

**- ENEL AGM 2012 -**

**Report by**

**Fondazione Culturale Responsabilità Etica**

The Cultural Foundation of Banca Etica - Fondazione Culturale Responsabilità Etica Onlus – started in 2007 a critical shareholding initiative. The Fondazione bought some shares of major Italian corporations that are targeted by Italian and international civil society organizations and networks. These firms are criticized for their negative environmental, social and human rights behavior, regarding their questionable impact on local and national development processes, their lack of transparency, their poor democratic governance, and more broadly for their responsibility and controversial sustainability record and performance.

The critical shareholding is carried on in close contact with Italian and international civil society organizations. The Fondazione bought the shares of ENEL after the proposal of Greenpeace Italy and the Campagna per la Riforma della Banca Mondiale – CRBM.

The goal of this initiative is at least three-fold:

- Firstly, it gives the chance to bring the voice of the Southern communities and of international civil society organisation campaigns directly to the board of the companies and to the other shareholders. Too many projects carried on by Northern transnational corporations badly impact on the life and the fundamental rights of local groups in the global South. These latter hardly can make their voice heard in the country where the mother company is based. The critical shareholding initiative may therefore be an effective tool to try and bring this voice directly to the board, the managers and the shareholders of the company. The result is an increase of the social and environmental performance of the company in order to reduce broader negative development impacts and to foster a more active dialogue between the company and all its stakeholders;
- Secondly, the Foundation sees the critical shareholding as a tool of “economic democracy”, thus increasing the knowledge and the participation of small shareholders and of the general public in financial matters. With this initiative, the Cultural Foundation wants to open a debate on the role of the shareholder and on its duties. The current crisis has shown the threats of a financial system based upon the “short-termism” and only the maximization of profits. Being a shareholder means you become an owner – even if of an extremely small percentage – of the company you invest in. Thus it must imply rights as well as duties, and namely to actively participate in the life

of the company; this is regarded as central in any development process both in the North and the South, given the prominent role nowadays of the private sector in most societies.

- Lastly, the critical shareholding increases the representativeness of the small shareholders in the AGM and, more broadly, in the life of the company. A 2009 OECD report “The corporate governance lessons from the financial turmoil” points out that one of the main reasons for the actual crisis has been the flaws in the corporate governance schemes of many companies. The same OECD report pledges, as a major step forward, to increase the participation of the small shareholders in the life and the decisions of the companies. The critical shareholding goes precisely in this direction and will contribute to increase democratization and accountability of private sector operations.

In several European countries, as well as in the US, active shareholders engagement has become a widespread practice. The interventions and proposals of the small active shareholders helped in many cases in increasing the company environmental and social responsibility, its governance and accountability, and its long-term sustainability. This strategy has already been used in some campaigns targeting Northern corporations’ responsibility in solidarity with affected communities in the global South and to promote their right to development.

This same practice has hardly been done in Italy, apart from some seldom initiatives carried on in specific cases. We therefore believe that the initiative undertaken in Italy by the Fondazione Culturale Responsabilità Etica Onlus could contribute to develop a more proactive and dynamic participation of other shareholders in the Italian firms.

To sum up, this initiative was conceived to make progresses in the medium and long term, both towards the firms’ responsibility and towards the shareholders’ participation.

In order to increase the efficiency of the initiative, the intervention in the AGM has been focused on a small number of concrete cases and investments where ENEL is involved. Moreover, the projects considered are those where we believe that some concrete social, environmental or human rights improvements could take place.

The intervention in the 2011 AGM focused on Enel investments in the nuclear energy. Moreover, the Foundation addressed the issue of the HidroAysén project, the mega hydroelectric project in the heart of Chilean Patagonia, inherited by Enel from Endesa, with potential serious environmental impacts and possible reputational risks for the Company’s international image.

Finally, in last year’s AGM the Foundation highlighted the complex structure of Enel’s subsidiaries and controlled companies in foreign jurisdictions and in countries often considered as tax havens, questioning the Company on its awareness of the high reputational risk connected to having many subsidiaries in Delaware, one of the most opaque financial centers in the world.

In general, during the AGMs in the previous years, the Foundation stressed the fact that a poor social and environmental track record may also have severe impacts on the Company’s long term financial sustainability, affecting its ability to maintain its leadership in the market and its competitiveness, thus damaging all shareholders.

In the 2012 AGM, the Foundation wants to further expand on some of the projects questioned in the previous AGMs, to introduce new issues that are causing increasing concern among the international civil society and the impacted communities, and raise some specific questions regarding the consequences of Enel's investments in the global South.

In this introduction we have to point out that, despite the right for shareholders to pose questions before the AGMs and the company duty to reply, and despite the dialogue carried on with the company, the results of this dialogue with ENEL has been so far unsatisfactory. Several of the questions posed to the company in the last AGMs remain unanswered.

Going further, for the 2012 AGM we present two new contributions. The first one is a contribution from Greenpeace Italy on Enel's fossil-fired power generation external costs. The second one is a contribution from Greenpeace Italy on Enel's fossil-fired power generation external costs. These two contribution contain, together with the analysis, some specific questions we pose to the company in view of the 2012 AGM. As shareholders of ENEL and following on the company declarations on its accountability, we look forward to receiving detailed replies and information to these questions.

# Enel's fossil-fired power generation external costs

## Foreword

- In this section, edited by Greenpeace Italy, an analysis of Enel's current and future investments (these latter as announced by the company) is provided, in order to compare current capacity and production with what the company will be in the next future, trying to highlight the externalities of its baseload from coal (focusing on Italy) and, furthermore, to draft a realistic scenario for future environmental, economical and health impacts if Porto Tolle and Rossano projects would be fulfilled. The source of most of the informations here presented is an upcoming report by SOMO, a Dutch independent research institute, that is still being finalized.

If we except hydropower (that in many regions where Enel operates it's just an inheritance of a distant past, while elsewhere – e.g. in Latin America – shows significant environmental and social criticalities), we have the picture of a company that is investing very few resources in new renewables technologies, especially in Europe and in Italy, where it is still based (although being a multinational) and whose ministry of Treasure holds a golden share. Enel is nowadays mainly basing its future low carbon strategies on unprobable solutions like nuclear power and Carbon Capture and Storage (CCS).

Literature on CCS projects failure is nowadays so wide that we won't assume any investor or shareholder to be unconscious of how this industrial prospect is unreliable. For what concerns the financial risks in investing in CCS, we just quote, here, what is stated in the 5<sup>th</sup> “Strategic Analysis of the Global Status of Carbon Capture and Storage” provided by the Global CCS Institute: when it comes to the question “What is the estimated level of investment required to develop and deploy CCS technologies?”, then answer is “The magnitude of this challenge is similar to investing in the entire infrastructure for the hydrocarbons industry developed over the past century in the next 40 years. To achieve this goal some estimates suggest \$100 billion annually is required (Ernst and Young 2009)”.

The datas we present here, when referring to externalities of coal production, are a further elaboration of a study already developed by the European Environmental Agency (EEA), released in the past autumn. Focusing on air pollution, that research sketches out aggregated values for environmental, agricultural and health impacts for many different industrial plants all over Europe, also providing a rank of the 20 most polluting ones. The most polluting plant, in Italy, is the Enel's coal fired plant Federico II in Brindisi, whose externalities (accounting to a maximum of 707 mln Euro in year 2009) are even higher than the profits Enel earns through it. What we present here, then, is the EEA methodology extended to all Enel's Italian coal fired plants. Main findings are that external costs for coal production by Enel, in Italy, amount approximately to 1,7 bln Euro per year (over a total of 2,5 bln € from the whole fossil fuels production; 705); and that health impacts are valuable to 366 additional deaths (in 2009), over a total of 489 from the whole Enel's fossil fuels production. Adopting that same EEA methodology, we have that if Enel would fulfil Porto

Tolle and Rossano Calabro conversion into coal's projects, then additional mortality would rise up to 441 units per year and aggregated damages would approximately amount to 2.5 bln € per year.

It is the first time that Greenpeace Italy focuses its analysis of damages from thermal-electrical coal production on local pollutant. Nevertheless, we are obviously deeply concerned about the impacts that coal has on climate. Coal is the most significant source of man-made carbon dioxide in the atmosphere. A third of all CO<sub>2</sub> emissions in the world comes from the burning of coal. The continued extraction and burning of coal is therefore incompatible with combating climate change.

There are severe environmental, regulatory, financial and reputational risks associated with investing in the coal industry. The growth of the coal sector cannot continue if we are to take the fight against climate change seriously. In its latest publication, the International Energy Agency calculated that 80% of the cumulative CO<sub>2</sub> that can be emitted between 2010 and 2035, for the world to have a chance of achieving the 2°C scenario, has already been "locked-in" in existing capital stock. All infrastructure built after 2017 then needs to be zero-carbon, unless existing infrastructure is scrapped before the end of its economic life-span.

This fact explains why more and more countries around the world are adopting stringent climate regulations to reduce their GHG emissions, for example the European Union Emissions Trading System, new climate regulations in California and Australia, or clear climate targets in China's 12th Five-Year Plan. Those regulations will directly impact existing or planned power infrastructure that would not be compliant with these new standards. In addition, other stringent regulations on other environmental impacts of coal are also being put in place, such as on mercury emissions from coal mining and coal power plants.

These developments contribute to the financial risks of investing in a coal-fired power plant project with a minimum 30 year life-span. Such investments are extremely vulnerable to any potential climate legislation adopted during this period of time, that could lead to a potential early retirement of that project, resulting in significant financial loss. On top of this, a recent report by the Carbon Tracker Initiative revealed that only 20% of the total fossil fuels reserves already known can be burned unabated, leaving up to 80% of assets technically unburnable. These assets form what can be defined a "carbon bubble", which could burst anytime in the future as the subprime bubble did in 2008.

It should be highlighted, finally, how companies face a growing reputational risk by investing in high climate impact forms of energies from such as coal. Enel is the biggest CO<sub>2</sub> emitter in Italy, with a total amount from fossil fuels power plant of almost 42 mill tons in 2009, of which more than 27 coming from coal power plants.

#### • **Context and point of departure**

Italy-based multinational Enel is an energy giant and a major player in several areas of the global energy market. Headquartered in Rome, Enel is the largest power company in Italy, Spain, Slovakia and a number of major Latin American countries and is Europe's overall second-largest utility by installed capacity. This report presents a fact-based profile and analysis of Enel, its current activities and operations, and, using methods found in the scientific and academic literature, the company's impacts on the climate and public health.

## 1. Installed capacity and electricity production

In its annual report, Enel provides information on its installed capacity and electricity generated broken down by business divisions. In order to be able to determine the company's capacity and generation figures for Italy, Europe and the company as a whole, data from the company's 2010 Sustainability Report and the "2010 Results & 2011-2015 Plans" presentation<sup>1</sup> are used, meaning that the base year for all installed capacity and production figures is 2010. On 8 March 2012, Enel published its "2011 Results & 2012-2016 Plans" presentation<sup>2</sup>, but the information provided in this report is much less detailed than what was already gathered for the 2010 year, so it was decided to maintain the 2010 figures for capacity and production.

This chapter presents Enel's figures on installed capacity and generated electricity for the company as a whole, for its production in Europe and for its production in Italy for the year 2010.

It has to be noted that Enel doesn't make a distinction between oil-fired and traditionally operated natural gas plants in its categorizations. The differentiation Enel makes is on the one hand Combined Cycle Gas Turbine (CCGT) gas plants and on the other hand gas plants with Open Cycle Gas Turbines (OCGT) and Steam Turbine (ST) oil plants. These categories are also used in this chapter.

### 1.1. Global

Globally, Enel's main source of power is natural gas: 40% of its installed capacity is composed of gas fired installations (OCGT and CCGT combined).<sup>3</sup> Gas is followed by hydropower with 32% and coal with 19% of the company's total installed capacity. Nuclear power (5%) and wind (3%) have a relatively small share in Enel's capacity.

Figure 1 shows the fuel mix of Enel's global generation capacity.

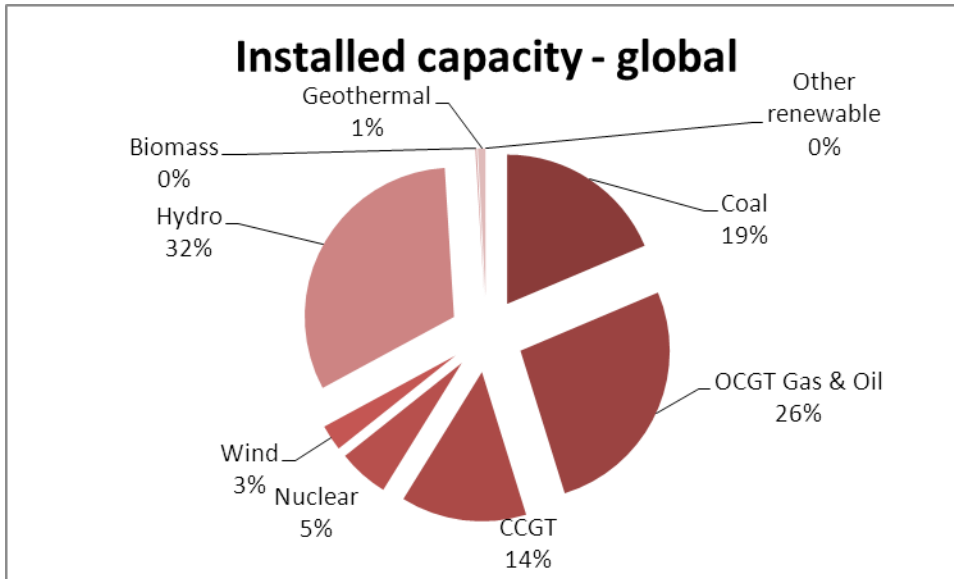
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<sup>1</sup>Enel presentation "2010 Results 2011-2015 Plans", 15 March 2011, pp. 59-62, Enel website, Investor, Presentations, 2011, [http://www.enel.com/en-GB/investor/annual\\_presentations/?anno\\_curr=2011&anno\\_iniziale=2012&anno\\_finale=2005&id=](http://www.enel.com/en-GB/investor/annual_presentations/?anno_curr=2011&anno_iniziale=2012&anno_finale=2005&id=) (03/02/2012)

<sup>2</sup>Enel presentation "2011 Results 2012-2016 Plans", 8 March 2012, Enel website, Investor, Presentations, 2012 <[http://www.enel.com/en-GB/investor/annual\\_presentations/presentazione.aspx?id=2012\\_02](http://www.enel.com/en-GB/investor/annual_presentations/presentazione.aspx?id=2012_02)> (03/03/2012)

<sup>3</sup> It has to be noted that in this figure also the oil fired power plants have been calculated.

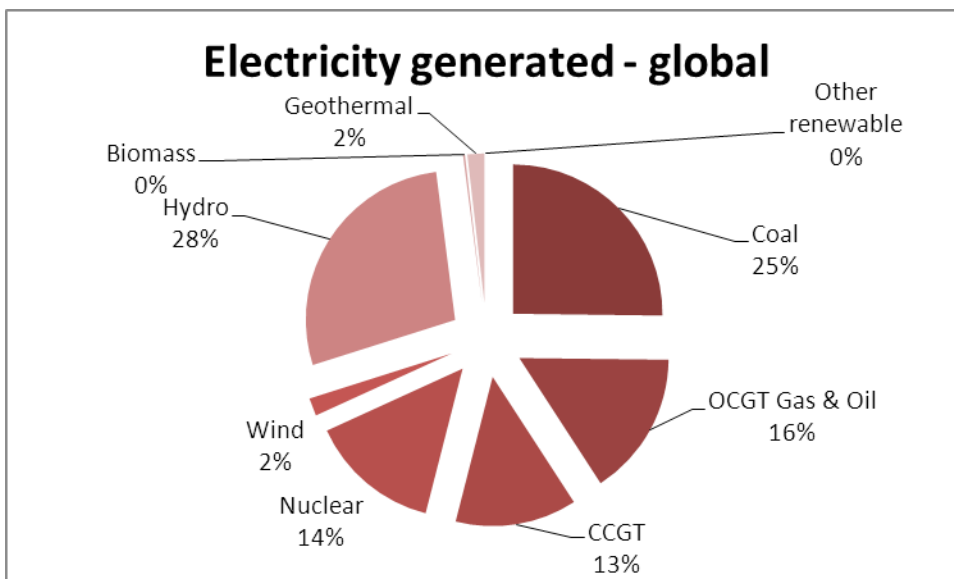
Figure 1: Fuel mix of Enel's installed capacity globally, 2010, in percentages



When it comes to the actual production of Enel's power plants, we get a different picture. In 2010, the company generated almost the same amount of electricity from natural gas (OCGT and CCGT together)<sup>4</sup>, hydropower and coal: 29%, 28% and 25% of its total generated electricity, respectively. Nuclear power amounted for 14% of the total generation figures worldwide.

Figure 2 shows the fuel mix of the electricity that was generated by Enel in 2010 globally.

Figure2 : Fuel mix of Enel's electricity generated globally, 2010, in percentages



<sup>4</sup> The figures for OCGT also contain the figures for oil fired power plants.

Enel’s 2011 figures for electricity generated globally are similar, yet indeed slightly different: coal 29.3%, hydro 23.9%, CCGT 16.2%, nuclear 13.4%, OCGT 12.9%, and other renewables (wind, solar, geothermal, biomass) 4.3%.<sup>5</sup>

Table 1 shows the absolute figures for Enel’s fuel mix of installed capacity (in MW) and generated electricity (in GWh) in 2010.

*Table 1: Fuel mix of Enel's installed capacity and electricity generated globally, 2010*

<b>Fuel type</b>	<b>Installed Capacity (MW)</b>	<b>Electricity generated (GWh)<sup>6</sup></b>
Coal	18,122	73,100
OCGT Gas & Oil	25,852	45,400
CCGT	13,248	38,200
Nuclear	5,332	41,200
Wind	2,731	5,600
Hydro	31,033	80,800
Biomass	154	600
Geothermal	775	5,300
Other renewable	34	30
<b>Total</b>	<b>97,281</b>	<b>290,200</b>

Source: Enel<sup>7</sup>

Enel’s global hydroelectric capacity is the sum of hydro plants from natural flows (21,195 MW) and pumped storage facilities (9,839 MW).<sup>8</sup> Although pumped storage is generally not considered to be a renewable source of energy, it should be given a separate category and not included along with hydro. However, nearly all of the figures on fuel mix and production provided by Enel do include pumped storage along with hydro.

### ***1.2 Europe***

Enel reports on its capacity and generation figures in somewhat different manner for its global operations than when it comes to the regions where the company operates. For its regional breakdown, the thermal (coal, OCGT gas & oil and CCGT) and nuclear categories are maintained; however, when it comes to renewables, the only two categories are hydro and “other renewable”

<sup>5</sup> Enel presentation “2011 Results 2012-2016 Plans”, 8 March 2012, Enel website, Investor, Presentations, 2012 <[http://www.enel.com/en-GB/investor/annual\\_presentations/presentazione.aspx?id=2012\\_02](http://www.enel.com/en-GB/investor/annual_presentations/presentazione.aspx?id=2012_02)> (03/03/2012)

<sup>6</sup> See for more detailed figures on generated electricity for the year 2010: Enel Environmental Report 2010 p. 90 and 93

<sup>7</sup> Enel Sustainability Report 2010, p. 258 & p. 261.

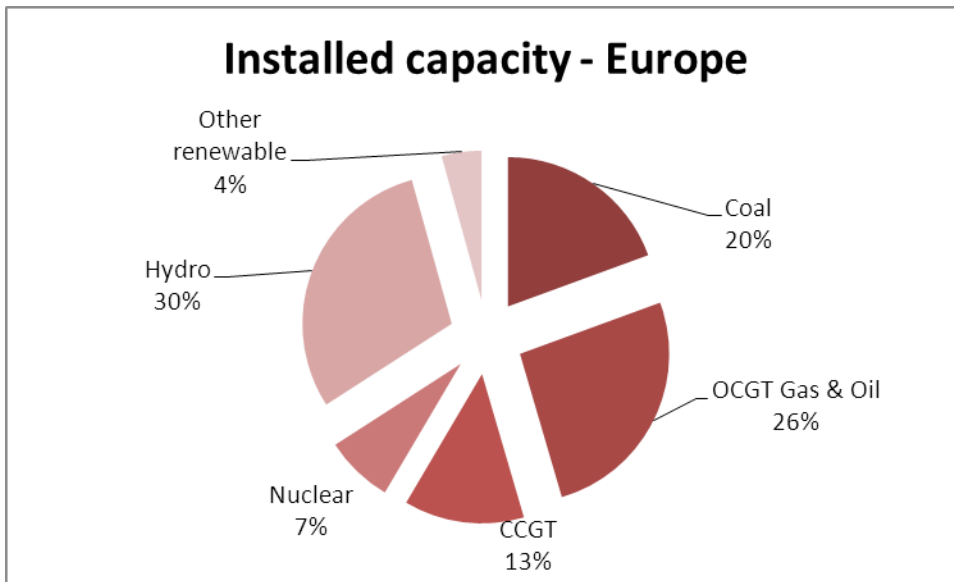
<sup>8</sup> Enel Environmental Report 2010, p. 46.

(wind, solar, geothermal, biomass together). Enel’s categorization is followed when presenting the European figures for capacity and generation in this paragraph.

In Europe, Enel’s main source of power is natural gas with 39% (26% OCGT gas & oil + 13% CCGT) of its total installed capacity, followed by 30% hydro, 20% coal, 7% nuclear and 4% “other renewable”.

Figure 3 shows the fuel mix of Enel’s installed capacity in Europe.

Figure 3: Fuel mix of Enel's installed capacity in Europe, 2010, in percentages



The actual electricity generated by Enel’s plants in Europe differs substantially from the percentages of the company’s installed capacity. Figure 4 shows the fuel mix of the electricity that was generated by Enel in Europe in 2010.

Figure 4: Fuel mix of Enel's electricity generated in Europe, 2010, in percentages

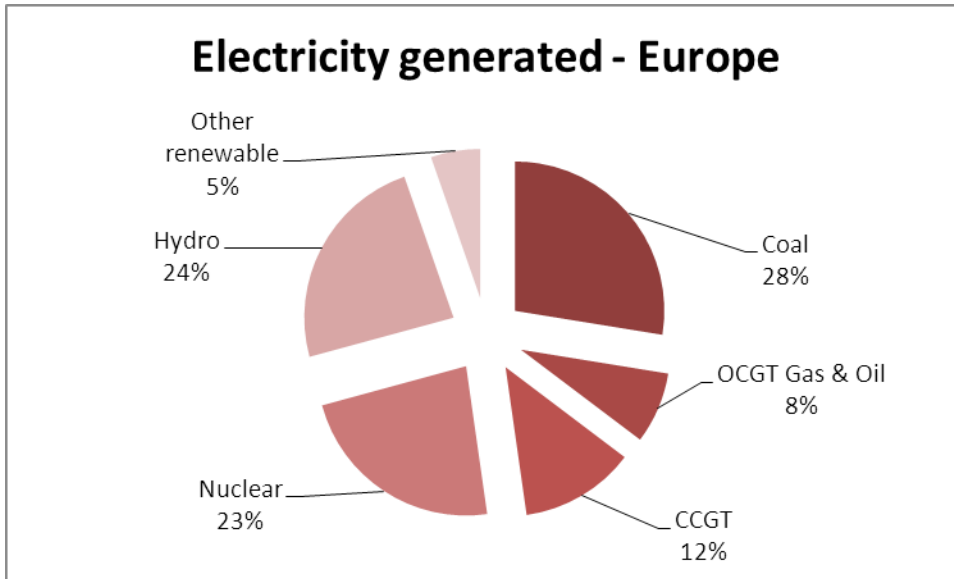


Table 2 shows the absolute figures for Enel's European fuel mix of installed capacity (in MW) and generated electricity (in GWh) in 2010.

Table 2: Fuel mix of Enel's installed capacity and electricity generated in Europe, 2010

Fuel type	Installed Capacity (MW)	Electricity generated (GWh)
Coal	13,990	49,252
OCGT Gas & Oil	18,758	13,816
CCGT <sup>9</sup>	9,380	22,236
Nuclear	5,332	41,153
Hydro	21,460	42,649
Other renewable	3,110	9,570
<b>Total</b>	<b>72,030</b>	<b>178,676</b>

Source: Enel<sup>10</sup>

<sup>9</sup> Figures for CCGT include 123 MW of installed capacity and 689 GWh electricity generation in Morocco.

<sup>10</sup>The figures for installed capacity and electricity generation are composed of the figures for "Italy", "Iberia", "Central", and "SEE", as presented in the Enel presentation, "2010 Results 2011-2015 Plans", 15 March 2011, pp. 59-60, Enel website, Investor, Presentations, 2011, [http://www.enel.com/en-GB/investor/annual\\_presentations/?anno\\_curr=2011&anno\\_iniziale=2012&anno\\_finale=2005&id=](http://www.enel.com/en-GB/investor/annual_presentations/?anno_curr=2011&anno_iniziale=2012&anno_finale=2005&id=) (03/02/2012)

### 1.2.1 Italy

Enel categorizes its capacity and generation figures for Italy in the same way as it does for the other regions it operates: coal, OCGT gas & oil, CCGT, nuclear, hydro and “other renewable” (wind, solar, geothermal and biomass). However, Enel does not have any nuclear power plants in Italy. In its home market Italy, 45% of Enel’s plants are fuelled by natural gas (30% OCGT & oil and CCGT together), followed by hydro energy (35%), coal (17%) and “other renewable” (3%). Figure shows the fuel mix of Enel’s installed capacity in Italy.

Figure 5: Fuel mix of Enel's installed capacity in Italy, 2010, in percentages

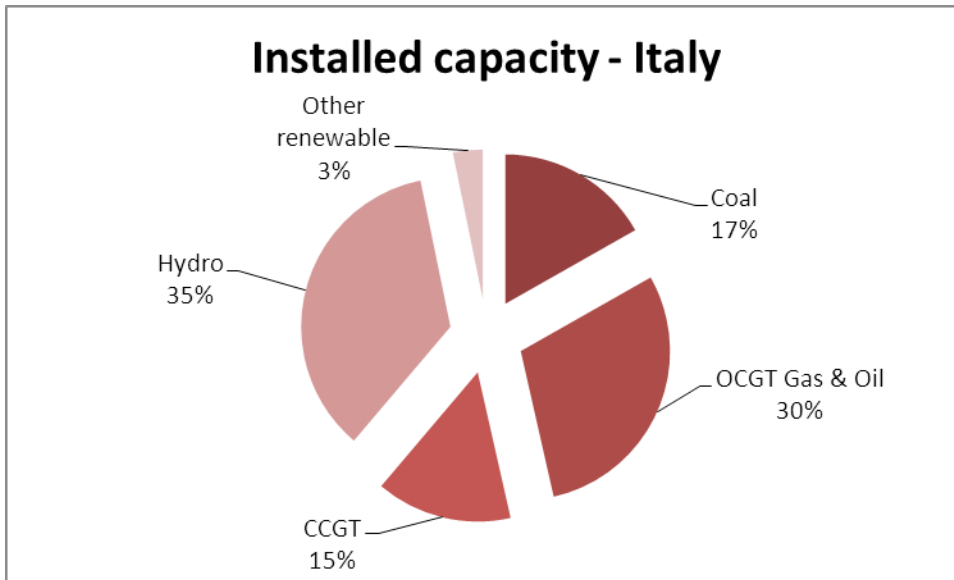


Figure 6 shows the fuel mix of the electricity that was generated by Enel in Italy in 2010. Enel generated almost the same amount of electricity from coal and hydropower, both 34% of its total generation figures. Natural gas was used for 25% of the generation activities (22% CCGT and 3% OCGT gas & oil), while “other renewables” were spent for 7% of all electricity generated in 2010.

Figure 6: Fuel mix of Enel's electricity generated in Italy, 2010, in percentages

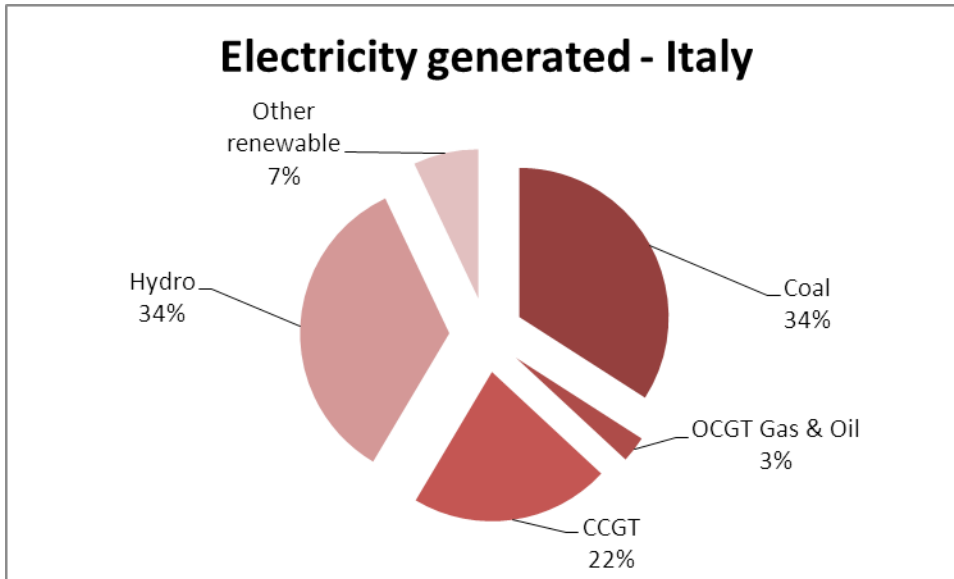


Table shows the absolute figures for Enel's European fuel mix of installed capacity (in MW) and generated electricity (in GWh) in 2010.

Table 3: Fuel mix of Enel's installed capacity and electricity generated in Italy, 2010

Fuel type	Installed Capacity (MW)	Electricity generated (GWh)
Coal	6,804	27,798
OCGT Gas & Oil	12,021	2,313
CCGT	5,973	17,632
Nuclear	-	-
Hydro	14,417	28,068
Other renewable	1,307	5,758
<b>Total</b>	<b>40,522</b>	<b>81,569</b>

Source: Enel<sup>11</sup>

<sup>11</sup>Enel presentation, "2010 Results 2011-2015 Plans", 15 March 2011, pp. 59-60, Enel website, Investor, Presentations, 2011, [http://www.enel.com/en-GB/investor/annual\\_presentations/?anno\\_curr=2011&anno\\_iniziale=2012&anno\\_finale=2005&id=](http://www.enel.com/en-GB/investor/annual_presentations/?anno_curr=2011&anno_iniziale=2012&anno_finale=2005&id=) (03/02/2012)

## ***1.4 Coal consumption in Enel power production has remarkably increased in 2011***

The 2011 Enel's power production in Italy shows a slight decrease with a total production of 79 TWh compared to 81.6 TWh produced in 2010. In spite of this decrease, the coal contribution to the total production grew from 34 to 41%, passing from 27.7 to 32.4 TWh thanks to the increased output of the Torrevadalinga Nord power station<sup>12</sup>.

## **2. Emissions, waste, and the impact on public health of Enel's current fossil fuel power production**

### ***2.1 Carbon and climate***

One of the best-known and most influential impacts of electricity production, especially thermal power generation, is the large-scale creation of carbon dioxide (CO<sub>2</sub>). The emission of this gas, along with other greenhouse gases that are produced in power plants, leads to climate change. Energy companies have a very large impact on worldwide carbon emissions and can be held responsible for their significant contribution to climate change.

According to Enel, Enel's total, worldwide direct and indirect greenhouse gas emissions amounted to 122.6 million tons of CO<sub>2</sub>-equivalent in 2010 or 116.4 million tons of direct emissions.<sup>13</sup> During that same year, the company produced 290,176 GWh.<sup>14</sup> The company reports having generated 386 kg CO<sub>2</sub>/MWh(eq).<sup>15</sup>

In the European Union<sup>16</sup>, Enel produced 177,095 GWh in 2010 and thereby emitted approximately 67.8 million tons of CO<sub>2</sub> or 68.0 million tons of CO<sub>2</sub>-equivalent. This amounts to an emission of 691 kg CO<sub>2</sub>/MWh or 783.7 kg CO<sub>2</sub> eq/MWh. This excludes Greece, France, and Ireland, as Enel has not reported CO<sub>2</sub>-equivalent emissions from its renewable energy sources there.

Total emissions in Italy amounted to 34.4 million tons of CO<sub>2</sub>, or 34.5 million tons of CO<sub>2</sub> equivalent in 2010.<sup>17</sup> Having generated a total of 81180 GWh<sup>18</sup>, the Italian emission-production ratio amounted to 425 kg CO<sub>2</sub>/MWh<sup>19</sup>. In its Environmental Report, Enel states that the Italian emissions are having a downward trend and that the performance of 425 kg/MWh is remarkable when compared to the emissions of 618 kg/MWh<sup>20</sup> in 1990, the base year of the Kyoto Protocol targets. It is interesting to see that Enel's current ratio of carbon emissions per produced kWh in the EU are actually much higher than the Italian ratio of 1990.

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<sup>12</sup>Enel presentation "2011 Results 2012-2016 Plans", 8 March 2012, Enel website, Investor, Presentations, 2012 <[http://www.enel.com/en-GB/investor/annual\\_presentations/presentazione.aspx?id=2012\\_02](http://www.enel.com/en-GB/investor/annual_presentations/presentazione.aspx?id=2012_02)> (03/03/2012)

<sup>13</sup>Enel Sustainability Report 2010, p. 179.

<sup>14</sup>Enel SpA Investor Relations, 2010 Results, 2011-2015 Plan. 'Growth and rewarding returns with financial discipline'. London, March 15 2011. Pdf, p.60.

<sup>15</sup>Enel Sustainability Report 2010, p. 179.

<sup>16</sup>That is, in Portugal, Spain, Italy, Slovakia, Greece, Bulgaria, France, Romania and Ireland.

<sup>17</sup>Enel Environmental Report 2010, p. 151.

<sup>18</sup>Enel Environmental Report 2010, p. 149.

<sup>19</sup>Enel Environmental Report 2010, p.161.

<sup>20</sup>Enel Environmental Report 2010, p. 161.

### 2.1.1 Coal procurement

Enel has a procurement department which manages the company's relations with suppliers and it has a supplier website.<sup>21</sup> However, the company does not publish specific information on coal procurement. Coal from Slovak power plant 'Vojany' is obtained from Ukraine and Russia, and the 'Nováky' power plant uses brown coal mined in Slovakia.<sup>22</sup> For other coal-fired plants, no details are available on countries or mines of origin of coal.

In 2010 Enel Group's fossil fuel consumption consisted of among others: coal 31.5 Mt, lignite 11.3 Mt, oil 2.7 Mt.<sup>23</sup> In 2010 Enel spent €1,536 million on the purchase of coal as a fuel for its power plants.<sup>24</sup>

### 2.1.2 Air pollution

Air pollution is detrimental to human health and has great impact on mortality. The most notorious pollutants that are common in today's industrial environment are nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), and particulate matter (PM).<sup>25</sup> Emissions in the energy sector are mainly generated in coal-fired power plants. The pollutants emitted by the power plants are paramount and include a wide range of chemical formations, including heavy metals. This report will only focus on the three most influential and wide-spread pollutants emitted by coal power plants.

#### Common high-impact air pollutants

##### NO<sub>x</sub>

Nitrogen oxides, such as nitrogen dioxide (NO<sub>2</sub>), are a product of combustion processes and have adverse respiratory effects. NO<sub>x</sub> can cause bronchitis and in high concentrations, the oxides are toxic and cause inflammation. NO<sub>x</sub> can react or connect with other small particles to form small particulate matter that damages the lungs.<sup>26</sup>

##### SO<sub>x</sub>

Sulphur oxides, like nitrogen oxides, can cause or aggravate respiratory problems and cardiac disease. Sulphur occurs naturally in most fossil fuels and sulphur oxides (SO<sub>2</sub>) are produced on a large scale in industrial processes, the most important of which is fossil fuel combustion.

##### PM<sub>x</sub>

Particulate matter (PM) is a mixture of various small airborne particles. The components vary and include materials such as nitrogen and sulphur oxides, dust, metals, and soil. Upon inhalation, the small particles easily enter lung and heart cells, and damage the organs. This effect becomes

<sup>21</sup>Enel supplier website, [http://www.acquisti.enel.it/en-GB/fornitori/01\\_chi\\_siamo/](http://www.acquisti.enel.it/en-GB/fornitori/01_chi_siamo/) (14/03/2012)

<sup>22</sup>Enel Slovenské Elektrárne brochures Vojany and Nováky power plants

<sup>23</sup>Enel Sustainability Report 2010, p. 196.

<sup>24</sup>Enel Sustainability Report 2010, p. 291.

<sup>25</sup>World Health Organisation, website. Viewed 23 February 2012.

<http://www.who.int/mediacentre/factsheets/fs313/en/index.html>

<sup>26</sup>U.S. Environmental Protection Agency website, viewed 23 February 2012.

<http://www.epa.gov/air/nitrogenoxides/health.html>

stronger with decreasing particle size. Usually,  $PM_x$  is noted as  $PM_{10}$  or  $PM_{2.5}$ , whereby the number does not indicate the number of atoms but the maximum diameter of the particles in micrometers ( $\mu\text{m}$ ). PM is emitted from fires and from reactions between emittants near roads and industrial facilities.

According to data drawn from the European Pollutant Release and Transfer Register (E-PRTR) of the European Environment Agency, which contains data from all major polluting industrial facilities in Europe, the energy sector is by far the leading air polluting sector in Europe. Damage costs of air pollution – costs that are carried by citizens – that are generated by the energy sector are out of proportion when compared to any of the other industrial sectors in Europe.<sup>27</sup> All of the top polluting industrial sites in Europe are power generating facilities, and Enel is included in the list of biggest polluters.

Enel's Slovak thermal power plant 'Elektrárne Nováky' is number 15 of the E-PRTR list of facilities with the highest estimated damage costs from emissions to air (excluding  $\text{CO}_2$ )<sup>28</sup>, while the company's Italian thermal power plant 'Centrale Termoelettrica Federico II' in Brindisi is number 18 on the E-PRTR list of industrial facilities generating the greatest damage costs from emissions of selected pollutants to air ( $\text{NO}_x$ ,  $\text{SO}_x$ ,  $\text{PM}_{10}$ ,  $\text{CO}_2$ )<sup>29</sup>. Many of Enel's European thermal power plants are present in the top-191 facilities which generate 50% of all costs (€102 to 169 billion in 2009) to human health and to the environment.<sup>30</sup>

Using emission data from the E-PRTR and applying the EEA method, the annual health and financial impacts of Enel's fossil-fuel based power plants can be calculated and quantified. Tabl and Table reveal the impacts based on the 2009 emissions from Enel's plants (see sthe Appendix for more details on the methods used to make these calculations)

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<sup>27</sup>European Environment Agency, Technical Report No 15/2011. 'Revealing the costs of air pollution from industrial facilities in Europe', figures 3.6 and 3.7, p. 32.

<sup>28</sup>European Environment Agency, Technical Report No 15/2011. 'Revealing the costs of air pollution from industrial facilities in Europe', figure 3.5, p. 29.

<sup>29</sup>European Environment Agency, Technical Report No 15/2011. 'Revealing the costs of air pollution from industrial facilities in Europe', figure 3.1, p. 25.

<sup>30</sup>European Environment Agency website, viewed 23 February 2012.

<http://www.eea.europa.eu/pressroom/newsreleases/industrial-air-pollution-cost-europe>

Table 4: Emissions to air from Enel's fossil fuel-based power plants in Italy and the associated health and financial impacts, 2009

Enel facility	Emissions to air (t)				Exposure		Health and financial impacts associated with Enel emissions				
	PM <sub>10</sub>	NOx	SOx	CO <sub>2</sub>	PM <sub>2.5</sub>	SOMO35 (ozone)	Deaths	(€) Crop damages	Costs air pollution (€)	Costs CO <sub>2</sub> (€)	Total Costs (€)
<b>Coal-fired plants</b>											
Genova		3,320	4,910	1,670,000	1,062,840	99,641,016	66	575,313	152,761,077	56,112,000	208,873,077
Federico Ii (Brindisi Sud)	473	7,300	6,540	13,000,000	1,875,407	254,252,853	119	1,372,376	269,785,802	436,800,000	706,585,802
Eugenio Montale (La Spezia)	106	1,790	1,870	2,340,000	493,228	60,143,627	31	329,794	70,924,771	78,624,000	149,548,771
Torrevaldaliga Nord (Civitavecchia)		835	769	2,860,000	204,956	28,909,416	13	156,449	29,508,784	96,096,000	125,604,784
Sulcis	93	15	3,030	2,240,000	607,538	37,468,468	38	235,241	87,185,030	75,264,000	162,449,030
Fusina	104	2,500	2,010	4,300,000	598,268	88,970,832	38	475,788	86,121,948	144,480,000	230,601,948
Porto Marghera		380	284	315,000	84,445	13,701,359	5	72,863	12,167,398	10,584,000	22,751,398
Pietro Vannucci (Bastardo)	112	2,220	4,620	1,010,000	915,199	55,583,071	57	350,969	131,341,715	33,936,000	165,277,715
<b>TOTAL COAL</b>	<b>888</b>	<b>19,825</b>	<b>24,033</b>	<b>27,735,000</b>	<b>5,841,881</b>	<b>638,670,642</b>	<b>366</b>	<b>3,568,792</b>	<b>839,796,526</b>	<b>931,896,000</b>	<b>1,771,692,526</b>
<b>Other (non-coal) fossil fuel-based power plants</b>											
Piombino		322	671	475,000	129,153	8,054,681	8	50,884	18,541,876	15,960,000	34,501,876
Porto Corsini		360		990,000	43,991	15,203,078	3	75,816	6,380,618	33,264,000	39,644,618
Augusta		516	1,440	306,000	255,781	9,894,171	16	72,338	36,689,614	10,281,600	46,971,214
Porto Empedocle		369	329	262,000	89,123	12,865,042	6	69,411	12,833,187	8,803,200	21,636,387
Porto Tolle		127	250	208,000	48,979	3,297,873	3	20,439	7,032,895	6,988,800	14,021,695
Rossano		197		268,000	24,073	8,319,462	2	41,488	3,491,616	9,004,800	12,496,416
Livorno		301	794	240,000	143,049	6,151,640	9	43,358	20,522,395	8,064,000	28,586,395
Priolo Gargallo		529		1,600,000	64,642	22,340,079	4	111,407	9,375,964	53,760,000	63,135,964
La Casella		452		1,360,000	55,233	19,088,309	4	95,191	8,011,221	45,696,000	53,707,221
Leri		207		148,000	25,295	8,741,770	2	43,594	3,668,856	4,972,800	8,641,656
Montalto Di Castro		998	1,210	2,650,000	283,897	32,149,604	18	179,651	40,833,154	89,040,000	129,873,154
Termini Imerese		950		2,020,000	116,087	40,119,234	8	200,070	16,837,743	67,872,000	84,709,743

Assemini		671		130,000	81,994	28,336,848	6	141,313	118,92,764	4,368,000	16,260,764
Maddaloni		210			25,661	8,868,462	2	44,226	3,722,027	0,00	3,722,027
Portoscuso		157		123,000	19,185	6,630,231	1	33,064	2,782,659	4,132,800	6,915,459
Di Bari				128,000	0	0	0	0	0	4,300,800	4,300,800
Pietrafitta		131		275,000	16,008	5,532,231	1	27,589	2,321,836	9,240,000	11,561,836
Santa Barbara		176		442,000	21,507	7,432,616	1	37,066	3,119,413	14,851,200	17,970,613
<b>TOTAL NON-COAL FOSSIL FUEL</b>	<b>106</b>	<b>8,463</b>	<b>6,564</b>	<b>13,965,000</b>	<b>1,936,885</b>	<b>303,168,960</b>	<b>123</b>	<b>1,616,698</b>	<b>278,982,610</b>	<b>469,224,000</b>	<b>748,206,610</b>
<b>TOTAL ALL FOSSIL FUEL</b>	<b>994</b>	<b>28,288</b>	<b>30,597</b>	<b>41,700,000</b>	<b>7,778,766</b>	<b>941,839,602</b>	<b>489</b>	<b>5,185,490</b>	<b>1,118,779,136</b>	<b>1,401,120,000</b>	<b>2,519,899,136</b>
<b>Coal's percentage of the total (%)</b>	<b>89%</b>	<b>70%</b>	<b>79%</b>	<b>67%</b>	<b>75%</b>	<b>68%</b>	<b>75%</b>	<b>69%</b>	<b>75%</b>	<b>67%</b>	<b>70%</b>

Source: Emissions from E-PRTR Database. Calculations of health and financial impacts associated with emissions using EEA methodology

Table 5: Emissions to air from Enel's coal-fired power plants in Europe (ex-Italy) and the associated health and financial impacts, 2009

Enel facility	Emissions to air (t)				Exposure		Health and financial impacts associated with Enel emissions				
	PM <sub>10</sub>	NOx	SOx	CO <sub>2</sub>	PM <sub>2.5</sub>	SOMO35 (ozone)	Deaths	(€) Crop damages	Costs air pollution (€)	Costs CO <sub>2</sub> (€)	Total Costs (€)
TETs "Enel Maritsa iztok 3" (BUL)		3,870	14,900	4,950,000	1,335,058	269,494,425	86	728,267	193,505,377	166,320,000	359,825,377
Central Termoelétrica do Pego (POR)	60	2,210	1,340	2,830,000	127,925	4,256,949	8	243,166	18,625,213	95,088,000	113,713,213
CENT. TERMICA DE ANDORRA (=Teruel) (S)		10,000	11,700	2,610,000	1,474,364	353,397,657	96	2,061,735	214,847,958	87,696,000	302,543,958
UPT COMPOSTILLA (S)	390	8,420	3,770	2,640,000	749,296	354,979,616	52	1,921,160	110,518,231	88,704,000	199,222,231
UNIDAD DE PROD. TERMICA AS PONTES (SPAIN)	264	7,460	4,990	5,220,000	800,393	298,929,636	54	1,651,883	117,439,796	175,392,000	292,831,796
CENTRAL TÉRMICA LIT. DE ALMERÍA (S)	564	9,740	14,000	5,090,000	1,737,725	319,621,228	111	1,928,832	252,284,081	171,024,000	423,308,081
Es Murterar, in Alcudia (Majorca Menorca) (S)											
Slovenské elektrárne a.s. - Elektrárna Vojany, závod (SLOV)		1,390	446	898,000	263,353	115,708,980	18	385,748	38,927,755	30,172,800	69,100,555
Slovenské elektrárne a.s.- Elektrárne Nováky, závod (SLOV)		3,820	32,400	2,450,000	4,922,819	174,158,416	302	818,824	698,085,984	82,320,000	780,405,984
Carverna(PORT)											
Enercampo (PORT)											
Enerviz (PORT)											
Enerlousado (PORT)											
Estuario (PORT)											
Estuario (PORT)											
<b>Total EU excluding Italy</b>	<b>1,278</b>	<b>46,910</b>	<b>83,546</b>	<b>26,688,000</b>	<b>11,410,932</b>	<b>1,890,546,908</b>	<b>727</b>	<b>9,739,613</b>	<b>1,644,234,395</b>	<b>896,716,800</b>	<b>2,540,951,195</b>

Note: for the plants marked in yellow we have no data available

### 3. New coal projects in the pipeline

Although the present industrial plan “frozen” new coal projects, in Enel’s pipeline there are some new coal-fired power stations which have been proposed and are in the authorisation phase.

In Italy, Enel will continue to contribute to air pollution by having new installed coal-fired capacity. Enel’s predictions for emissions for the proposed new Porto Tolle plant for SO<sub>2</sub>/NO<sub>x</sub>/Dust (mg/Nm<sup>3</sup>) are: 100/100/15 (hourly basis).<sup>31</sup> Rossano, Italy’s oil-fired power plant that will be converted to a coal-fired plant, will also be responsible for future emissions. Outside of Italy, Enel is planning to invest in Romania’s Galati plant, and in the Albanian plant of Porto Romano. The proposed 800 MW Porto Romano Energy Complex in Albania is estimated to produce the following air pollutants: 44,800 tonnes of bottom ashes, 401,600 tonnes of fly ashes and 9,328,000 tonnes of CO<sub>2</sub> emissions annually. Estimates for CO<sub>2</sub> emissions are based on 8,000 hours of annual operation with 1,166 tonnes emitted per hour.<sup>32</sup>

Table reveals the projected emissions to air from Enel’s four planned coal-fired power plants in Europe and the associated health and financial impacts. Assumptions made for these calculations can be found in the footnotes. Note that Rossano Calabro emissions are excluding the gas-fired part.

If the new projects will be implemented, the total external additional costs will be of 1.15 bn € and more than 160 excess deaths (58% of which from the Italian new coal power stations).

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<sup>31</sup> Enel presentation, Pietro Barbucci, Enel - Engineering & Innovation Division, “Enel’s projects in Clean Coal and CCS” IEA Energy Efficiency and Clean Coal Technologies Workshop, Moscow, 25th-27th October 2010, p. 20., [http://www.iea.org/work/2010/ee\\_cc/barbucci.pdf](http://www.iea.org/work/2010/ee_cc/barbucci.pdf)

<sup>32</sup> P. Trzaskowski and F. Bacheva-McGrath, “Over the edge - Enel’s plans to export its pollution to Porto Romano, Albania”, (Tirana: CEE Bankwatch Network, April 2010), p. 14., <http://bankwatch.org/sites/default/files/PortoRomanoOverTheEdge.pdf>

**Table 6: Projected emissions to air from Enel’s planned coal-fired power plants in Europe and the associated health and financial impacts<sup>33</sup>**

Enel facility	Emissions to air (t per year)				Exposure, per year		Health and financial impacts associated with Enel emissions, per year				
	PM <sub>10</sub>	NO <sub>x</sub>	SO <sub>x</sub>	CO <sub>2</sub>	PM <sub>2.5</sub>	SOMO35 (ozone)	Deaths	Crop damages (€)	Costs air pollution (€)	Costs CO <sub>2</sub> (€)	Total Costs (€)
Rossano Calabro (Italy) <sup>34</sup>	300	1,800	1,800	4,719,000	529,405	61,144,257	33	343,908	76,656,843	158,558,400	235,215,243
Porto Tolle (Italy) <sup>35</sup>	347	3,564	3,564	9,791,000	991,675	121,065,628	62	680,938	143,611,898	328,977,600	472,589,498
Porto Romano (Albania) <sup>36</sup>	180	2,700	2,700	4,360,000	338,965	177,655,035	24	N/A	49,926,213	146,496,000	196,422,213
Galati (Romania) <sup>37</sup>	200	2,700	2,700	4,360,000	651,932	210,297,405	43	656,721	95,297,064	146,496,000	241,793,064
<b>TOTAL</b>	<b>1,027</b>	<b>10,764</b>	<b>10,764</b>	<b>23,230,000</b>	<b>2,511,976</b>	<b>570,162,325</b>	<b>163</b>	<b>at least 1,681,567</b>	<b>365,492,018</b>	<b>780,528,000</b>	<b>1,146,020,018</b>

Source: See below for sources of emission figures and assumptions. Calculations of health and financial impacts associated with emissions using EEA methodology

<sup>33</sup> Assumptions need to be made in order to obtain an idea of any future emissions and health impacts. These are the assumptions used here: 7500 full load hours for all plants; as Rossano Calabro values are given both as mg/Nm<sup>3</sup> and t/h, these were used to convert the others. Porto Tolle: 1980 MW, Porto Romano: both 1 and 2 units of 800 MW but only one was calculated. Reported efficiencies for Rossano Calabro and Porto Tolle are the same; coal will probably be similar, thus values were scaled up by higher output.

<sup>34</sup> Rossano Calabro [http://www.autistici.org/difendiamolacalabria/wp-content/uploads/2010/05/SIA\\_ROSSANO-SNT\\_aprile2010.pdf](http://www.autistici.org/difendiamolacalabria/wp-content/uploads/2010/05/SIA_ROSSANO-SNT_aprile2010.pdf)

<sup>35</sup> Porto Tolle <http://www.cslforum.org/publications/documents/Edmonton2011/Barbucci-TG-ZEPTProject-Edmonton0511.pdf>

<sup>36</sup> Porto Romano <http://www.scribd.com/doc/72026971/131/Ndikimet>. These figures are based on one 800MW unit at Porto Romano. Will the total capacity be 1,600 MW of coal-fired capacity, then these numbers should be doubled

<sup>37</sup> Galati <http://www.mediugov.md/file/Evenimente/Memoriu%20de%20prezentare.pdf>

#### 4. Conclusion

What the 2010 Enel's sustainability report definitely doesn't mention are the external costs of its fossil fuelled power plants and the role that coal fired power plants have in determining the external costs of its power production in Italy and abroad.

Limiting our focus on Italy and Europe and applying the same methodology used by EEA for "revealing" the external costs on environment, agriculture and health, our conclusions are that:

- Enel fossil-fired power plants generated in 2009 a total external cost of about 2,52 bn € in Italy and 2,54 bn € caused by coal power stations operating in other European countries, **totalling more than 5 bn € of external costs in 2009, 4.3 of which are caused by burning coal**
- In Italy coal share is largely predominant with some **70% of the total estimated cost with a total estimated cost of 1,77 bn €**
- In Italy excess deaths of the fossil fired power plants in 2009 are estimated around 490 cases, 75% of which are related to coal plants
- The excess deaths of other European coal plants owned by Enel (in Spain, Portugal, Slovak Rep.), for which the dataset here considered is however not complete, **are more than 720 cases in 2009**
- In total, excess deaths are about 1,200 cases/year; **almost 1,000 excess deaths are caused by coal in 2009**
- If the proposed 4 new coal fired power plant will be realised, the total external **additional costs will increase by around 1.15 bn € and more than 160 excess deaths**, 58% of which in Italy (Porto Tolle and Rossano).

Enel is pursuing the expansion of its coal-fired power production. For Italy we have shown that the gross income generated by the largest coal plant (Cerano, Brindisi sud) is approximately of the same order of the external costs as calculated by the EEA in its report<sup>38</sup> of 536-707 m€ per year.

By using coal Enel – as every other utility – pursues its own profit at a disadvantage of public health, the global climate and the environment in general. **Burning coal produces a deadly trade off between the company's profit and the public health and climate.**

Pursuing the use of coal while limiting its efforts in developing the new renewables – which recorded a marginal share of 7.8% in 2011 – Enel is the most important hurdle for a green energy revolution in Italy and in other countries as well.

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<sup>38</sup>see Greenpeace briefing "Enel. I veri costi del carbone" March 2012.

[http://www.greenpeace.org/italy/Global/italy/report/2012/clima/ENEL\\_i\\_veri\\_costi\\_del\\_carbone.pdf](http://www.greenpeace.org/italy/Global/italy/report/2012/clima/ENEL_i_veri_costi_del_carbone.pdf)

In spite of the relevant health and environmental external costs of coal, Enel strategy is to further increase coal use for producing electricity for increasing its own profit – given the economical margin between electricity from coal plants and the price to which it is being sold - at the disadvantage for the public health, environment and the climate. For that reason:

- we ask whether Enel has ever made an evaluation of external costs associated to its fossil-fired plant, including excess mortality and on what kind of methodology; and the role of coal
- we ask what is the Enel's judgment about the EEA report and CAFE methodology here quoted;
- we ask why the quoted impacts – including excess mortality - have never been reported in the Sustainability Reports issued by Enel;
- we ask whether Enel considers the order of magnitude of external costs and excess deaths as here evaluated acceptable;
- we ask Enel to develop an alternative strategy based on a phase out of coal plants by 2030 replacing that power with renewables in order to bring to almost zero the company huge impacts on health, the environment and the climate.

## Appendix - Methods used for quantifying impacts on public health

The methodology used here to quantify the public health impacts of air pollution from coal-fired power plants in EU has been developed for the European Environment Agency (EEA) by a consortium led by the UK consultancy firm AEA. It has been subsequently used by the EEA to estimate the economic impacts caused by air pollution from industrial facilities. The approach has been fully documented by Holland et al.<sup>39</sup> and the EEA<sup>40</sup>.

The estimates of health impacts include five separate pathways. Emissions of particulate matter contribute to primary PM concentrations. Emissions of SO<sub>2</sub> and NO<sub>x</sub> affect concentrations of secondary particulate matter (PM), while NO<sub>x</sub> emissions also contribute to the generation of ozone. The increased concentrations of PM and ozone cause a range of health risks. Only the health impacts related to the three abovementioned emissions, PM, SO<sub>2</sub> and NO<sub>x</sub> are included in this estimates – heavy metals and organic toxins are not included here, but doing so would increase the calculated health impacts.

The first step in implementing the methodology is obtaining data on air pollution emissions. For operating industrial facilities, this data is available in the European Pollutant Release and Transfer Register (E-PRTR) database maintained by the EEA.<sup>41</sup> For proposed power plants, we have relied on available public sources.

The second step is estimating how the emissions affect the ambient concentrations of particulate matter and ozone that the population is exposed to. This is done with atmospheric modeling carried out by the EMEP programme (Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe). The models include data on population density and weather patterns on a given year. The output from the modeling is in the form of source-receptor matrices, which give the increase in exposure to ambient PM<sub>2.5</sub> and ozone (as µg/m<sup>3</sup>/person) as a result of the emission of one tonne of SO<sub>2</sub>, NO<sub>x</sub> or PM<sub>2.5</sub>. These matrices are calculated separately for each European country. EMEP describes the matrices as follows:

**Source-receptor (SR) matrices give the change in various pollution levels in each receptor country (or grid square) resulting from a change in anthropogenic emissions from each individual emitter. Such matrices are generated by reducing emissions for each emitter of one or more precursors by a given percentage (15 % in this case), running the EMEP model with these reduced emissions, and comparing the resulting output fields with the base simulation, i.e. a simulation without any emission reduction. The reason for this procedure is to keep the chemical conditions as close to the original conditions as possible.'**

Greenpeace Italy uses new matrices that were prepared for the EEA report “Revealing the costs of air pollution from industrial facilities in Europe”.<sup>42</sup> These matrices were not published but they were obtained from the authors and are included in Appendix 1. As the dispersion of emissions from different industrial sources depends on factors such as stack height and flue gas velocity and

<sup>39</sup>Holland, M., Pye S., Watkiss P., Droste-Franke B. & Bickel P, Damages per tonne emission of PM2.5, NH3, SO2, NOx and VOCs from each EU25 Member State (excluding Cyprus) and surrounding seas(Didcot, UK: AEA Technology Environment, 2005).

<sup>40</sup>EEA, Revealing the costs of air pollution from industrial facilities in Europe: EEA Technical Report No 15/2011 (Copenhagen: European Environment Agency, 2011).

<sup>41</sup>EC DG ENV, European Pollutant Release and Transfer Register (E-PRTR) : Summary tables. (Brussels: European Commission Directorate-General for Environment, 2011). Available at <<http://www.eea.europa.eu/data-and-maps/data/member-states-reporting-art-7-under-the-european-pollutant-release-and-transfer-register-e-prtr-regulation-4>>

<sup>42</sup>EEA, Revealing the costs of air pollution from industrial facilities in Europe: EEA Technical Report No 15/2011 (Copenhagen: European Environment Agency, 2011).

temperature, sectoral adjustment factors are used to adjust the source-receptor matrices to reflect impacts from the power sector. The last step is using risk factors based on epidemiological studies to estimate health impacts resulting from the increases in ambient PM<sub>2.5</sub> and ozone concentrations. For example, it is estimated that if the ambient concentration of PM<sub>2.5</sub> increases by 10 µg/m<sup>3</sup> for a year, there will be approximately six deaths per 10,000 people.

### ***Health effects and associated risk factors***

*Table A1: PM<sub>2.5</sub> health effects quantified and risk factors used<sup>43</sup>*

<b>Health end-point</b>	<b>Cases per µg/m<sup>3</sup>/person/year exposure</b>
Chronic mortality (deaths)	6.07E-05
Chronic mortality (life years lost)	6.51E-04
Infant mortality (1 – 11 months)	1.05E-07
Chronic bronchitis, population aged over 27 years	2.85E-05
Respiratory hospital admissions, all ages	1.08E-05
Cardiac hospital admissions, all ages	6.68E-06
Restricted activity days (RADs) working age population	6.06E-02
Respiratory medication use by adults	5.14E-03
Respiratory medication use by children	6.21E-04
Lower respiratory syndromes (LRS), including cough, among adults with chronic symptoms	4.91E-02
LRS (including cough) among children	3.19E-02
Consultations for asthma, ages 0-14	3.08E-05
Consultations for asthma, ages 15-64	5.29E-05
Consultations for asthma, ages over 65	2.31E-05
Consultations for upper respiratory symptoms (excluding allergic rhinitis) ages 0-14	1.05E-04
Consultations for upper respiratory symptoms (excluding allergic rhinitis) ages 15-64	3.35E-04
Consultations for upper respiratory symptoms (excluding allergic rhinitis) ages over 65	1.13E-04
Restricted activity days, non-working age population	2.96E-02

<sup>43</sup> Holland, M., Pye S., Watkiss P., Droste-Franke B. & Bickel P, Damages per tonne emission of PM<sub>2.5</sub>, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>x</sub> and VOCs from each EU25 Member State (excluding Cyprus) and surrounding seas(Didcot, UK: AEA Technology Environment, 2005), p.9.

Table A2: Ozone health effects quantified and risk factors used<sup>44</sup>

Health end-point	Cases per 10 µg/m <sup>3</sup> /person/year increase in 8-hour daily average ozone <sup>45</sup>
Acute mortality (life years lost) <sup>46</sup>	1.80E-08
Respiratory hospital admissions, ages over 65	1.02E-08
Minor restricted activity days, ages 18-64	4.06E-05
Respiratory medication use by adults	1.48E-05
Minor restricted activity days, ages over 65	1.00E-05
Respiratory symptoms among adults	1.89E-04

### Sample calculations

This section provides some sample calculations using the example of the Enel's Federico II coal-fired power plant in Italy. The source notes for all data and factors employed in these calculations are given below.

Table 2: PM2.5 deaths from Enel's Federico II coal-fired power plant in Italy

	PM10	NOx	SO2
Emissions, tonnes per year	473	7,300	6,540
	TIMES		
PM10 to PM2.5 conversion factor	0.649	1	1
	TIMES		
Emissions-to-concentration factors for Italy	703.69	156.66	153.84
	TIMES		
Power sector adjustment factors	0.5	0.78	0.87
	EQUALS		
Increase in population-weighted concentrations, µg/m <sup>3</sup> /person	1,875,407		
	TIMES		

<sup>44</sup> Holland, M., Pye S., Watkiss P., Droste-Franke B. & Bickel P, Damages per tonne emission of PM2.5, NH3, SO2, NOx and VOCs from each EU25 Member State (excluding Cyprus) and surrounding seas(Didcot, UK: AEA Technology Environment, 2005), p.10.

<sup>45</sup> As health impacts of ozone at concentrations below 35 parts per billion are not directly proven by epidemiological studies, the ozone concentrations used by EEA are SOMO35 (sum of mean ozone over 35 ppb).

<sup>46</sup> An average loss of life expectancy amongst those affected of 1 year is estimated.

<b>Risk factor for chronic deaths</b>	6.0665 x 10 <sup>-5</sup>
	EQUALS
<b>Amount of deaths caused per year</b>	113.77
	TIMES
<b>Value of statistical life, M€</b>	2.00
	EQUALS
<b>Economic losses due to deaths, M€</b>	227.54

*TableA3: Ozone deaths from Enel's Federico II coal-fired power plant in Italy*

	<b>PM10</b>	<b>NOx</b>	<b>SO2</b>
<b>Emissions, tonnes per year</b>	473	7,300	6,540
	TIMES		
<b>Emissions-to-concentration factors for Italy</b>	0	54,142	-9,496
	TIMES		
<b>Power sector adjustment factors</b>	0.5	0.78	0.87
	EQUALS		
<b>Increase in population-weighted concentrations, µg/m<sup>3</sup>/person</b>	6,630,231		
	TIMES		
<b>Risk factor for chronic deaths</b>	1.7985 x 10 <sup>-8</sup>		
	EQUALS		
<b>Amount of deaths caused per year</b>	4.57		
	TIMES		
<b>Value of statistical life, M€</b>	€0.12		
	EQUALS		
<b>Economic losses due to deaths, M€</b>	0.549		

The same calculation is repeated for each health effect quantified.

*Table A4: Source notes for numbers*

Data	Reference
Emissions, tonnes per year	EC DG ENV <sup>47</sup>
PM10 to PM2.5 conversion factor	EEA <sup>48</sup>
Power sector adjustment factors	EEA <sup>49</sup>
Emissions-to-concentration factors for Italy	Holland et al <sup>50</sup>
Risk factor for chronic deaths	Holland et al <sup>51</sup>
Value of statistical life, M€	Holland et al <sup>52</sup>

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<sup>47</sup>EC DG ENV, European Pollutant Release and Transfer Register (E-PRTR) : Summary tables. (Brussels: European Commission Directorate-General for Environment, 2011). Available at <<http://www.eea.europa.eu/data-and-maps/data/member-states-reporting-art-7-under-the-european-pollutant-release-and-transfer-register-e-prtr-regulation-4>>

<sup>48</sup>EEA, Revealing the costs of air pollution from industrial facilities in Europe: EEA Technical Report No 15/2011 (Copenhagen: European Environment Agency, 2011), p.19.

<sup>49</sup>Ibid, p.68-9.

<sup>50</sup>Holland, M., Pye S., Watkiss P., Droste-Franke B. & Bickel P, Damages per tonne emission of PM2.5, NH3, SO2, NOx and VOCs from each EU25 Member State (excluding Cyprus) and surrounding seas(Didcot, UK: AEA Technology Environment, 2005), p.23-24.

<sup>51</sup> Ibid, p.9-10.

<sup>52</sup> Ibid, p.9.

## NUCLEAR ENERGY

### **Cernavoda 3 and 4 NPP - Romania**

According to Art. 127-ter of the Testo Unico della Finanza, Fondazione Culturale Responsabilità Etica ONLUS (FCRE) exercised the right to pose some questions to ENEL's management few days before the 2011 AGM.

FCRE posed three questions to the management concerning the controversies linked to Cernavoda 3 and 4 NPP in Romania, which led to four among the major European utilities to withdraw from the project. ENEL replied in written form in May 2011, that the feasibility studies and the authorization process with reference to Cernavoda 3&4 project were not yet concluded, and that ENEL had decided to maintain its participation to the project until it will receive the results of the on-going studies.

Since then the FCRE has been informed that the Romanian Government is still looking for other strategic investors after all other utilities that had joined ENEL had left the project. The Romanian government could not finalise a tender for new strategic investors in March 2012 because so far only 2 letters of interest were submitted: one from a Korean consortium led by BKB - this consortium has no experience on the EU market and little experience with the CANDU design. The other consortium is a Chinese one led by Guandong Nuclear Power. This has also no experience on the EU market and no experience at all with CANDU. The tender is now prolonged to September 2012.

There are still many opened issues to be addressed such as: the negative opinion from the European Commission<sup>53</sup> and the high seismic risk defined by far the dominant contributor to the total NPP risk in the framework of the site-specific probabilistic seismic hazard assessment (PSHA) conducted in 2004 and its further review by the International Atomic Energy Agency's (IAEA) International PSA Review Team (IPSART) missions, which pointed to several shortcomings leading to large uncertainties in the hazard evaluation.

One year after the above mentioned communication submitted in written form by ENEL to the FCRE,

- we ask the management if it has taken a final decision over ENEL's participation to the project Cernavoda 3&4
- if so, we ask the management if the specific measures for plant upgrade have been put in place, and have been submitted to independent review as requested by the European Commission.

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<sup>53</sup> "Viewpoint of the European Commission in accordance with Article 43 of the Euratom Treaty concerning the completion of Units 3 and 4 of the Cernavoda Nuclear Power Plant, Romania", 2010

### **Baltic NPP - Kaliningrad, Russian Exclave**

Also for what concerns the Baltic NPP in Kaliningrad, ENEL replied in written form to the three questions posed by FCRE before the 2011 AGM, that all the feasibility studies linked to the above mentioned project were still in process (as per May 2011 when the written replies were published by the company), and that therefore ENEL would be waiting to receive the results of these analyses and only after that it would take a final decision on its participation to the project.

One year after the above mentioned communication:

- we ask the management if it has taken a final decision over ENEL's participation to the project Baltic NPP in Kaliningrad
- moreover we ask the management if after more than two years from the signature of the MOU with INTER RAO UES, this still is valid.
- And, in case the management has decided to go ahead with this project, considering Enel's current financial situation, in particular the large debt accumulated in the last years, which could affect the rating of the company and its financial leverage capacity on financial markets in the long-run, and taking into account the Company's general investment scheme in nuclear sector, as well as the interest of the shareholders, how is the management planning to find resources for the implementation of this project?

## **HYDROAYSEN PROJECT – CHILE**

Enel, through its control of Endesa/Spain/Chile, is currently developing HidroAysén (HA), a mega hydroelectric project in Chilean Patagonia. This project was not conceived by Enel, but by Endesa/Chile/Spain. The flawed logic behind the HA project is that Endesa captured massive water rights in Chile's southern rivers and has since then been planning to use them with strictly commercial purposes. Since February 2009, both the HA project as well as these water rights are ENEL's responsibility, so that its management should seriously consider the environmental impacts that the exercise of these water rights would provoke, and that they were acquired in a highly questionable manner during the military dictatorship (1973-1989) and in early 1990, at a time when democracy in Chile had just been restored with huge difficulties, in such a way that these rights were registered at zero cost and in absence of a democratic process.

Chilean Patagonia is an ecosystem mosaic with high rates of biodiversity and endemism; its unique landscapes are an extraordinary and priceless natural capital. Patagonia, which has been proposed to UNESCO for Natural World Heritage status, boasts one of the world's major freshwater reserves and it is home to a culture with a rich identity. Local people aim at developing the region's potential on the basis of conserving its environmental attributes and territorial integrity. Patagonia's tourism potential, which relies on its exceptional natural resources and environmental amenities, would be seriously and irreversibly damaged by HA.

### **Technical details**

a) Generation component: 5 hydroelectric plants (2,750 MW; 18,400 GWh/a; 6.000+ ha. flooding area): two in the Baker river and three in the Pascua river; estimated cost: US\$ 3.2 Bn; project developed by the HidroAysén company, a joint venture 51% owned by Endesa-Chile (a subsidiary of Endesa-España, of which Enel retains a 92% control) and 49% owned by Chilean company Colbún. HA submitted an Environmental Impact Assessment (EIA) of the project in August 2008; a first EIA "addendum" (additional information) in August 2009; a second addendum on October 28 2010 and has until April 15 2011 to submit a third addendum. Political signals would indicate that the generation component of the HA would be authorized after this, meaning by the end of April, beginning of May. As it will be detailed in the rest of the document, the EIA process of the HA project has been surrounded by controversy and has elicited lawsuits, and accusations coming from environmental organizations, public officers involved in the evaluation of the EIA, and members of the Chilean Parliament. These referents argue that the EIA has been plagued with irregularities, that only the lobby, influence traffic, censorship and edition of the work of the scientific teams involved has permitted the EIA to proceed to today's stage.

b) Transmission component: a 1,500-mile direct-current transmission line; 6,000 towers measuring between 164 to 230 feet high; 56,069 acres clear-cut for the line's service lane; estimated cost: US\$ 3,8 Bn. No EIA has been presented yet for the transmission component. The whole of the electricity generated by HA would be transported through the 1,500-miles to supply industries around Santiago, and mining operations north of it. None of the nine regions crossed by this transmission line would receive any of the electricity produced by the HA project.

Flawed Environmental Governance System. During the last two periods, Chilean governments have been debating and implementing radical changes in environmental governance and laws. This results from a transversal negative assessment of the system that has been in place since 1994, under which HA's EIA started, where decision-making is not democratic, political rather than technical, disproportionately influenced by project promoters. Problems in environmental governance are leading to serious governance issues in general, and to a loss of confidence in the

establishment by citizens. The radical modification of the previous system, and the creation of the new Environment Ministry is still underway, also surrounded by public controversy.

**Incomplete Assessment.** Obviously, the generation and transmission components of a major hydroelectric project are inseparable parts of an integrated whole. In Chile, due to the serious shortcomings of environmental legislation, each component can be assessed separately. Thus, as far as we know, the impact of the HA project – sum and synergy of the impacts of the generation and transmission components - cannot be properly assessed. On August 28<sup>th</sup> 2008, the Chilean Fiscalía del Medioambiente (FIMA - Attorneys for the Environment), a member organization of the CDP, filed a lawsuit in the 28<sup>th</sup> Civil Court of Santiago, Chile, requesting the suspension of the EIA until an appropriate study including the assessment of transmission lines is submitted. The sentence is pending. The development of the generation component independently from the transmission component is creating a legal oddity, which carries high risks for the proponents of the HA project. FIMA filed another lawsuit arguing that Chilean legislation does not consider citizen's participation, and the opinion of the population most directly affected by large projects, something particularly shocking around a project such as HA, which through its generation and transmission components would impact thousands of persons and their properties. FIMA's second lawsuit is also pending.

**Water and Energy Monopoly.** Endesa-Chile and Colbún account for 74% of power generation in the Central Interconnected System (SIC), which serves 93% of Chile's population. If the HA project is built, these companies would have monopoly control of 80% of power generation in the SIC grid, hindering an effective state regulation of the sector. The installation of HA's 2,750 MW would thwart the deployment of non-conventional renewable energy sources, precisely now that recent legal changes have created favorable conditions for this. Endesa-Chile also controls 80% of Chile's non-consumptive water rights, which rises to 96% in the Aysén region. This monopoly in the energy and water resources sectors leads, from our personal point of view, to an excessive concentration of financial and social power, posing serious problems for democratic governance in Chile.

### **HA's High Risks**

- a) Patagonia is a geologically unstable region. It is crossed by important geological faults. On 21<sup>st</sup> April 2007, the region was hit by an earthquake (6.2° Richter) and a tsunami, after which Aysén was declared a "seismic region". Nevertheless, neither this situation, nor reservoir induced seismicity were taken into account in the EIA;
- b) On May 1<sup>st</sup>, 2008, the Chaitén volcano erupted in Chile's northern Patagonia. This volcanic event, which is still ongoing, would have destroyed an important stretch of the transmission line associated to HA, causing an unprecedented energy crisis in the SIC with the sudden loss of HA's 2,750 MW for an undetermined period of time;
- c) In Patagonia's basins, where the dams are being planned, glacial lake outburst floods (Glofs) have been occurring with an unprecedented recurrence rate. Seven glofs directly related to climate change and the melting of the glaciers hit the Baker river basin in the last two years, producing serious rises in water levels and flow rates in the Baker river, flooding farmland, causing loss of cattle and affecting road infrastructure;
- d) There are growing security concerns about large dams worldwide. The world's 45,000 large dams were built without considering the erratic hydrology that is being caused by climate change; today, most of them should be considered liabilities. With earthquakes, volcanic eruptions and glofs, the HA dams could put at risk the life of the population living downstream from the dams, and install a high risk of power shortages for 93% of Chile's population, due to the high probability

of failures in the hydroelectric power stations and transmission lines. It is worth mentioning the total, four-hour collapse of the SIC grid (running through three quarters of the Chilean territory) which occurred as recently as 14<sup>th</sup> March 2010, and caused a black-out that affected 93% of Chile's population. According to Transelec (owner of the system), this was due to the failure of one transformer caused by the earthquake of February 27<sup>th</sup>, 2010;

e) If HA is imposed on Chile's population through sheer corporate and political lobbying, it will carry an extremely high social risk. Five major hydroelectric dams built in a remote and much cherished part of Chile, and a 1,500-mile long transmission line crossing 9 regions, 67 counties, thousands of properties --including lands of indigenous Mapuche communities-- and 14 protected wildlife sites, would be extremely vulnerable to the human/social unrest factor.

Violation of International Treaty. On June 12<sup>th</sup>, 2008, CDP lawyers submitted a claim before the Canada-Chile Commission for Environmental Cooperation in Ottawa, calling for the enforcement of the 1991 Environmental Treaty between Chile and Argentina, and reporting "a persistent pattern of non-compliance of sector-specific legislation on the part of the Chilean State". The Chilean government granted Endesa a provisional electricity concession to carry out studies for hydroelectric projects in Aysén without considering the Additional Specific Protocol on Shared Water Resources contained in the Treaty mentioned above, which requires "general plans for the utilization of shared watersheds" before any intervention on bi-national basins. These plans do not exist and an EIA for the damming of the Baker and the Pascua rivers is currently underway, in clear violation of the Protocol given that both basins are shared water resources.

Unnecessary Energy Project. A recent study conducted by energy experts focusing solely on the SIC grid --which serves 93% of the country's population and into which the energy generated by HA would be injected-- clearly proves that this project is unnecessary. The study shows that in Chile there are now several companies that are planning non-conventional as well as conventional energy projects which would satisfy the energy demand of the SIC. The National Energy Commission (CNE) forecast that, in 2025, this demand will be of 22,375 MW. The study also looked at the alternative scenario for the 2009-2025 period, considering the SIC's current installed capacity (9,118 MW) plus an additional 13,962 MW to be installed by the more environmentally friendly plants that have already been approved, and the capacity of other similar projects that are being evaluated. These figures add up to 23,080 MW, which exceeds the future demand estimated by the CNE. What is more, the predicted potentials of energy efficiency and renewable sources from the present to 2025, always within the SIC, have been estimated in 2,719 MW and 4,565 MW respectively. If we incorporate these potentials to the overall scenario, figures speak for themselves: they clearly show that Chile does not need HA to have the necessary energy for its present and future development.

In Chile, over the last few decades, Endesa has gained a negative reputation for projects that are claimed to having been designed without serious environmental considerations, having been poorly assessed, and which, consequently, are blamed for having caused serious environmental damage, and violated indigenous and human rights.

If Enel does not take control of Endesa Chile by making a radical and conspicuous change of orientation --of operational directives--, it will wholly inherit Endesa's controversial legacy and bad image. Furthermore, it should be considered that Enel's entry in Chile has already been tarnished by the unfortunate and widely reported geothermal exploration accident by the company Geotérmica del Norte (51% owned by Enel) at its El Tatio's concession, in the Antofagasta region.

Questions to the board:

- There is a growing opposition to the project among the Chilean people. Recent surveys show how the majority of the population at national level is against the project. The recent uprising in the Aysen region, against the economic policies of the government, demonstrate that top-down approach creates political instability. ENEL keeps standing aside of the government without listening to the impacted communities and the public opinion. How the company evaluate the reputational risk in this respect? And how ENEL evaluate the risk that, despite the investments already done, the project may be blocked by a growing local opposition?
- Considering that the Transmission Line's EIA process involves 64 Municipalities and 9 regions, there is a risk that the project will not be finally approved and/or will generate a huge number of complaints and legal disputes. Did the company allocate in its reserve resources to overcome a possible failure of the projects?
- Do the company confirm that project's work in the Aysen region will not start before the approval of the Transmission line's EIA?
- What alternative has been analyzed and discarded before to go for HydroAysen project? And why these options have been not selected?
- What is the updated costs of the project ?

## **THE PALO VIEJO HYDROELECTRIC PROJECT - GUATEMALA**

**Technical specifications:** The Palo Viejo hydroelectric plant is an ENEL Green Power project carried out through its local subsidiary Renovables de Guatemala.

This is a run-of-river electric power generation project involving rivers Cotzal, Chipal, Regadio and Escondido.

This project uses a system of intakes conveying water into a chamber by means of canals, tunnels and siphons. Then, a penstock pipeline feeds the turbines thanks to a gross head of 106m and 238 respectively.

The plant is now completed and should generate up to 84MW of electricity. On 15<sup>th</sup> March, ENEL officially announced that the plant had been connected to the national grid<sup>54</sup>.

**Project location:** The plant is located in the Municipality of San Juan Quetzal, in the indigenous Maya Ixil region in the Quiche Department. It is built inside the San Francisco *Finca*, a huge coffee plantation run by Agricola Cafetelera Palo Viejo and owned by the Broll family. This property was put together in the last century through the progressive appropriation of land belonging to neighbouring municipalities, indigenous communities and farmers. Property rights for this land are still subject to contention. To this day, the owners of the *finca* are still accused by local communities of exerting pressure on neighbouring communities. Recently the El Regadio community, with the help of lawyers of CUC (Comitè de Unidad Contadina), took back 800 hectares of land demonstrating with original land titles that the Finca enlarged illegally.

Inside the *finca*, child labour is still in use; coffee is still handpicked and grains are transported manually; workers are paid three Euros for 100kg of coffee and seasonal workers live in overcrowded communal shacks called *galeras* with very poor sanitation.<sup>55</sup>

The ENEL plant and workers' quarters located inside the *finca* are closed off and patrolled by armed guards.

The documentation attached to the Environmental Impact Assessment shows that the Ministry of the Environment granted the first environmental licence to Agricola Cafetelera Palo Viejo after the payment of USD 40,000. The environmental licence for the extension of the project, on the contrary, was granted to ENEL Guatemala.

### **Violation of local community consultation rights**

The Palo Viejo hydroelectric plant is located in the San Juan Cotzal municipality, an indigenous territory inhabited by the Maya-Ixiles ethnic group. Article 66 of Guatemala's Constitution states that "the State of Guatemala is made up of various ethnic groups and among them indigenous groups of Maya descent. The State recognizes, respects and encourages their ways of life, traditional dress, customs and forms of social organization".

Moreover, in 2010, Guatemala's Constitutional Court incorporated ILO Convention 169 on indigenous and tribal peoples into the country's Constitution.

Guatemala ratified Convention 169, which recognises tribal peoples' land rights, specifying that they should be consulted prior to the approval of any projects on their lands. The Court also ruled that all the rights contained in the convention have constitutional status, which means that the

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<sup>54</sup> [http://www.enel.it/it-IT/media\\_investor/comunicati/release.aspx?idoc=1651244](http://www.enel.it/it-IT/media_investor/comunicati/release.aspx?idoc=1651244)

<sup>55</sup> These facts have been recently documented by pictures and interview by a facts finding mission carried out by the Italian NGO, Campagna per la Riforma della Banca Mondiale.

government is required to consult with indigenous peoples prior to granting any mining or hydroelectric licence or approving any law or regulation affecting their territories.

Moreover, Article 32 of the Declaration on the Rights of Indigenous Peoples adopted by the UN General Assembly affirms that “States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.”

The obligation to consult with local peoples is also recognised by the World Commission on Dams and it is provided for by International Financial Institutions (IFIs) standards.

Nevertheless, in the environmental impact assessment there is no mention of any consultation with local communities. Representatives of indigenous communities declare they were informed about the project in 2005 by Mr Baltasar Toma Sambrano, who was the mayor of San Juan Cotzal at the time, during a meeting with the representatives of local community development councils (COCODES, a local governance body set up by law in 2002 as part of a framework of provisions on local governance and decentralization). However, this information was not followed by any further communication until ENEL started its operations in 2008. In May 2008, the then mayor, Mr José Perez Chen, convened a meeting with local communities to inform them about the start of works. On 16<sup>th</sup> June, after an internal consultation, local communities made a formal request to the municipal council to set up a “Bona fide committee” before starting any construction work connected to the hydroelectric plant.

According to the local indigenous authorities such consultation never took place and operations just went ahead. The leaders of indigenous populations declared receiving pressures and threats from San Juan Cotzal’s mayor, Mr Perez Chen, who is now in prison for having encouraged the lynching of a policeman in the town square.

ENEL signed an agreement with former mayor Perez Chen for an annual contribution of 800,000 Qetzales (80,000 Euros) to be paid to the San Juan Cotzal municipality. Indigenous authorities, declared however, were not in the know of this agreement; they states that were informed about it only as recently as January 2011 by some ENEL executives accompanied by government officials.

### **Dialogue and social responsibility projects**

On 3<sup>rd</sup> January 2011, the 18 communities living in San Juan Cotzal, having not received any answer to their calls for consultation, blocked the road in the San Felipe Chenlá community, hindering the passage of all means of transport going to the San Francisco plantation. On 18<sup>th</sup> March, the army raided the area with the use of balaclava helmets and helicopters, triggering panic among the population of that territory, who had endured 114 massacres during the civil war. As many as nine arrest warrants were issued for indigenous leaders, whose very serious accusations appeared to far outweigh the gravity of the actual event itself (road block). These occurrences led to the start of a dialogue between local communities and ENEL. Even though the company committed in theory to recognising indigenous authorities, in practice it still only deals with municipal authorities and other institutions, leaving local communities out of the whole process.<sup>56</sup>

ENEL Green Power also claims it has invested 4.5mn Euros in social development projects in favour of the communities affected by project<sup>57</sup>. An expert assessment made by Mr Giovanni Lorenzo Vasquez Ventura on behalf of the municipality of San Juan Cotzal, however, has

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<sup>56</sup> ENEL’s letter to the witnesses of honour, 2<sup>nd</sup> of November 2011

<sup>57</sup> This figure appears in various announcements, the latest being dated 15<sup>th</sup> March (see footnote 1)

calculated that the projects funded by ENEL in that area are worth 2,722,247 Qetzales (272,224 Euros)<sup>58</sup>

**Comments on the environmental impact assessment:** according to the analysis carried out by the lawyers of Aleanza Mundial de Derecho Ambiental (E-LAW, Environmental Law Alliance Worldwide), the environmental impact assessment shows several flaws and irregularities:

- The study does not include a detailed analysis of the alternatives available, which is a key element in any decision-making and approval process concerning an hydroelectric plant. On the contrary, it only considers a possible alternative location of the plant.
- The study also shows a methodological problem as it leaves out the assessment of the scale and magnitude of the project's impacts.
- The information contained in the assessment is insufficient; moreover, there is no mention of other information like the assessment of impacts downstream of the plant, data on the basin sedimentation process and the effects on the local ecosystem (including a measurement of greenhouse gases, biodiversity and endangered species).
- The study lacks a detailed long-term cost-benefit analysis.
- The Environmental Management Plan does not offer any guarantee on whether it will actually be implemented, especially when it comes to the allocated budget, its financing, decision-making processes and project staff.
- The estimated cost of the plant, amounting to USD 110mn, does not include mitigation measures, which are not recorded under the budget headings.
- The study does not contain an assessment of the project's social impact.

### Questions for ENEL's BoD

1) The environmental licence for the first Palo Viejo project appears to have been granted to Agricola Cafetelera Palo Viejo in 2006. Subsequently, the Ministry of the Environment granted an environmental licence for an extended version of the project to ENEL Guatemala.

What is the contractual relationship between ENEL and Agricola Cafetelera Palo Viejo? Did ENEL acquire the first licence and then requested another licence for the final version of the project? If ENEL did purchase this licence, what was the price paid? Is Agricola Cafetelera Palo Viejo part of the consortium controlling the plant? If it is so, what share does it own?

2) Considering the list of foreseen actions aimed at benefiting the communities of San Juan Cotzal, El Pinal Vinaikab, Santa Avelina, Ojo de Agua, Sajubal, Tzinala, El Mirador Santa Avelina, Chichel, Cajixay and San Pedro, which projects have been completed? What is the overall investment and what is the breakdown of each project?

3) What are the expected mean returns of the Palo Viejo hydroelectric plant?

4) Indigenous communities declared that no consultation process ever took place, in breach of the provisions of ILO Convention 169, the UN resolution on the rights of indigenous peoples and international standards concerning the drawing of EIA/ESIA. ENEL, on the contrary, claims that these consultations did take place. However, the environmental impact assessment makes no mention of these alleged consultations. Considering that, according to international law, indigenous

<sup>58</sup> "Cuantificación y actualización de proyectos instituto tecnologico en las comunidades de San Felipe Chenla, Vichivala y Oyo de Agua y pavimento rigida en la comunidad de Santa Abelina

communities who have not been consulted can claim compensation from the State and from the company concerned, is it possible to obtain a list of works already completed and respective costs?

5) In the project assessment, costs were estimated at USD 110mn. In other company statements, on the contrary, costs appear to total up to USD 270mn. Why has there been a 150% increase on the expected investment?

## EL QUIMBO HYDROELECTRIC PROJECT, DEPARTMENT OF HUILA, COLOMBIA

**Technical specifications and location:** This project consists of a 151m high and 632m long dam and a 489m diversion tunnel. Power shall be generated by two turbines with a 400MW total installed capacity. The reservoir will be 55km long and 1.4km large and will flood 8,250 hectares. The plant is based in the Huila department, 16km away from the Gigante municipality and 60km from the town of Neiva. The expected total investment amounts to USD 840mn. The project is developed by EMGESA.

### **The questionable process leading to the granting of an environmental licence**

This project dates back to 1997; at that time, the Colombian Minister of the Environment rejected it as none of the alternatives shown in the environmental impact assessment was deemed to meet the environmental, social and economic needs of the region. In 2007, Emgesa renewed its application for an environmental licence. In 2008, the Ministry found several flaws in the assessment; the information provided was deemed insufficient and incomplete, so the Ministry asked for a list of additional elements such as mitigation measures and the amount of compensation for the local communities affected<sup>59</sup>. The Ministry of the Environment granted an environmental licence by means of Resolution 899 of 2009, which contains a compensation list for any damage caused to the environment and displaced people, such as the transfer and relocation of all economic activities to different places. Colombian law<sup>60</sup> states that all environmental impact assessments should be carried out by a government-appointed independent body. The El Quimbo assessment, however, was commissioned directly by EMGESA.

In the same year, Italian electric company ENEL raised its stake in Endesa to a controlling 92% of its share capital. The following year, Endesa claimed that the standards required to obtain an environmental licence were too strict; thus, it asked for a renegotiation of the agreements and suggested reaching an extrajudicial settlement with the Ministry of the Environment through a series of sessions in front of the *procuraduría*<sup>61</sup>. This appears a questionable mechanism: the Ministry is the environmental authority responsible for granting permissions and it is not supposed to reach a settlement on a decision that it must then authorise. The company should comply in good faith with the decisions adopted by national and local institutions without exerting pressure in order to obtain more advantageous conditions. On 17<sup>th</sup> September 2010, the Ministry of the Environment granted another environmental licence<sup>62</sup>; compared to the original licence, it contained lower compensation for local communities. In breach of the provisions in force, local communities were not consulted during the renegotiation process. As a consequence, they filed a complaint with the regional administrative court who, on 28<sup>th</sup> December 2010, ruled that the environmental licence be revoked. However, the Ministry of the Environment did not pay heed to *the Defensoria del Pueblo* (Ombudsman's office), who reiterated its decision on 30<sup>th</sup> March 2011 based on the following reasons<sup>63</sup>:

1. Repudiation of the agreements stemming from the work of consultation panels
2. Failure to involve local communities before modifying the environmental licence
3. Lower investment made by the company to fulfil environmental obligations and compensate affected communities

<sup>59</sup> Ministerio de Ambiente, vivienda y desarrollo territorial, Decision n. 2495, 12th August 2008.

<sup>60</sup> Article 6 of law 56/81

<sup>61</sup> Attorney General office

<sup>62</sup> Ministerio de Ambiente, vivienda y desarrollo territorial, Resolution 1814, 17th September 2010

<sup>63</sup> Document n.º 4050-0388, Secretereria General Defensoria del Pueblo

#### 4. Threat to the right of access to land and food security.

##### **Investigations and ongoing legal proceedings.**

A number of lawsuits and investigations have been initiated by courts and local investigative bodies. Opposition is also mounting among local institutions around the procedures followed by the project. Following similar requests made by the Administrative Court, local communities also filed an appeal with the Council of State<sup>64</sup> to ask for the annulment of resolution 1814, which granted the environmental licence.

On 4<sup>th</sup> March 2012, the *Fiscalia* and the *Procuraduría*, two national investigation bodies, started an inquiry into alleged irregularities in the awarding of the USD 334mn construction contract to Italian firm Impregilo<sup>65</sup>. Investigators are also reviewing the whole process to detect any possible procedural anomaly. The *Fiscalia* assigned the investigation to an anti-corruption and environmental crimes unit, who shall also look into any threat to and displacement of families living in the area.

In addition, the *Contraloría General de la Nación*<sup>66</sup> opened an inquiry on the Ministry of the Environment and the *Corporación Autónoma Regional del Alto Magdalena* for alleged irregularities in the granting of the environmental licence<sup>67</sup>. They reached this decision following some “studies and visits that have revealed a serious situation threatening the State’s resources as well as the life and the integrity of citizens living in that area”. The latest news (April 2012) seems to confirm that procedures did not comply with Colombia’s legal requirements. There is also growing condemnation on the part of local institutions. Huila’s regional parliamentary assembly asked the Ministry of the Environment to suspend the project and launch a new public auditing process to assess in detail the feasibility of this project from an environmental perspective. Moreover, the *Corporación Autónoma Regional del Alto Magdalena* called for a stop of operations and, most importantly, it asked for the environmental licence to be revoked following discharges of polluting substances into the river between 19<sup>th</sup> and 21<sup>st</sup> March 2012, which exterminated the river’s fish. These operations were not authorised and will bring sanctions against the company<sup>68</sup>. Finally, the Interior Minister was invited to answer before parliament for his obvious conflict of interest – which became manifest during the violent removal of demonstrators – and for the unsuccessful handling of negotiations on the part of his Ministry. It should be said that the Minister’s brother is an Emgesa executive and Board member.

##### **Environmental and economic impacts:**

The project carries a huge environmental and economic impact on the area affected. This is all the more worrying if one considers that the amendments made to the environmental licence will lead to lower compensation payments. The flooding of 8500 hectares will have the following impacts<sup>69</sup>:

1. Flooding of over 2,000 hectares of fertile land in the municipalities of Gigante, Garzón and Agrado with the resulting annihilation of eight fully productive farms.
2. Flooding of roads connecting various communities.

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<sup>64</sup> The Administrative Court of Appeal (*translator’s note*)

<sup>65</sup> <http://www.caracol.com.co/noticias/regional/fiscalia-iniciara-investigacion-por-hidroelectrica-de-el-quimbo/20120303/nota/1648581.aspx>

<sup>66</sup> National Comptroller’s Office (*translator’s note*); Decision n. 015 and 6-068-11 of 2011

<sup>67</sup> <http://www.cmi.com.co/?n=77477>

<sup>68</sup> <http://www.diariodelhuila.com/noticia/26202>

<sup>69</sup> “Estudio sobre impactos del proyecto hidroeléctrico El Quimbo”, Miller Armín Dussán Calderón, Titular de la Universidad Surcolombiana

3. Displacement of 1466 people and loss of 2,000 jobs
4. A loss of agricultural production amounting to 32mn pesos every year
5. Loss of food security for about 3,000 people
6. Flooding of 842 hectares of Amazon forest.
7. The Colombian Geological Institute identified the whole area as posing a very high seismic risk<sup>70</sup>

In the same study SurColombiana University estimated that, during the 50 years of operation of El Quimbo hydro plant, Emgesa will pay about 135mn Euros to the Huila Department, against an estimated loss of 480mn Euro caused by the cessation of agricultural production in the flooded area. Therefore, it is clearly that the economic balance is absolutely negative for both local people and the region as a whole.

On 14<sup>th</sup> and 15<sup>th</sup> February 2012, the police attacked against groups of citizens who were occupying a traditional fishing area. Although the land within 30 meters of the river is recognised by the Constitution as an inalienable area available for public use. Some witnesses have seen police using vehicles belonging to the building site. This incident left seven people injured, one of whom lost his right eye.

#### **Questions for ENEL's BoD**

1. Has the company considered and budgeted the costs related to the possible stoppage of the project due to the many ongoing legal proceedings and the calls to revoke the environmental licence which is currently being used?
2. What is the overall figure allocated for compensation payments and mitigation measures?
3. Does the company confirm that it made its own vehicles and logistics available to the Colombian riot police so that they could remove local communities who were camping on the banks of the Magdalena river to prevent its deviation?
4. As things stand now, the project is way behind schedule, as it has not been possible to divert the river, which was scheduled between December 2011 and January 2012. Several Colombian control agencies opened inquiries into charges of environmental disaster and corruption; they are investigating some alleged serious irregularities in the granting of the permissions needed to build the plant. Has the Board considered the loss of the company's reputation, the ensuing economic damage and the risk faced by its shareholders?

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<sup>70</sup> Ingeominas, decree n.33, 1998

## **Fondazione Culturale Responsabilità Etica Onlus**

The Cultural Foundation For Ethical Responsibility was founded in the year 2003 by Banca Popolare Etica [[www.bancaetica.com](http://www.bancaetica.com)], the first Italian ethical bank, owned by over 37,000 members.

The Foundation aims at spreading awareness at the national and international levels about the consequences that economic action and the market dynamics have on society and the environment as well as on the production system. Convinced of the need for a strong revision of the economic model for an economy that can positively manage environmental and social limits, the Foundation promotes the principles of ethical finance, the criteria of social utility in the credit system and good manufacturing practice for a more conscious and responsible use of money. The Foundation is very committed on global justice and development issues too, and supports several Italian development NGOs as well as public campaigns on development issues, such as the Social Watch.

Furthermore, the Foundation is taking a leadership role within European and global alternative finance networks in order to promote a more political approach to ethical finance in solidarity with consumers in the North and affected communities both in the North and the South.

In line with its mission, the Foundation initiated innovative activities such as the eco-fair Terra Futura [[www.terrafutura.it](http://www.terrafutura.it)], the Social Value certification [[www.valoresociale.it](http://www.valoresociale.it)], the on-line platform Zoes (Zona equo sostenibile – Fair and Sustainable Zone) [[www.zoes.it](http://www.zoes.it)]. Valori [[www.valori.it](http://www.valori.it)] is the monthly magazine specializing in issues of social, ethical and financial sustainability, promoted by the Foundation.

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