%**  
 ■ Low pressure **60.8%**

## Resources

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

## Fuels

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  $\leq 2.5\%$ ; LS = low:  $>0.5\%$  and  $\leq 1.3\%$ ; VLS = very low:  $\leq 0.5\%$ ).
- > Orimulsion is an emulsion of bitumen in water, coming from the Orinoco basin (Venezuela); until 2004, orimulsion (just as coal) was used in power plants equipped with flue gas desulfurizers and denitrification systems; in 2005, procurement difficulties zeroed the consumption of this fuel.
- > Gas-oil, a high-cost fuel, is used on an exceptional basis 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), in diesel-engine power plants (supplying some minor Italian islands), in the start-up of steam-cycle power plants, in auxiliary boilers and emergency generating sets. The maximum sulfur content in the gas-oil used for electricity generation is 0.2%, as specified in the applicable legislation. However, Enel uses gas-oil with a sulfur content of 0.15%.

- > 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 repowering gas turbines, for which it is the only practicable option).
- > After the sale of Elettroambiente (whose landfill gas consumption was reported in 2001), the Eco-Balance shows again the contribution of non-fossil fuels in 2005. This contribution, which is still very small, consists of:
  - refuse-derived fuel (RDF), accounting for over 97% (in terms of energy content) of the non-fossil fuels used by Enel; RDF was co-fired with coal, on an experimental basis, at the Fusina power plant;
  - solid biomass, representing the remaining share; this fuel was co-fired with coal, on an experimental basis, in unit 2 of the Sulcis power plant and used as the main fuel in the single unit of the Mercure power plant. After conversion work, the latter plant started operating tests in the course of 2005.

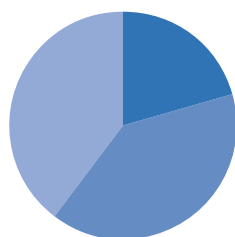
Natural gas and start-up gas-oil also feed the boilers which heat the fuel oil stored in Enel's facility of Ravenna (heating fluidifies fuel oil before its transfer to destination).

Small quantities of gas-oil are also used for driving geothermal drilling equipment and in emergency generating sets, which are practically present in all of Enel's installations.

Fuel consumption, obtained from data measured and certified in each installation, is expressed here in metric units (thousand tonnes or million cubic meters). To facilitate the summing of the various contributions, overall fuel consumption is expressed in energy potential (thousand tonnes of oil-equivalent).

Fossil fuel consumption for thermal generation in 2005

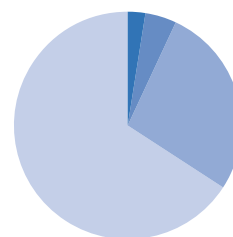
**Total: 17,995 ktoe**



■ Fuel oil & gas-oil 20.6%  
 ■ Natural gas 39.8%  
 ■ Coal 39.6%

Fuel-oil consumption for thermal generation in 2005

**Total: 3,705 kt**



■ HS 2.6%  
 ■ MS 4.4%  
 ■ LS 27.4%  
 ■ VLS 65.6%

The further drop, which was recorded in overall fuel requirements in 2005, was mostly due to fuel oil and natural gas. Fuel oil, in particular, had the sharpest decrease, both in absolute terms and in percentages.

The reasons for the decrease were its high price, as well as the fact that the Torrealvaldaliga Nord power plant – being converted to coal-firing – stopped using this fuel.

High price is instead the only reason for the decline in the technologically-captive uses of natural gas (83% in combined-cycle power plants). By contrast, the non-technologically captive uses of natural gas went up, even in absolute terms, to meet environmental requirements.

With regard to fuel-oil, massive use continued to be made of LS and VLS products with a view to complying with point-source limits of emissions from existing power plants. These limits were introduced in Italy in 1990 (Ministerial Decree of July 12, 1990), i.e. long before the Directive 2001/80/EC entered into force.

## Geothermal fluid

Geothermal fluid, in the form of steam at adequate pressure and temperature, is the energy source for geothermal generation.

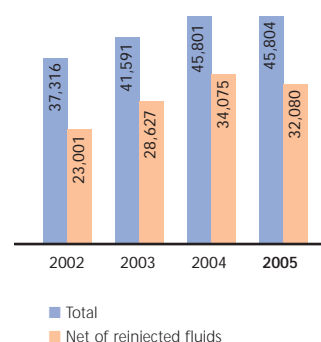
If the extracted fluid has thermodynamic properties which are unsuitable for geothermal generation, it may be employed in non-electric uses: supply of heat (especially for greenhousing and district heating, but also as process heat in the food industry) and extraction of substances (e.g. carbon dioxide for foodstuffs). 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 amount of geothermal steam used for electricity generation is obviously correlated with the kWh generated.

The capability of geothermal fields is mostly sustained by the reinjection of fluids into geothermal reservoirs. These fluids consist of: the water that is entrained by steam and separated from it at the well outlet; steam that is condensed after its expansion in the turbines; and the fluid remaining after non-electric uses.

The difference between the total fluid extracted and the fluids reinjected is due to: the fraction of incondensable gases that are contained in geothermal steam; the vaporization and entrainment of condensates in cooling towers (by far the largest contribution) and inevitable losses.

Consumption of geothermal fluid  
(thousand t)



Reinjection and extraction of fluids into/from the deep subsoil do not jeopardize shallow aquifers which, among others, are isolated from the wells by metal pipings, cemented to the soil and between them.

### Primary electricity

Electricity is used as an energy raw material in fuel-oil storage & handling and gas distribution. In the first case, it is used for pumping fuel oil into pipelines and for feeding the auxiliaries of the fuel-oil storage & handling facility.

In the case of gas distribution, electricity is mainly used for cathode protection of gas pipelines and for driving the water pumps of the circuits which heat natural gas upon its depressurization.

The amounts of net electricity generation and of electricity wheeled on distribution grids (see "Processes and Products") are net of both own consumption and losses.

### Water for industrial uses

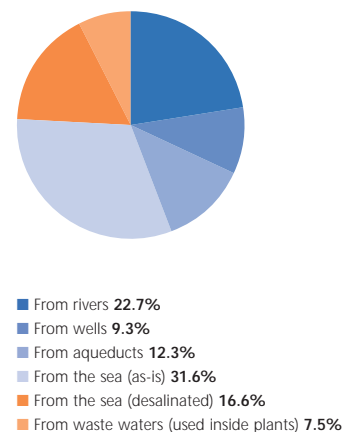
Water for industrial uses is consumed in thermal power plants (especially to make up for the amounts lost in the generation process of steam-turbine power plants and in closed-cycle wet cooling tower systems), to carry out clean-up jobs (above all of boilers), and to feed auxiliaries and desulfurizers.

To a much lesser extent, water is used:

- > in geothermal activities, for the 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 re-vaporization 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 closed-cycle production of steam for heating and fluidifying fuel oil before its transfer to destination.

#### Coverage of water requirements for industrial uses in 2005

**Total: 44.0 million m<sup>3</sup>**



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.

Water requirements in 2005 are in line with the average of the period. Their coverage recorded a further drop in the contribution of inland waters and the growing share of as-is sea water.

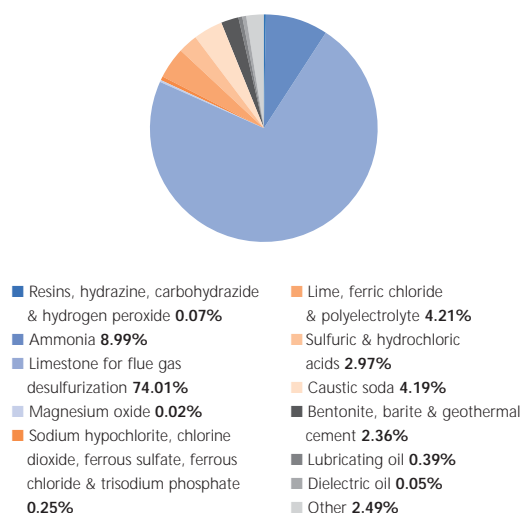
## Expendables

Expendables, used mainly in thermal power plants and in geothermal drilling, complete the list of resources; the following are the principal 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 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 power 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, the primary application of soda is as an additive in the slurries used in the drilling of geothermal wells.
- > Bentonite is a clay which is used as a slurry for the drilling of geothermal wells.
- > Barite is used in some cases to thicken bentonite slurries, thereby improving their effectiveness upon the drilling of mechanically unstable rock formations.
- > Geothermal cement is used for joining the steel walls of new wells and for permanent plugging of disused wells.
- > "Other" expendables (antifouling, defouling, deoxidizing, antifoam, detergent and antifreezing agents, carbon dioxide and bottled hydrogen, etc.), just as lubricating oil and dielectric oil, come from the generality of installations.

### Expendables in 2005

**Total: 219,438 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.

The further decrease in the overall amount of expendables is ascribable above all to the reduction of limestone: lower consumption of coal and disappearance of orimulsion from the fuel mix reduced the amount of sulfur dioxide to be abated. However, limestone and ammonia continue to play a key role among expendables; as previously stated, both of them are used to abate pollutant emissions.

## Resources

		2001	2002	2003	2004	2005
<b>Fossil fuels</b>						
Thermal generation (including auxiliary boilers and emergency generating sets)						
Fuel oil	thousand t	10,708	8,241	6,487	4,905	3,705
> HS	thousand t	221	6	0	25	95
> MS	thousand t	4,446	2,518	83	180	163
> LS	thousand t	3,266	2,458	2,309	1,956	1,016
> VLS	thousand t	2,775	3,260	4,095	2,744	2,432
Orimulsion	thousand t	1,589	1,620	1,481	377	0
Gas-oil	thousand t	75	58	93	42	64
Natural gas	million m <sup>3</sup>	10,549	8,893	11,075	9,022	8,493
> <i>technologically captive use</i>	million m <sup>3</sup>	4,097	2,407	6,555	5,813	5,137
> <i>non-technologically captive use</i>	million m <sup>3</sup>	6,452	6,487	4,520	3,209	3,356
Coal	thousand t	10,425	11,295	10,427	12,072	11,755
Total	thousand toe	27,022	23,864	23,294	20,128	17,995
Other activities: fuel-oil storage & handling, geothermal drilling, other emergency generating sets						
	thousand toe	n.a.	1.7	1.8	8.2	5.5
<b>Grand total</b>	<b>thousand toe</b>	<b>n.a.</b>	<b>23,865</b>	<b>23,296</b>	<b>20,136</b>	<b>18,001</b>
<b>Biomass and waste</b> (thermal generation)	thousand toe	7.1	-	-	-	6.8
<b>Geothermal fluid</b>						
Total fluid extracted	thousand t	n.a.	37,316	41,591	45,801	45,804
net of reinjected fluids	thousand t	n.a.	23,001	28,627	34,075	32,080
Geothermal steam for electricity generation	thousand t	35,374	37,112	41,372	42,478	41,687
<b>Primary electricity</b>						
(fuel-oil storage & handling, gas distribution)	GWh	n.a.	2	3	9	4
<b>Water for industrial uses</b>						
From rivers	million m <sup>3</sup>	10.7	8.4	9.6	14.0	10.0
From wells	million m <sup>3</sup>	11.4	7.0	7.2	4.5	4.1
From aqueducts	million m <sup>3</sup>	5.6	5.5	5.5	5.6	5.4
Total abstraction from inland waters	million m <sup>3</sup>	27.7	20.9	22.3	24.0	19.5
From the sea (as-is)	million m <sup>3</sup>	5.1	5.8	9.2	12.7	13.9
From the sea (desalinated)	million m <sup>3</sup>	8.1	8.4	8.6	7.2	7.3
From waste waters (used inside plants)	million m <sup>3</sup>	3.2	3.1	3.2	4.2	3.3
<b>Total requirements</b>	<b>million m<sup>3</sup></b>	<b>44.1</b>	<b>38.2</b>	<b>43.4</b>	<b>48.1</b>	<b>44.0</b>
for thermal generation	million m <sup>3</sup>	44.1	38.1	43.4	48.0	43.9
for geothermal drilling	million m <sup>3</sup>	0.042	0.027	0.001	0.051	0.043
for fuel-oil storage & handling	million m <sup>3</sup>	-	-	-	0.069	0.049
<b>Expendables</b>						
Resins	t	81	35	17	41	48
Hydrazine	t	35	51	12	5	3
Carbohydrazide	t	1	13	14	14	22
Hydrogen peroxide	t	n.a.	n.a.	n.a.	n.a.	82
Ammonia	t	20,455	22,909	19,869	22,343	19,744
Limestone for flue gas desulfurization	t	302,067	327,661	254,828	211,775	162,412
Magnesium oxide	t	213	153	116	93	41
Lime	t	13,541	11,926	9,672	9,164	8,417
Ferric chloride	t	n.a.	n.a.	n.a.	n.a.	779
Polyelectrolyte	t	n.a.	n.a.	n.a.	n.a.	40
Sodium hypochlorite	t	962	612	888	799	477
Chlorine dioxide	t	0	28	13	31	0
Ferrous sulfate	t	0	3	1	0	1
Ferrous chloride	t	n.a.	n.a.	n.a.	n.a.	45
Trisodium phosphate	t	n.a.	n.a.	n.a.	n.a.	17
Sulfuric & hydrochloric acids	t	7,440	5,432	6,931	5,765	6,516
Caustic soda	t	7,237	6,314	6,722	9,904	9,193
Bentonite	t	1,044	2,045	1,853	386	1,505
Barite	t	60	0	0	0	0
Geothermal cement	t	2,331	2,520	2,691	1,521	3,676
Lubricating oil	t	n.a.	n.a.	n.a.	n.a.	847
Dielectric oil	t	n.a.	n.a.	n.a.	n.a.	113
Other	t	4,360	3,002	2,508	1,985	5,458
<b>Total</b>	<b>t</b>	<b>359,828</b>	<b>382,703</b>	<b>306,136</b>	<b>263,825</b>	<b>219,438</b>

n.a.: not available (the amounts of expendable items indicated as not available until 2004 are included among "Other" expendables)



## Processes and products

Enel's activities are today focused on generation of electricity and distribution of electricity and gas.

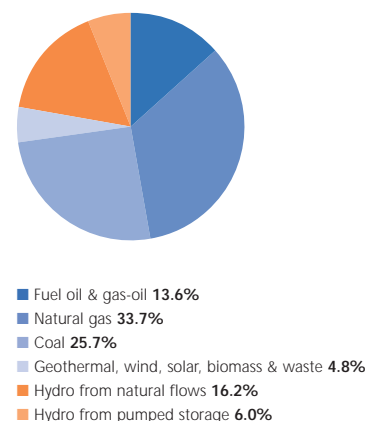
**Electricity generation** With regard to electricity generation, it is worth recalling that, in the first years of the period considered, Enel completed the change of its assets; the generating assets reported from 2003 reflect Enel's present assets.

Furthermore, it is worth mentioning that:

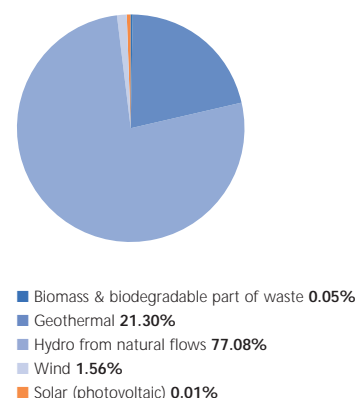
- > the various contributions are net of the electricity consumed by power plant auxiliaries;
- > in 2005 (as already mentioned in connection with fuel consumption), generation from non-fossil fuels was resumed; in particular, generation from RDF is divided in two shares: i) the one obtained from the non-biodegradable part of waste; and ii) the one obtained from the biodegradable part 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 in low-load hours (pumped storage is the only available option for storing significant amounts of electricity, albeit indirectly);
- > actually available generation is the overall net generation, i.e. after deducting the electricity consumed for pumping.

In 2005, overall generation declined. The decline is shared, in almost equal percentages, between fossil-fired and hydro generation (the key contributors to overall generation). Among the main reasons for this trend: low precipitation; increase in electricity imports; going into service of new entrants' power plants; and Enel's power plant outages for conversion work. As to the other primary sources, the small contraction in geothermal generation is largely offset by

Net electricity generation by source in 2005  
**Total: 112,087 million kWh**



Net electricity generation from renewables in 2005  
**Total: 23,537 million kWh**



the growth of wind generation (thanks to a further increase in its generating capacity) and by the new contribution of biomass and waste.

#### Fuel-oil storage & handling

As previously mentioned, this activity is complementary to thermal generation and is carried out at Enel's facility of Ravenna.

Fuel oil transferred to destination is the main product of this activity. A by-product – necessary for fluidifying fuel oil prior to its transfer to destination – is heat, which is generated locally by steam-producing boilers.

The amount of fuel oil transferred to destination dropped radically as the Porto Tolle power plant reduced its electricity generation and thus its fuel-oil requirements.

Conversely, the generation of heat had a much lower decrease, since heat was necessary to keep the stored fuel oil in the fluid state.

#### Geothermal drilling

This activity is aimed at making available endogenous steam for geothermal generation. Enel is a worldwide leader in geothermal drilling technologies and know-how.

Yearly drilling represents, to a certain extent, Enel's volume of activity. However, it should be stressed that operating conditions – and thus the consumption of energy and expendables and the generation of waste - may vary significantly depending on the nature of the rock formations that are crossed.

#### 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, i.e. the sum of the electricity wheeled for the eligible market and of the electricity sold on the captive market.

Own consumption is the consumption of electricity required for the operation of the distribution grid.

#### Natural gas distribution

The amount of natural gas wheeled represents the total amount of gas that is delivered to customers. The consumption of natural gas for grid operation ("own consumption") is due to the combustion of one fraction of the gas that is wheeled; this fraction is used for heating of the wheeled gas, to prevent the moisture that it contains from freezing upon depressurization (passage from the high-pressure grid to the medium-pressure one and from the medium-pressure grid to the low-pressure one).

Natural gas losses from the grid are estimated on the basis of the amount of natural gas wheeled, using loss factors (% by volume) which take into account gas pressures, length and configuration of pipelines, their state of conservation, etc.

The gradual increase in the natural gas distributed is related to Enel's growing penetration into the gas market.

In 2005, losses along the grid were estimated in more accurate, systematic and extensive ways, using both direct measurements and parameters from the literature. The resulting percentages proved to be higher than in previous years.

## Processes and products

		2001	2002	2003	2004	2005
<b>Electricity generation (net)</b>						
From fossil fuels	million kWh	118,569	104,735	106,669	91,854	81,794
<i>fuel oil &amp; gas-oil</i>	<i>million kWh</i>	<i>46,211</i>	<i>35,184</i>	<i>27,838</i>	<i>20,552</i>	<i>15,270</i>
<i>natural gas</i>	<i>million kWh</i>	<i>42,259</i>	<i>37,024</i>	<i>48,802</i>	<i>40,602</i>	<i>37,718</i>
<i>coal</i>	<i>million kWh</i>	<i>25,883</i>	<i>28,038</i>	<i>25,978</i>	<i>29,659</i>	<i>28,805</i>
<i>orimulsion</i>	<i>million kWh</i>	<i>4,216</i>	<i>4,489</i>	<i>4,052</i>	<i>1,041</i>	<i>0</i>
From waste (non-biodegradable part)	million kWh	-	-	-	-	16
From renewables	million kWh	31,423	24,834	23,792	26,591	23,537
<i>biomass and biodegradable part of waste</i>	<i>million kWh</i>	<i>25</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>13</i>
<i>geothermal</i>	<i>million kWh</i>	<i>4,239</i>	<i>4,382</i>	<i>5,036</i>	<i>5,120</i>	<i>5,012</i>
<i>hydro from natural flows</i>	<i>million kWh</i>	<i>27,129</i>	<i>20,399</i>	<i>18,679</i>	<i>21,236</i>	<i>18,142</i>
<i>wind</i>	<i>million kWh</i>	<i>26</i>	<i>50</i>	<i>75</i>	<i>233</i>	<i>367</i>
<i>solar (photovoltaic)</i>	<i>million kWh</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>
Hydro from pumped storage	million kWh	6,961	7,543	7,333	7,422	6,741
<b>Total</b>	<b>million kWh</b>	<b>156,952</b>	<b>137,112</b>	<b>137,794</b>	<b>125,867</b>	<b>112,087</b>
Consumption for pumping	million kWh	9,653	10,595	10,369	10,263	9,244
Available generation	million kWh	147,299	126,518	127,425	115,604	102,843
<b>Fuel-oil storage &amp; handling</b>						
Fuel oil transferred to destination	t	-	-	-	900,000	169,583
Heat production	million kcal	-	-	-	53,860	51,471
<b>Geothermal drilling</b>						
Extent	meter	14,068	12,960	11,856	18,247	13,792
<b>Electricity distribution</b>						
Electricity wheeled	million kWh	n.a.	258,469	244,426	250,682	251,077
Electricity consumption for grid operation	million kWh	n.a.	n.a.	n.a.	358	401
<b>Natural gas distribution</b>						
Natural gas wheeled	million m <sup>3</sup>	n.a.	3,166	3,493	3,633	3,924
Natural-gas consumption for grid operation	million m <sup>3</sup>	n.a.	1.9	5.8	4.8	4.9
Losses of natural gas along the grid	million m <sup>3</sup>	n.a.	11.1	12.2	12.7	25.5

n.a.: not available

## Emissions

The tables display the amounts of emissions in the gaseous, liquid and solid form.

### Emissions into the atmosphere

The emissions of some substances into the atmosphere have a polluting effect, while those of other substances contribute to the greenhouse effect.

The most significant emissions into the atmosphere, which are quantitatively significant and typical of Enel's industrial activities, are as follows: in the first category, sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and particulates; and, in the second category, carbon dioxide (CO<sub>2</sub>), sulfur hexafluoride (SF<sub>6</sub>) and methane (CH<sub>4</sub>).

> SO<sub>2</sub>, NO<sub>x</sub> and particulates originate from the combustion process which commonly takes place in thermal power plants.

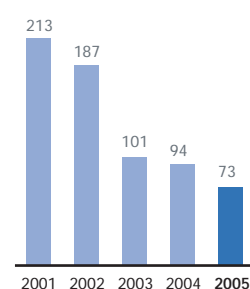
The amounts shown include both emissions yearly reported to the Ministry of the Environment and those from other installations.

Their values are obtained by multiplying their concentrations in the flue gases (generally continuously monitored) by the volumes of the same flue gases. NO<sub>x</sub> are expressed in terms of NO<sub>2</sub>-equivalent.

Over the years, the emissions of these pollutants from thermal power plants fell significantly, thanks above all to: generalized use and constant tuning of advanced combustion systems (prevention measures); installation or upgrading of flue gas abatement

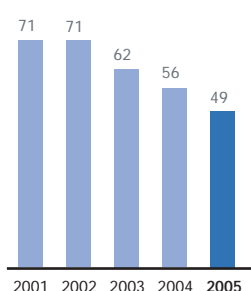
#### SO<sub>2</sub> emissions from thermal generation

only power plants presently owned by Enel (thousand t)



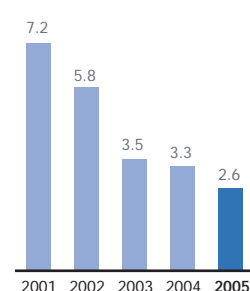
#### NO<sub>x</sub> emissions from thermal generation

only power plants presently owned by Enel (thousand t)



#### Particulate emissions from thermal generation

only power plants presently owned by Enel (thousand t)



systems (desulfurizers in large coal- and orimulsion-fired plants; denitrification systems in the same plants or in other plants when prevention measures prove to be insufficient; particulate collection systems in almost all plants; the latter systems are usually based on electrostatic precipitators, but also on more efficient bag filters, which are suitable for coal-fired plants only); as well as the use of high-grade fuels. Even if generating assets are considered to be equal, the reductions are still considerable.

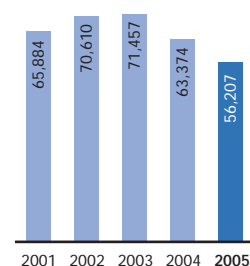
- > CO<sub>2</sub> is the typical product of combustion and, as such, the near totality of it (99.8% of Enel's total CO<sub>2</sub> emissions) derives from thermal power plants. Small amounts – reported here in view of the attention paid to the greenhouse effect – also derive from fuel-oil storage & handling (combustion of natural gas and gas-oil for generating process steam), geothermal drilling (combustion of the gas-oil which feeds the diesel engines of drilling equipment), distribution of natural gas (combustion of one fraction of the wheeled gas for heating of the gas upon depressurization) and emergency generating sets (combustion of gas-oil), which are present in the generality of Enel's installations. CO<sub>2</sub> 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 also contributes to CO<sub>2</sub> emissions in another way: as CO<sub>2</sub> is a minor constituent of natural gas, it is also present in the losses from the distribution grid.

Until 2004 inclusive, CO<sub>2</sub> from combustion was computed by applying specific emission factors to the consumption of the various fuels. The factors had been recommended by IPPC (International Panel on Climate Change) in its 1996 Guidelines for national greenhouse gas inventories. Each of the factors was multiplied by a correction coefficient accounting for the typical fraction of unburned carbon (0.980 for solid fuels; 0.990 for liquid fuels; 0.995 for gaseous fuels). The computation considered the burned carbon fraction – whose value, as indicated above, was taken to lie below 100% – to be completely oxidized to CO<sub>2</sub>.

On January 1, 2005, Directive 2003/87/EC (establishing a scheme for greenhouse gas emission allowance trading within the Community or Emissions Trading Scheme – ETS) was implemented. As a result, for the fuels and installations covered by the Directive and required to monitor and report their emissions, CO<sub>2</sub> was calculated in accordance with new requirements: in the first period (until September 28, 2005), reference parameters were still applied, but adapted to the Italian situation (parameters adopted for

#### CO<sub>2</sub> emissions from thermal generation

only power plants presently owned by Enel (thousand t)



the last national greenhouse gas inventory); from September 29, 2005, reliance was made on parameters deriving from analyses (carbon content of fuel, calorific value, carbon content of ash) conducted on individual fuel lots. The latter criterion will become the final one.

In the other cases (fuels and installations not covered by Directive 2003/87/EC, with total emissions in the range of 40,000 tonnes, of which about 25,000 tonnes from thermal power plants), Enel applied the reference parameters of the latest national greenhouse gas inventory to the entire year. The amount of CO<sub>2</sub> from the desulfurization process is computed stoichiometrically from the amount of limestone used.

CO<sub>2</sub> emissions associated with natural gas losses are quantified on the basis of these losses, taking into account the carbon content of natural gas (average value in 2005: 0.12%) and its density (1.520 kg/m<sup>3</sup>).

Even if reference is made to Enel's present assets, CO<sub>2</sub> emissions still show a downward trend in the past few years, witnessing the impressive technological and operational efforts through which Enel has, among others, responded to the challenge posed by Directive 2003/87/EC.

> SF<sub>6</sub> 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.

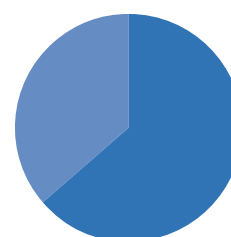
These emissions are determined with a complex procedure, which takes into account replenishments (difference between the weights of SF<sub>6</sub> contained in the bottles used for replenishment, at the start of the year and at the end of the year, increased by the weight of SF<sub>6</sub> contained in the bottles purchased or acquired during the year and decreased by the weight of SF<sub>6</sub> contained in the bottles transferred during the year), including those made by third parties. In the very rare event of breakage of SF<sub>6</sub>-containing equipment, its nominal SF<sub>6</sub> content is considered as leakage. Given the particular care with which SF<sub>6</sub> is removed from end-of-life equipment, the above procedure can yield fairly reliable data.

These emissions are expressed in weight of SF<sub>6</sub> and in weight of CO<sub>2</sub>-equivalent, in terms of Global Warming Potential (GWP = 23,900).

When expressed in CO<sub>2</sub>-equivalent, the values of SF<sub>6</sub> appear to be extremely low (in 2005, 1.8% of Enel's overall greenhouse gas emissions). The variability of SF<sub>6</sub> emissions from one year to the other is largely due to the occasional character of the above-mentioned replenishments.

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Origin of sulfur hexafluoride emissions in 2005  
**Total: 4,230 kg**



■ Electricity distribution **63.8%**  
■ Electricity generation **36.2%**

> CH<sub>4</sub> emissions, just as the aforesaid minor amounts of CO<sub>2</sub>, are ascribable to the losses of natural gas from the distribution grid.

These emissions are determined on the basis of grid losses, taking into account the methane content of natural gas (average value in 2004: 92.94%) and its density (0.555 kg/m<sup>3</sup>).

They are expressed both in weight of CH<sub>4</sub> and in weight of CO<sub>2</sub>-equivalent, in terms of Global Warming Potential (GWP = 21).

When expressed in CO<sub>2</sub>-equivalent, CH<sub>4</sub> emissions appear to be extremely low (4.8‰ of Enel's overall greenhouse gas emissions). However, based on the considerations previously made (see "Natural gas distribution" in "Processes and products") about the assessment of losses, the value of these emissions in 2005 is practically twice the one in 2004.

With regard to "minor" pollutants (e.g. metals), Enel conducted extensive programs of monitoring & sampling 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 established by the Ministerial Decree of July 12, 1990.

Separate considerations should be made for the gases contained in geothermal steam. As such gases are incondensable, they are emitted into the atmosphere when steam condenses after expansion in turbines. The main gases are:

- > hydrogen sulfide (H<sub>2</sub>S), the only potentially polluting substance which is present in significant amounts in geothermal fluid;
- > carbon dioxide (CO<sub>2</sub>).

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<sub>2</sub> emissions from geothermal generation among those to be censused.

However, Italy included these CO<sub>2</sub> emissions in its national reports on greenhouse gas emissions. In this Environmental Report, CO<sub>2</sub> and H<sub>2</sub>S emissions from geothermal generation are reported for information completeness.

Their values are estimated on the basis of periodical monitoring & sampling of the composition and flow rate of geothermal steam used by power plants.

Thanks to the growing use of abatement systems, H<sub>2</sub>S emissions are lower than those that would be naturally present in geothermal areas without power plants.



In line with the aforesaid IPCC Guidelines, the Eco-Balance does not report the emissions of CO<sub>2</sub> from thermal generation which was obtained from landfill gas in 2001 and from solid biomass and the biodegradable part of RDF (containing non-fossil carbon) in 2005. Indeed, these emissions counterbalanced the CO<sub>2</sub> which was absorbed by biomass during its growth; such biomass may have been the organic component of waste – giving rise to biogas or to the biodegradable part of RDF, depending on the cases – or may have been used on as-is basis. However, CO<sub>2</sub> emissions from combustion of the non-biodegradable part (containing fossil carbon) of RDF are reported.

**Avoided CO<sub>2</sub> emissions** Avoided CO<sub>2</sub> 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, from utilization of the resources to end-uses of the various products. The tables show the CO<sub>2</sub> emissions that were avoided thanks to electricity generation from renewables, rather than from the otherwise necessary fossil fuels.

These emissions are determined by multiplying the electricity generation from each renewable source by the average specific CO<sub>2</sub> emissions from Enel's fossil-fired thermal generation. In the case of hydro power, reference is made only to generation from natural flows, excluding the contribution of pumped-storage power plants.

The reported trends are obviously consistent with those of electricity generation. In 2005, electricity generation from renewables avoided over 22% of CO<sub>2</sub> emissions, which would have been produced by Enel's electricity generation activities, failing any contribution by renewables.

**Waste waters** Waste waters include residual water for industrial uses and meteoric waters collected from the outdoor areas of thermal power plants and of the fuel-oil storage & handling facility of Ravenna. These waters undergo a specific treatment 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 the plants – thereby contributing to coverage of water requirements for industrial uses – and in part returned to water bodies or, more infrequently, discharged into the sewage system.

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 installations where these systems are located.

As is obvious, waste waters reflect the trend of water requirements for industrial uses, except for a few deviations due to the variability of precipitation.

## Releases into water bodies

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

In the case of Enel, the extent of the problem is much smaller than in other industries, such as the chemical industry. Nevertheless, the applicable legislation specifies strict limits for concentration of pollutants, with which Enel complies through the use of treatment systems.

Before treatment, waste waters are distinguished on the basis of their characteristics (acidic/alkaline, oily, coming from desulfurizer drains, meteoric, gray water) and, after treatment, some of their parameters (e.g. conductivity, pH, turbidity, dissolved oxygen and oil content) are continuously monitored. This activity ensures compliance with regulatory limits; indeed, when pollutant concentrations get close to regulatory limits, waste waters are treated again.

Also the waste waters that are reused inside Enel's power plants (reducing water requirements for industrial uses) usually need a prior treatment in order to comply with the applicable specifications.

Data on all waste water releases are reported from 2003. This result was made possible by the systematic use of environmental management systems (certified or awaiting certification) in thermal power plants and was preceded by the collection of waste water data on larger and larger samples of such plants in previous years. The relevant data are as follows: overall releases 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). The data are obtained by multiplying concentrations by the volumes of waste water releases.

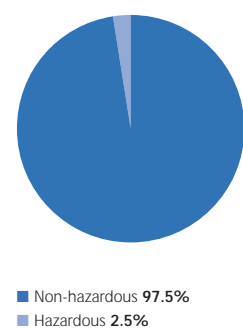
Special waste

Special waste represents the refuse from Enel's industrial activities. This refuse is regulated by Legislative Decree no. 22 of February 5, 1997, as amended, now replaced by Legislative Decree no. 152 of April 3, 2006 (fourth part: "Provisions on waste management and rehabilitation of polluted sites").

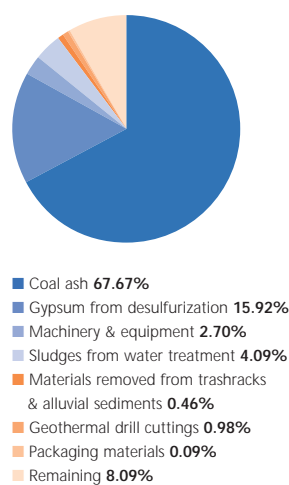
The above legislation classifies waste into non-hazardous and hazardous.

> Non-hazardous waste includes: i) the most representative items (specified in the tables): coal ash and gypsum from desulfurization; ii) "other" waste (only specified in the pie chart), including typical and "remaining" non-hazardous waste; the typical items of the latter category are individually inventoried: machinery & equipment and their parts, supports of power lines, conductors and cables, gas ducts; sludges from water treatment; materials removed by Enel from the trashracks of hydro power plant intake structures; the portion of alluvial sediments 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 packagings); the "remaining" waste is made up of items of a general or exceptional nature (e.g.: clothing; debris from construction and demolition; sand, used for the fluidized bed of the Sulcis power plant unit 2 boiler and no longer usable due to its high content of combustion by-products).

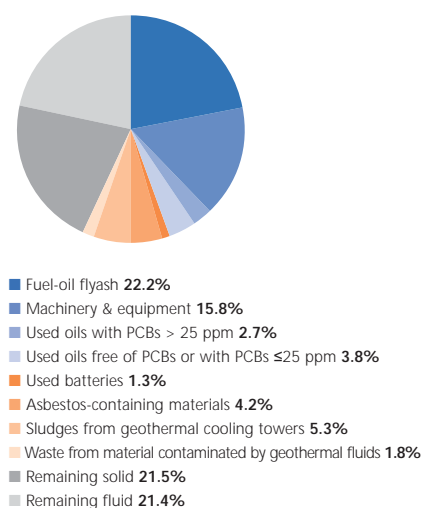
Special waste in 2005  
Total production: 1,801,445 t



Non-hazardous special waste in 2005  
Total production: 1,756,056 t



Hazardous special waste in 2005  
Total production: 45,389 t



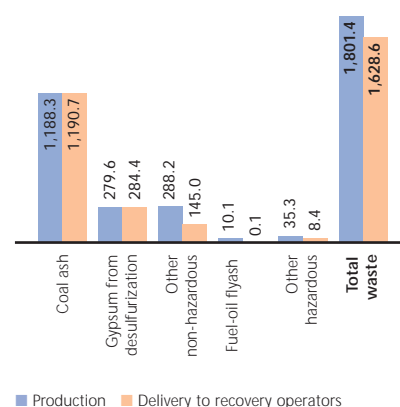
> Hazardous waste comprises: i) fuel-oil flyash (specified in the tables as the most representative item); ii) "other" waste (only shown in the pie chart), including typical and "remaining" hazardous waste; the typical items of the latter category are individually inventoried: PCB-containing equipment, such as transformers, capacitors and their parts; used oils; used batteries; asbestos-containing material; sludge from condensation of geothermal steam; waste from material contaminated by geothermal fluids; the "remaining solid" and "remaining liquid" waste consists of items of a general or exceptional nature (oil-stained clothing, dirt and deposits, soil from remediation works, oil-in-water emulsions, etc.).

The waste data are those yearly reported to the Public Inventory of Waste. These reports are based on the qualitative and quantitative characteristics of the waste, recorded at least on a weekly basis in the books of incoming and outgoing waste.

"Waste production" refers to the amounts of waste recorded as "incoming waste" in the books of incoming and outgoing waste.

"Waste delivered to recovery operators" refers to the amounts of waste which are delivered to authorized waste recovery operators.

Main categories of special waste in 2005  
(thousand t)



The results show that:

- > the production of ash is obviously correlated with fuel consumption and characteristics, but it reflects fluctuations that depend on: frequency of ash removal from flue gas ducts and from the hoppers of boilers and of particulate collectors; possible addition of water to the ash to prevent the formation of dust during its temporary storage on the plant site; combustion of flyash in the upper part of boiler furnaces in the case of dual oil-gas firing, etc.; in particular, the increase in fuel-oil ash in 2005, in spite of the sharp drop in fuel-oil consumption, is due to the fact that the Torrealvaldiga Nord power plant boilers and ash storage vats were cleaned up before their demolition, as part of the project of conversion of the plant to coal firing;
- > the production of gypsum from desulfurization naturally reflects limestone consumption in the flue gas desulfurization process;
- > the sharp increase in the "other" non-hazardous special waste from electricity generation is mostly due to demolition works in power plants being converted;
- > the rise in the "other" hazardous waste from electricity generation sites is to be attributed to: repeated sludge collections from the vats underlying geothermal power plant cooling towers; high amount of waste from material contaminated by geothermal fluids – this waste was generated

upon works of renovation or corrective maintenance in geothermal power plants; and exceptional amount of oil emulsions resulting from the clean-up of storage vats and from remediation of fuel storage tanks in the Brindisi Sud and La Casella power plants;

- > the increase in the "other" hazardous waste from electricity distribution is related to the special project of decontamination/disposal of equipment with PCB-containing dielectric oil and to meteoric waters collected in the vats underlying the transformers of high-voltage/medium-voltage substations; these waters (potentially contaminated by oils) are currently included in the category of liquid waste, when they are intercepted as an option for complying with the provisions of Legislative Decree no. 152/99 on waste water discharges; this circumstance, together with the one mentioned above in connection with electricity generation sites, also explains the high percentage of the "remaining liquid" waste in the total hazardous special waste;
- > the high share of the "remaining solid" waste in the total hazardous special waste, instead, is mainly due to packagings containing waste from 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 tables, the volumes of "waste delivered to recovery operators" may exceed those of "waste production", when the waste has been temporarily stored on the plant site in a given year and delivered to recovery operators only in the subsequent year.

Finally, it is worth stressing that, in 2005, 62,130 of the 62,139 tonnes of alluvial sediments (removed with mechanical equipment upon emptying of hydro basins) were used locally (e.g. for restoring the embankments of basins) and thus not included in waste production.

## Emissions

Source			2001	2002	2003	2004	2005
<b>Emissions into the atmosphere</b>							
SO <sub>2</sub>	thermal generation	thousand t	284	196	101	94	73
NO <sub>x</sub>	thermal generation	thousand t	101	75	62	56	49
	fuel-oil storage & handling	thousand t	-	-	-	0.008	0.004
	<b>Total</b>	<b>thousand t</b>	<b>101</b>	<b>75</b>	<b>62</b>	<b>56</b>	<b>49</b>
Particulates	thermal generation	thousand t	10.2	6.1	3.5	3.3	2.6
CO <sub>2</sub>	<i>fossil-fired thermal generation (from combustion)</i>	<i>thousand t</i>	<i>83,742</i>	<i>75,246</i>	<i>71,345</i>	<i>63,281</i>	<i>56,124</i>
	<i>fossil-fired thermal generation (from desulfurization)</i>	<i>thousand t</i>	<i>133</i>	<i>144</i>	<i>112</i>	<i>93</i>	<i>71</i>
	total from fossil-fired thermal generation	thousand t	83,875	75,391	71,457	63,374	56,195
	<i>non-fossil-fired thermal generation (from fossil carbon)</i>	<i>thousand t</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>12</i>
	total from thermal generation	thousand t	83,875	75,391	71,457	63,374	56,207
	geothermal drilling, fuel-oil storage & handling, gas distribution, generating sets	thousand t	n.a.	9	17	30	24
	<b>Total</b>	<b>thousand t</b>	<b>n.a.</b>	<b>75,400</b>	<b>71,474</b>	<b>63,404</b>	<b>56,232</b>
SF <sub>6</sub>	electricity generation & distribution	kg	2,804	3,424	3,462	4,191	4,230
		thousand t of CO <sub>2</sub> -equivalent	67	82	83	100	101
CH <sub>4</sub>	gas distribution	thousand t	n.a.	5.7	6.3	6.6	13.0
		thousand t of CO <sub>2</sub> -equivalent	n.a.	120	132	138	274
<b>Total greenhouse gases (CO<sub>2</sub>, SF<sub>6</sub>, CH<sub>4</sub>)</b>		<b>thousand t of CO<sub>2</sub>-equivalent</b>	<b>n.a.</b>	<b>75,601</b>	<b>71,689</b>	<b>63,642</b>	<b>56,607</b>
H <sub>2</sub> S	geothermal generation (fluid)	thousand t	25	21	24	23	23
CO <sub>2</sub>	geothermal generation (fluid)	thousand t	1,724	1,809	1,958	1,893	1,838
<b>Avoided CO<sub>2</sub> emissions</b>							
Hydro generation from natural flows		thousand t	19,191	14,684	12,513	14,651	12,464
Geothermal generation		thousand t	2,999	3,154	3,373	3,533	3,444
Generation from wind & solar (photovoltaic)		thousand t	20	38	52	162	254
Generation from biomass & biodegradable part of waste		thousand t	18	-	-	-	9
<b>Total</b>		<b>thousand t</b>	<b>22,228</b>	<b>17,876</b>	<b>15,938</b>	<b>18,346</b>	<b>16,171</b>
<b>Waste waters (discharged quantity)</b>							
	thermal generation	million m <sup>3</sup>	20.2	16.4	12.6	12.9	14.7
	fuel-oil storage & handling	million m <sup>3</sup>	-	-	-	0.1	0.1
	<b>Total</b>	<b>million m<sup>3</sup></b>	<b>20.2</b>	<b>16.4</b>	<b>12.6</b>	<b>13.0</b>	<b>14.8</b>
<b>Releases into water bodies</b>							
Metals and compounds (expressed as metal equivalent)	thermal generation	kg	n.a.	n.a.	4,605	5,339	3,178
	fuel-oil storage & handling	kg	-	-	-	49	40
	<b>Total</b>	<b>kg</b>	<b>n.a.</b>	<b>n.a.</b>	<b>4,605</b>	<b>5,388</b>	<b>3,218</b>
Total nitrogen (expressed as N)	thermal generation	kg	n.a.	n.a.	50,696	59,683	104,881
	fuel-oil storage & handling	kg	-	-	-	936	800
	<b>Total</b>	<b>kg</b>	<b>n.a.</b>	<b>n.a.</b>	<b>50,696</b>	<b>60,619</b>	<b>105,681</b>
Total phosphorus (expressed as P)	thermal generation	kg	n.a.	n.a.	3,381	4,727	7,524
	fuel-oil storage & handling	kg	-	-	-	508	435
	<b>Total</b>	<b>kg</b>	<b>n.a.</b>	<b>n.a.</b>	<b>3,381</b>	<b>5,235</b>	<b>7,959</b>
COD	thermal generation	kg	n.a.	n.a.	408,067	422,739	384,393
	fuel-oil storage & handling	kg	-	-	-	7,215	6,160
	<b>Total</b>	<b>kg</b>	<b>n.a.</b>	<b>n.a.</b>	<b>408,067</b>	<b>429,954</b>	<b>390,553</b>
BOD	thermal generation	kg	n.a.	n.a.	62,575	70,933	76,439
	fuel-oil storage & handling	kg	-	-	-	240	205
	<b>Total</b>	<b>kg</b>	<b>n.a.</b>	<b>n.a.</b>	<b>62,575</b>	<b>71,173</b>	<b>76,644</b>

n.a.: not available

## Emissions

Source		2001	2002	2003	2004	2005
<b>Non-hazardous special waste</b>						
Coal bottom ash	fossil-fired thermal generation					
production	t	63,761	58,311	35,855	14,878	30,552
delivery to recovery operators	t	63,735	58,336	35,855	14,755	29,710
Coal flyash	fossil-fired thermal generation					
production	t	1,056,605	1,146,320	1,043,885	1,267,438	1,157,709
delivery to recovery operators	t	981,465	1,078,017	1,029,882	1,261,586	1,161,008
Gypsum from desulfurization	fossil-fired thermal generation					
production	t	470,240	579,777	442,598	354,713	279,632
delivery to recovery operators	t	428,666	547,872	431,009	361,918	284,421
Other						
production	electricity generation & geothermal drilling	t	168,867	219,723	203,717	179,278
	electricity distribution	t	54,905	46,161	39,210	53,544
	fuel-oil storage & handling, gas distribution	t	n.a.	133	175	167
	Total	t	n.a.	266,017	243,101	232,989
delivery to recovery operators	electricity generation & geothermal drilling	t	116,938	99,950	95,553	115,034
	electricity distribution	t	50,948	44,358	39,432	52,819
	fuel-oil storage & handling, gas distribution	t	n.a.	116	175	121
	Total	t	n.a.	144,425	135,160	167,973
<b>Total</b>						
production	electricity generation & geothermal drilling	t	1,759,473	2,004,131	1,726,055	1,816,307
	electricity distribution	t	54,905	46,161	39,210	53,544
	fuel-oil storage & handling, gas distribution	t	n.a.	133	175	167
	Total	t	n.a.	2,050,425	1,765,440	1,870,018
delivery to recovery operators	electricity generation & geothermal drilling	t	1,590,803	1,784,175	1,592,299	1,753,293
	electricity distribution	t	50,948	44,358	39,432	52,819
	fuel-oil storage & handling, gas distribution	t	n.a.	116	175	121
	Total	t	n.a.	1,828,650	1,631,906	1,806,232
						1,620,173

n.a.: not available

## Emissions

Source		2001	2002	2003	2004	2005
<b>Hazardous special waste</b>						
Oil flyash	fossil-fired thermal generation					
production	t	14,532	14,911	11,479	8,937	10,096
delivery to recovery operators	t	2,639	656	948	197	94
Other						
production	electricity generation & geothermal drilling	t	6,298	10,126	12,769	13,020
	electricity distribution	t	4,912	6,250	8,212	12,170
	fuel-oil storage & handling, gas distribution	t	n.a.	20	6	2,106
	<b>Total</b>	<b>t</b>	<b>n.a.</b>	<b>16,397</b>	<b>20,986</b>	<b>27,295</b>
delivery to recovery operators	electricity generation & geothermal drilling	t	1,408	1,414	1,085	1,348
	electricity distribution	t	3,345	4,241	5,757	4,472
	fuel-oil storage & handling, gas distribution	t	n.a.	0	0	0
	<b>Total</b>	<b>t</b>	<b>n.a.</b>	<b>5,655</b>	<b>6,842</b>	<b>5,820</b>
<b>Total</b>						
production	electricity generation & geothermal drilling	t	20,830	25,038	24,248	21,956
	electricity distribution	t	4,912	6,250	8,212	12,170
	fuel-oil storage & handling, gas distribution	t	n.a.	20	6	2,106
	<b>Total</b>	<b>t</b>	<b>n.a.</b>	<b>31,308</b>	<b>32,466</b>	<b>36,232</b>
delivery to recovery operators	electricity generation & geothermal drilling	t	4,047	2,070	2,033	1,545
	electricity distribution	t	3,345	4,241	5,757	4,472
	fuel-oil storage & handling, gas distribution	t	n.a.	0	0	0
	<b>Total</b>	<b>t</b>	<b>n.a.</b>	<b>6,311</b>	<b>7,789</b>	<b>6,017</b>
<b>Total special waste</b>						
production	electricity generation & geothermal drilling	t	1,780,303	2,029,168	1,750,303	1,838,263
	electricity distribution	t	59,817	52,411	47,421	65,714
	fuel-oil storage & handling, gas distribution	t	n.a.	153	181	2,272
	<b>Total</b>	<b>t</b>	<b>n.a.</b>	<b>2,081,733</b>	<b>1,797,906</b>	<b>1,906,250</b>
delivery to recovery operators	electricity generation & geothermal drilling	t	1,594,850	1,786,246	1,594,331	1,754,838
	electricity distribution	t	54,293	48,599	45,189	57,291
	fuel-oil storage & handling, gas distribution	t	n.a.	116	175	121
	<b>Total</b>	<b>t</b>	<b>n.a.</b>	<b>1,834,962</b>	<b>1,639,696</b>	<b>1,812,249</b>
						<b>1,628,621</b>

n.a.: not available



## Indicators

Indicators (ratios between homogeneous or heterogeneous quantities) are used to analyze Enel's environmental performance over time, regardless of the volume of activities in each year. The following paragraphs describe the characteristics of the indicators presented in the tables and provide comments, if any, on their trends.

### Conservation and quality of resources

- > The net heat rate of thermal generation defines the average quantity of fuels which are consumed by thermal power plants to generate one kWh net.

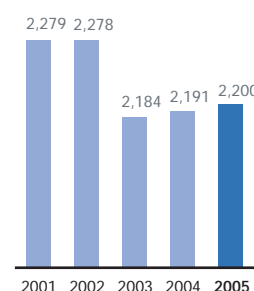
Its trend in the past few years is the result of two opposite effects: on one hand, the growing amount of electricity absorbed by power plant systems for abating emissions into the atmosphere (with increased reliance on coal, the use of these systems became more and more systematic); and, on the other hand,

the entry into operation of new high-efficiency combined-cycle plants. Capacity modulation in many power plants (more marked after the start of the Power Exchange) had a pejorative effect on the trend of this indicator.

To facilitate the understanding of the 2005 result, it is worth pointing out that if the related thermal power had been generated with the 2001 net heat rate, fuel consumption would have increased by 645,000 tonnes of oil-equivalent.

- > The net heat rate of geothermal generation defines the average quantity of geothermal steam which is used by geothermal power plants to produce one kWh net.  
Its slight increase in the past two years (whose amount is however comparable to the typical error of the instrumentation used for measuring the geothermal steam flowing into power plants) may be attributed to the naturally declining pressure of geothermal reservoirs over time.
- > The net efficiency of hydro generation from pumped storage expresses, in percentages, the ratio of net electricity produced by pumped-storage hydro power plants to electricity consumed for pumping.  
The yearly average in the reported period, weighted on hydro generation from pumped storage, is equal to 71.8%.
- > The consumption of electricity and natural gas for grid operation and the losses of natural gas from the grid are expressed as percentages of the total amounts distributed.  
The increase in the percentage losses of natural gas in 2005 represents the first effect of the new procedure for assessing such losses (see "Natural gas distribution" in "Processes and products" of the Eco-Balance).

Net heat rate of thermal generation  
(kcal/kWh)



> The net specific requirements of water for industrial uses in thermal generation express the amount of water consumed per kWh net. Their increase in the reported period is due, above all, to the growing penetration of flue gas desulfurization systems. However, it should be stressed that the main source for covering the water requirements of desulfurizers is as-is sea water; disregarding the contribution of as-is sea water, the increase is much smaller.

> In 2005, the overall contribution of inland waters (rivers, wells and aqueducts) to coverage of the requirements of water for industrial uses shrank further (in 2004, this contribution was for the first time below 50%).

> Fossil fuel consumption in 2005 reflects a further decrease of fuel oils and equal shares for coal and natural gas.

With regard to fuel oils, use is currently made of low- and very low-sulfur (LS and VLS) ones only; in particular, the share of VLS in 2005 was the highest of the period.

The consumption of natural gas (in terms of both technologically-captive and non-technologically captive uses) radically dropped in 2005 vs. 2004 (see "Fuels" in "Resources" of the Eco-Balance).

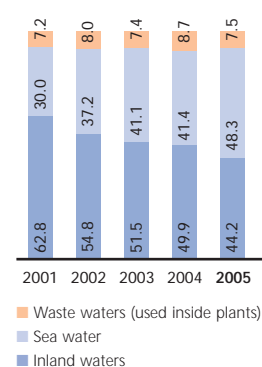
> The share of geothermal fluid having suitable thermodynamic characteristics and thus allocated to electricity generation accounts for the near totality of the geothermal fluid extracted.

Its progressive downward trend is related to the considerations made about the net heat rate of geothermal generation. However, it is worth recalling that the part of this fluid not used for electricity generation is used for carrying heat.

> The generation from renewables, expressed as a percentage of total electricity generation, is much above the average of the period, in spite of the lower contribution of hydro

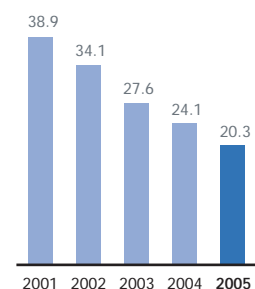
#### Coverage of requirements of water for industrial uses

(%)



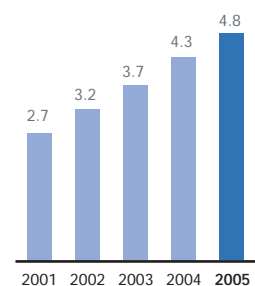
#### Relative consumption of fuel oil

(% of total consumption of fossil fuels for thermal generation)



sources. Wind generation had a sustained growth rate, demonstrating Enel's commitment to this technology: among conventional technologies using renewable sources other than hydro, wind generation is the closest to competitiveness.

Power generation from biomass & waste (biodegradable part), geothermal, wind & solar (photovoltaic) sources vs. total electricity generation (%)



### Specific emissions into the atmosphere

In electricity generation, they express the amounts of the typical and significant substances (see "Emissions into the atmosphere" in "Emissions" of the Eco-Balance) that are released into the atmosphere per kWh net of thermal, geothermal or total electricity generation.

The specific emissions from thermal generation represent:

- > for SO<sub>2</sub>, NO<sub>x</sub> and particulates: the cumulated effect of the fuel mix, of the efficiency of thermal power plants and of direct prevention and abatement measures;
- > for CO<sub>2</sub>: the cumulated effect of the mix of fossil fuels (or fuels containing carbon of fossil origin) and of the efficiency of thermal power plants; the contribution due to the operation of desulfurizers is definitely marginal but included in the data.

Specific emissions of SO<sub>2</sub>, NO<sub>x</sub> and particulates have a definitely downward trend in the reported period, thanks to the combined effect of: i) advanced combustion systems; ii) flue gas emission abatement systems; iii) growing reliance on high-grade fuels; and iv) excellent average efficiency of thermal power plants.

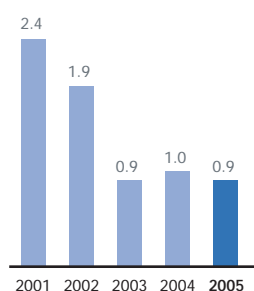
The ratio of specific CO<sub>2</sub> emissions to thermal generation is fairly variable in the period owing to the variability of the emission determinants. Excellent results were achieved with respect to 1990, i.e. the base year for the Kyoto Protocol targets, when 738 g/kWh net were recorded.

In line with a practice adopted by many electricity companies, specific CO<sub>2</sub> emissions are also determined with reference to total generation of electricity, thereby mirroring also the effect of the overall mix of energy sources.

Also from the latter standpoint, the value of specific CO<sub>2</sub> emissions in 2005 is the lowest of the period (501 g/kWh net) thanks, above all, to the high contribution of renewables to overall electricity generation; thus, the gap between the 2005 value and the 1990 one (618 g/kWh net) is much more significant

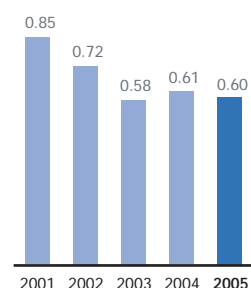
### Specific SO<sub>2</sub> emissions from thermal generation

(g/kWh thermal net)



### Specific NO<sub>x</sub> emissions from thermal generation

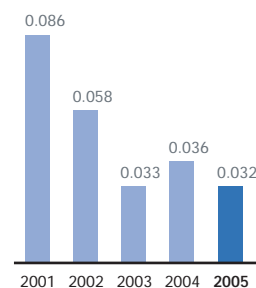
(g/kWh thermal net)



Relative SF<sub>6</sub> emissions, which concern all electric activities, express the ratio of the yearly emissions of SF<sub>6</sub> to the year-end volume of SF<sub>6</sub> contained in in-service & in-stock equipment, as well as in the bottles used for replenishments. The percentages of SF<sub>6</sub> over the years show small fluctuations, due above all to the occasional character of replenishments. However, they all lie below the value indicated in the 1996 IPPC Guidelines for national greenhouse gas inventories (1%).

### Specific particulate emissions from thermal generation

(g/kWh thermal net)



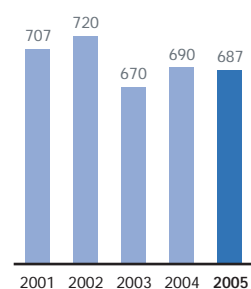
As to natural gas distribution, the tables show the ratio of emissions of CO<sub>2</sub>-equivalent (about 97% of which are due to losses of CH<sub>4</sub> from the grid and the remaining part to CO<sub>2</sub> from losses and from own consumption of natural gas) to the total gas wheeled.

Naturally, the 2005 value is heavily affected by the increase in the percentage losses of natural gas arising from the new procedure of assessment.

Specific emissions from geothermal generation, taking into account the considerations made about their origin (see "Emissions into the

### Specific CO<sub>2</sub> emissions from thermal generation

(g/kWh thermal net)



atmosphere" in "Emissions" of the Eco-Balance), express:

- > for H<sub>2</sub>S: the cumulated effect of the composition of geothermal steam and of the efficiency of geothermal power plants and abatement systems;
- > for CO<sub>2</sub>: the cumulated effect of the composition of geothermal steam and of the efficiency of geothermal power plants.

Both of them show progressive decreases over the years.

#### **Specific releases into water bodies**

They express the amount, per kWh net of thermal generation, of typical and significant substances (see "Releases into water bodies" in "Emissions" of the Eco-Balance) which are entrained by the portion of waste waters from thermal power plants that is returned to water bodies.

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

#### **Specific waste production**

Ash is the only waste which has a significant correlation with the volume of activities. As a result, the tables show the overall production of coal ash (bottom ash and flyash) and of fuel-oil flyash per kWh net generated from each fuel.

The use of better quality fuels (lower production of ash) and the generalized application of advanced particulate collection technologies (higher production 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.

In 2005, the latter circumstances (clean-up of boilers and vats in the Torrealvaldliga Nord power plant) had a major impact on production of fuel-oil ash.

## Waste recovery

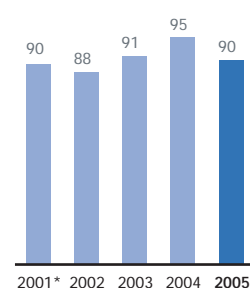
For the main groups of waste, this indicator expresses the ratio of the quantities delivered to recovery operators to the quantities produced.

The trends infer that:

- > the value of overall waste recovery in 2005 (90%) was in line with the average of the period;
- > recovery of the near totality of coal ash and gypsum characterized the entire period;
- > recovery of fuel-oil ash has become marginal, reflecting a progressive drop in demand by the markets of recovered materials (heavy metals);
- > recovery of "other" non-hazardous waste had considerable fluctuations in the various business activities, except in electricity distribution; the latter activity recorded steady and excellent results, as it almost completely recovered its high quantities of metals, packagings, glass, etc.;
- > recovery of "other" hazardous waste in electricity generation, geothermal activities and electricity distribution sharply dropped in the mid of the period; this drop is justified by the production of huge amounts of waste for which the only option was delivery to disposal facilities, especially if the operators involved were not licensed for recovery; this situation arose from: i) exceptional remediation or rehabilitation measures, in electricity generation and geothermal activities; and ii) decommissioning of oil-containing equipment and removal of potentially oil-contaminated meteoric waters collected in the vats underlying high-voltage/medium-voltage substations, in electricity distribution.

### Total waste recovery

(% of production)



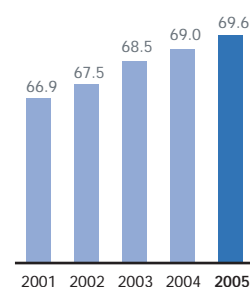
\* Electric activities only

## Land

With regard to landscape and land conservation, note the progressive increase in the percentage of overhead and underground cables for low- and medium-voltage lines and, accordingly, the gradual decrease of bare conductors.

### Overhead and underground cables in low- and medium-voltage lines

(% of entire LV and MV grid)



## Indicators

		2001	2002	2003	2004	2005	% ('05-'01)/'01	% ('05-'04)/'04
<b>Resource conservation and quality</b>								
Net heat rate of thermal generation	kcal/kWh	2,279	2,278	2,184	2,191	2,200	-3.5	0.4
Net heat rate of geothermal generation	kcal/kWh	5,411	5,491	5,324	5,376	5,389	-0.4	0.2
Net efficiency of hydro generation from pumped storage	%	72.1	71.2	70.7	72.3	72.9	1.1	0.8
Consumption of electricity for distribution grid operation	% of electricity distributed	n.a.	n.a.	n.a.	0.14	0.16	n.a.	11.9
Consumption of natural gas for distribution grid operation	% of natural gas distributed	n.a.	0.06	0.16	0.13	0.12	n.a.	-5.4
Losses of natural gas along the grid	% of natural gas distributed	n.a.	0.35	0.35	0.35	0.65	n.a.	85.7
Net specific requirements of water for industrial uses in thermal generation								
including contribution of as-is sea water	liters/kWh	0.371	0.364	0.407	0.523	0.536	44.4	2.6
excluding contribution of as-is sea water	liters/kWh	0.328	0.309	0.320	0.385	0.366	11.5	-4.7
Coverage of requirements of water for industrial uses								
from rivers	% of requirements	24.2	22.0	22.2	29.1	22.7	-6.2	-22.0
from wells	% of requirements	25.9	18.2	16.5	9.3	9.3	-64.2	0.0
from aqueducts	% of requirements	12.7	14.5	12.7	11.5	12.3	-3.6	6.5
<b>Total from inland waters</b>	<b>% of requirements</b>	<b>62.8</b>	<b>54.7</b>	<b>51.5</b>	<b>49.9</b>	<b>44.3</b>	<b>-29.6</b>	<b>-11.3</b>
from the sea (as-is)	% of requirements	11.6	15.3	21.3	26.3	31.6	173.4	20.0
from the sea (desalinated)	% of requirements	18.4	21.9	19.8	15.0	16.7	-9.6	10.8
from waste waters (used inside plants)	% of requirements	7.2	8.0	7.4	8.7	7.5	3.8	-14.2
Fossil-fuel consumption for thermal generation								
fuel oil	% of total fuel consumption	38.9	34.1	27.6	24.1	20.3	-47.9	-15.9
orimulsion	% of total fuel consumption	3.9	4.5	4.2	1.2	0.0	-100.0	-100.0
gas-oil	% of total fuel consumption	0.3	0.2	0.4	0.2	0.4	27.9	69.2
natural gas	% of total fuel consumption	33.1	31.7	40.3	38.1	39.8	20.2	4.4
coal	% of total fuel consumption	23.9	29.5	27.4	36.3	39.6	65.9	8.9
HS fuel oil	% of total fuel-oil consump.	2.0	0.1	0.0	0.5	2.5	23.9	416.6
MS fuel oil	% of total fuel-oil consump.	41.1	30.0	1.2	3.6	4.3	-89.5	20.4
LS fuel oil	% of total fuel-oil consump.	30.4	29.7	35.0	39.3	27.2	-10.5	-30.8
VLS fuel oil	% of total fuel-oil consump.	26.5	40.2	63.8	56.6	66.0	149.0	16.5
natural gas, technologically captive use	% of tot. natural gas consump.	37.5	27.1	59.0	64.2	60.7	62.0	-5.6
natural gas, non-technologically captive use	% of tot. natural gas consump.	62.5	72.9	41.0	35.8	39.3	-37.1	10.0
Geothermal steam for electricity generation	% of total geothermal fluid extracted	n.a.	99.5	99.5	97.2	96.8	n.a.	-0.4
Electricity generation from renewables								
thermal from biogas & degradable part of waste	% of total generation	0.016	-	-	-	0.011	-29.2	-
geothermal	% of total generation	2.7	3.2	3.7	4.1	4.5	65.6	9.9
hydro from natural flows	% of total generation	17.3	14.9	13.6	16.9	16.2	-6.4	-4.1
wind & solar (photovoltaic)	% of total generation	0.018	0.038	0.056	0.187	0.330	1,702.3	76.5
<b>Total</b>	<b>% of total generation</b>	<b>20.0</b>	<b>18.1</b>	<b>17.3</b>	<b>21.1</b>	<b>21.0</b>	<b>4.9</b>	<b>-0.6</b>
<b>Specific emissions into the atmosphere</b>								
SO <sub>2</sub> (thermal generation)	g/kWh thermal net	2.40	1.87	0.94	1.02	0.89	-62.7	-12.3
NO <sub>x</sub> (thermal generation)	g/kWh thermal net	0.85	0.72	0.58	0.61	0.60	-29.8	-1.9
Particulates (thermal generation)	g/kWh thermal net	0.086	0.058	0.033	0.036	0.032	-62.7	-12.3
CO <sub>2</sub> (thermal generation)	g/kWh thermal net	707	720	670	690	687	-2.9	-0.4
	g/kWh total net	534	550	519	504	501	-6.2	-0.4
SF <sub>6</sub> (electric activities)	% of SF <sub>6</sub> in equipment or in stock	0.8	0.9	0.9	1.0	0.9	20.4	-4.9
CH <sub>4</sub> + CO <sub>2</sub> , as CO <sub>2</sub> -equivalent (gas distribution)	g/m <sup>3</sup> of natural gas wheeled	n.a.	39.1	41.1	40.4	72.2	n.a.	78.6
H <sub>2</sub> S (geothermal fluid)	g/kWh geothermal net	5.9	4.8	4.8	4.6	4.6	-22.4	0.5
CO <sub>2</sub> (geothermal fluid)	g/kWh geothermal net	407	413	389	370	367	-9.9	-0.8

n.a.: not available

## Indicators

							%	%
							('05-'01)/'01	('05-'04)/'04
		2001	2002	2003	2004	2005		
<b>Specific releases into water bodies</b> (thermal generation)								
Metals and compounds (expressed as metal equivalent)	mg/kWh thermal net	n.a.	n.a.	0.04	0.06	0.04	n.a.	-33.2
Total nitrogen (expressed as N)	mg/kWh thermal net	n.a.	n.a.	0.5	0.6	1.3	n.a.	97.3
Total phosphorus (expressed as P)	mg/kWh thermal net	n.a.	n.a.	0.03	0.05	0.09	n.a.	78.7
COD	mg/kWh thermal net	n.a.	n.a.	3.8	4.6	4.7	n.a.	2.1
BOD	mg/kWh thermal net	n.a.	n.a.	0.6	0.8	0.9	n.a.	21.0
<b>Specific production of waste</b>								
Coal ash	g/kWh net from coal	43	43	42	43	41	-4.7	-4.6
Oil flyash	g/kWh net from fuel oil & gas-oil	0.31	0.42	0.41	0.43	0.66	110.2	52.1
<b>Waste recovery</b>								
Coal ash	% of production	93	94	99	100	100	7.4	0.7
bottom ash	% of production	100	100	100	99	97	-2.7	-1.9
flyash	% of production	93	94	99	100	100	8.0	0.8
Gypsum from desulfurization	% of production	91	94	97	102	102	11.6	-0.3
Other non-hazardous special waste								
electricity generation & geothermal drilling	% of production	69	45	47	64	41	-40.7	-36.0
electricity distribution	% of production	93	96	101	99	98	5.8	-0.5
fuel-oil storage & handling, gas distribution	% of production	n.a.	88	100	72	71	n.a.	-1.7
Total	% of production	n.a.	54	56	72	50	n.a.	-30.2
<b>Total non-hazardous special waste</b>								
electricity generation & geothermal drilling	% of production	90	89	92	97	92	1.9	-4.6
electricity distribution	% of production	93	96	101	99	98	5.8	-0.5
fuel-oil storage & handling, gas distribution	% of production	n.a.	88	100	72	71	n.a.	-1.7
Total	% of production	n.a.	89	92	97	92	n.a.	-4.5
Fuel-oil flyash	% of production	18.2	4.4	8.3	2.2	0.9	-94.9	-57.6
Other hazardous special waste								
electricity generation & geothermal drilling	% of production	22	14	8	10	8	-65.0	-24.5
electricity distribution	% of production	68	68	70	37	38	-43.5	4.7
fuel-oil storage & handling, gas distribution	% of production	n.a.	0	0	0	4	n.a.	-
Total	% of production	n.a.	34	33	21	24	n.a.	11.0
<b>Total hazardous special waste</b>								
electricity generation & geothermal drilling	% of production	19	8	8	7	5	-73.0	-25.3
electricity distribution	% of production	68	68	70	37	38	-43.5	4.7
fuel-oil storage & handling, gas distribution	% of production	n.a.	0	0	0	4	n.a.	-
Total	% of production	n.a.	20	24	17	19	n.a.	12.1
<b>Total special waste</b>								
electricity generation & geothermal drilling	% of production	90	88	91	95	91	1.3	-4.9
electricity distribution	% of production	91	93	95	87	81	-10.4	-6.7
fuel-oil storage & handling, gas distribution	% of production	n.a.	76	97	5	63	n.a.	1,093.8
Total	% of production	n.a.	88	91	95	90	n.a.	-4.9
<b>Land</b>								
LV cable lines								
overhead cable	% of entire LV grid	51.5	52.1	52.0	52.1	52.4	1.8	0.6
underground cable	% of entire LV grid	29.7	29.6	30.4	30.6	30.7	3.6	0.3
Total	% of entire LV grid	81.2	81.7	82.5	82.8	83.2	2.5	0.5
MV cable lines								
overhead cable	% of entire MV grid	1.54	1.88	2.15	2.25	2.37	53.8	5.3
underground cable	% of entire MV grid	34.8	35.2	36.1	36.7	37.3	7.1	1.5
Total	% of entire MV grid	36.4	37.1	38.3	39.0	39.7	9.0	1.7
Overhead and underground cables in HV, MV and LV distribution lines	% of total distribution grid	65.7	66.3	67.4	67.9	68.4	4.2	0.8

n.a.: not available



## Domestic Generation and Energy Management

In Enel's current organizational structure, Domestic Generation and Energy Management is the Division that manages all activities of generation, import and supply of electricity in Italy, optimizing generation and procurement costs. The Division purchases fuels and manages the related commodity risk (risk concerning electricity generation and electricity and gas sales and connected to the trends of oil product prices and euro/dollar exchange rates) on the behalf of the Group, in and outside Italy, with the primary purpose of optimizing fuel costs for thermal power plants and ensuring competitive gas sales to final customers. Finally, the Division designs, develops and builds power plants in and outside Italy.

The Division consists of six Business Units, including:

- > "Thermal Generation", which operates and maintains thermal power plants and is responsible for their operating costs and technical performance;
- > "Renewables", which develops, operates and maintains renewable-energy power plants and is responsible for their operating costs and technical performance.

Competitiveness in the open market is today's key target of Domestic Generation and Energy Management. With this target in mind, the Division focuses on: conversion of power plants to coal firing; completion of investments in combined cycles and development of renewables. Indeed, its goals are: efficient management, optimization of generating capacity and reliance on a more balanced fuel mix, hedging against risks of prices and supplies of hydrocarbons.

This modernization program also has a positive impact on the environment, in terms of rationalization of the use of energy resources, development of renewables, increased efficiency of power plants and reduction of emissions into the atmosphere.

This is in line with the Division's strategic guidelines, which place environmental protection among the strategic factors for competing on the new liberalized energy market.

The Division puts particular emphasis on improvement of the quality of services. In 2004, it launched its QUASAR (Quality of Services, Assets and Resources) project with the purpose of improving quality in all activities and of raising its performance to the best international levels. The project is being extended inside the Division, involving a growing number of employees and power plants in Italy. As early as in the first year of operation, the project covered 42% of the personnel of the Thermal Generation Business Unit and 24% of the one of the Renewables Business Unit. In the near future, the project will be also implemented in Enel's companies outside Italy.

## Thermal Generation Business Area



### Business Unit

- Generation from coal and orimulsion
- Generation from fuel oil and gas
- Generation from combined cycles and gas turbines

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### Power plants

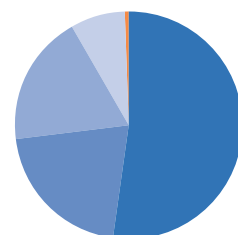
- (1) Fusina, Porto Marghera.
- (2) Sulcis, Portoscuso, Santa Gilla, Assemini, Codrongianos.
- (3) Piombino, Livorno, Portoferraio, Capraia.
- (4) Rossano, Mercure.
- (5) Termini Imerese, Alicudi, Filicudi, Malfa, Panarea, Santa Marina Salina, Stromboli, Vulcano.
- (6) Torvaldaliga Nord, Fiumicino, Ventotene.
- (7) La Casella, Alessandria, Carpi.
- (8) Pietrafitta, Camerata Picena, Campomarino, Giugliano, Larino, Maddaloni.

## Thermal power installations

	Power plants no.	Generating units no.	Net maximum capacity MW
Steam (condensing)		57	14,208
Repowered with gas turbines		9	5,556
Combined-cycle gas turbines		14	5,005
Single-cycle gas turbines		30	2,104
Diesel		52	29
	<b>46</b>	<b>162</b>	<b>26,902</b>

## Net maximum capacity

**Total: 26,902 MW**



- Steam (condensing) **52.8%**
- Repowered with gas turbines **20.7%**
- Combined-cycle gas turbines **18.6%**
- Single-cycle gas turbines **7.8%**
- Diesel **0.1%**

## Storage & handling of fuel oil

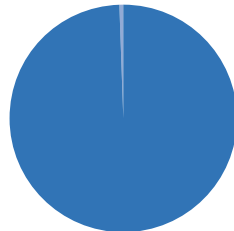
The Thermal Generation Business Area operates an integrated fuel-oil storage & handling facility in Ravenna. The facility ("IICO"), which is equipped with pumping and heating systems, supplies fuel oil via a pipeline to the Porto Tolle power plant.

Overall length of supply pipelines, from sea terminal and from AGIP dock (km)	28
Capacity of storage tanks (m³)	183,630
Length of transfer pipeline to Porto Tolle (km)	92
Delivery pumps (no.)	6
Fuel oil transferred to Porto Tolle (t)	169,583
Heat production – 15 bar and 210°C steam (million kcal)	51,471
Electricity consumption (million kWh)	2.0

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 releases into water bodies, waste) are included among thermal generation data.

### Net electricity generation

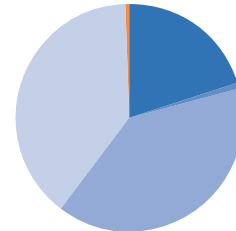
Total: 81,823 million kWh



■ From fossil fuels **99.96%** (81,794 GWh)  
■ From biomass and waste **0.04%** (29 GWh)

### Fuel consumption

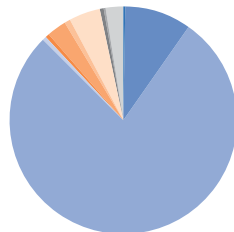
Total: 18,004,994 t of oil-equivalent



■ Fuel oil **20.26%**  
■ Gas-oil **0.36%**  
■ Natural gas **39.78%**  
■ Coal **39.56%**  
■ Biomass & waste **0.04%**

### Expendables

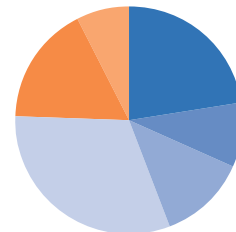
Total: 205,342 t



■ Resins, hydrazine, carbonylhydrazide & hydrogen peroxide **0.08%**  
■ Ammonia **9.61%**  
■ Limestone for flue gas desulfurization **79.09%**  
■ Magnesium oxide **0.02%**  
■ Sulfuric & hydrochloric acids **2.73%**  
■ Caustic soda **0.93%**  
■ Lime, ferric chloride & polyelectrolyte **4.50%**  
■ Lubricating oil **0.27%**  
■ Dielectric oil **0.05%**  
■ Other **2.46%**  
■ Sodium hypochlorite, chlorine dioxide, ferrous sulfate, ferrous chloride & trisodium phosphate **0.26%**

### Water for industrial uses

Total requirements: 43,926,658 m<sup>3</sup>  
Total abstraction from inland waters: 19,416,972 m<sup>3</sup>



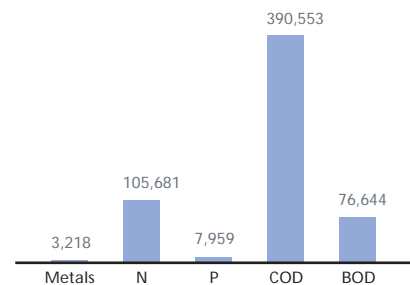
■ From rivers **22.6%**  
■ From wells **9.3%**  
■ From aqueducts **12.3%**  
■ From the sea (as-is) **31.6%**  
■ From the sea (desalinated) **16.7%**  
■ From waste waters (used inside plants) **7.5%**

### Waste waters

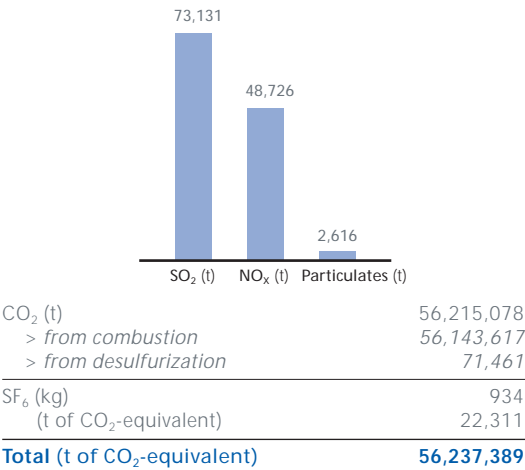
Discharged (m <sup>3</sup> )	14,792,519
Used inside plants (m <sup>3</sup> )	3,283,860

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

### Releases into water bodies (kg)



Emissions into the atmosphere

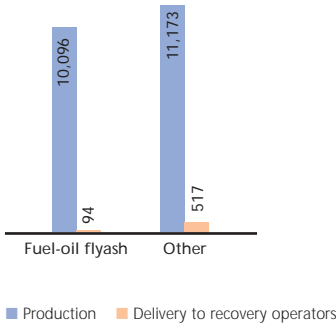
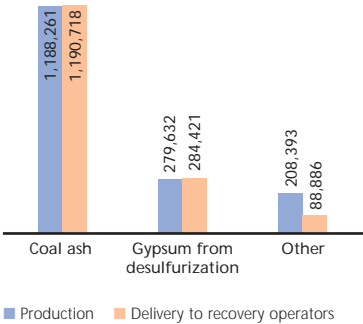


Special waste

**Total production: 1,697,555 t**  
**Total delivery to recovery operators: 1,564,636 t**

Non-hazardous  
Production: 1,676,286 t  
Delivery to recovery operators: 1,564,025 t

Hazardous  
Production: 21,269 t  
Delivery to recovery operators: 611 t



## Energy and environmental efficiency of the thermal generating mix

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The main events of 2005 are as follows.

- > Unit 2 (fluidized bed) of the Sulcis power plant (Cagliari) went into operation.

The use of the fluidized-bed technology in large combustion plants is beneficial to the environment: combustion takes place at temperatures much lower than in a conventional combustion process, with a positive impact in terms of mitigation of nitrogen oxide emissions. Moreover, unlike in conventional thermal generating units, sulfur oxides are completely abated in the furnace, thereby avoiding the use of abatement systems outside the boiler.

- > Operating tests were started on the new biomass unit of the Mercure power plant (Cosenza). The utilization of biomass also in the Genova and Sulcis power plants is awaiting authorization from the Ministry for Economic Development. However, unit 2 of the Sulcis power plant already used this fuel on an experimental basis in 2005.

- > In the Fusina power plant (Venice), the project for experimental co-firing of coal and refuse-derived fuel (RDF) was completed and the commencement of commercial operation of the plant in this configuration was notified to the Province of Venice. On units 1 and 2 of the same plant, environmental improvement measures continued. In particular, a system for crystallization of liquid waste from flue gas desulfurization was installed.

This system will decrease the environmental impact of liquid waste and minimize the consumption of waters for industrial uses. In the process, the water contained in the liquid waste is softened until it can be separated into distilled water and solid waste containing all the substances initially dissolved or suspended in the liquid waste.

- > Works for conversion of the Santa Barbara power plant (Arezzo) to combined cycle went on, while those on the second 320-MW unit of the Termini Imerese power plant (Palermo) were initiated.
- > The project of conversion of the Torrealvaldiga Nord power plant (Rome) to high-efficiency clean coal firing continued.
- > An application was filed for authorization to convert the Porto Tolle power plant (Rovigo) to coal firing; the related notice to the public for the beginning of the EIA procedure was published.

## Directive 2003/87/EC

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Directive 2003/87/EC (the so-called “Emissions Trading” Directive) established a scheme for greenhouse gas emission allowance trading within the Community.

The Directive provides that the emission allowance market shall be fully operational from January 1, 2005 and that all the installations falling within the scope of the Directive shall obtain appropriate authorizations from the national competent authority to release greenhouse gas emissions. In December 2004, Enel received such authorization from the Ministries of the Environment and Land Protection and of Productive Activities for all of its installations.

The decision to transpose the Directive was included in the 2004 Law on Community matters (concerning compliance with obligations arising from Italian membership in the European Communities), which was converted into Law no. 62 of April 18, 2005. This law mandated the Italian Government to adopt the related implementing regulations within 18 months from its entry into force. The legislative framework is still to be completed with the publication of the transposing legislative decree, which has already been approved by the Italian Council of Ministers.

In July 2004, Italy notified its national allowance allocation plan (or National Allocation Plan -NAP) to the European Commission and, in February 2005, it supplemented the NAP with preliminary data on the allowances to be allocated to each installation. In its opinion of May 2005, the Commission asked Italy to cut its yearly average allocations by 23 million tonnes, without providing details on how the cuts should be distributed among the various sectors.

The allocation of the cuts demanded by the Commission among the industrial sectors covered by the Directive was delayed and the operators of the installations involved did not receive final data on the number of allowances granted to them within the time limit specified in the Directive (three months before the start of the three-year 2005-2007 period). This fact prevented the covered installations from being operated properly.

Only on February 23, 2006, did the Ministry of the Environment enact a decree (DEC/RAS/074/2006) on the allocation and issue of CO<sub>2</sub> allowances for the 2005-2007 period; actually, the allowances for 2005 were allocated on an *ex post* basis.

The Decree defines other aspects concerning the implementation of the Directive. In particular, much later than in the other Member States, it establishes the National Registry of emissions and emission allowances, i.e. the basis for their transfer, surrender and cancellation. As the Registry is crucial to the start of actual trading of allowances between operators, the delay contributed to postponing the beginning of the scheme at European level.

The allowances that the above Decree allocates at national level for the three-year 2005-2007 period amount to 223.1 million tonnes of CO<sub>2</sub> per year on average, of which 131.1 million in the thermal generation sector and 92.0 million in other sectors. The cut asked by the Commission ended up by causing a heavier burden on the thermal generation sector, requiring Enel, in particular, to undertake a very significant effort. Indeed, the yearly average emissions granted to Enel are about 37% lower than the yearly average historical (2001 to 2004) emissions from its present generating assets.

Enel was thus called to make this reduction effort in spite of its “early action”, such as its 2000 voluntary accord on mitigation of greenhouse gas emissions with the Ministries of the Environment and of Industry.

Under the agreement, Enel committed to slashing its specific CO<sub>2</sub> emissions by 20% in 2006 vs. 1990 levels. This target has already been exceeded thanks to the adoption of an array of measures, including those making part of its power plant conversion and fuel diversification plan, which is associated with the use of more efficient technologies. In addition to its CO<sub>2</sub> reduction strategy based on internal actions (enhanced efficiency of thermal power plants and increased reliance on renewables), Enel is taking a number of initiatives of international cooperation. More specifically, Enel plans to make a significant use of the Kyoto Protocol Flexible Mechanisms (CDM – Clean Development Mechanism and JI – Joint Implementation) in various ways, such as participation in selected carbon funds, direct purchase of CO<sub>2</sub> credits under long-term contracts, development of own projects in geographic areas where it is already active. In some cases, Enel's actions are conducted jointly with the Italian Government, like in the case of the agreement entered into with the Ministry of the Environment within a wider Italy-China cooperation framework.

Enel's strategic plan does not neglect research into and development of innovative technologies, such as the application of the hydrogen vector to heat & power generation and an experimental project of integration of a conventional combined-cycle plant with a thermodynamic solar plant.

Moreover, Enel participates in the preparation of the EU-wide Technology Platform for Zero Emission Fossil Fuel Power Plants. The goal of this research project is to produce a strategic document for improving the understanding of and developing technologies for the capture and geological storage of CO<sub>2</sub> emitted by fossil-fired power plants. Enel also made major efforts to meet new requirements in terms of CO<sub>2</sub> emission monitoring, reporting and verification, as set forth in the European Commission's guidelines. Indeed, these requirements (implying at times an excessive level of accuracy in the monitoring activity) cause additional costs for introducing new or duplicating some measurements and analyses.

The next fundamental step in the development of the EU Emissions Trading Scheme is the submission of the 2008-2012 NAPs to the European Commission within June 30, 2006. In this connection, the Commission issued a communication providing "Further guidance on allocation plans for the 2008 to 2012 trading period of the EU Emissions Trading Scheme" on December 22, 2005.

## Land rehabilitation

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In 2005, Enel took various initiatives of environmental rehabilitation and restoration of the industrial areas that Law 426/98 (on rehabilitation of contaminated sites) designates as of “national interest”.

In particular, site characterization was completed in the power plants of Fusina and Porto Marghera (Venice), Piombino (Leghorn) and Augusta (Siracusa) and it is under way in those of La Spezia, Leghorn, Brindisi Sud, Sulcis and Portoscuso (Cagliari), as well as Priolo Gargallo (Siracusa).

Emergency measures were taken for groundwater safety and conservation near the power plants of Porto Marghera (Venice) and Fusina. These measures are part of a dispute-settlement contract that Enel made with the Ministry of the Environment and Land Protection and with the “Magistrato delle Acque” (water magistrate) for construction of barriers to safeguard lagoonal canals from pollution.

Furthermore, the rehabilitation of the Augusta power plant is already at the final design stage.

Site characterization in the power plants of Maddaloni (Caserta) and Giugliano (Naples) is planned for 2006.

## Integrated Environmental Permit

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With its Sixth Environment Action Program, the European Union took a novel approach to the environmental issue, placing emphasis on integrated prevention and mitigation of pollution due to industrial installations.

The goal of this policy is to ensure a high level of protection of the environment taken as a whole, to prevent, minimize and eliminate pollution – to the possible extent – as well as to guarantee careful management of natural resources.

The reference legislation is Directive 96/61/EC, the so-called “IPPC Directive” (Integrated Pollution Prevention and Control), implemented in Italy by Legislative Decree 59/2005. The Directive covers production installations having a particularly significant impact on the environment, including thermal power plants with a thermal capacity of over 50 MW.

Central to the Directive is the Integrated Environmental Permit (IEP) system, i.e. a single authorization procedure for new or existing industrial installations, which practically replaces any other environmental approval, clearance, opinion or authorization of a sectoral nature.

If the installations involved have ISO 14001-certified and EMAS-registered environmental management systems in place, then the compulsory periodical renewal of their permits is extended from 5 years to 6 and 8 years, respectively. Thirty-four power plants of Enel are covered by the IPPC Directive, accounting for 99% of the net maximum capacity of Enel's generating mix (plants on minor islands are excluded).

A Decree of the Ministry of the Environment and Land Protection of April 19, 2006 established the calendar of deadlines for submitting IEP applications for installations to be authorized by the Government: applications should be filed from May 2006 to March 2007, within the dates specified in the calendar for each thermal capacity range.



## Renewables Business Area

### Hydro, geothermal, wind and photovoltaic solar generation



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- (1) Including the wind power plants of Acquaspruzzia (Isernia), Campolieto and Campolieto 2 (Campobasso), Collarmele (L'Aquila), Serra Cortina (Matera) and the photovoltaic solar power plant of Serre Persano (Salerno).
- (2) Including the wind power plants of Monte Arci (Oristano), Nuova Alta Nurra, Sa Turrina Manna and Littigheddu (Sassari) and the photovoltaic solar power plant of Alta Nurra Plug (Sassari).
- (3) Including the wind power plants of Caltabellotta (Agrigento), Carlentini (Siracusa), Sclafani Bagni, Sclafani Bagni 2, Contrada Corvo-Cozzo Miturro, Cozzo Vallefondi 1 and Monte Zimmara (Palermo), Serra Marrocco (Enna) and the photovoltaic solar power plants of Vulcano and Vulcano Plug (Messina).

### Power installations

HYDRO	Power plants no.	Head installations no.	Net maximum capacity MW
Run-of-river		318	1,656.3
Pondage/reservoir		196	5,225.2
Pure/mixed pumped storage		20	7,481.1
	<b>500</b>	<b>534</b>	<b>14,362.7</b>

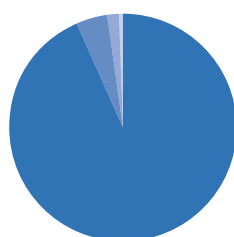
WIND	Power plants no.	Net maximum capacity MW
	<b>17</b>	<b>276.9</b>

GEO THERMAL	Power plants no.	Generating units no.	Net maximum capacity MW
Condensing		32	664.9
Atmospheric exhaust		1	5.9
	<b>32</b>	<b>33</b>	<b>670.8</b>

PHOTOVOLTAIC SOLAR	Power plants no.	Net maximum capacity MW
	<b>4</b>	<b>3.6</b>

### Net maximum capacity

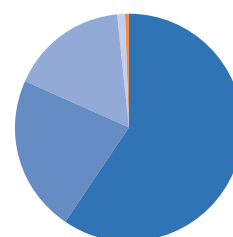
**Total: 15,314 MW**



■ Hydro **93.79%**  
 ■ Geothermal **4.38%**  
 ■ Wind **1.81%**  
 ■ Photovoltaic solar **0.02%**

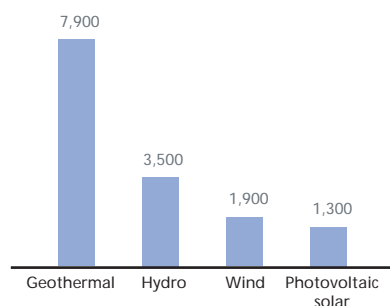
### Net electricity generation

**Total: 30,265 million kWh**



■ Hydro from natural flows **59.95%** (18,142 GWh)  
 ■ Hydro from pumped storage **22.27%** (6,741 GWh)  
 ■ Geothermal **16.56%** (5,012 GWh)  
 ■ Wind **1.21%** (367 GWh)  
 ■ Photovoltaic solar **0.01%** (2 GWh)

## Equivalent yearly hours of utilization\*



\*On a statistical basis: yearly energy capability/capacity ratio

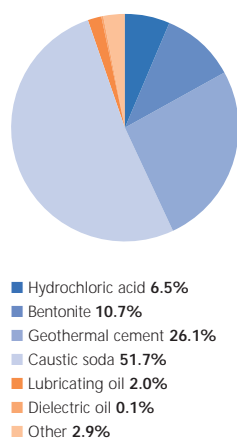
## Geothermal fluid

Total fluid extracted (t)	45,803,665
Net of reinjected fluids (t)	32,079,526
Steam for electricity generation (t)	41,686,706
Fluid for non-electric uses (t)	910,730
> used directly	320,000
> used after expansion in atmospheric-exhaust turbine for electricity generation	590,730

Non-electric uses are uses of resources that do not have or have lost the thermodynamic properties making them suitable for geothermal generation. These uses fall under two main categories: supply of heat (especially for greenhousing and district heating) and extraction of substances (e.g.: carbon dioxide for foodstuffs).

## Expendables

Total: 14,096 t



## Water for industrial uses (geothermal drilling)

Abstraction from inland waters, entirely from rivers (m <sup>3</sup> )	42,787
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## Gas-oil

Total consumption (toe)	2,315
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Used for driving the drilling equipment and, to a much lesser extent (about 2% of the total), for feeding emergency generating sets.

## Emissions into the atmosphere

SF <sub>6</sub> – all types of generation (kg)	597
(t of CO <sub>2</sub> -equivalent )	14,258
CO <sub>2</sub> (t)	7,142
Carbon dioxide emissions arising from gas-oil combustion.	

H <sub>2</sub> S – from geothermal fluid (t)	23,110
CO <sub>2</sub> – from geothermal fluid (t)	1,837,770

A large debate is under way on the natural or anthropogenic origin of emissions of incondensable gases from geothermal fluid.

Avoided CO<sub>2</sub> emissions

Hydro generation from natural flows (t)	12,464,000
Geothermal generation (t)	3,444,000
Wind generation (t)	252,000
Photovoltaic solar generation (t)	1,000
<b>Total (t)</b>	<b>16,161,000</b>

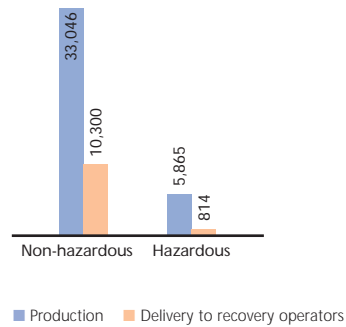
Avoided CO<sub>2</sub> emissions from the otherwise necessary conventional thermal generation.  
The contribution of geothermal generation is calculated on the assumption that the related CO<sub>2</sub> emissions are of natural origin.

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## Special waste

Total production: 38,911 t

Total delivery to recovery operators: 11,114 t



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## Other data

### HYDRO GENERATION

Emptied reservoirs	quantity (no.)	14
	alluvial sediments removed by flushing them out through bottom outlets (m³)	55,359
	alluvial sediments removed by mechanical equipment (m³)	62,139
	> reused locally (m³)	62,130
	Fish ladders (no.)	37
Fish restocking campaigns	quantity (no.)	99
	restocked fish individuals	2,730,000
	in addition to kg	6,700

### GEO THERMAL ACTIVITIES

Drilled wells	new (no.)	5
	deepened (no.)	1
	rehabilitated (no.)	5
Meters drilled (m)		13,792
In-service wells	for fluid extraction (no.)	285
	for reinjection (no.)	56

### WIND & PHOTOVOLTAIC SOLAR GENERATION

Wind systems	Surface area occupied by machines, buildings and roads (ha)	16
	Total surface area affected by the installations (ha)	20 to 100 times larger
Photovoltaic solar systems	Surface area occupied by modules (ha)	7.7
	Total surface area affected by the installations (ha)	14.0

## Commitment to renewables

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In 2005, the electricity from renewables that Enel generated in Italy displaced 16.2 million tonnes of CO<sub>2</sub> emissions into the atmosphere, thereby contributing to our country's achievement of the Kyoto Protocol targets.

In the same year, Enel gave further impetus to its program of development of renewables with over 100 MW of new capacity, divided as follows:

- > entry into operation of the new hydro power plants of Busche (Belluno), Ponte Pià (Trento), Posada (Nuoro), Roccasparvera Diga (Cuneo) and Tirso 1 (Oristano): about 24 MW;
- > renovation and/or repowering of the hydro power plants of Bussolengo (Verona), Ceprano (Frosinone), Chiedo (Venice), Galliciano (Lucca), Somana (Lecco) and Talamona (Sondrio): about 18 MW;
- > completion of the new wind facility of Littigheddu (Sassari) and enlargement of the one of Sclafani Bagni 2 (Palermo): about 30 MW;
- > entry into operation of the geothermal power plants of Nuova Larderello (Pisa) and Nuova San Martino (Grosseto) and decommissioning of one unit of the San Martino power plant: positive balance of 29 MW.

Environmental efforts in geothermal activities also continue with the installation of systems abating the mercury and hydrogen sulfide present in geothermal steam and with asbestos removal from steam pipelines.

## Environmental Product Declaration

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In 2005, Bagnore 3 (Grosseto) was the first geothermal power plant in the world to gain the certification of environmental product declaration, EPD®.

This certification adds to the one already obtained in 2004 by the wind power plant of Sclafani Bagni (province of Palermo). This was the first environmental product declaration released in Italy to the electricity product.

The results of the Life Cycle Assessment – on which environmental product declarations are based – substantiated that, for both plants, the operation and maintenance stages have much lower impacts than the building and end-of-life ones.

The two environmental product declarations conclude Enel's participation in the Intend project ([www.intendproject.net](http://www.intendproject.net)), funded by the 2003 European LIFE Environment program. Intend, a demonstration project involving Sweden and Italy, was implemented in the 2003-2005 period, with the goal of disseminating the EPD® scheme at international level.

## Domestic Networks and Infrastructure

The Domestic Networks and Infrastructure Division has the mission of ensuring electricity and gas distribution, capturing the cost and investment synergies that can result from optimized operation of its grids, managing metering systems efficiently and guaranteeing the quality of its technical support services. The grids are operated by the Power Grid and Gas Grid Business Areas. The Power Grid Business Area distributes electricity throughout Italy, excluding the Valle d'Aosta region (served by Deval SpA, in which Enel has a 51% holding) and other areas where Enel sold its grids to municipal companies in accordance with the rationalization requirements of Legislative Decree no. 79 of March 16, 1999.

The Gas Grid Business Area, which distributes natural gas, incorporated the companies that Enel acquired upon entering and expanding into the sector (in 2005, Ottogas, Italgestioni, S.A.M.I.G. and Metan Gas Sicilia).

The Division's commitment to the environment translates into multiple efforts. Mitigation of the environmental impact of the power grid (search for less invasive power line routes and use of cables in low- and medium-voltage lines) are key considerations in Enel's decisions on infrastructure modernization and development. Other important initiatives concern: control of possible interferences exerted by high-voltage power lines, taking into account the attention values specified for electric & magnetic fields (as per Decree of the President of the Council of Ministers of July 8, 2003); fast decommissioning or decontamination of PCB-containing equipment; and electricity and gas end-use energy efficiency.

## End-use energy efficiency

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In the course of 2005, the rules of operation of the Energy Efficiency Certificates Market were issued. The first trading sessions started in March 2006 in the venue of Gestore del Mercato Elettrico (electricity market operator). About one year and a half after the enactment of the energy efficiency decrees of July 20, 2004 and five years after the first decrees (April 24, 2001), electricity and gas distributors with over 100,000 final customers could therefore purchase in the market the certificates that they needed to fulfill their obligations in terms of reduction of primary energy consumption.

At the end of the five-year 2005-2009 period, cumulated primary energy reductions are mandated to be equal to 2.9 million tonnes of oil-equivalent (toe). It is worth noting that, from 2002 to 2004, gross domestic energy consumption went up by approximately 8.3 million toe.

In this scenario, Enel plays a leading role: as both electricity and gas distributor, its obligations account for about 88% and 9% of national ones, respectively.

Enel's energy efficiency plan consists of four lines of action, including:

- > direct projects and measures through offerings of initiatives and/or services;
- > initiatives through its Energy Service Company (Enel.si) and, in the future, through external ESCOs;
- > agreements and/or memoranda of understanding with central institutions;
- > activities for promoting end-use energy efficiency (awareness campaigns).

In particular, in 2005, Enel Distribuzione SpA (operationally accountable to the Power Grid Business area) implemented the above plan through a range of initiatives, the most prominent of which were as follows:

- > distribution of more than two million compact fluorescent lamps (displacing over 40,000 toe of primary energy consumption); the lamps were placed in specially designed boxes, representing a tool for communicating energy-saving practices; in addition to the "smart energy" slogan (combining the value of intelligence with a virtuous behavior, such as wise energy use), the boxes also contain information about the characteristics of the lamps, their life and their correct use by consumers;
- > promotion of the purchase of class "A" (high energy-efficient) household appliances by releasing a special card ("Enel card") to customers who pay their electricity bills by direct debit; upon presenting the card, they are entitled to a 10% discount on their energy-efficient appliance purchases in numerous retailing outlets; in 2005, over 16,000 class "A" household appliances were sold through the Enel card;
- > public lighting initiatives, such as the replacement of mercury vapor lamps with high-pressure sodium vapor lamps and the installation of special dimmers.

Finally, a project was launched for using low-enthalpy geothermal steam for residential district heating.

It is worth stressing that, in 2005, Deval achieved its specific primary energy saving target (225 toe), by reducing consumption by 229 toe.

This success was obtained through a project that replaced 20,000 incandescent lamps with as many compact fluorescent ones; the project involved all primary and secondary schools of the Valle d'Aosta region, as well as voluntary organizations.

Enel Rete Gas SpA (operationally accountable to the Gas Grid Business Area) participated in the sessions of the Energy Efficiency Certificates Market, buying certificates to cover 50% (minimum allowable value) of its 2005 obligations.

Power Grid Business Area Electricity distribution



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Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	2,012	93,628
Satellite substations and MV units	491	-
MV/LV	356,733	68,600
MV/MV	53,167	-
	412,403	162,228

LINES (km)

	Overhead bare conductors	Overhead cables	Undergr. cables	Total
HV (>40 kV)	18,427	-	468	18,895
MV (1-30 kV)	201,413	7,877	124,494	333,784
LV (380 V)	123,866	384,084	225,317	733,266
	343,705	391,961	350,279	1,085,945

General data

Regional units (no.)	11
Operation centers (no.)	28
Zones (no.)	128
Municipalities served (no.)	7,700
Surface area served (km²)	286,037
Customers connected to the grid (no.)	30,054,408
> supplied	29,870,758
> using the wheeling service only	183,650

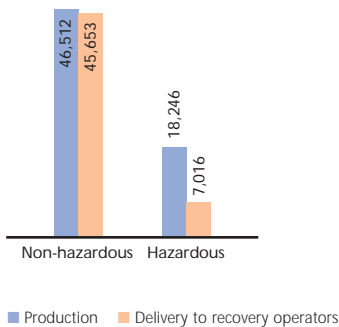
The Power Grid Business Area also operates 199 isolated photovoltaic solar systems. With a net maximum capacity of 589 kW and a yearly energy capability of about 648,000 kWh, these systems offer a cost-effective and environmentally sustainable solution for supplying power to mountain huts, nature sanctuaries and other small isolated consumers.

Electricity

Total electricity distributed (million kWh)	250,111
Own consumption for grid operation (million kWh)	400

Special waste

Total production: 64,758 t  
Total delivery to recovery operators: 52,669 t



Emissions into the atmosphere

SF <sub>6</sub> (kg) (t of CO <sub>2</sub> -equivalent)	2,697 64,458
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## Deval SpA Electricity distribution



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### Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA
HV/MV	13	372
Satellite substations and MV units	4	22
MV/LV	1,311	234
MV/MV	196	30
	<b>1,524</b>	<b>658</b>

### LINES (km)

	Overhead bare conductors	Overhead cables	Undergr. cables	Total
HV (>40 kV)	57	-	-	57
MV (1-30 kV)	795	57	515	1,367
LV (380 V)	8	1,832	921	2,760
	<b>859</b>	<b>1,888</b>	<b>1,436</b>	<b>4,184</b>

### General data

Municipalities served (no.)	68
Surface area served (km <sup>2</sup> )	3,132
Customers connected to the grid (no.)	121,094
> supplied	120,534
> using the wheeling service only	560

Deval also operates one isolated photovoltaic solar system feeding an agricultural consumer (in a middle-mountain area) with a subscribed demand of 1.5 kW.

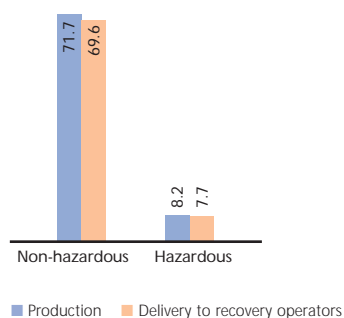
### Electricity

Total electricity distributed (million kWh)	966
Own consumption for grid operation (million kWh)	0.9

### Special waste

**Total production: 79.9 t**

**Total delivery to recovery operators: 77.3 t**



### Emissions into the atmosphere

SF <sub>6</sub> (kg) (t of CO <sub>2</sub> -equivalent)	3 72
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## PCB plan

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On January 1, 2005, the Power Grid Business Area launched a special project of decontamination/disposal of equipment containing dielectric oil with PCBs (class of chlorinated hydrocarbons, hazardous to the environment and carcinogenic to humans). The project will eliminate all contaminated equipment by 2010, much ahead of the time limit indicated in the relevant legislation (Legislative Decree 209/99, as amended, and related implementing regulations).

Indeed, the Power Grid Business Area planned to decontaminate/dispose of equipment containing oil with a PCB content exceeding 500 ppm by 2006 (time limit specified in the legislation: 2010) and of equipment with a PCB content of 50-500 ppm by 2010 (time limit specified in the legislation: end-of-life).

The project covers a total of 35,000 units (a little less than 10% of the total), mostly power transformers, but also capacitors, bushing insulators, circuit-breakers, measuring transformers, etc.

Already in the course of 2005, contaminated equipment dropped by about 8,000 units.

Deval SpA, which has no equipment with a PCB content of over 500 ppm, will dispose of 20 units with a PCB content of 50 to 500 ppm by 2010.

## Gas Grid Business Area Natural gas distribution



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### Installations

#### STATIONS (no.)

HP/MP	623
MP/LP with a power of > 1,200 kW	7,821
	<b>8,444</b>

#### PIPELINES (km)

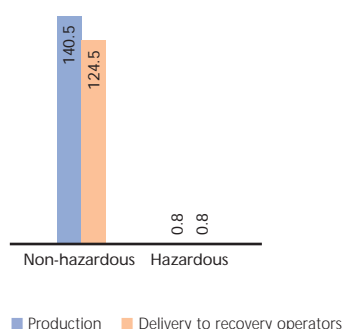
HP (p > 5 bar)	191
MP (0.04 < p ≤ 5 bar)	11,315
LP (p ≤ 0.04 bar)	17,866
	<b>29,372</b>

### General data

Municipalities served (no.)	1,221
Surface area served (km <sup>2</sup> )	40,000
Customers connected to the grid (no.)	1,961,319

### Special waste

**Total production: 141.3 t**  
**Total delivery to recovery operators: 125.3 t**



### Natural gas

Total natural gas distributed (million m <sup>3</sup> )	3,924
Own consumption (million m <sup>3</sup> )	4.9
Losses along the grid (million m <sup>3</sup> )	25.5

Own consumption is the use of natural gas for its heating; before being distributed to customers, natural gas is heated in order to prevent it from freezing upon depressurization.  
 The gas is heated through an intermediate water circuit.

### Resource consumption

Electricity (million kWh)	2.1
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Used for cathode protection of pipelines, for powering gas-heating circuit water pumps and for lighting the installations.

### Emissions into the atmosphere

CH <sub>4</sub> (t)	13,038
(t of CO <sub>2</sub> -equivalent)	273,796
CO <sub>2</sub> (t)	9,624
<b>Total (t of CO<sub>2</sub>-equivalent)</b>	<b>283,420</b>

The emissions of methane are the share of this gas which is present in the natural gas lost along the grid.  
 The carbon dioxide emissions are due to the share of this gas which is present in the natural gas lost along the grid and to the combustion of natural gas for own consumption.





## North America

Enel is one of the 60 companies that make up the Climate Leadership Index, the prestigious ranking of the companies most involved in addressing the problems of climate change.

Safeguarding the environment is a major commitment for Enel in every country in which we operate.

In the United States, renewable resources are especially important, and Enel is focusing its investment on wind and hydroelectric power.

Recently, Enel North America received a leading award for power generators who use renewable resources, the Green Power Leadership Award. Enel received the prize for its role in developing renewable energy at its Fenner wind plant in New York State.

**Stephen Pike** Regional Manager Enel North America

*"The Green Power Leadership Award, a prize we received thanks in part to the support of local communities, validates our commitment to the environment"*

## ENVIRONMENTAL RESULTS – Non-Italian Operations

Enel operates outside Italy with various percentages of holdings in electricity generation, distribution and retailing companies. In the course of 2005, Enel continued its international expansion, reaching – with its power plants – a net maximum capacity of 4,450 MW, generating over 15 billion kWh and distributing about 13 billion kWh to approximately 2 million customers.

Enel's electricity generation abroad has two distinctive features: high reliance on renewables (roughly 30%: hydro, wind and biomass) and almost exclusive use of indigenous fuels (coal and brown coal by Viesgo Generación in Spain and brown coal by Maritza in Bulgaria).

In Spain, Enel operates in the thermal and hydro generation business through Viesgo Generación, in the distribution business through Electra de Viesgo Distribución and in hydro, wind and combined heat & power generation through Enel Unión Fenosa Renovables.

The launch of an over 1.3 billion euro program for revamping Viesgo Generación's plants will consolidate Enel's presence in Spain.

In March 2003, Enel acquired control of one of the principal brown coal-fired thermal power plants of Bulgaria, Maritza East III, for which it planned an impressive environmentalization project to be completed within 2009. The project (overall investment: 600 million euro) involves the installation of desulfurizers and low nitrogen oxide emission burners.

In terms of power generation from renewables, Enel is one of the chief independent operators of the American continent, through Enel North America and Enel Latin America, having more than 600 MW of hydro and wind capacity, as well as a combined heat & power plant.

In June 2004, Enel acquired 51% ownership of two electricity distributors (Enel Electrica Banat and Enel Electrica Dobrogea) in Romania. In 2005, these companies covered 20% of the Romanian market (7.2 billion kWh and 1,340,000 customers). The power grid of Enel Electrica Dobrogea is based in the Danube delta area, one of the most important wetlands in Europe: particular care was thus taken to integrate the infrastructure into the environment.

The following pages provide general and environmental performance data on the various companies, through tables and sheets. For a better understanding of the data and of their mode of collection, processing and reporting, the reader is referred to "Eco-Balance" and "Indicators" in "Environmental Results – Italian Operations".

## New investments

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Within 2006, a 44 MW geothermal unit will go into service in El Salvador. Geothermal exploration is also under way in view of building two 40 MW units in Chili (expected start-up: 2011 and 2012) and of as many units in Nicaragua (expected start-up: 2012 and 2013).

Furthermore, jointly with the Italian Ministry of the Environment and Land Protection, new opportunities of geothermal development are being investigated in the US, Guatemala, Argentina, Mexico, India and China.

In France, under a special agreement with Electricité de France, Enel will participate in a nuclear program which will be in full operation in 2012.

In Slovakia, at the end of April 2006, Enel purchased 66% of Slovenské Elektrárne, the first electricity producer of Slovakia and the second in Central-Eastern Europe; the company has a generating capacity of 7,000 MW, which is balanced between nuclear, thermal and hydro.

## Green Power Award

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In October 2005, Enel North America received the prestigious Green Power Award for Renewable Energy Technology Suppliers from the US Department of Energy (DOE), the US Environmental Protection Agency (EPA) and the Center for Resource Solutions (CRS), for its outstanding commitment to development of renewable-energy power plants. The award, one of the major recognitions for green power producers in the United States, was assigned mainly for construction of the Fenner wind farm (30 MW) in the State of New York.

## Integration with the environment

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Enel North America owns a combined heat & power plant at Saint-Félicien, Canada. In spite of its small size (21 MW), the plant stands as an example of integration into the local socio-economic and environmental context:

- > it uses the refuse from a local saw-mill as a fuel and it makes available most of the ash deriving from biomass combustion as a fertilizer;
- > it provides process heat to a nearby factory;
- > it is engaged in an experimental project for finding alternatives to the gas-oil that it uses (albeit in minimum amounts) for biomass drying.

The hydro power plants of Enel North America have two innovative fish elevators (in Lowell and Lawrence, Massachusetts) which, together with fish ladders, help conserve the fish species populating the rivers on which the plants are located.

## Overall Data

Main data of Enel's non-Italian operations in 2005.

### Production of electricity and heat

Installations	Power plants (no.)	Net maximum power capacity (MW)
Thermal <sup>(1)</sup>	21	2,508
Hydro	123	1,255
Wind	28	687
<b>Total</b>	<b>172</b>	<b>4,450</b>

(1) Including 14 combined heat & power plants (net maximum electrical capacity: 184 MW; useful thermal capacity: 86.5 million kcal).

### Emissions into the atmosphere

Thousand t

SO <sub>2</sub>	284 <sup>(1)</sup>
NO <sub>x</sub>	28 <sup>(1)</sup>
Particulates	8 <sup>(1)</sup>
CO <sub>2</sub>	10,967

(1) ) Excluding Enel Unión Fenosa Renovables.

By generating electricity from renewables outside Italy, Enel avoided over 4.5 million tonnes of CO<sub>2</sub> emissions into the atmosphere from the otherwise necessary fossil-fired thermal generation.

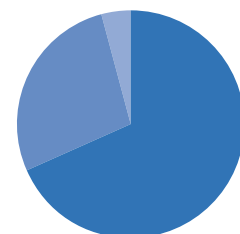
### Net electricity generation

Million kWh

Thermal from fossil fuels	10,282
<i>Fuel oil and gas-oil</i>	1,075
<i>Natural gas</i>	948
<i>Coal</i>	4,653
<i>Brown coal</i>	3,607
Total from renewables	4,190
<i>Thermal from biomass</i>	162
<i>Hydro from natural flows</i>	2,451
<i>Wind</i>	1,577
Hydro from pumped storage	586
<b>Total</b>	<b>15,058</b>

### Net electricity generation

**Total: 15,058 million kWh**



■ Thermal from fossil fuels **68.3%**  
■ Total from renewables **27.8%**  
■ Hydro from pumped storage **3.9%**

### Useful heat output from combined heat & power plants

**Million kcal** **566,564**  
**Equivalent GWh** **659**

### Fuel consumption

Thousand toe

Fossil fuels	2,835
<i>Fuel oil and gas-oil</i>	276
<i>Natural gas</i>	242
<i>Coal</i>	1,190
<i>Brown coal</i>	1,127
Biomass	67
<b>Total</b>	<b>2,902</b>

### Electricity distribution

#### Lines

km

High voltage	6,964
<i>&gt; underground cables</i>	58
Medium voltage	32,552
<i>&gt; overhead and/or underground cables</i>	5,242
Low voltage	46,623
<i>&gt; overhead and/or underground cables</i>	28,074
<b>Total</b>	<b>86,139</b>

### Electricity distributed

Million kWh

**Total** **12,833**



## Performance

Environmental performance of Enel's non-Italian operations.

			2003	2004	2005
<b>Electricity generation from renewables</b>					
Share	% of total generation	Viesgo Generación <sup>(1)</sup>	n.a.	9.5	7.0
		EUFER	66.6	57.3	61.1
		Maritza	0.0	0.0	0.0
		ENA	100.0	100.0	100.0
		ELA	100.0	100.0	100.0
		Enel's average generation outside Italy	n.a.	29.9	27.8
Generation by source					
biomass	%	Viesgo Generación	0.0	0.0	0.0
		EUFER	0.0	0.0	0.0
		ENA	13.5	13.5	12.6
		ELA	0.0	0.0	0.0
hydro (from natural flows)	%	Viesgo Generación <sup>(1)</sup>	n.a.	100.0	100.0
		EUFER	32.6	17.0	10.0
		ENA	73.1	72.6	74.4
		ELA	92.3	92.4	93.7
wind	%	Viesgo Generación	n.a.	0.0	0.0
		EUFER	67.4	83.0	90.0
		ENA	13.4	13.9	13.0
		ELA	7.7	7.6	6.3
<b>Hydro generation by type</b>					
from natural flows	% of total hydro generation	Viesgo Generación <sup>(1)</sup>	n.a.	52.7	46.9
		EUFER	n.a.	100.0	100.0
		ENA	n.a.	100.0	100.0
		ELA	n.a.	100.0	100.0
from pumped storage	% of total hydro generation	Viesgo Generación	n.a.	47.3	53.1
		EUFER	n.a.	0.0	0.0
		ENA	n.a.	0.0	0.0
		ELA	n.a.	0.0	0.0
Efficiency of hydro generation from pumped storage (net generation/electricity absorbed by pumps)	%	Viesgo Generación	n.a.	70.8	69.9
Waste recovery	% of production	Viesgo Generación <sup>(1)</sup>	n.a.	100.0	100.0
		EUFER	n.a.	n.a.	n.a.
		ENA	n.a.	n.a.	n.a.
		ELA	n.a.	n.a.	0.0
<b>Wind generation</b>					
Waste recovery	% of production	EUFER	n.a.	0.0	0.0
		ENA	n.a.	n.a.	n.a.
		ELA	n.a.	n.a.	4.2

(1) with Barras Electricas Generación.

n.a.: not available

			2003	2004	2005
<b>Thermal generation</b>					
Net heat rate	kcal/kWh	Viesgo Generación	n.a.	2,642	2,605
		Maritza	n.a.	3,050	3,224
Abstraction from inland waters (for industrial uses)	% of water requirements for industrial uses	Viesgo Generación	n.a.	100.0	100.0
		Maritza	n.a.	n.a.	100.0
Overall, by source					
fossil fuels	% of total thermal generation	Viesgo Generación	n.a.	100.0	100.0
		Maritza	n.a.	100.0	100.0
biomass	% of total thermal generation	Viesgo Generación	n.a.	-	-
		Maritza	n.a.	-	-
Fossil-fired, by source					
fuel oil and gas-oil	% of fossil-fired generation	Viesgo Generación	n.a.	7.6	9.6
		Maritza	n.a.	0.0	0.0
natural gas	% of fossil-fired generation	Viesgo Generación	n.a.	6.5	7.2
		Maritza	n.a.	0.0	0.0
coal	% of fossil-fired generation	Viesgo Generación	n.a.	72.5	73.6
		Maritza	n.a.	0.0	0.0
brown coal	% of fossil-fired generation	Viesgo Generación	n.a.	13.4	9.5
		Maritza	n.a.	100.0	100.0
Net specific SO <sub>2</sub> emissions	g/kWh	Viesgo Generación	11.5	13.1	11.6
		Maritza	62.5	71.7	70.4
Net specific NO <sub>x</sub> emissions	g/kWh	Viesgo Generación	2.3	4.0	3.3
		Maritza	1.1	2.3	2.3
Net specific particulate emissions	g/kWh	Viesgo Generación	0.8	0.9	0.8
		Maritza	1.5	1.1	1.1
Net specific CO <sub>2</sub> emissions	g/kWh	Viesgo Generación	1,058	1,004	957
		Maritza	1,208	1,266	1,452
Waste recovery	% of production	Viesgo Generación	n.a.	80.3	69.8
		Maritza	n.a.	n.a.	0.9

n.a.: not available

			2004	2005
<b>Combined heat &amp; power generation</b>				
Net heat rate	kcal/kWh <sub>eq.</sub>	EUFER ENA	1,382 n.a.	1,367 4,010
Ratio of heat generation to total (heat & power) generation	%	EUFER ENA	38.3 n.a.	40.6 2.6
Abstraction from inland waters (for industrial uses)	% of water requirements for industrial uses	EUFER ENA	n.a. 100.0	n.a. 100.0
Thermal generation by source				
fossil fuels	% of total thermal generation	EUFER ENA	100.0 -	100.0 -
biomass	% of total thermal generation	EUFER ENA	- 100.0	- 100.0
Fossil-fired thermal generation by source				
fuel oil and gas-oil	% of fossil-fired generation	EUFER	49.1	48.7
natural gas	% of fossil-fired generation	EUFER	50.9	51.3
Net specific SO <sub>2</sub> emissions	g/kWh <sub>eq.</sub>	EUFER	n.a.	n.a.
Net specific NO <sub>x</sub> emissions	g/kWh <sub>eq.</sub>	EUFER	n.a.	n.a.
Net specific particulate emissions	g/kWh <sub>eq.</sub>	EUFER	n.a.	n.a.
Net specific CO <sub>2</sub> emissions	g/kWh <sub>eq.</sub>	EUFER	379	347
Waste recovery	% of production	EUFER ENA	n.a. 100.0	n.a. 80.9
<b>Electricity distribution</b>				
Grid losses	% of electricity supplied (consumption + losses)	Electra de Viesgo Distribución <sup>(2)</sup> Enel Electrica <sup>(3)</sup>	6.7 -	7.0 14.4
Relative SF <sub>6</sub> emissions	% of SF <sub>6</sub> in equipment or in stock	Electra de Viesgo Distribución <sup>(2)</sup> Enel Electrica <sup>(3)</sup>	0.0 -	1.2 0.04
Waste recovery	% of production	Electra de Viesgo Distribución <sup>(2)</sup> Enel Electrica <sup>(3)</sup>	0.0 -	0.0 53.0
Overhead and underground cables in LV and MV lines	% of entire LV and MV grid	Electra de Viesgo Distribución <sup>(2)</sup> Enel Electrica <sup>(3)</sup>	68.0 -	68.8 27.9

(2) With Barras Eléctricas Galaico Asturianas.

(3) Banat and Dobrogea.

n.a.: not available

Viesgo Generación SL<sup>(1)</sup> Thermal and hydro generation



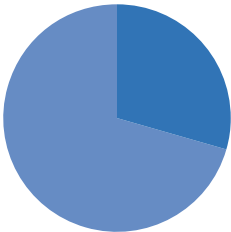
For additional information, contact:  
Tommaso Nappi  
Viesgo Generación  
Torre Picasso pl.19  
28020 Madrid (Spain)  
Tel. no. +34 91 4184423  
TNappi@VIESGO.ES

(1) Including the data of the (hydro) power plants of Barras Eléctricas Generación SL.

Power installations

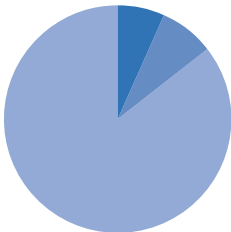
HYDRO	Power plants no.	Head installations no.	Net maximum capacity MW	THERMAL	Power plants no.	Generating units no.	Net maximum capacity MW
Run-of-river		6	4	Steam (condensing)		6	1,527
Pondage/reservoir		12	307	Pressurized fluidized bed with flue-gas-recovery turbine		1	65
Pure/mixed pumped storage		1	361				
	18	19	672		6	7	1,592
Fish ladders (no.)			2				

Net maximum capacity  
Total: 2,264 MW



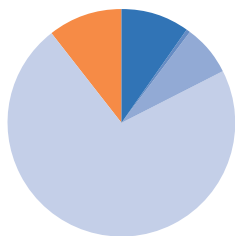
■ Hydro 29.7%  
■ Thermal 70.3%

Net electricity generation  
Total: 7,423 million kWh



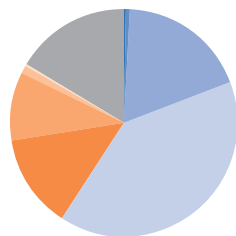
■ Hydro from natural flows 7.0% (518 GWh)  
■ Hydro from pumped storage 7.9% (586 GWh)  
■ Thermal (fossil-fired) 85.1% (6,319 GWh)

Fuel consumption (thermal generation)  
Total: 1,646,087 t of oil-equivalent



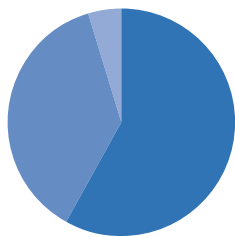
- Fuel oil 9.8%
- Gas-oil 0.1%
- Natural gas 7.4%
- Coal 72.3%
- Brown coal 10.4%

Expendables  
Total: 3,176 t



- Resins & hydrazine 0.2%
- Ammonia 0.1%
- Trisodium phosphate 18.3%
- Sulfuric & hydrochloric acids 40.8%
- Caustic soda 13.1%
- Other 16.1%
- Lime, ferric chloride & polyelectrolyte 9.8%
- Lubricating oil 1.4%
- Dielectric oil 0.2%

Water for industrial uses (thermal generation)  
Total requirements: 7,419,154 m³

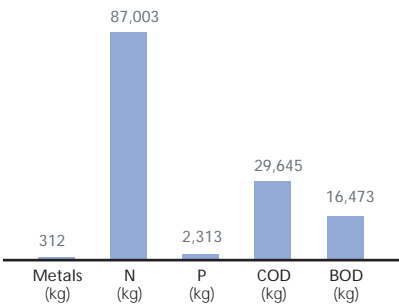


- From rivers 58.2%
- From wells 37.2%
- From aqueducts 4.6%

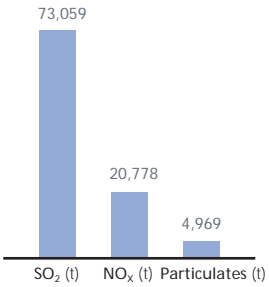
Waste waters (thermal generation)  
Total discharged quantity: 1,295,361 m³

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

Releases into water bodies (thermal generation)



Emissions into the atmosphere  
(thermal generation)



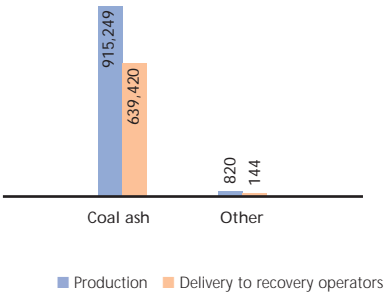
CO<sub>2</sub> (t) 6,045,981

Hydro generation from natural flows avoided about 496,000 t of CO<sub>2</sub> emissions into the atmosphere from the otherwise necessary conventional thermal generation.  
This computation refers to specific CO<sub>2</sub> emissions from Viesgo's thermal generation.

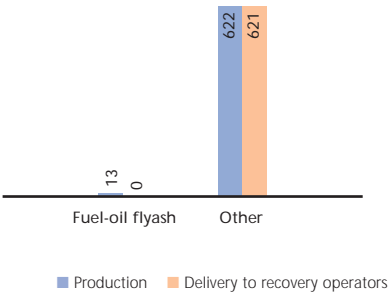
Special waste

Total production: 916,703 t  
Total delivery to recovery operators: 640,186 t

Non-hazardous  
Production: 916,069 t  
Delivery to recovery operators: 639,564 t

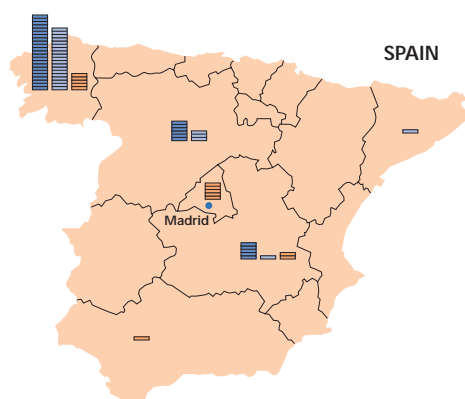


Hazardous  
Production: 635 t  
Delivery to recovery operators: 621 t



## Enel Unión Fenosa Renovables SA

### Hydro, wind and combined heat & power generation



For additional information, contact:  
 Joaquín Castillo García  
 Enel Unión Fenosa Renovables  
 Avda. San Luis, 77 A-3  
 Madrid (Spain)  
 Tel. no. +34 91 5676000  
[jcastillo@unionfenosa.es](mailto:jcastillo@unionfenosa.es)

#### Distribution of power plants over the country

- 1 hydro power plant
- 1 wind power plant
- 1 combined heat & power plant
- Headquarters

### Power installations

#### HYDRO

	Power plants no.	Head installations no.	Net maximum capacity MW
Run-of-river		32	63
Pondage/reservoir		2	26
	<b>34</b>	<b>34</b>	<b>89</b>

#### WIND

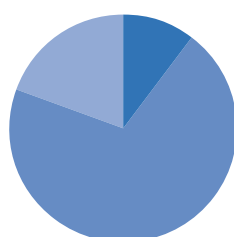
	Power plants no.	Net maximum capacity MW
	<b>24</b>	<b>596</b>

#### COMBINED HEAT & POWER (CHP)

	Power plants no.	Generating units no.	Net maximum electrical capacity MW	Useful thermal capacity 10 <sup>6</sup> kcal/h
Combined-cycle gas turbines		2	37	22
Alternative engines		29	126	64
	<b>13</b>	<b>31</b>	<b>163</b>	<b>86</b>

### Net maximum electrical capacity

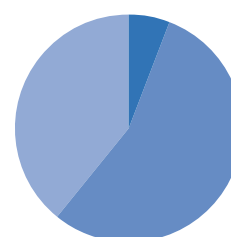
**Total: 848 MW**



■ Hydro 10.5%  
 ■ Wind 70.3%  
 ■ CHP 19.2%

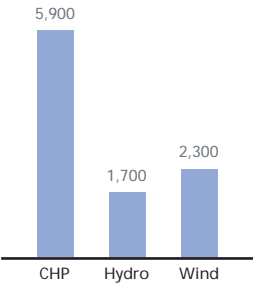
### Net electricity generation

**Total: 2,462 million kWh**



■ Hydro from natural flows 6.1% (150 GWh)  
 ■ Wind 55.0% (1,354 GWh)  
 ■ Thermal 38.9% (958 GWh)

Equivalent yearly average hours of utilization <sup>(1)</sup>



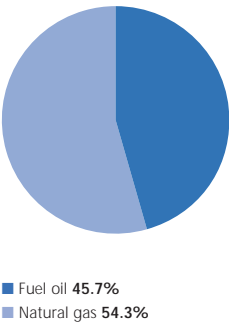
(1) Electricity generation/maximum electrical capacity ratio.

Useful heat output (combined with thermal generation)

Total: 562,814 million kcal equal to 655 million kWh

The heat is used by food, chemical, pharmaceutical, textile and building material industries.

Fuel consumption (CHP)  
Total: 220,509 t of oil-equivalent



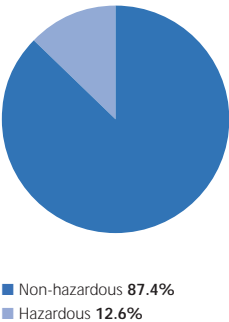
CO<sub>2</sub> emissions (CHP)  
Total: 558,926 t

Avoided CO<sub>2</sub> emissions

Hydro generation (t)	168,000
Wind generation (t)	1,511,000
<b>Total (t)</b>	<b>1,679,000</b>

Emissions from the otherwise necessary conventional thermal generation.  
This computation refers to average specific CO<sub>2</sub> emissions from Enel's fossil-fired thermal generation outside Italy.

Special waste (wind generation)  
Total production: 8 t



Total delivery to recovery operators: 0 t

Other data

Wind power plants	Surface area occupied by machines, buildings and roads (ha)	12
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## Maritza East III Power Company AD Thermal Generation



For additional information, contact:  
John Clark  
Maritza East III Power Company  
9 Fridtjof Nansen Blvd  
Sofia 1000 (Bulgaria)  
Tel. no. +359 2 8102323  
[John.clark@me3power.com](mailto:John.clark@me3power.com)

### Power plant data

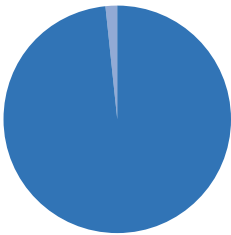
	Generating units no.	Net maximum capacity MW
Steam (condensing)	4	732

### Net electricity generation

**Total: 3,005 million kWh**

### Fuel consumption

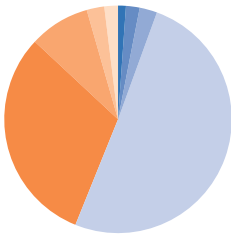
**Total: 968,757 t of oil-equivalent**



■ Brown coal **98.6%**  
■ Fuel oil **1.4%**

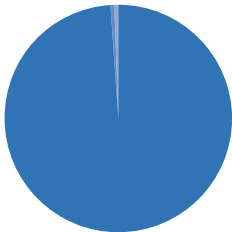
### Expendables

**Total: 2,171 t**



■ Resins & hydrazine **1.3%**  
■ Ammonia **1.9%**  
■ Sodium hypochlorite, ferrous sulfate & trisodium phosphate **2.5%**  
■ Sulfuric & hydrochloric acids **50.6%**  
■ Caustic soda **30.9%**  
■ Lime & ferric chloride **8.6%**  
■ Lubricating oil **2.4%**  
■ Other **1.8%**

Water for industrial uses  
Total requirements: 20,620,300 m<sup>3</sup>

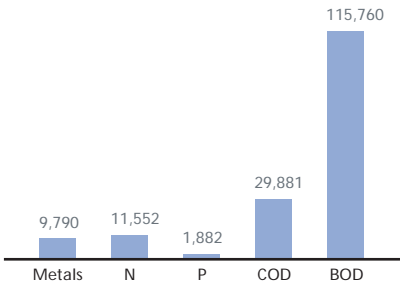


■ From rivers 99.1%  
■ From wells 0.4%  
■ From aqueducts 0.5%

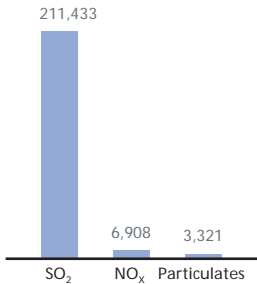
Waste waters  
Total discharged quantity: 4,790,989 m<sup>3</sup>

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

Releases into water bodies (kg)



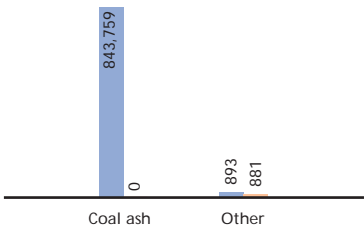
Emissions into the atmosphere (t)



CO<sub>2</sub> 4,362,235

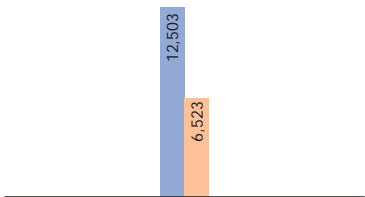
Special waste  
Total production: 857,156 t  
Total delivery to recovery operators: 7,404 t

Non-hazardous  
Production: 844,652 t  
Delivery to recovery operators: 881 t



■ Production ■ Delivery to recovery operators

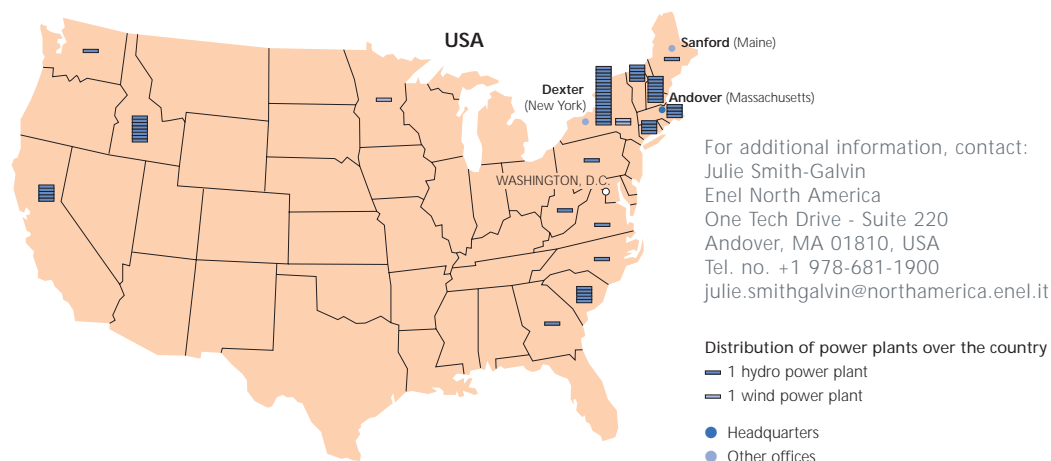
Hazardous  
Production: 12,503 t  
Delivery to recovery operators: 6,523 t



■ Production ■ Delivery to recovery operators

## Enel North America Inc.

Hydro, wind and combined heat & power generation



Enel North America also owns a combined heat & power plant (Saint Félicien) in the Canadian province of Québec.

### Power installations

#### HYDRO

	Power plants no.	Net maximum capacity MW
Run-of-river	60	196
Pondage/reservoir	4	116
	<b>64</b>	<b>312</b>

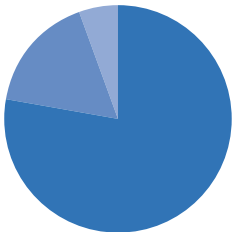
#### COMBINED HEAT & POWER (CHP)

	Power plants no.	Generating units no.	Net maximum electrical capacity MW	Useful thermal capacity 10 <sup>6</sup> kcal/h
Steam (condensing and bleeding)	<b>1</b>	<b>1</b>	<b>21</b>	<b>0.505</b>

#### WIND

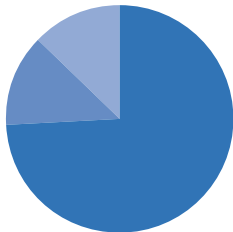
	Power plants no.	Net maximum capacity MW
	<b>3</b>	<b>67</b>

Net maximum electrical capacity  
Total: 401 MW



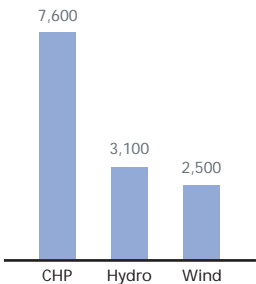
■ Hydro 78.0%  
■ Wind 16.7%  
■ CHP 5.3%

Net electricity generation  
Total: 1,284 million kWh



■ Hydro from natural flows 74.4% (955 GWh)  
■ Wind 13.0% (167 GWh)  
■ Thermal 12.6% (162 GWh)

Equivalent yearly average  
hours of utilization <sup>(1)</sup>



(1) Electricity generation/maximum electrical capacity ratio.

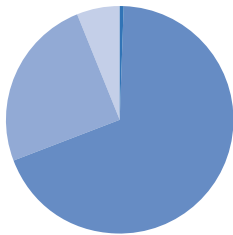
Useful heat output  
(combined with thermal generation)  
Total: 3,750 million kcal  
equal to 4.4 million kWh

The heat, which is generated by the Saint Félicien power plant and supplied to a nearby factory, uses steam (12 bar and 300°C) as carrier fluid.

Fuel consumption (CHP)  
Total: 66,578 t of oil-equivalent

Heat & power are generated from biomass, especially tree bark residue from the local wood processing industry.  
The amount shown includes 11.3 toe of gas-oil used for biomass drying.

Expendables (CHP)  
Total: 83 t

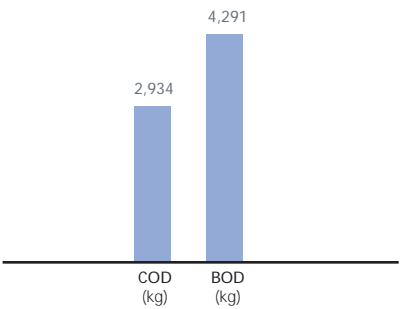


■ Resins 0.6%  
■ Sulfuric & hydrochloric acids 68.7%  
■ Sodium hypochlorite 24.7%  
■ Lubricating oil 6.0%

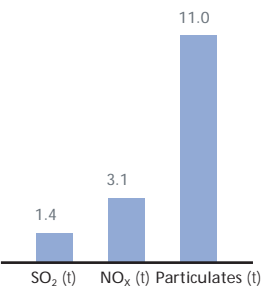
Water for industrial uses (CHP)  
Abstraction from inland waters,  
entirely from aqueducts: 599,460 m³

Waste waters (CHP)  
Total discharged quantity: 209,727 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 (CHP)



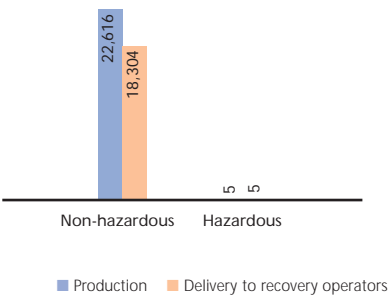
CO<sub>2</sub> (t) 34.0

Avoided CO<sub>2</sub> emissions

Electricity generation from biomass (t)	180,000
Hydro generation (t)	1,066,000
Wind generation (t)	186,000
Total (t)	1,432,000

Emissions from the otherwise necessary conventional thermal generation.  
This computation refers to average specific CO<sub>2</sub> emissions from Enel's fossil-fired thermal generation outside Italy.

Special waste (CHP)  
Total production: 22,621 t  
Total delivery to recovery operators: 18,309 t



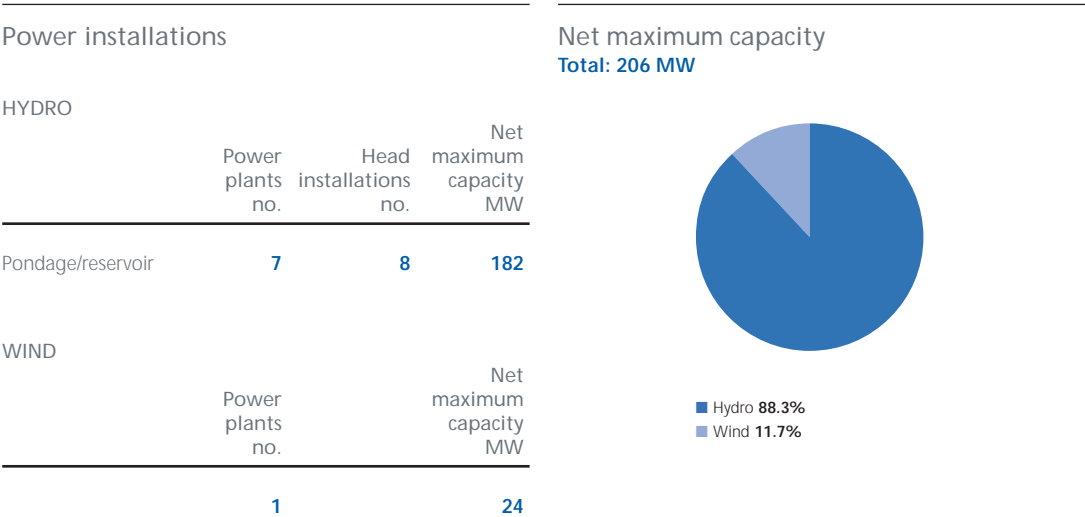
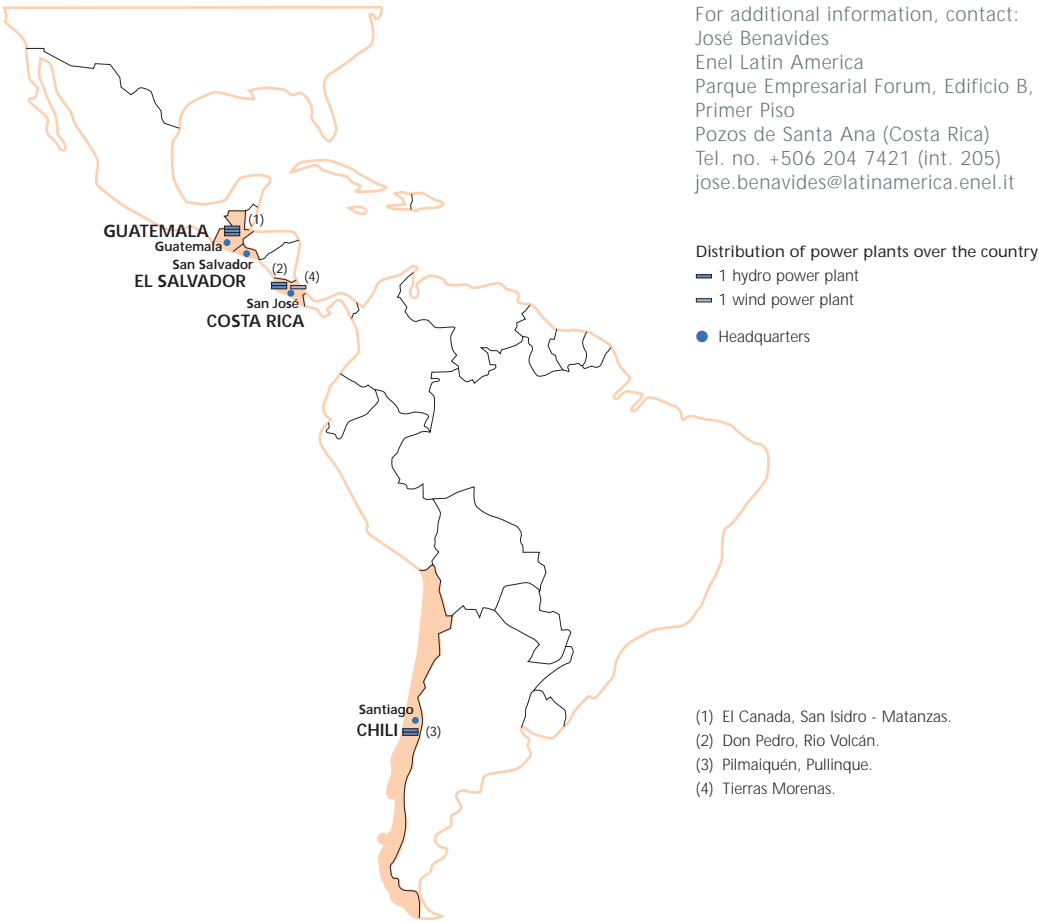
Non-hazardous waste essentially consists of biomass ash. Over 80% of this waste (the heaviest portion) is recovered as agricultural fertilizer.

Other data

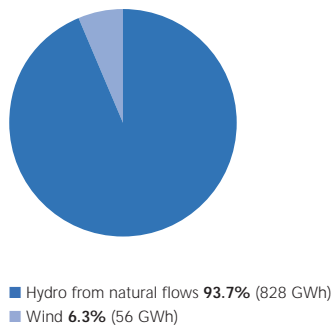
HYDRO GENERATION			
Emptied reservoirs	quantity (no.)		2
	alluvial sediments removed by mechanical equipment (m³)	7,250	
	> reused locally (m³)	7,250	
Fish ladders and elevators (no.)			11
Fish restocking campaigns	quantity (no.)		3
	restocked fish individuals	1,014,000	

WIND GENERATION			
Wind systems	surface area occupied by machines, buildings and roads (ha)		30

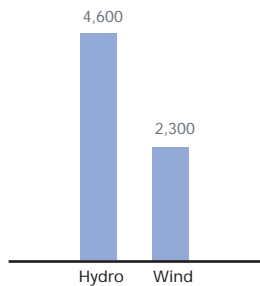
Enel Latin America LLC Hydro and wind generation



Net electricity generation  
Total: 884 million kWh

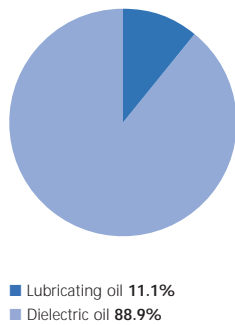


Equivalent yearly average  
hours of utilization <sup>(1)</sup>



(1) Electricity generation/maximum capacity ratio.

Expendables (CHP)  
Total: 6.8 t

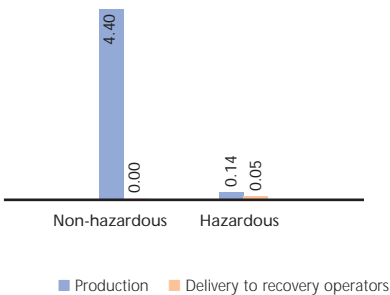


Avoided CO<sub>2</sub> emissions

Hydro generation (t)	924,000
Wind generation (t)	62,000
<b>Total (t)</b>	<b>986,000</b>

Emissions from the otherwise necessary conventional thermal generation.  
This computation refers to average specific CO<sub>2</sub> emissions from Enel's fossil-fired thermal generation outside Italy.

Special waste  
Total production: 4.54 t  
Total delivery to recovery operators: 0.05 t



Other data

HYDRO GENERATION

Emptied reservoirs	quantity (no.)	4
alluvial sediments removed by flushing them out through bottom outlets (m³)		928,751
alluvial sediments removed by mechanical equipment (m³)		7,500
> reused locally (m³)		7,500

WIND GENERATION

Wind systems	surface area occupied by machines, buildings and roads (ha)	4
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## Electra de Viesgo Distribución SL <sup>(1)</sup> Electricity Distribution



### High-voltage distribution grid perimeter

— Electra de Viesgo Distribución  
— BEGASA

● Headquarters

For additional information, contact:

Iñigo Malo Badía  
Electra de Viesgo Distribución  
c/Medio 12  
39012 Santander (Spain)  
Tel. no. +34 942 246017  
imalo@viesgo.es

(1) Including data on plants owned by its subsidiary Barras Eléctricas Gallico Asturianas SA (BEGASA).

## Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA	LINES (km)			
			Overhead bare conductors	Overhead cables	Undergr. cables	Total
HV/MV	87	3,609	HV (220 and 130 kV) 1,961	-	23	1,985
Satellite substations and MV units	4	-	MV 8,586	0	1,094	9,680
MV/LV	10,051	1,854	LV 0	16,041	1,779	17,821
MV/MV	286	-	<b>10,547</b>	<b>16,041</b>	<b>2,896</b>	<b>29,485</b>
	<b>10,428</b>	<b>5,462</b>				

## General data

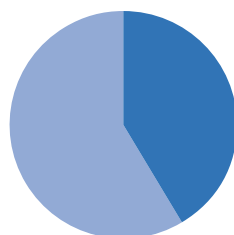
Surface area served (km <sup>2</sup> )	16,494
Customers connected to the grid (no.)	624,895

## Electricity

Total electricity distributed (million kWh)	5,627
Own consumption for grid operation (million kWh)	6.5
Losses along the grid (million kWh)	421.3

## Special waste

Total production: 448 t



■ Non-hazardous 41.5%  
■ Hazardous 58.5%

Total delivery to recovery operators: 0 t

## Emissions into the atmosphere

SF <sub>6</sub> (kg) (t of CO <sub>2</sub> -equivalent)	77 1,847
--	-------------

On January 1, 2005, Viesgo Distribución sold its electricity transmission assets (one 400 MVA 380/220-kV transforming station, eight 220-kV switching stations and 108 km of 220-kV lines) to Red Eléctrica (owner of the Spanish transmission grid).



## Enel Electrica Banat SA / Enel Electrica Dobrogea SA Electricity distribution



### Counties (and corresponding company districts) served

- Electrica Banat
- Electrica Dobrogea
- Headquarters

For additional information, contact:

Carmen Pana  
Enel Electrica Banat  
str. Pestalozzi 3-5  
Timișoara (Romania)  
Tel. no. +40 256405055  
cpa@electricabanat.ro

## Power installations

SUBSTATIONS	no.	Installed transforming capacity MVA	LINES (km)			
			Overhead bare conductors	Overhead cables	Undergr. cables	Total
HV/MV	212	8,574	4,945	-	35	4,980
Satellite substations and MV units	104	731	18,724	0	4,148	22,872
MV/LV	12,267	4,406	18,549	4,031	6,223	28,802
	<b>12,583</b>	<b>13,711</b>	<b>42,218</b>	<b>4,031</b>	<b>10,406</b>	<b>56,654</b>

## General data

Districts (no.)	8
Municipalities, towns and communes served (no.)	1,859
Surface area served (km <sup>2</sup> )	57,144
Customers connected to the grid (no.)	1,340,890

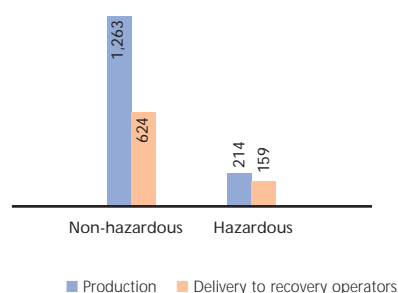
## Electricity

Total electricity distributed (million kWh)	7,206
Own consumption for grid operation (million kWh)	26
Losses along the grid (million kWh)	1,216

## Special waste

**Total production: 1,477 t**

**Total delivery to recovery operators: 783 t**



## Emissions into the atmosphere

SF <sub>6</sub> (kg) (t of CO <sub>2</sub> -equivalent)	2 48
--	---------



## El Salvador

In El Salvador, Enel is a shareholder, together with CEL, the Salvadoran national electricity company, of the LaGeo generation company, whose two geothermal plants meet about 22% of national demand for power. Enel is investing in LaGeo's growth, increasing its stake in the company.

One consequence of these investments has been the expansion of the use of renewable resources, especially geothermal, with major benefits for the environment and the country's energy balance. The operation has had a major impact on economic development in El Salvador: in the area of Berlin, Enel is building a geothermal plant with a capacity of 44 MW.

The construction of the plant has involved 110 people, with a further 500 employed in building the steam pipeline network. The Berlin geothermal plant is the first plant built by Enel abroad on a full turn-key basis. This was made possible in part by the highly specialized know-how that Enel has acquired in the geothermal field in Italy.

**Saul Alberto Hernandez Hernandez** Field Supervisor Enel Latin America

*"Working on the construction of this geothermal plant means looking forward to a sustainable future for my country"*

## OCCUPATIONAL HEALTH & SAFETY

“ To spread and reinforce a culture of safety, developing an awareness of risks while promoting responsible forms of behavior on the part of all staff members” (Code of Ethics): this is the commitment reiterated by the Top Management and that the entire Group has been vigorously pursuing for many years.

Occupational health & safety have thus entered into the corporate culture and are among the principles underlying Enel's policy.

To fulfill this commitment, Enel is engaged in many activities, such as:

- > employees' awareness, training & education;
- > health surveillance;
- > constant updating of risk assessment documents;
- > application of occupational health & safety management systems conforming to the international OHSAS 18001 standards;
- > in-depth analysis of occupational injuries;
- > communication.

### Organization

The “ Corporate” Personnel & Organization includes the Industrial Relations, Regulations and Health & Safety Unit, having the mission of coordinating safety units (present in each Division and company) and of formulating policies for a homogenous application of workers' health & safety regulations, behaviors and processes throughout Enel.

Appropriate corporate guidelines (issued in February 2004 and superseding previous documents of 1997 and 2000) govern the organization of these activities. The guidelines are used as a reference tool by all the units of Enel that are responsible for health & safety and represent the basis for identifying processes and procedures for correct application of the related management systems.

During 2005, procedures were worked out for the health & safety management system of Domestic Generation and Energy Management and of Enel Distribuzione SpA.

In all of Enel's sites, the so-called “ Production Units”, as well as their hierarchical and functional organization (employer, manager, controller), have been identified since 1997. At the same time, within each Production Unit, Enel also created the Prevention and Protection Service, appointing its Manager and the Physician in charge of workers' health surveillance.

Enel's Italian and foreign human resources dedicated to health & safety in workplaces amount to over 460 equivalent full-time units (about 9 workers out of 1,000). The number of human resources involved in support activities (emergency or first-aid teams, etc.) is much higher.

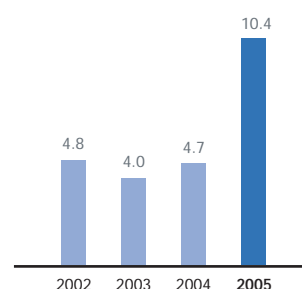
## Awareness, training & education

In 2005, both in and outside Italy, Enel delivered over 500,000 man-hours (more than 10 hours per employee) of training & education on health & safety at work.

The courses covered both general and specific health & safety themes; among the latter: first aid, fire prevention and electrical risks.

Enel also delivered courses for the positions of responsibility and representation specified in Legislative Decree no. 626/94 and for the safety coordinators referred to in Legislative Decree no. 494/96. As regards office work, employees participate in periodical programs aimed at making them aware of risks associated with the use of working equipment (video display units etc.), as well as of emergency plan procedures applicable to the individual sites.

Training & education hours per employee



## Expenditure

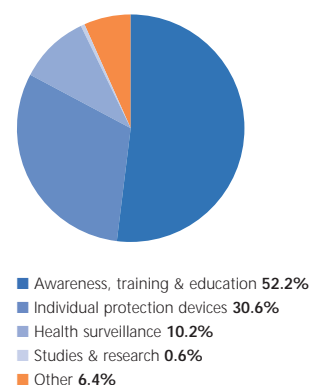
Also for 2005, only the most significant items of expenditure are reported, grouped under the following categories:

- > awareness, training & education;
- > individual protection systems;
- > health surveillance (physician in charge, health facilities, periodical medical examinations, etc.);
- > specialist studies and research (participation in national and international projects concerning health & safety, epidemiological studies, analysis of the trend of injuries, monitoring of industrial hygiene).

In 2005, in and outside Italy, Enel spent more than 22 million euro (438 euro per employee); a significant share of this figure was allocated to training & education. The overall expenditure rises to 43 million euro, if the cost of the health- & safety-dedicated personnel is included.

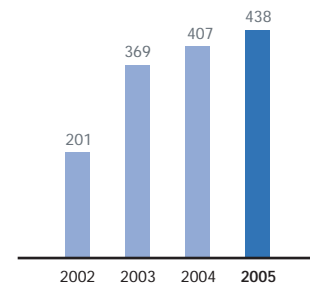
Current expenditure in 2005

**Total: 22.4 million euro**



As is obvious, this expenditure adds to investments in occupational safety & health improvements – which are part of projects of reorganization, renovation or alignment of offices and/or plant sites with the applicable legislation. The cross-cutting nature of these projects makes it difficult to identify them among overall investments.

Current expenditure per employee  
(euro)



## Initiatives

### Steering Committee

In 2005, the first Steering Committee on occupational health & safety was set up and convened. The purpose of the Committee is to favor exchange of data on the status of Enel's health & safety activities, as well as consultation on the relevant issues, and to pinpoint actions for additional or cross-company issues (occupational injuries, non-Italian operations, relations with companies and agencies, smoking, information manuals).

Within the Steering Committee, some projects and initiatives involving Enel's three Italian Divisions were presented. Among them:

Domestic Sales and Networks and Infrastructure Divisions:

- > project of compliance of buildings with health & safety regulations;
- > health & safety day;
- > drawing up of a health & safety manual for contractors;
- > new catalog of specialist training on health & safety matters.

Domestic Generation and Energy Management:

- > radon control campaign, as part of a wider industrial hygiene monitoring project;
- > extensive application of Enel's first-aid instructions;
- > smoking and explosive atmospheres;
- > start of a "health & safety" campaign in business units;
- > completion of the health & safety management system.

### **Operating rules of connection points between high-voltage power grids**

To fully implement its occupational health & safety policy, Enel also coordinated activities (issuing of rules and safety provisions) concerning work environments located in boundary areas between different companies.

To this end, in October 2005, operating rules were jointly prepared by Rete Ferroviaria Italiana (Italian railway company), Terna and Enel's Divisions of Domestic Networks and Infrastructure and Generation and Energy Management. These rules harmonize safety procedures to be followed in activities that are conducted at the boundary points of distribution grids.

### **Industrial vehicles and equipment**

The law on Community matters of 2004 mandated a careful overhaul of all industrial vehicles and equipment used in construction and/or maintenance of Enel's installations (bucket trucks, cranes, wire stringing equipment, etc.). Enel's commitment to this activity was outstanding and involved all the companies and Divisions of the Group. All the vehicles and equipment were inventoried, overhauled and, where necessary, brought in compliance with the new European directives.

### **Circular letter on occupational injuries**

In the course of 2005, Enel issued a new circular letter on occupational injuries. The new letter (replacing the one of June 2004) identified – in a better and more concise way – the work environments where adequate levels of attention and alert to serious and fatal injuries should be kept.

It is worth stressing that, in addition to being monitored, occupational injuries are also analyzed on an *ex post* basis, so as to define improvement actions and then develop processes of communication and warning to the Group's workers.

### **Fire prevention teams, emergency coordination and evacuation drills in large buildings**

In 2005, Enel continued evacuation drills, especially in large buildings, where evacuation and emergency plans received strong support and coordination. This activity led to the idea of setting up fire prevention teams (Turin, Bologna, Rome, Naples, Cagliari).

### **Radon monitoring & mitigation**

In 2005, Enel launched a workplace radon monitoring survey as per Legislative decree 230/95.

The areas to be monitored were selected on the basis of guidelines issued by the State-Regions Conference: basement or underground areas occupied for at least 10 hours per month.

The investigation involved the main corporate facilities:

> Enel's headquarters – Rome, Viale Regina Margherita: yearly program with half-yearly exposure dosimeters. The findings from the first half year of monitoring (the only ones available so far) showed no radon hazard.

- > Domestic Sales, Networks and Infrastructure: these Divisions assigned to CESI (Italian experimental electrotechnical center) the responsibility of monitoring radon in some of their typical sites (24) all over Italy. The survey (start date: July 2005; end date: July 2006) relies on the use of tri-annual exposure dosimeters. The readouts of the first dosimeters indicated a single criticality, however lying below the action threshold and slightly above the attention threshold. Subsequent continuous readings demonstrated that normal ventilation in the investigated sites restores radon to values that are largely below the attention threshold. Based on the data gathered so far, none of the monitored workplaces fall within the scope of Legislative Decree 230/95.
- > Domestic Generation and Energy Management: this Division entrusted the University of "Tor Vergata" – Rome to carry out a study on the typical underground workplaces of hydro power plants. The sample included 5 power plants in caverns, located in various parts of Italy. The final report from the study evidenced that only one plant exceeds the action threshold. Initiatives have already been taken for reducing radon concentrations in the plant. At the same time, the Domestic Generation and Energy Management Division monitored almost all of the remaining work environments, through either its own laboratories or ARPA (regional agency for environmental protection). The resulting data showed criticalities in only two plants; also in this case, the problem can be solved by improving ventilation.

### Health & safety management systems

Enel is continuing the introduction of management systems conforming to the international OHSAS 18001 standards into its Divisions and Companies. With the completion of the process in the Domestic Generation and Energy Management Division (scheduled in 2006), the system will be operational for about 90% of Enel's workforce.

### Auditing

Enel devoted considerable efforts to auditing (a basic element of health & safety management systems), with a view to enforcing compliance with legislative and organizational rules on health & safety. Health & safety audits were held in the Domestic Generation and Energy Management Division, while the performance of contractors working for the Domestic Sales and Domestic Networks and Infrastructure Divisions was audited on special health & safety days.

### Activities outside Italy

During 2005, Enel coordinated occupational health & safety initiatives also in its non-Italian operations. The provisions of its circular letter on occupational injuries and those on the parameters to be monitored (specified in its "Corporate Social Responsibility" paper) were fully implemented. Moreover, a "Health & Safety Policy" document was drafted with a view to defining common criteria and reference parameters for safety management in the companies and sites outside Italy. The document (in English) updates and completes Enel's 2004 guidelines. It was prepared by the Corporate Safety Unit in consultation with the other units involved, in particular with the International Division.



The document harmonizes health & safety management processes in the companies, lists criteria for assessing risks and activities to be performed for managing and monitoring occupational injuries, sets indicators to be adopted for monitoring and assessing Enel's health & safety performance and provides guidance for managing workplace safety, hygiene and emergencies (injuries, fires, etc. ).

#### **Nuclear**

Enel's strategy of expansion abroad implied the need for reacquiring skills and know-how in the nuclear sector. In 2005, the Corporate Safety Unit took initiatives to implement – within Enel – Legislative Decree 230/95 on ionizing radiations and requirements to ensure the health & safety of workers involved in its use.

#### **VAT Project**

VAT (Virtual Advanced Tracer) is a project that is expected to enhance the safety of high-voltage power line operation and maintenance by using a virtual operator. Simulation tests indicated that this system of automated response does not impair the safety of workers. In fact, the inflexibility of the system obliges workers to follow the process step by step, without deviations or non-scheduled operations. The project will switch from the testing to the implementation stage in the north-eastern and southern areas of Italy by year's end.

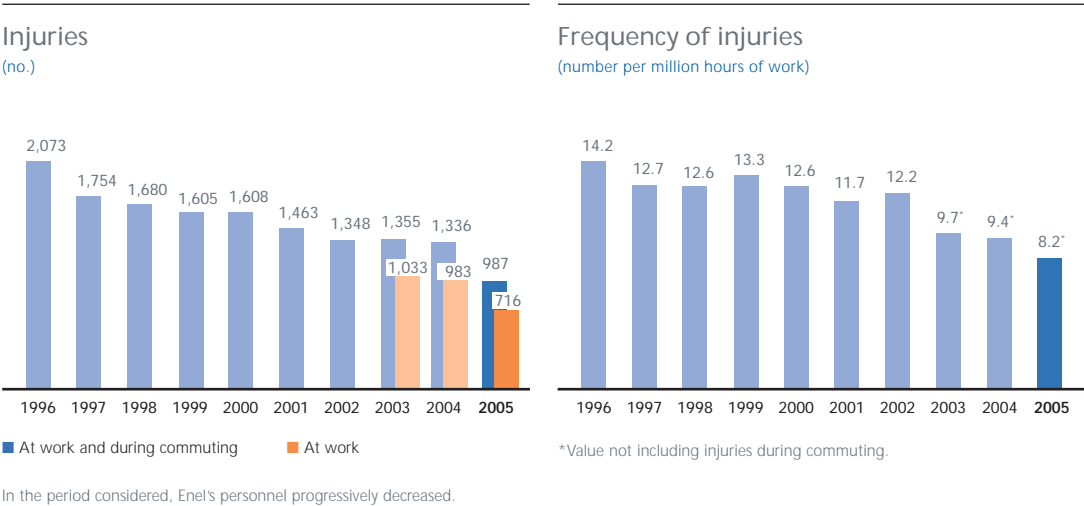
#### **No smoking policy**

The central cross-company initiative of the year was protection of workers from exposure to passive smoking by applying the smoking ban in indoor workplaces.

This initiative acquired the value of a corporate rule, with a functional hierarchy of supervision and control, and was accepted by all workers without particular difficulties.

Injuries

The total number of occupational injuries (involving at least one day of absence from work), in and outside Italy, continues to drop. In 2005, these injuries amounted to 716 (from 983 in 2004), thus decreasing the frequency rate (number of injuries per million hours of work) to 8.16; the corresponding severity rate (number of workdays lost owing to injuries per thousand hours of work) was equal to 0.27.

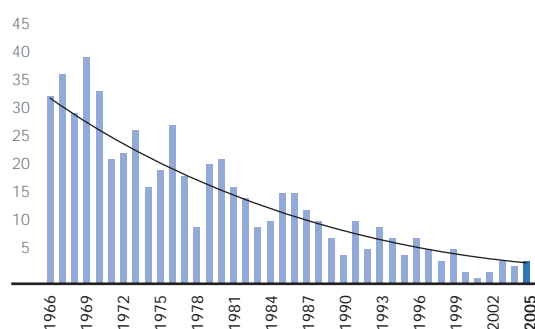


## Monitoring of serious and fatal injuries

In 2005, 11 serious injuries (first prognosis: more than 30 days) and 4 fatal injuries were recorded among Enel's employees. Out of the 4 fatal injuries, 3 happened in Italy (one due to electrical causes and two to road accidents) and 1 among Enel's employees abroad (due to crushing).

### Fatal injuries at work of Enel's personnel

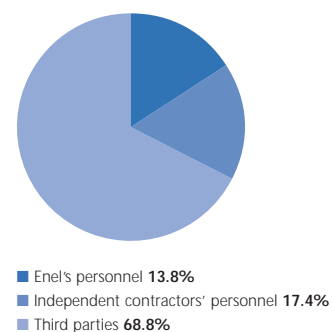
(no.)



In the period considered, Enel's personnel progressively decreased.

### Serious and fatal injuries related to Enel's activities in 2005

**Total: 109**



Conversely, the number of serious and fatal injuries of contractors' personnel (during work on behalf of Enel) dropped by 50% (38 in 2004, 19 in 2005), testifying strict workplace supervision and selection of contractors fulfilling adequate requirements.

Finally, Enel's commitment to safety is also demonstrated by a project which began some years ago. The project consists in monitoring adverse events in which third parties came into contact with Enel's infrastructure (road accidents, contacts of industrial vehicles and equipment with power lines, etc.). In 2005, 75 of such events occurred, 40 of which were fatal. None of them involved customers or visitors to Enel's installations and no evidence of liability was ever found on the part of Enel.

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Milan, May 12, 2006

### **Verification of Enel SpA's Environmental Report 2005**

The IT Group Infrastructure & Environmental Italia Srl verified Enel SpA's Environmental Report 2005. The following statement provides the reader with the results of our verification.

Our approach to the verification activity was largely based on the guidelines issued by the “*Forum on Certification of Environmental Reports*”, which was held at Fondazione Eni Enrico Mattei. Reliance was also made on the ASTM E-1527-00 standard and on the most innovative international reporting guidelines.

We reviewed the Report, as well as the activities and procedures for collection and aggregation of the reported data, in order to determine whether:

- the Report was complete and included all the aspects and significant impacts of Enel's activities;
- all the reported data were understandable and clear;
- the procedures and system used for data collection and aggregation were adequate and reliable.

We sample-checked the reported data by conducting audits at:

#### **A – Domestic Generation and Energy Management Division**

##### **Headquarters (Rome)**

##### **Thermal Generation Business Area**

- MONTALTO DI CASTRO Business Unit
- PIETRAFITTA Business Unit
- SULCIS Business Unit – Power plants of Sulcis, Portoscuso and Assemini GT (gas-turbine units)
- LA CASELLA Business Unit – Power plants of La Casella, Alessandria GT and Carpi GT
- ROSSANO Business Unit – Power plants of Rossano and Mercure
- FUSINA Business Unit – Power plants of Fusina and Porto Marghera
- PORTO CORSINI Business Unit

##### **Renewables Business Area**

- Geothermal generation – Operations and Drilling & Laboratory Units;
- BOLZANO Business Unit
- BERGAMO Business Unit
- SONDRIO Business Unit
- VITTORIO VENETO Business Unit
- SARDEGNA Business Unit

#### **B – Domestic Infrastructure and Networks Division**

##### **Power Grid Business Area**

- Headquarters (Rome)
- Sardegna Regional Unit

##### **Gas Grid Business Area**

- Headquarters (Milan)
-

**C - International Division**

- Enel Unión Fenosa Renovables – Headquarters (Madrid)
- Enel Unión Fenosa Renovables – Combined heat & power plant of Arener (Madrid)
- Enel Unión Fenosa Renovables – Wind farms of Enerbierzo and Navas del Marqués (Castilla y León).

At Enel SpA's Public and Regulatory Affairs/Environmental Policies Unit, which is responsible for the preparation of the Report, we carried out general verifications on data management, assessing the reliability of the data collection system. We also sample-checked the reported data for reliability and consistency.

At the peripheral sites of the various Divisions and Companies, we conducted our audits in accordance with ASTM E 1527 – 00 standards, i.e. through document analysis, interviews with the personnel in charge of the various activities and collection of visual evidence.

The data were gathered in a uniform way throughout Enel according to standard formats for presentation in the Report.

Enel's reporting system proved to be reliable and accurate in consolidating the data, enabling us to check them for consistency and facilitating our work as in previous years.

The introduction of automatic systems for collecting data, especially on waste management, further improved the reliability of the entire reporting system.

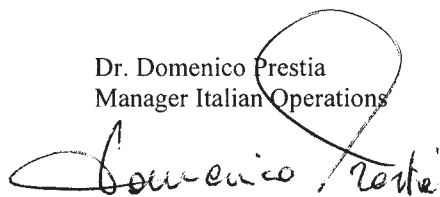
For the future, we reiterate our previous recommendation, i.e. to rapidly complete the planned introduction of certified Environmental Management Systems in all of Enel's field sites. Indeed, as largely demonstrated, these systems can help monitor and manage environmental issues on a day-to-day basis, making the implementation of the Group's policies more effective.

The format of the Report is reader-friendly and we can state that it is in line with the most advanced and innovative international standards.

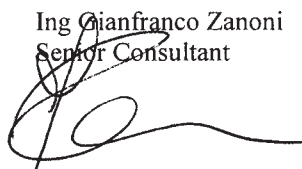
The Report is complete, clear and understandable. The performance indicators and the data are correctly reported.

In our opinion, Enel SpA's Environmental Report 2005 is complete, understandable and reliable.

Dr. Domenico Prestia  
Manager Italian Operations



Ing. Gianfranco Zanon  
Senior Consultant



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