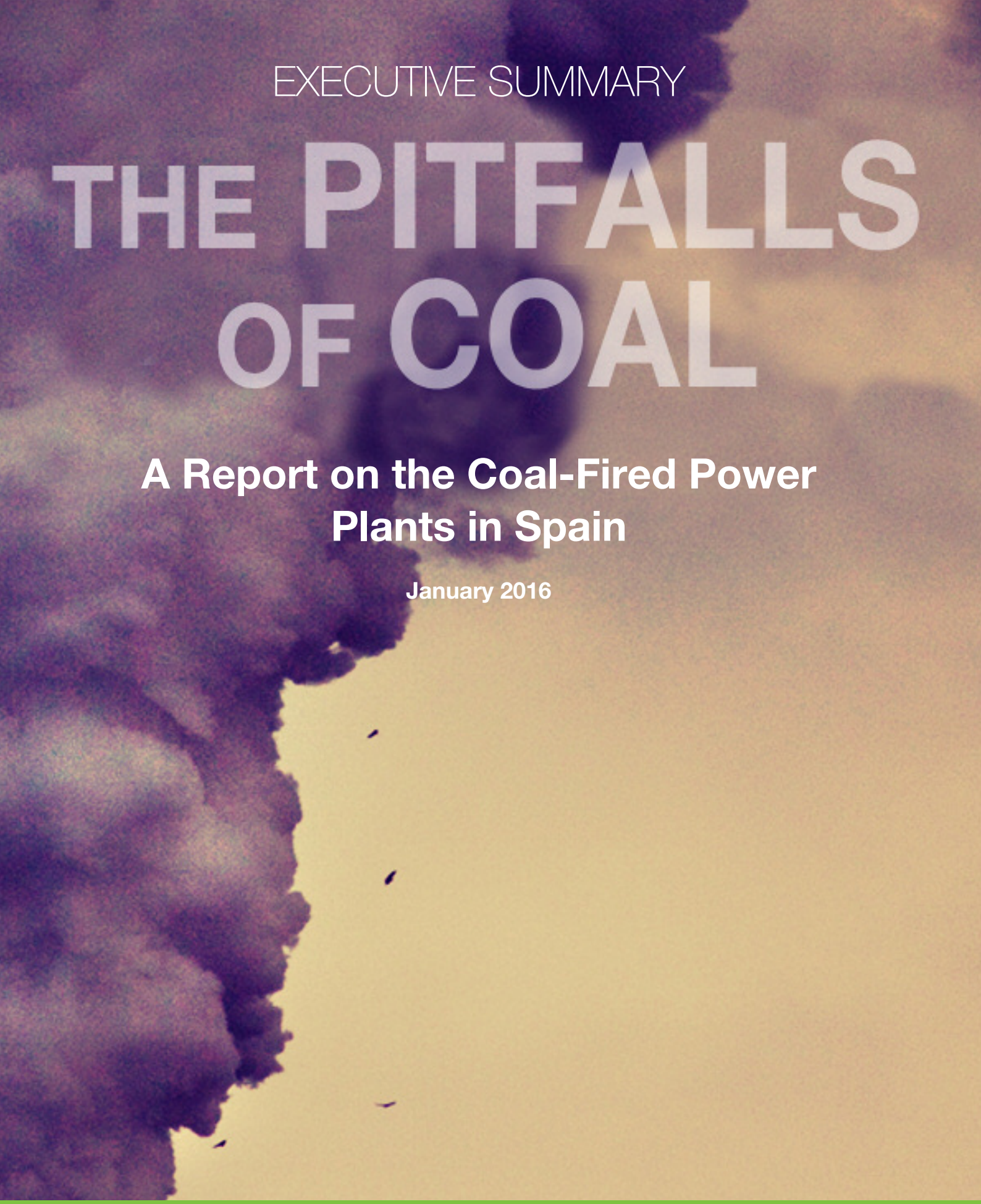

EXECUTIVE SUMMARY

THE PITFALLS OF COAL

A Report on the Coal-Fired Power Plants in Spain

January 2016

greenpeace.es

GREENPEACE

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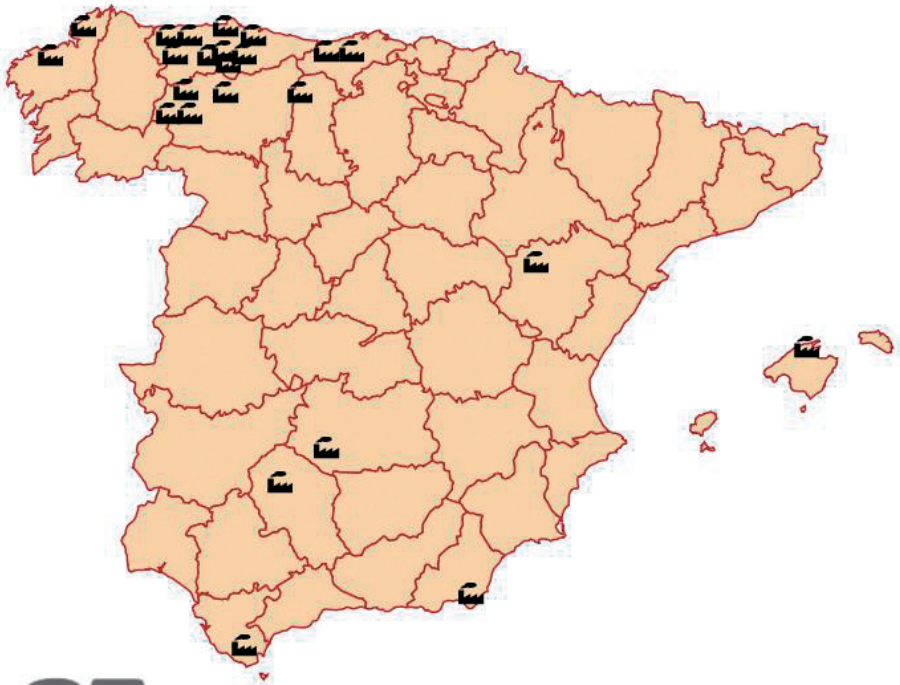
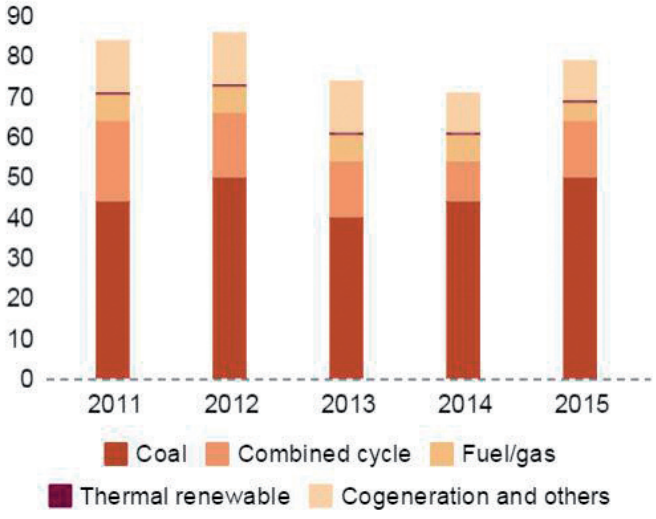
IIDMA would like to acknowledge the suggestions and support provided by Fundación Renovables during the development of this report. Furthermore, we would like to express our very great appreciation to Christian Schaible of the European Environmental Bureau for calculating the health costs that the Transitional National Plan will convey and for his permanent availability to assist us in our research work. We would also like to acknowledge the help provided by Dave Jones from Sandbag, which procured us the necessary data to carry out this analysis. Finally, we would like to thank the European Climate Foundation for its enormous support, which without, this report would not have been possible and CAN Europe for its valuable work which is always inspiring and has been of great help for the realization of this report.

The Pitfalls of Coal



Responsible for more than 70% of the electricity sector CO2 emissions

Evolution of CO2 emissions in the electricity sector (Mill.tCO2)



27 coal-fired large combustion plants

25 in the electricity supply sector

10.7% of total installed power

Second source of electricity supply in 2015

Spanish plants will not comply with the emission limit values set out in the Industrial Emissions Directive from 1 January 2016.

#1 Transitional National Plan (TNP)

Plants can emit more SO2, NOx and particles until 30 June 2020. Then, they will have to comply with the emission limit values (ELVs) provided in the IED for existing plants.

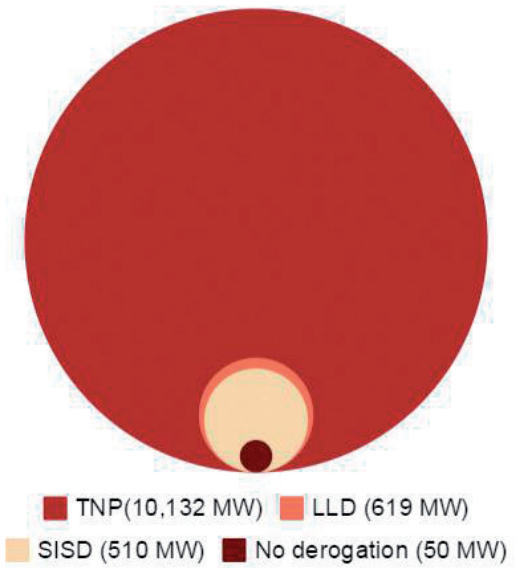
#2 Limited Lifetime Derogation (LLD)

Plants are exempted from complying with the ELVs set out in the IED provided they do not work for more than 17,500 hours from 1 January 2016, until, 31 December 2023, at the latest.

#3 Small Isolated System Derogation (SISD)

Plants which were part of a small isolated system on 6 January 2011, can be exempted from the ELVs set out in the IED until 31 December 2019.

Spanish coal plants under IED derogations



Non-compliance with European Union Law

- Integrated Pollution Prevention and Control Directive
- Large Combustion Plants Directive
- Industrial Emissions Directive

The ELVs currently set out in the permits are not in line with the Best Available Techniques (BATs) according to the 2006 Large Combustion Plant BAT Reference Document (BREF) and are much higher than those in the Large Combustion Plants Directive

The procedure of approval of the TNP has been carried out with an absolute lack of transparency and without public participation, despite the impacts to health and the environment and the cost of these impacts. Also, some of its content contravenes EU Law, as well as the Aarhus Convention.

From 2020 to 2029...

...what if ELVs are not based on BATs?

+ 2,010 deaths

+ 7,500 cases of acute bronchitis

+ 61,000 days with asthma symptoms

+ 2,351,940 days with limited activity

... among others...

How much have citizens paid for the extraction and burning of coal?

22 billion € for mining companies since 1992

4,800 million € for plants which burnt indigenous coal from 2011 to 2014

5,850 million € for plants which burnt imported coal from 2011 to 2014

CONCLUSIONS

1. Spanish coal combustion plants have always delayed the reduction of polluting emissions even though it was technically and economically feasible.
2. Coal is not necessary to ensure the security of supply in the Spanish electricity system.
3. Coal exists largely thanks to subsidies and aid for its extraction and burning.
4. Coal is responsible for around 3,700 million Euros per year in health costs. These can reach levels of 4,337 to 11,884 million Euros once the TNP enters into force.

Index

Acronyms

BATs	Best available techniques
BAT-AELs	Best Available Techniques Associated Emission Limits
BREF	Best Available Techniques Reference Document
CNMC	National Competition and Markets Commission
CO	Carbon monoxide
CO_2	Carbon dioxide
CH_4	Methane
COP	Conference of the Parties
EC	European Commission
EEA	European Environmental Agency
ELVs	Emission limit values
EU	European Union
GHGs	Greenhouse gases
GSB	General State Budget
Hg	Mercury
IED	Industrial Emissions Directive
IPPC	Integrated Pollution and Prevention Control
LCP	Large Combustion Plant
LCPD	Large Combustion Plants Directive
LLD	Limited Lifetime Derogation
MAGRAMA	Ministry of Agriculture, Food and Environment
MINETUR	Ministry of Industry, Energy and Tourism
MS	Member States
MW	Megawatts
NERP	National Emissions Reduction Plan
NOx	Nitrogen oxides
PRTR	Pollutant Release and Transfer Register
REE	Red Eléctrica Española
SAC	Special Area of Conservation
SCI	Site of Community Importance
SEA	Strategic Environmental Assessment
SO_2	Sulphur dioxide
TFEU	Treaty on the Functioning of the European Union
TNP	Transitional National Plan
UNFCCC	United Nations Framework Convention on Climate Change
UPC	Unit Production Cost
USA	United States of America
WHO	World Health Organization

Introduction

The use of coal for energy production causes irreversible harm both to people's health and the environment, as coal-fired power plants are a large source of pollutant emissions such as sulphur dioxide, nitrogen oxides, carbon monoxide, dust, mercury, greenhouse gases, and other substances (arsenic, lead, cadmium and halides, among others).

In Spain, successive Governments have allowed coal-fired power plants to be subject to different exemptions, allowing them to emit over the pollution limits set by European Union Law, mainly, the ones provided by the 2001 Large Combustion Plants Directive[1]. They have even allowed their emission limit values to be higher than those set out in the Best Available Techniques Reference Document of 2006, which a power plant can achieve if it applies the Best Available Techniques. Setting and complying with emission limit values associated with the best available techniques is mandatory in accordance with the Large Combustion Plants Directive and the Integrated Pollution Prevention and Control Directive[2], both now integrated into the Industrial Emissions Directive[3]. The Integrated Pollution Prevention and Control Directive was repealed with effect from 7 January 2014, and the Large Combustion Plants Directive will be repealed with effect from 1 January 2016[4].

From January 1 2016, large combustion plants should operate in accordance with the emission limit values set out in the Industrial Emissions Directive. In particular, large combustion plants which were granted a permit before 7 January 2013, or the operators which had submitted a complete application for a permit before that date, provided that such plants were put into operation no later than 7 January 2014 shall comply with the emission limit values set out in Annex V, Part 1 of the Industrial Emissions Directive[5]:

1 Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants, (OJ L 309 of 27.11.2001, p. 1).

2 Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control, (OJ L 24 of 29.01.2008, p. 8).

3 Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), (OJ L 334 of 24.11.2010, p. 17).

4 Art. 81, Industrial Emissions Directive.

5 Article 31(1) of the Industrial Emissions Directive provides "For combustion plants firing indigenous solid fuel, which cannot comply with the emission limit values for sulphur dioxide referred to in Article 30(2) and (3) due to the characteristics of this fuel, Member States may apply instead the minimum rates of desulphurisation set out in Part 5 of Annex V(...)". Currently, this only applies to combustion plant Teruel which has to reach a minimum desulphurisation rate of 92%.

TABLE 1. Emission Limit Values set out in Annex V, Part 1 of the Industrial Emissions Directive

Rated thermal input (MWth)	Pollutant (mg/Nm3)				
	SO_2		NOx		Dust
50 - 100	400	800[6]	300	450[7]	30
			450[8]		
100 - 300	250		200		25
300 - 500	200		200		20
> 500	200		200	450[9]	20

Source: Industrial Emissions Directive.

However, in Spain, 26 of the 27 large combustion plants that use coal have opted for one –or, in some cases, more– of the derogations provided by the Industrial Emissions Directive, mainly:

1. **Transitional National Plan,** which will allow them to emit more sulphur dioxide, nitrogen oxides and dust until 30 June 2020, under the condition that from that date they are subject to the emission limit values provided in the Industrial Emissions Directive for existing plants[10]. The Spanish Transitional National Plan was approved by the European Commission on May 29, 2015 and will be applicable from 1 January 2016.

2. **Limited Lifetime Derogation**, which allows them to be exempted from complying with the emission limit values and desulphurisation rates set out in the Industrial Emissions Directive, provided that they meet certain conditions[11]. One of them was the obligation for the operator of the combustion plant to commit before 1 January 2014, in a written declaration submitted to the competent authority, to not work for more than 17,500 hours from 1 January 2016, until, 31 December 2023, at the latest[12].

3. **Small Isolated Systems Derogation,** which allows combustion plants which were part of a small isolated system[13] on 6 January 2011, to be exempted from the emission limit values and desulphurisation rates established in the Industrial Emissions Directive until 31 December 2019.

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6 This emission limit value for sulphur dioxide applies to combustion plants using solid fuels which were granted a permit before 27 November 2002 or the operators of which had submitted a complete application for a permit before that date, provided that the plant was put into operation no later than 27 November 2003 and which do not operate more than 1,500 operating hours per year as a rolling average over a period of 5 years.

7 This applies to combustion plants using solid or liquid fuels which were granted a permit before 27 November 2002 or the operators of which had submitted a complete application for a permit before that date, provided that the plant was put into operation no later than 27 November 2003, and which do not operate more than 1,500 operating hours per year as a rolling average over a period of 5 years.

8 In case of pulverised lignite combustion.

9 This applies to combustion plants using solid fuels with a total rated thermal input greater than 500 MW, which were granted a permit before 1 July 1987 and which do not operate more than 1,500 operating hours per year as a rolling average over a period of 5 years.

10 The emission limit values for existing plants under the Industrial Emissions Directive are those set out in part 1 of Annex V.

11 Art. 33(1), Industrial Emissions Directive.

12 The only possibility for a plant which is under the limited lifetime derogation to continue operating after 31 December 2023 is if they undertake the necessary works to start operating as a completely new plant as provided in the Industrial Emissions Directive.

13 According to article 2(26) of Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC (OJ L 211, of 14.08.2009, p. 55), "small isolated system" refers to "any system with consumption of less than 3,000 GWh in the year 1996, where less than 5% of annual consumption is obtained through interconnection with other systems".

TABLE 2. Coal-fired power plants included in the Industrial Emissions Directive exemptions

Name of production unit	Installed capacity (MW)	Subject to National Emissions Reduction Plan[14]	Subject to Transitional National Plan	Subject to Limited Lifetime Derogation	Subject to Small Isolated System Derogation
Alcudia II 1(G1)	510	√	-	-	√
Alcudia II 2(G2)		√	-	-	√
Alcudia II 5(G3)		√	-	-	√
Alcudia II 6(G4)		√	-	-	√
Litoral I	577	√	√	-	-
Litoral II	582	-	√	-	-
Compostilla II (G2)	485	√	√	-	-
Compostilla II (G3)		√	√	-	-
Compostilla II (G4)	715	√	√	-	-
Compostilla II (G5)		√	√	-	-
As Pontes GR I	1,468	√	√	-	-
As Pontes GR II		√	√	-	-
As Pontes GR III		√	√	-	-
As Pontes GR IV		√	√	-	-
Andorra GI	368	√	√	-	-
Andorra GII	368	√	√	-	-
Andorra GII	366	√	√	-	-
Los Barrios	589	√	√	-	-
Puentenuevo GR III	324	√	√	-	-
Anllares	365	√	-	√	-
La Pereda	50	-	-	-	-
La Robla I	284	√	√	-	-
La Robla II	371	√	√	-	-
Meirama	580	√	√	-	-
Narcea I	65	√	√	-	-
Narcea II	166	√	√	-	-
Narcea III	364	√	√	-	-
Aboño I	360	√	√	-	-
Aboño II	556	√	√	-	-
Soto de Ribera II	254	-	-	-	-
Soto de Ribera III	350	√	√	-	-
Lada IV	358	√	√	-	-
Velilla I	155	√	√	-	-
Velilla II	361	√	√	-	-

[14] The coal plants of Escucha, Lada III, Soto de Ribera I and Soto de Ribera II opted for the derogation established in article 4.4 of the Large Combustion Plants Directive which exempted them from the compliance of the emission limit values of this Directive provided the operator undertook a written declaration to not operate the plant for more than 20,000 operating hours after 1 January 2008 and until 31 December 2015, at the latest. In fact, except Soto de Ribera II, other plants have been closed already and while Soto de Ribera II is in the list of plants which have opted for the limited lifetime derogation, it should be closed according to article 4.4 of the Large Combustion Plants Directive and article 33(1)(d) of the Industrial Emissions Directive.

TABLE 2 *(Cont)*. Coal-fired power plants included in the IED exemptions

Name of coal plant	Installed capacity (MW)	Subject to National Emissions Reduction Plan[14]	Subject to Transitional National Plan	Subject to Limited Lifetime Derogation	Subject to Small Isolated System Derogation
Central GICC Puertollano[15]	320	-	√	-	-
Cogecan[16]	-	-	√	-	-
Solvay I	-	-	√	-	-
Total installed power (MW)		**10,105**	**10,132**	**365**	**510**

Source: Own ellaboration.

According to the Industrial Emissions Directive, the deadline to opt for the limited lifetime derogation ended on 31 December 2013. Therefore, plants which had opted for this derogation would have to be excluded from the final transitional national plan, as both derogations are not compatible. However, Spain was the only country in the EU which according to its transposition of the Industrial Emissions Directive into the Spanish legal system[17] has extended that timeline, allowing large combustion plants to opt for both derogations until 1 October 2015, when they would finally have to decide whether to opt for one or the other. This transposition by Spanish Law is absolutely contrary to European Union Law and has given more time for the large combustion plants to decide which derogation suits them best from a business strategy point of view.

The large combustion plants which were included in both derogations –the transitional national plan and the limited lifetime derogation– were Aboño (GR I), Andorra (GR I), Anllares, As Pontes (GR I, II, III and IV), Compostilla (GR II and GR III), Compostilla (GR IV and GR V), Velilla GR I and Velilla GR II, which represent 4,277 megawatts of installed capacity in the Spanish electricity system. As of 1 October 2015, 3,036 megawatts[18] made public their decision of opting for the transitional national plan, whilst 365 megawatts[19] have definitely opted for the limited lifetime derogation and will have to withdraw from the supply system by 2023, at the latest. The remaining 876 megawatts[20] have not yet made their decision public, although according to the new transitional national plan which was drafted in December 2015 by the Spanish Government and which it has yet to communicate to the European Commission, those 876 megawatts will continue in the Transitional National Plan. Therefore, those plants cannot remain under the limited lifetime derogation, even though this option would be the reasonable thing to do, as exposed below.

15 The closure of this plant was authorized by the Resolution of 31 July 2015 of the Directorate General for Energy Policy and Mines which authorizes Elcogás, SA to close the Integrated Gasification in Combined Cycle coal power plant of Elcogás of 320 MW, in the municipality of Puertollano (Ciudad Real), (BOE No. 224, 18.09.2015). However, the closure of this plant is not definite since the company has a term of three months from the date of the Resolution to shut down the plant. In fact, the plant has not yet been shut down as negotiations between the national and regional Governments, the trade unions and the company are still open in order to find a solution that enables the plant to continue operating.

16 Solvay and Cogecan belong to the industrial sector. The installed capacity data is not relevant since they do not belong to the group of plants which generates electricity.

17 The transposition of the Industrial Emissions Directive into the Spanish legal system was done through Ley 5/2013, de 11 de junio, por la que se modifican la Ley 16/2002, de 1 de Julio, de prevención y control integrados de la contaminación y la Ley 22/2011, de 28 de Julio, de residuos y suelos contaminados (BOE núm. 140, of 12.06.2013) (Law 5/2013, of 11 June, which modifies Law 16/2002, of 1 July, on integrated pollution prevention and control and Law 22/2011 of 28 July, on waste and contaminated land) and Real Decreto 815/2013, de 18 de octubre, por el que se aprueba el Reglamento de emisiones industriales y de desarrollo de la Ley 16/2002, de 1 de Julio, de prevención y control integrados de la contaminación (BOE núm. 251, of 19.10.2013) (Royal Decree 815/2013, of 18 October, approving the Regulation on Industrial Emissions and developing Law 16/2002, of 1 July, of integrated pollution prevention and control).

18 Compostilla (GR II and GR III), Compostilla (GR IV and GR V), As Pontes (GR I, II, III and IV) and Andorra (GR I).

19 Anllares.

20 Aboño (GR I), Velilla GR I and Velilla GR II.

Based on an examination of European Union and national laws as well as their implementation, this report presents the situation of coal fired large combustion plants in Spain and carries out an analysis in order to determine whether they are as necessary to guarantee security of supply in the electricity system, as the Spanish Government claims.

This report is structured into two main sections. Firstly, it looks into the current situation of coal fired large combustion plants analysing their main characteristics and their impacts both on health and the environment as well as their compliance with European Union Law. Secondly, it examines the state aid that coal has been receiving in Spain, and which has been given both to its extraction and to its burning for producing electricity.

This analysis enables to conclude that continuing to extend and encourage the use of this fossil fuel is excessively costly, as coal:

1. Is not necessary to ensure security of supply in the Spanish electricity system, contrary to what the Spanish Government claims.

2. Has been responsible for about 13% of the total national emissions of greenhouse gases for the year 2014 and has a health impact of approximately 3,700 million Euros per year[21], which could amount to 11,884 million Euros during the period of implementation of the Transitional National Plan.

3. Exists largely because of subsidies and incentives both for its extraction, in the case of indigenous coal, and for its burning, both for imported and indigenous coal. Since the year 1992, these subsidies have had costs of about 32 billion Euros for the civil society.

2. Analysis of the combustion plants that use coal in Spain

2.1. General characteristics

As of 2015, there are 171 large combustion plants (LCPs) registered in Spain[22]. Twenty seven of these, which correspond to a total of 37 production units[23] use coal as their main or one of their main sources of fuel. Except for Solvay I and Cogecan, which belong to the industrial sector, the rest of the coal fired LCPs belong to the electricity supply sector.

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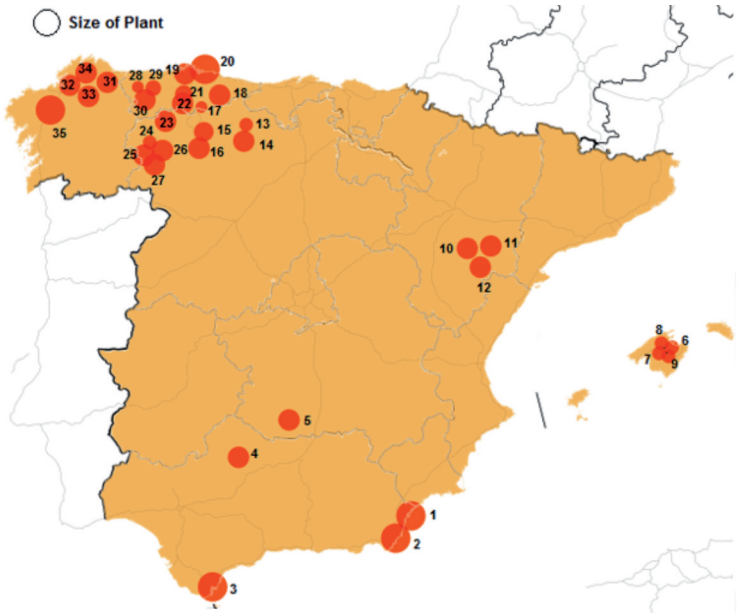
21 Source: European Coal Map http://www.coalmap.eu/#.

22 State Pollutant Release and Transfer Register (PRTR-Spain), Ministry of Agriculture, Food and Environment (MAGRAMA). Last verification on July 21, 2015.
Available online at: http://w.prtr-es.es/Informes/InventarioInstalacionesIPPC.aspx. According to article 28(1) of the Industrial Emissions Directive, LCPs are considered "(...) combustion plants, whose total rated thermal input is equal to or greater than 50 MW, irrespective of the type of fuel used (...)".

23 In accordance with the provisions of article 29(1) of the Industrial Emissions Directive "when the waste gases of two or more separate combustion plants are expelled by a common stack, the combination of such facilities shall be considered a single combustion plant and their capacities added for the purpose of calculating the total rated thermal input".

TABLE 3. Characteristics and location of coal-fired LCPs which belong to the electricity supply sector

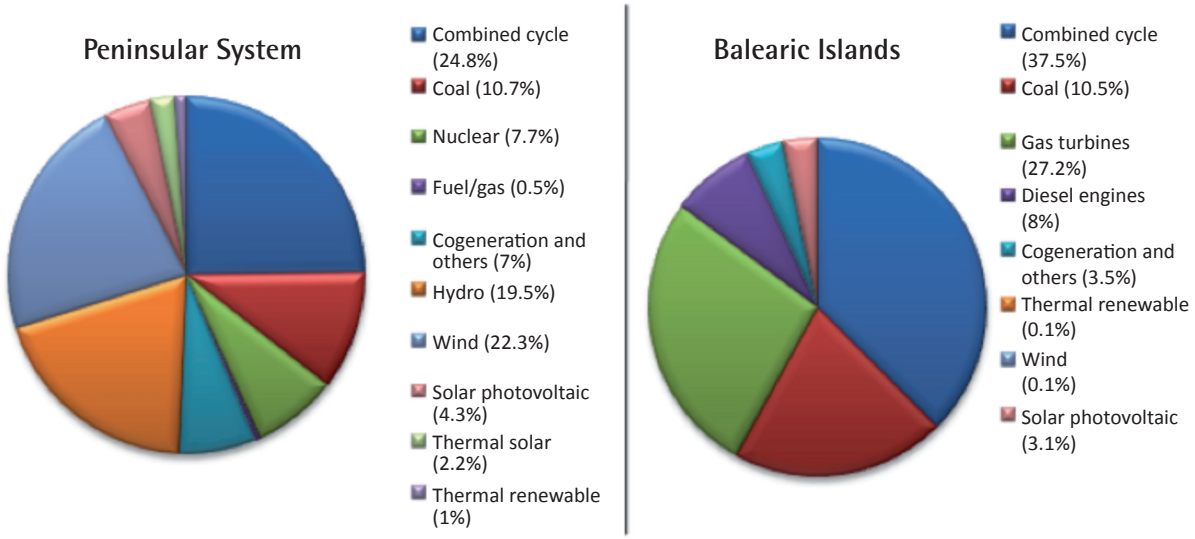


Source:
Own ellaboration.

M	Unit of production	Installed Capacity (MW)	Type of fuel
1	Litoral I	577	bituminous coal & anthracite
2	Litoral II	582	bituminous coal & anthracite
3	Los Barrios	589	bituminous coal & anthracite
4	Puente Nuevo	324	bituminous coal & anthracite
5	Elcogás GICC Puertollano	320	gasification gas/bituminous coal & anthracite/natural gas
6	Alcúdia II 1 GR I	125	bituminous coal & anthracite
7	Alcúdia II 2 GR II	125	bituminous coal & anthracite
8	Alcúdia II 5 GR III	130	bituminous coal & anthracite
9	Alcúdia II 6 GR IV	130	bituminous coal & anthracite
10	Andorra I	368	lignite
11	Andorra II	368	lignite
12	Andorra IIII	366	lignite
13	Velilla I	155	bituminous coal & anthracite
14	Velilla II	361	bituminous coal & anthracite
15	La Robla I	284	bituminous coal & anthracite
16	La Robla II	370,7	bituminous coal & anthracite
17	La Pereda	50	bituminous coal & anthracite
18	Lada IV	358	bituminous coal & anthracite
19	Aboño I	360	bituminous coal & anthracite/gas
20	Aboño II	556	bituminous coal & anthracite/gas
21	Soto de Ribera II	254	bituminous coal & anthracite
22	Soto de Ribera III	350	bituminous coal & anthracite
23	Anllares	365	bituminous coal & anthracite
24	Compostilla II GII	148	bituminous coal & anthracite
25	Compostilla II GIII	337	bituminous coal & anthracite
26	Compostilla II GIV	359	bituminous coal & anthracite
27	Compostilla II GV	356	bituminous coal & anthracite
28	Narcea I	65	bituminous coal & anthracite
29	Narcea II	166	bituminous coal & anthracite
30	Narcea III	364	bituminous coal & anthracite
31	As Pontes I	369	bituminous coal & anthracite
32	As Pontes II	366	bituminous coal & anthracite
33	As Pontes III	366	bituminous coal & anthracite
34	As Pontes IV	367	bituminous coal & anthracite
35	Meirama	580	lignite

Coal-fired LCPs represent a 10.7% of the total installed power[24] in peninsular Spain and 20.5% of the total installed power in the non-peninsular system, which includes only the Balearic Islands[25]. Of the 107,954 megawatts (MW) of electrical power installed in Spain, 11,482 MW correspond to coal.

ILLUSTRATION 1. Installed power capacity by 31 December 2014 in Peninsular Spain and Balearic Islands (107,954 MW)



Source: Red Eléctrica Española (REE), *El Sistema Eléctrico Español,* 2014.

In 2014, the production of electricity with coal in the mainland system (peninsular Spain) rose by a 13% with respect to production in 2013, being the only fossil fuel whose consumption for energy production increased[26]. In fact, during 2014, Spain was the only country in the European Union (EU) which increased its energy production with coal[27]. It covered a 16.5% of the annual electricity demand in the mainland system, which placed this fossil fuel as the third main source of electricity behind nuclear (22%) and wind (20.3%)[28]. In the Balearic Islands, 40.2% of energy demand was covered by the Alcudia power plant, the only existing coal power plant in the Balearic Islands and the first source of electricity for this archipelago[29].

In 2015, according to provisional data provided by the operator of the Spanish electricity transmission network, Red Eléctrica Española (REE), the production of electricity with coal is, once again, higher with respect to the previous year (a 20.3% in 2015 compared to a 16.5% in 2014). As shown in the latest period of data available (from January to October), the production of electricity with coal in the mainland system is 20.8% higher with

24 The installed power is known as the "total electrical load (in watts) of a system or electrical circuit if all appliances are in operation at the same time. It is also known as connected load".

25 The Canary Islands, Ceuta and Melilla do not use coal as a source of electricity production. Source: Red Eléctrica Española (REE), *El Sistema Eléctrico Español, 2014. (The Spanish Electricity System, 2014).* Available online at: http://www.ree.es/sites/default/files/downloadable/inf_sis_elec_ree_2014_v2.pdf.

26 Ibid. Coal covered 14.6% of demand in 2013 and 16.5% in 2014.

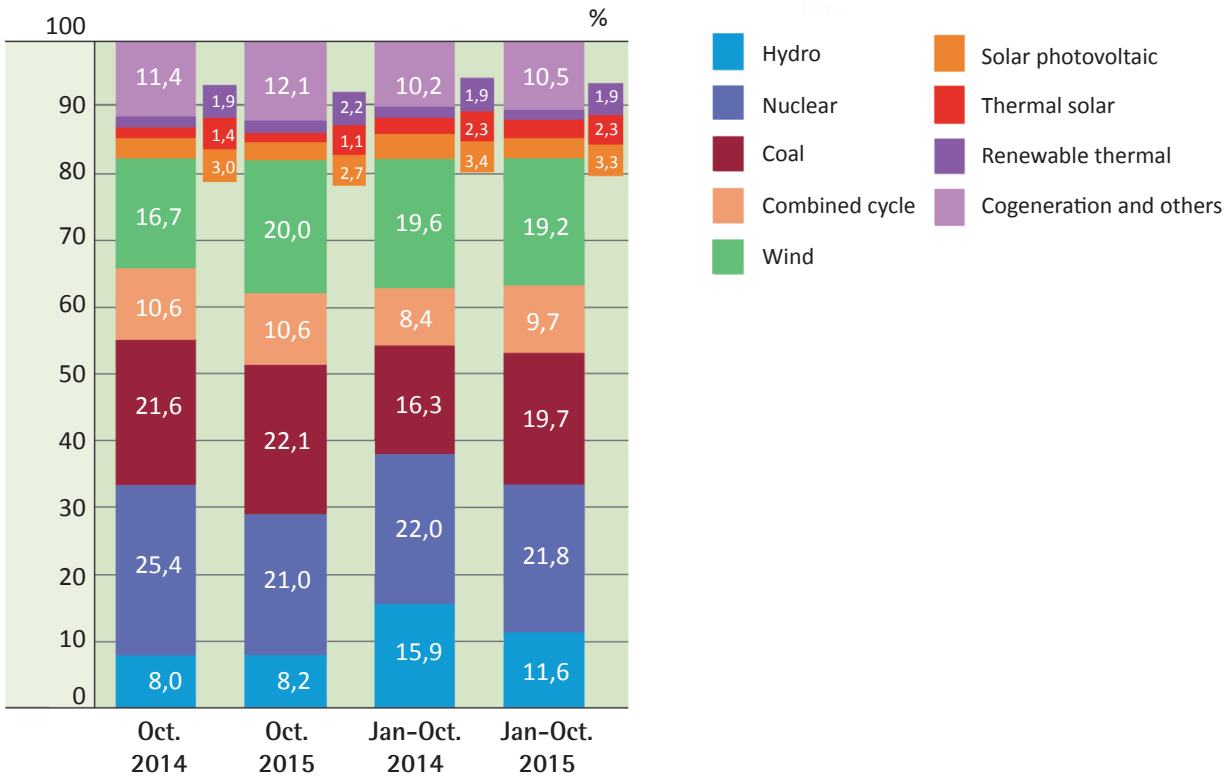
27 Sandbag, *EU power emissions fell by more than 8% in 2014,* 2015. Available online at: https://sandbag.org.uk/blog/2015/jan/14/eupower-emissions-fell-more-8-2014/.

28 REE, *El Sistema Eléctrico Español,* 2014.

29 Ibid.

respect to the same period in 2014[30]. In fact, during the period from January to July 2015, the difference increased up to 42% in comparison to the previous year. This is especially because during the heat waves of the month of July 2015, when temperatures rose up to 45ºC, coal was the main source of fuel used, covering about 25.4% of the electricity demand in peninsular Spain[31].

ILLUSTRATION 2. Coverage structure of the peninsular electricity demand 2014-2015



Source: REE, *Monthly Bulletin*, October 2015.

The current Government of Spain and the mining and power sectors continue defending the use of coal to produce electricity, asserting coal-fired power plants are necessary in order to guarantee the security of supply in the Spanish electricity system. According to data provided by the Ministry of Industry, Energy and Tourism (MINETUR) to the European Commission (EC) in 2010, in order to maintain a sufficient safety margin, the mid-term coverage index[32] should be maintained above 1.1[33]. The MINETUR also asserted that this mid-term coverage index cannot be achieved without burning coal as it is the only indigenous, primary source of fuel that stabilizes the Spanish electricity market which is affected by several elements, such as:

30 REE, *Monthly Bulletin* nº 106, October 2015.
Available online at: http://www.ree.es/sites/default/files/downloadable/ree_octubre_2015_0.pdf.

31 REE, Real Time Energy Generation Structure Tool and Carbunion, *State of the coal industry in Spain – restructuring and support for indigenous coal production*, 11th EC-EURACOAL Coal Dialogue, June 2015.

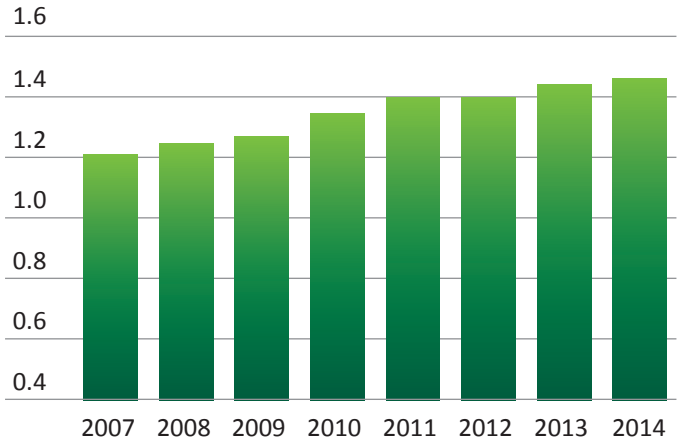
32 The "mid-term coverage index" is defined as the ratio forecasted for every year until 2014 between on the one hand, available generation capacities, as estimated on the basis of installed generation capacities, and on the other hand, maximum instant electricity demand (peak demand). Source: EC Decision N 178/2010 - Spain, *Public service compensation linked to a preferential dispatch mechanism for indigenous coal power plants*, C(2010) 4499 of 29.09.2010, p. 7.

33 Ibid.

- The intermittence of electricity production coming from renewable sources, especially in extreme weather conditions.
- The very limited interconnection between the Spanish electricity system and other large European electricity markets[34].

However, if we compare these arguments with the real data corresponding to the annual available power generation capacities and the annual maximum peak demand from 2007 until 2014, it can be seen that during that period, Spain's mid-term coverage index has always been above the recommended one by MINETUR. In fact, it has increased during the years, being above 1.4 in the year 2014.

ILLUSTRATION 3. Evolution of the minimum peninsular coverage index (2007-2014)



Minimum coverage index (ICmin) = Available power generation capacity in the system (Pd)/Peak demand in the system (Pa).

Source: REE, *El Sistema Eléctrico Español,* 2014.

Therefore, instead of the estimated scenario of unacceptable risks of disruption of electricity supply anticipated by the Government, at this moment, Spain has a collapsed electricity system with approximately a 30% of overcapacity[35]. Translated to numbers, the electricity system has approximately 14,000 MW of overcapacity, of which 2,000 MW are destined for interruptibility services[36].

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34 Preamble, *Draft Order regulating the capacity mechanism to improve environmental performance in certain electricity production facilities*, Secretariat of State for Energy, Ministry of Industry, Energy and Tourism and EC Decision N 178/2010-Spain. *Public service compensation linked to a preferential dispatch mechanism for indigenous coal power plants,* C(2010)4499. Available online at: http://ec.europa.eu/competition/state_aid/cases/236267/236267_1151628_152_2.pdf

35 REE, *El Sistema Eléctrico Español 2014. (The Spanish Electricity System, 2014).*

36 In accordance with the definition given by REE, "interruptibility service" is known as the tool allowing flexible operation of the electricity system from the demand side. When events where the electricity system does not produce enough energy to supply all the existing demand, the biggest energy consumers reduce their consumption responding to an order given by the power system operator to keep balance between energy generation and demand. Thus, the rest of consumers will have access to electricity and those consumers reducing demand receive compensation.

Currently in Spain, power plants using coal to generate electricity correspond to 11,482 MW of the installed power[37]. These numbers show the viability of phasing-out coal: If Spain were to abandon coal for electricity production, there would still be an excess of more than 2,000 MW of installed power and mid-term coverage index would continue to maintain a sufficient safety margin, remaining above 1.1.

In a system with such overcapacity and with such a high energy mix, coal could be easily replaced by other sources of energy. Nevertheless, the Spanish Government has opted to constrain the growth of renewable energy and to favour electricity companies and the mining sector by giving subsidies and approving mechanisms which favour electricity production with the most polluting fossil fuel: coal[38].

2.2. The impacts of emissions from coal power plants: damages to health and the environment and contribution to climate change

The combustion of fuels in LCPs contributes significantly to the emission of polluting substances into the atmosphere[39]. The main pollutants that derive from the combustion of fossil fuels are: sulphur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), dust, mercury (Hg), greenhouse gases (GHGs) such as carbon dioxide (CO_2) and other substances (arsenic, lead, cadmium and halides, among others)[40]. The release of these substances into the air results in very negative impacts on human health and the environment, as well as on climate change.

Coal-fired power plants are the largest source of arsenic, Hg and SO_2 emissions within all of Europe[41]. SO_2 along with NOx, ash and soot derived from the burning of coal are one of the main causes of acid rain, smog and pollution caused by particulate matter ($PM_{2.5}$). $PM_{2.5}$ is one of the biggest environmental health threats in Europe, and recently identified by the World Health Organization (WHO) as the main environmental cause of deaths by cancer.[42] The pollution caused by coal-fired power plants in the EU was responsible for about 22,300 premature deaths in the year 2010, of which approximately 536 occurred in Spain[43]. In addition, Hg emissions coming from the burning of coal are responsible for the birth of more than 1.8 million babies per year with Hg levels above the safety limit, of which 200,000 are born in the EU.[44]

37 REE, *El Sistema Eléctrico Español 2014.*

38 See section 3 of this report.

39 Industrial Emissions Directive Preamble, para. 29.

40 MAGRAMA, *Grandes Instalaciones de Combustion: Actividades Emisoras.* (Ministry of Agriculture, Food and Environment, *Large Combustion Plants: Pollutant Activities.* Available online at: http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/atmosfera-y-calidad-delaire/emisiones/act-emis/grandes_instalaciones_combustion.aspx

41 Greenpeace, *Silent Killers: Why Europe must replace coal power with green energy*, 2013. Data extracted from the European Environmental Agency (2012b). The European Pollutant Release and Transfer Register. http://prtr.ec.europa.eu/FacilityLevels.aspx

42 Greenpeace España, *Carbón Tóxico: Impactos sobre la salud y la economía de unos límites de contaminación insuficientes,* 2015. (Greenpeace Spain, *Toxic coal: Health and Financial Impacts of insufficient pollution limits,* 2015). Available online at: http://www.greenpeace.org/espana/Global/espana/2015/Report/cambioclimatico/Carbon%20toxico-%20Impactos%20sobre%20la%20salud%20y%20la%20economia.pdf

43 Greenpeace, *Smoke and Mirrors: How Europe's biggest polluters became their own regulators*, 2015.

44 Ibid.

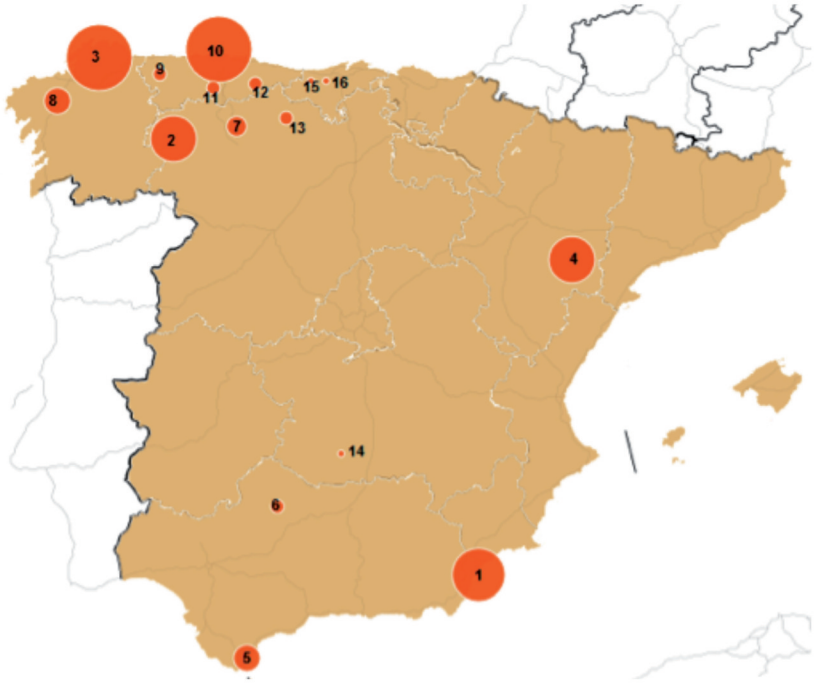
Coal is the largest and most important source of CO_2 pollution, which is the main cause of climate change. More than 80% of annual GHG emissions in Spain are CO_2 emissions, coming mainly from the direct combustion of fuels to obtain energy and heat[45].

In 2014, the total CO_2 emissions in Spain reached 225 million tonnes,[46] of which 60.5 million corresponded to the mainland electricity sector,[47] and of those, around 41 million tonnes corresponded only to the production of electricity with coal[48]. Moreover, in that same year, the European Environmental Agency (EEA) quantified the health costs caused by the emissions of Spanish coal-fired power plants during the period 2008-2012 in 19 million Euros[49].

ILLUSTRATION 4. CO_2 emissions for coal plants under the TNP in 2014

Size of plant

N.	Combustion plant	CO_2 emissions (Year 2014) (kg/year)
1	Litoral	5,005.892
2	Compostilla	4,215,702
3	As Pontes	6,909,512
4	Andorra	4,787,410
5	Los Barrios	2,678,793
6	Puentenuevo	1,027,984
7	La Robla	1,572,487
8	Meirama	2,192,577
9	Narcea	935,873
10	Aboño	6,785,247
11	Soto	1,356,362
12	Lada	1,269,693
13	Velilla	1,135,795
14	Elcogás GICC Puertollano	0
15	Cogecan	0
16	Solvay I	0



Source: Spanish Office for Climate Change, *Implementation report of Law 1/2005 for the year 2014*, 2015.

During the past year, coal has been responsible for approximately 70% of all CO_2 emissions coming from the electricity production sector. Nevertheless, this percentage could continue to grow. According to provisional data for 2015 provided by REE, CO_2 emissions linked to electricity generation have grown significantly during 2015, as the use of coal for electricity production has also increased. This is mainly because the use of coal for electricity production also grew significantly in 2015.

45 PWC and EOI, *El Cambio Climático en España, 2033. Hacia una economía baja en carbono*, 2015, p. 36. (PWC and School of Industrial Organization, *Climate Change in Spain, 2033. Towards a low carbon economy*, 2015).

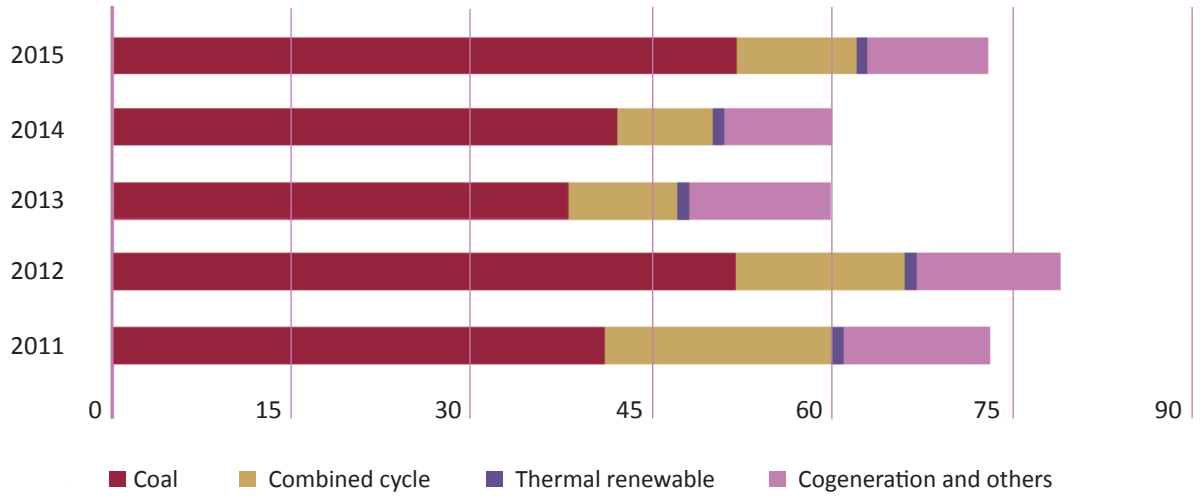
46 Eurostat. For the year 2014 data was extracted from the estimations Eurostat published in June 2014.

47 REE, *El Sistema Eléctrico Español 2014*.

48 European Union Transaction Log http://ec.europa.eu/environment/ets/welcome.do?languageCode=es.

49 European Environmental Agency, *Costs of air pollution from European industrial facilities 2008-2012*, 2014. Available at: http://www.eea.europa.eu/publications/costs-of-air-pollution-2008-2012.

ILLUSTRATION 5. Evolution of CO_2 emissions linked to electricity generation (Mill.t CO_2)



Source: REE, *El Sistema Eléctrico Español*, 2015 (Provisional Version).

THE IMPACTS OF COAL

- Coal is the largest source of CO_2 emissions, which are the main cause of climate change.
- Coal mining destroys ecosystems, emits toxic levels of minerals and gases (including methane which is a powerful GHG) into the water and the air and exposes miners and those who live nearby to dust emissions from coal and other toxins.
- In addition to CO_2, coal combustion emits millions of tonnes of SO_2 and NOx into the air which are responsible for acid rain and smog.
- Coal combustion also produces particulate matter that generates air pollution, respiratory problems and other health problems.
- Another by-product of burning coal is Hg, that penetrates the food chain and attacks the human nervous system. Children and babies whose nervous system is developing are especially vulnerable.
- Coal burning generates millions of tonnes of waste containing toxic levels of heavy metals and minerals. These usually end up in landfill sites or in reservoirs and pose a threat both to health and the environment.

The use of coal is an option that collides head-on with the goal of the Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC). The Agreement's long-term goal is framed in terms of limiting temperature increases to a maximum of 2ºC, while pursuing all efforts to limit the increase to 1.5ºC. In order to achieve the goal, countries have agreed to "achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases" –in other words, zero-net emissions by the end of the century. This Agreement has a profound impact on the coal industry as burning coal will not allow to achieve its goal.

2.3. Compatibility of Spanish coal-fired power plants with EU Law

In order to prevent, reduce and eliminate as far as possible the pollution caused by LCPs, it is necessary to control their emissions[50]. The two main EU regulatory instruments to which LCPs are subject to are:

- Directive 2001/80/EC of the European Parliament and of the Council of 23 October of 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants (LCPD), and

- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (IED). As said previously, the IED will repeal the LCPD from 1 January 2016.

In order to reduce the impacts on health and the environment, the IED sets stricter emission limit values (ELVs) and more thorough controls than the LCPD. From January 1, 2016, the existing LCPs[51] that wish to continue in operation shall include in their permits the necessary conditions to ensure that their emissions into the air do not exceed the ELVs set out in Part 1 of Annex V of the IED[52]. These ELVs are stricter than the ones established in the LCPD. However, the IED also introduces derogations from the common rules which Member States (MS) can opt for. The exemptions that affect Spanish coal-fired LCPs are mainly:

- The **Transitional National Plan (TNP)**[53]: The IED provides the possibility for certain LCPs of operating without complying with the ELVs for SO_2, NOx and dust set out in part 1, Annex V of the IED from 1 January 2016 until 30 June 2020. In order to opt for this derogation, MS had to communicate their TNPs to the EC before January 1, 2013 for their evaluation and approval[54].

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50 IED, Preamble, para. 2.

51 This applies to installations that have been granted a permit before January 7 2013 or those which have "submitted a complete application for a permit before that date, provided that such plants are put into operation no later than 7 January 2014" (Art. 30(2), IED).

52 Art. 30(2)(a), IED.

53 Art. 32(2) para. 2 of the IED provides: "(...)The transitional national plan shall not include any of the following combustion plants: (a) those to which Article 33(1) applies; (b) those within refineries firing low calorific gases from the gasification of refinery residues or the distillation and conversion residues from the refining of crude oil for own consumption, alone or with other fuels; (c) those to which Article 35 applies; (d) those which are granted an exemption as referred to in Article 4(4) of Directive 2001/80/EC".

54 Article 32(5), of the IED establishes: "Not later than 1 January 2013, Member States shall communicate their transitional national plans to the Commission. The Commission shall evaluate the plans and, where the Commission has raised no objections within 12 months of receipt of a plan, the Member State concerned shall consider its plan to be accepted. When the Commission considers a plan not to be in accordance with the implementing rules established in accordance with Article 41(b), it shall inform the Member State concerned that its plan cannot be accepted. In relation to the evaluation of a new version of a plan which a Member State communicates to the Commission, the time period referred to in the second subparagraph shall be 6 months".

Every TNP shall include, as a minimum[55], the necessary measures to guarantee that each plant complies with the ELVs set out in the IED from 1 July 2020.

- The **Limited Lifetime Derogation (LLD)**[56]: The IED allows certain LCPs to be exempted from meeting the ELVs and desulphurisation rates set out in the IED, provided they are not included in a TNP and only if they comply with certain conditions[57]. One of them is the obligation for the operator to undertake, in a written declaration submitted to the competent authority by 1 January 2014 at the latest, not to operate the plant for more than 17,500 operating hours, starting from 1 January 2016 and ending no later than 31 December 2023[58].

The LCPD, which will be in force up to January 1 2016, also contains a series of provisions which allowed certain plants to be exempted from complying with the ELVs it establishes[59]. LCPs had the possibility to be included in a National Emissions Reduction Plan (NERP), which mainly all Spanish LCPs opted for[60]. Therefore, up to 31 December 2015, LCPs which were subject to the NERP have been allowed to emit higher levels of SO_2, NOx and dust than the common ones established in the LCPD, with the consequent increase in air pollution and the recognised health and environmental risks this conveys.

From 1 January 2016, both the Government and the electricity companies have chosen to continue using coal, without any intention of reducing the emissions of these plants to adapt them to the ELVs set out in the IED. Thus, 24 of the 27 coal-fired LCPs (all except Alcudia[61] and La Pereda) have decided to opt either for the TNP or for the LLD. Nonetheless, in the period from 1 January 2014 until 1 October 2015 there were 8 combustion plants which were included in both derogations. This is due to the incorrect transposition of the IED[62] in the Spanish

55 The content of these plans is regulated both in article 32, paragraphs 3 and 4 of the IED as well as in Commission Implementing Decision of 10 February 2012 laying down rules concerning the transitional national plans referred to in Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (OJ L 52, 24.02.2012, p. 12).

56 Art. 33, IED.

57 Art. 33(1) of the IED provides that "(...) provided that the following conditions are fulfilled: (...) (b) the operator is required to submit each year to the competent authority a record of the number of operating hours since 1 January 2016; (c) the emission limit values for sulphur dioxides, nitrogen oxides and dust set out in the permit for the combustion plant applicable on 31 December 2015, pursuant in particular to the requirements of Directives 2001/80/EC and 2008/1/EC, shall at least be maintained during the remaining operational life of the combustion plant. Combustion plants with a total rated thermal input of more than 500 MW firing solid fuels, which were granted the first permit after 1 July 1987, shall comply with the emission limit values for nitrogen oxides set out in Part 1 of Annex V; and (d) the combustion plant has not been granted an exemption as referred to in Article 4(4) of Directive 2001/80/EC".

58 Art. 33(1)(a), IED.

59 Art. 4(1), LCPD.

60 Orden PRE/77/2008, de 17 de enero, por la que se da publicidad al Acuerdo de Consejo de Ministros por el que se aprueba el Plan Nacional de Reducción de Emisiones de las Grandes Instalaciones de Combustión existentes (BOE núm. 24 of 28.01.2008). (Order PRE/77/2008 of 17 January, which gives publicity to the agreement of the Council of Ministers, which adopts the National Emissions Reduction Plan of existing Large Combustion Plants).

61 Alcúdia is part of the small isolated system of Majorca-Minorca. Therefore, it has opted for the small isolated system derogation in accordance with article 34 of the IED. It is exempt from complying with the ELVs set out in Annex V, Part 1 of the IED until January 1, 2020. Alcúdia will maintain the ELVs set out in its permit in accordance with the LCPD and the Integrated Pollution Prevention and Control Directive until 31 December 2015. However, for dust emissions it will comply with the ELVs set out in annex V, part 1 of the IED from 1 January 2016, according to the Acuerdo del Pleno de la Comisión de Medio Ambiente de las Illes Balears de la Adaptación a la Directiva 2010/75/CE sobre emisiones industriales de la autorización ambiental integrada de la central térmica de Alcúdia (BOIB núm. 70, of 22.05.2014) (Agreement of the Plenary of the Environment Committee of the Balearic Islands regarding the adaptation to Directive 2010/75/EC of industrial emissions of the permit of Alcúdia).

62 Arts. 32(1)(a) and 33(1), IED.

legal system[63]. The IED clearly provides that both exemptions are mutually exclusive. Therefore, combustion plants should have opted either for the TNP or for the LLD as of 1 January 2014, date when the operators had the obligation to notify the competent authorities of their intention to opt for the latter.

Spanish coal-fired LCPs have always been subject to the exemptions provided by EU Law, delaying the reduction of polluting emissions that are responsible for so many damages to health and the environment, even though complying with the common ELVs is actually technically and economically feasible. The lack of will of these companies to improve air quality and the efficiency of their plants is more than clear. So, even though SO_2, NOx and dust emissions could have been reduced in the year 2008, we will have to wait, in general terms, at least until 2020 for these LCPs to reduce their emissions.

2.4. The emission limit values and the Sevilla process

The combustion plants which were included in the NERP, approved under the LCPD, were not excluded from the obligation of having the ELVs set out in the permits in line with the best available techniques (BATs), as established in the Integrated Pollution Prevention and Control Directive (IPPC Directive)[64]. According to the provisions set out in the IED, the obligation to base the ELVs on the BATs also applies for plants which are subject to the TNP[65].

The exchange of information regarding the BATs and control activities, is sometimes known as the "Sevilla Process", as it is carried out under the coordination of the European Integrated Pollution and Prevention Control Bureau, which belongs to the Institute for Prospective Technological Studies of the European Union's Joint Research Centre based in Seville. In these negotiations, as Greenpeace already pointed out[66], the twelve-person official Spanish delegation included eight industry representatives, a significant number of which, represented the electricity sector.

Article 9(4) of the IPPC Directive establishes the obligation to base ELVs provided in the combustion plant permits on the BATs, "without prescribing the use of any technique or specific technology". BATs are defined in the so called BREFs or BAT reference document[67].

Although the inclusion of a combustion plant in the NERP did not exclude the competent authority from the Autonomous Community from granting a permit which included ELVs based on the BATs, the vast majority of the coal-fired power plants permits authorize ELVs much higher than the ones prescribed by the 2006 LCP-Best Avail-

63 Art. 47(1)(a) of Real Decreto 815/2013, de 18 de octubre, por el que se aprueba el Reglamento de Emisiones Industriales y de desarrollo de la Ley 16/2002, de 1 de Julio, de prevención y control integrados de la contaminación (Royal Decree 815/2013, of 18 October, which adopts the Regulation on Industrial Emissions and develops Law 16/2002, of July 1, of integrated pollution prevention and control), (RD 815/2013), (BOE No. 251, of 19.10.2013).

64 Art. 4(6) of the LCPD provides "6. Member States may, without prejudice to this Directive and Directive 96/61/EC, (...) define and implement a national emission reduction plan (...)".

65 Art. 32(2), para. 2, IED.

66 Greenpeace, *Smoke and Mirrors. How Europe's biggest polluters become their own regulators*, April 2015. Available online at: http://www.greenpeace.org/espana/es/Informes-2015/Marzo/Cortinas-de-humo/.

67 The IPPC Directive does not define "BAT reference document", but article 3(11) of the IED provides it is "a document, resulting from the exchange of information organised pursuant to Article 13, drawn up for defined activities and describing, in particular, applied techniques, present emissions and consumption levels, techniques considered for the determination of best available techniques as well as BAT conclusions and any emerging techniques, giving special consideration to the criteria listed in Annex III".

able Techniques Reference Document (BREF). This has alarming consequences, as it implies that from 1 January 2016, plants which are included in the TNP or in the LLD, apart from not complying with the ELVs set out for existing plants under the IED, will be operating with permits granted by the competent Autonomous Community authorities, that do not reflect the binding ELVs set out in the 2006 LCP-BREF. In addition, the majority of combustion plant permits do not even comply with the ELVs set out in the 2001 LCPD, which are far less strict than the ones included in the 2006 LCP-BREF[68].

TABLE 4. Unconformities of the ELVs set out in the permits with the ELVs established in the 2006 BREF and the LCPD

Coal Plant	Production Unit	Rated thermal input (MWth)	ELVs NOx(mg/Nm3)					ELVs SO_2(mg/Nm3)			ELVs Dust(mg/Nm3)		
			LCPD			BREF 2006	Permit	LCPD	BREF 2006	Permit	LCPD	BREF 2006	Permit
			Until 31.12. 2015	Beyond 01.01. 2016	Excep-tion								
Anllares	Anllares	953	-	-	1,200[69]	90-200	1,750	400	20-200	2,750	50	5-20	350
As Pontes	GR I	3,800	500	200	n/a[70]	50-200	650[71]	-	-	-	50	5-20	100[72]
	GR II												
	GR III												
	GR IV												
Compostilla II	GII and GIII	1,332	-	-	1,200	90-200	1,300	400	20-200	1,200	50	5-20	200
	GIV and GV	1,960	-	-	1,200	90-200	1,300	400	20-200	1,100	50	5-20	100
Velilla	GR I	430	600	-	n/a	90-200	1,750	679	20-200	3,000	100	5-20	280
	GR II	1,010	500	200	n/a	90-200	1,200	400	20-200	400	50	5-20	100
La Robla	GR I	691	500	200	n/a	90-200	1,500	400	20-200	2,000	50	5-20	400
	GR II	951	500	200	n/a	90-200	1,200	400	20-200	400	50	5-20	50
Lada	GR IV	986	500	200	n/a	90-200	1,000[73]	400	20-200	400	50	5-20	50
Meirama	Meirama	1,437	500	200	n/a	50-200	650	400	20-200	2,400	50	5-20	150
Narcea	GR I	193	600	-	-	90-200	1,008	1,628	100-250	2,400	100	5-20	150
	GR II	459	600	-	-	90-200	1,200	562	20-200	1,200	100	5-20	150
	GR III	993	1,200	200	-	90-200	1,200	400	20-200	400	50	5-20	75

Source: Own ellaboration.

68 The permits that were analyzed were chosen randomly. Therefore, the ELVs set out in other combustion plants' permits could also be non-compliant with the LCPD and the 2006 BREF.

69 This ELV applies until 1 January 2018 in the case of plants that in the 12 month period ending on 1 January 2001 operated on, and continue to operate on solid fuels whose volatile content is less than 10%.

70 Not applicable.

71 These values apply until 31 December 2015. According to the permit, from 1 January 2016 the ELVs will be those established in the IED.

72 Ibid.

73 These values apply from the year 2009, onwards. In the year 2008, the ELV for NOx was 500mg/Nm3.

The IED is very clear on the obligation for BAT conclusions to be "the reference for setting permit conditions"[74]. Therefore, all LCPs have to be compliant, in principle by 2021, with the new ELVs set out under the LCP-BREF which is currently being negotiated. In those negotiations, as Greenpeace already revealed in April 2015, the Spanish delegation has pushed for maintaining ELVs for NOx, SO_2, dust and Hg higher than those which could actually be obtained by using the BATs[75]. This would have a great impact on the health of Spanish citizens.

TABLE 5. Impacts on health in Spain. Accumulative difference between 2020 and 2029 of the impacts on health between the ELVs proposed by the EU and the ELVs based on BATs

Health impacts	Difference between the proposed EU limits and the BAT based limits	Unit
Mortality (+30 years old)	2,010	Deaths
Mortality (+30 years old)	21,800	Lost life years
Acute bronchitis in children (6-12)	5,800	Cases
Acute bronchitis (+27 years old)	1,700	Cases
Hospitalisation for respiratory problems (all ages)	830	Number of hospitalisations
Hospitalisations for cardiovascular problems (+ 18 years old)	850	Number of hospitalisations
Days with asthma symptoms (5-19 years old)	61,000	Days
Days with limited activity (all ages)	2,351,940	Days
Loss of working days (15-64 years old)	654,000	Days
Loss of IQ because of mercury	860	IQ points

Source: Greenpeace Spain, *Carbón Tóxico: Impactos sobre la salud y la economía de unos límites de contaminación insuficientes*, May 2015.

Failure to comply with the ELVs established under EU Law and to apply the BATs has direct consequences on people's health. As mentioned previously in this report, the EEA quantified the health costs of damages caused by the emissions of Spanish coal-fired power plants during the period 2008-2012 in 19 million Euros. Following the methodology used by the EEA, we have calculated the health costs that the implementation of the TNP will cause during the period from 1 January 2016 to 30 June 2020[76]. The results are incredibly alarming, as they are estimated to be between 4,337 and 11,884 million Euros. These damages could be avoided if the Government required these LCPs to apply the ELVs required for existing plants under EU Law[77].

74 Art. 14(3), IED.

75 The last meeting of the technical working group of the LCP-BREF took place in June 2015. The process has not yet finished and the new LCP-BREF is expected to be published in the EU Official Journal in the first quarter of 2017.

76 The TNP includes not only coal fired power plants but also other combustion plants which use other types of fossil fuels.

77 This calculation has been done by Mr. Christian Schaible, representative of the EEB in the BREF negotiations and one of the authors of the report *Toxic coal - counting the cost of weak EU air pollution limits*. Available online at: http://www.greenpeace.org/eu-unit/Global/eu-unit/reports-briefings/2015/coal%20and%20health%20impacts%20report%20May%202015.pdf.

2.5. The Spanish TNP

The first TNP presented by Spain was rejected by the EC on December 17, 2013[78] because the plan was not in accordance with the requirements set out in the IED. On November 10 2014, Spain sent a revised version of the TNP to the EC. On May 29 2015, the EC approved this version of the TNP[79] which includes 33 combustion plants, of which 23 use coal as a source of fuel. These plants are equivalent to 10,497 MW.

The procedure of approval of the TNP submitted by Spain on November 2014 has been carried out with an absolute lack of transparency and without public participation, despite the impacts it has on health and the environment and the costs of these impacts. Also, some of its content contravenes EU Law, as well as the Aarhus Convention.

The main breaches of the Spanish TNP that Greenpeace jointly with IIDMA reported to the EC in July 2015 have been:

- **Incompatibility of the TNP with the LLD and incorrect transposition of the IED**: The combustion plants of Aboño (GR I), Andorra (GR I), Anllares, As Pontes (GR I, II, III and IV), Compostilla (GR II and GR III), Compostilla (GR IV and GR V), Velilla GR I and Velilla GR II, at the time of the approval of the TNP were included both in the TNP and in the LLD, even though the deadline of opting between one or the other was 1 January 2014.

- **Emission ceilings have been calculated using values which are contrary to EU Law:** The TNP sets maximum total annual emission ceilings for all of the plants and pollutants covered by the plan (SO_2, NOx and dust). These ceilings are calculated based on the fuel use of each plant, averaged over the last ten years of operation up to and including 2010, among others. In some cases, plants covered by the TNP have emitted above the individual ceilings they were allowed under the NERP. Therefore the maximum total annual emission ceilings of the TNP have been calculated based on waste gas flow rates that are contrary to EU Law. It is not logical to think that Spanish LCPs are going to comply with the emission ceilings established in the TNP, or, with the ELVs set out n Annex V, part 1 of the IED from July 1 2020, if they have not been capable of complying with the emission ceilings fixed by the 2007 NERP, which, in addition, allowed plants' emissions to be much higher than the ones provided by the 2001 LCPD and the compulsory ones provided by the 2006 BREF.

- **The measures proposed by Spain for the installations to meet the ELVs fixed by the IED from 1 July 2020 are disappointing:** The proposed measures include the "closure of the installation" for combustion plants Litoral (GR I and GR II), Compostilla (GR II, and GR III), Compostilla (GR IV and GR V), As Pontes, Teruel, Los Barrios, Puentenuevo, Aboño I, Aboño II and Soto de Ribera III; "respecting the ELVs of the IED" in the case of Los Barrios, Puentenuevo, Aboño I and Aboño II and Soto de Ribera III. These are not measures in order to reduce pollution, they are only a natural consequence of having to apply the ELVs of the IED once the TNP expires. If the plants are not capable of doing so, they will have to shut down, and if not, they will continue to operate.

78 OJ L 352, of 24.12.2013, p. 53.

79 Commission Decision of 29.5.2015 on the notification by the Kingdom of Spain of a transitional national plan referred to in Article 32 of Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions, C(2015)3525. Available online at: https://circabc.europa.eu/sd/a/aefc3212-31e9-485b-aa5f-12e49d7b479f/Spain%20TNP%20%20Commission%20Decision%2029%20May%202015%20(EN).pdf

- **Some of the combustion plants are located in Natura 2000 areas or close to them, which according to the Habitats Directive required that the TNP should undergo an environmental assessment**[80]: Soto III is located in the Nalón River[81] which is a special area of conservation (SAC). Besides this, there are three Natura 2000 areas in the proximities of combustion plant Litoral, located in Almería: SAC and Natural Park Cabo de Gata-Níjar[82], SAC Islote de San Andrés[83] and Site of Community Importance (SCI) Marine Beds of Eastern Almería[84].
- **Absence of strategic environmental assessment (SEA):** The TNP should have been subject to a SEA since some of the measures for the fulfilment of the ELVs from July 1 2020, involve the execution of construction works.
- **Existence of combustion plants in areas which are in breach of air quality according to the provisions of Directive 2008/50/EC:** Aboño I and Aboño II are located in an area which, according to the 2013 Assessment Report of the Air Quality in Spain prepared by the MAGRAMA had higher NOx and dust levels than those allowed under Directive 2008/50/EC on ambient air quality.
- **Lack of transparency and public participation:** Since the TNP is a plan that excludes certain combustion plants from complying with the ELVs set out in the IED for existing plants, it is without a doubt a plan that affects the environment. Therefore, and according to article 7 of the Aarhus Convention it should have been subject to a public participation procedure.

Judging from the content of the TNP, the future of these plants is completely uncertain, as in order to ensure compliance with EU environmental law they will not only have to comply with the ELVs set out for existing plants under the IED after 1 July 2020, but also with the stricter BAT associated emission limit (BAT-AELs) which will, in principle, have to be applied no later than 2021[85]. In order to do so, they will have to invest in retrofit works which, according to the Spanish National Competition and Markets Commission (CNMC)[86], are not guaranteed to be profitable for some plants, unless they receive financial aid.

3. Aid from the Spanish Government to coal

Most of the coal that is consumed in Spain is imported coal which comes from countries such as South Africa, Indonesia, Colombia, Russia, or the United States (USA)[87], as indigenous coal is of worse quality and much more expensive due to its high extraction costs[88].

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80 Art. 6.3, Habitats Directive.

81 Type E, ES1200029. Application form available at: http://www.magrama.gob.es/es/biodiversidad/temas/espacios-protegidos/ES1200029_tcm7-153530.pdf.

82 Type C, ES0000046.

83 Type B, ES6110020.

84 Type E, ES6110010.

85 See section 2.4 of this report.

86 CNMC, IPN/DE/009/15 *Informe sobre la propuesta de orden por la que se regula el mecanismo de capacidad para la mejora medioambiental en determinadas instalaciones de producción de electricidad*, 30 September 2015, (CNMC, IPN/DE/009/15 *Report on the draft order regulating the capacity mechanism to improve environmental performance in certain electricity production facilities*, 30 September 2015).

87 Eurostat.

88 Greenpeace España, *El Carbón: Un futuro negro*, 2009, (Greenpeace Spain, *Coal: A black future*, 2009).

However, over the years, both the Spanish Government and the mining industry have justified the use of indigenous coal and the numerous State aid which Spain has given to this sector, arguing the "need" to have an "indigenous and reliable" source of fuel to avoid problems of security of supply.

Indigenous coal has been receiving state aid in two ways:

a) Public aid for mining companies

This aid has had costs of up to 22 billion Euros since 1992[89]. Over the years, this aid has continuously been extended. Currently, in accordance with Council Decision 2010/787/EU of 10 December 2010 on State aid to facilitate the closure of uncompetitive coal mines[90], it can continue until 2018 for those coal production units which form part of a closure plan whose deadline does not extend beyond 31 December 2018. Coal production units are defined under article 1(d) of Council Decision 2010/787/EU as "underground or opencast coal workings and related infrastructure capable of producing raw coal independently of other parts of the undertaking":

TABLE 6. Coal production units which form part of the Spanish Closure Plan

Company	Production Unit	Mining
Alto Bierzo, S.A	Alto Bierzo	Underground
	Torre del Bierzo	Underground
	Vitoria	Underground
	Alto Bierzo	Opencast
	Chacón	Opencast
	Rebollal y Pico	Opencast
Carbones Arlanza, C.L	Single	Underground
Carbones San Isidro y María, S.L	Single	Underground
Carbonar, S.A	Single	Underground
Carbones del Puerto S.A	Single	Underground
Cía. General. Minera de Teruel S.A	Single	Opencast
	Coto	Underground
Coto Minero Cantábrico S.A	Cantábrico	Underground
	Single	Opencast
Empresa Carbonífera del Sur, Encasur, S.A	Puertollano	Opencast
Endesa Generación S.A	Andorra	Opencast
Hijos de Baldomero García S.A	Underground	Underground
La Carbonífera del Ebro, S.A	Single	Underground
S.A. Hullera Vasco – Leonesa	Underground	Underground
	Opencast	Opencast
S.A Minera Catalano	Underground	Underground
Aragonea	Opencast	Opencast
Unión Minera del Norte, S.A	Underground	Underground
	Opencast	Opencast
Hulleras del Norte, S.A	Agrupación Caudal	Underground
	Agrupación Nalón	Underground

Source: Action Framework for the Coal Mining and Mining Regions in the period 2013-2018.

89 MINETUR, *The Minister of Industry, Energy and Tourism announces a regulation that will facilitate the consumption of 6 million tonnes of indigenous coal, 2015.* Available online at: http://www.minetur.gob.es/esES/GabinetePrensa/NotasPrensa/2015/Paginas/20150527-congresocarbon.Aspx

90 OJ L 336, of 21.12.2010, p. 24.

This implied that this aid was subject to the preparation by MS of a closure plan which had to include the identification of the coal production units, among other aspects, and which should have been notified to the EC. The Spanish closure plan, was rejected in December 2013 by the EC. However, almost two years later, it has still not been approved. In fact, in July 2015, it was still being subject to negotiations[91]. Despite not having been approved, this aid has continued to be fixed and funded annually through the General State Budget (GSB). Only in the concept of "closure aid"[92] during the period 2013-2015, the Spanish Government has given up to 104 million Euros.

b) Aid with charge to the preferential dispatch mechanism

This mechanism was approved by *Real Decreto 134/2010 de 12 de febrero, por el que se establece el procedimiento de resolución de restricciones por garantía de suministro* (Royal Decree 134/2010 of 12 February which establishes the procedure of resolution of restrictions to guarantee supply- RD 134/2010)[93]. It was intended to encourage the use of indigenous coal in electricity generation. For that purpose, a financial compensation was given to the owners of ten combustion plants running on indigenous coal in exchange of producing certain volumes of electricity out of that coal under conditions specified in RD 134/2010[94].

ILLUSTRATION 6. Coal-fired power plants included in RD 134/2010

Combustion plant	Owner
Soto de Ribera III	Hidrocantábrico (HC Energía)
Narcea III	Gas Natural Fenosa
Anllares	Gas Natural Fenosa (66%) - Endesa (33%)
La Robla II	Gas Natural Fenosa
Compostilla	Endesa
Teruel	Endesa
Velilla II	Iberdrola
Puentenuevo III	E-On
Escucha	E-On
Elcogás	Endesa, EDF, Iberdrola and EDP-HC Energía

Source: EC Decision N 178/2010-Spain. *Public service compensation linked to a preferential dispatch mechanism for indigenous coal power plants,* C(2010)4499.

In return, they were granted:

1. A financial compensation of 1,300 million Euros during the period in which the preferential dispatch mechanism was applied (2011-2014)[95] – calculated the unit production costs (UPCs) of each plant[96] and the annual volumes of electricity produced.

91 Diario de León, *Industry announces the commitment of coal-fired power plants to burn indigenous coal from 1 July,* 26.06.2015. Available online at: http://www.diariodeleon.es/noticias/provincia/industria-anuncia-compromiso-termicasquemar-carbon-nacional-partir-1-julio_989652.html

92 Article 3(1) of Council Decision 2010/787/EU defines closure aid as "Aid to an undertaking intended specifically to cover the current production losses of coal production units (...)".

93 BOE núm. 51 of 27.02.2010.

94 The maximum volumes of electricity as well as the amount of coal that the plants had the obligation to buy were set annually for the years 2011 to 2014 through Resolutions of the Secretary of State for Energy.

95 Calculation in accordance with data of REE. Source: http://www.esios.ree.es/web-publica/.

96 The UPC corresponds to the total production costs, that is to say, the variable and fixed costs, including reasonable return on invested capital, per MWh produced. The UPCs for each plant were fixed annually by a Resolution of the Secretary of State for Energy.

2. Priority to the dispatch of these ten indigenous coal power plants over other power plants using imported coal or other sources of fuel.

Without this aid, the activity of coal mining in Spain would have come to an end due to the decline in the electricity demand, the high price of indigenous coal, its low quality and the low competitiveness of indigenous coal in comparison to other energy sources. In fact, most of the coal produced in Spain (hard coal, anthracite and black lignite) is used for the generation of electricity in Spain, and since the preferential dispatch mechanism came to an end, the mining sector has been seriously affected.

3.1. Who finances coal-fired power plants?

The total annual revenue of coal-fired power plants, regardless of the origin of the coal they burn, can come from three sources:

- **Revenues drawn from sales on the wholesale electricity market**, which will depend on the clearing of the day-ahead electricity market.
- **Capacity payments** -in the case of plants that benefit from these payments- in exchange for ensuring the availability of existing generation capacities over a given period of time in order to reduce the risks of disruption of electricity supply or for the power generators to invest in new generation capacities[97].
- **Payments derived from the preferential dispatch mechanism**, which only affected the ten combustion plants which burnt indigenous coal, under the conditions established by the RD 134/2010. The amounts corresponding to the payment obligations and the collection rights of this mechanism will be transferred according to the rules that govern the capacity payment mechanism.

The capacity payment mechanism is mainly financed by a levy imposed on direct consumers of the wholesale electricity markets and electricity retail suppliers. Therefore, indirectly, the aid being given to coal-fired power plants as capacity payments or payments derived from the preferential dispatch mechanism is being charged to final electricity consumers through the electricity bill. Obviously, not only coal aid is being charged to the electricity tariff. There are also many other subsidies, taxes and fees that are charged to the electricity bill.

During the period from 2011 to 2014, plants that burnt indigenous coal and which were benefited by the preferential dispatch mechanism perceived in total about 4,800 million Euros[98].

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97 The amounts which each power generator is entitled to receive, as well as the conditions under which these payments, can be made are defined in regulatory provisions. Source: Decision C(2010)4499 of the EC of 29 September 2010 on the subject "State aid Nº 178/2010 – Spain".

98 These calculations have been made based on the data obtained by the annual reports of the Spanish Electricity System (2011-2014) made by REE; the Resolutions of February 8 2011, December 30 2011, February 13 2013 and December 30 2013, of the Secretary of State for Energy laying down the quantities of coal, the maximum volume of production and the return price of the electricity which will be applied annually in the preferential dispatch mechanism process (BOE No. 35 of 20.02.2011, No. 315 of 31.12.2011, No. 42, of 18.02.2013, No. 313, of 31.12.2013); the Resolutions of 30 March 2012, October 4 2012 and November 28 2012, laying down the quantities of coal, the maximum volume of production and the return price of the electricity for the second, third and fourth

TABLE 7. Costs of the plants which burnt indigenous coal during the period 2011-2014

Coal plant	Year	Production (GWh)	Income (€)[99]
Soto de Ribera III	2011	899	79,534,530
	2012	1,119	96,737,550
	2013	703	61,449,230
	2014	873	72,476,460
	Total	**3,594**	**310,197,770**
Narcea III	2011	1,067	87,867,450
	2012	1,649	125,604,330
	2013	779	63,628,720
	2014	772	61,458,920
	Total	**4,267**	**338,559,420**
Anllares	2011	1,245	87,349,200
	2012	1,689	114,294,630
	2013	863	55,982,810
	2014	1,182	66,310,200
	Total	**4,979**	**323,936,840**
La Robla II	2011	1,070	76,462,200
	2012	1,786	126,877,440
	2013	520	36,597,600
	2014	902	64,980,080
	Total	**4,278**	**304,917,320**
Compostilla	2011	4,151	289,988,860
	2012	5,355	371,583,450
	2013	2,560	171,366,400
	2014	4,538	255,852,440
	Total	**16,604**	**1,088,791,150**
Teruel	2011	4,548	289,252,800
	2012	4,864	297,336,320
	2013	3,778	213,797,020
	2014	5,002	254,651,820
	Total	**18,192**	**1,055,037,960**

quarter of the year 2012 respectively, to be applied in the preferential dispatch mechanism process (BOE No. 78 of 31.03.2012, No. 242, 08.10.202, No. 288, 30.11.2012); the Correction of Errors of the Resolution of 30 December 2013, of the Secretary of State for Energy laying down the quantities of coal, the maximum production volume and the return price of the electricity for the year 2014, to be applied in the preferential dispatch mechanism process (BOE No. 7, of 08.01.2014) and the Resolution of 8 July 2014, of the Secretary of State for Energy which authorizes the transfers of coal between the combustion plants of Narcea, Anllares and Compostilla (BOE No. 168 of 11.07.2014).

99 The incomes correspond to the sum of market revenues, capacity payments and payments derived from the preferential dispatch mechanism.

TABLE 7 *(Cont)*. Costs of the plants which burnt indigenous coal during the period 2011-2014

Coal plant	Year	Production (GWh)	Income (€)[99]
Guardo II	2011	1,268	96,811,800
	2012	1,614	132,993,600
	2013	1,022	73,032,120
	2014	1,167	90,034,050
	Total	**5,071**	**392,871,570**
Puentenuevo III	2011	995	99,440,300
	2012	1,127	124,172,860
	2013	703	80,043,580
	2014	1,153	106,295,070
	Total	**3,978**	**409,951,810**
Escucha	2011	439	31,792,380
	2012	439	31,406,060
	2013	-	-
	2014	-	-
	Total	**878**	**63,198,440**
Elcogás	2011	1,117	109,732,160
	2012	1,401	153,899,850
	2013	899	110,208,410
	2014	1,035	110,662,200
	Total	**4,452**	**484,502,620**
TOTAL		66,293	4,771,964,900

Source: Own ellaboration.

On the other hand, the total income of plants that were not included in this mechanism during this time-span, was of about 5,850 million Euros[100] in market revenues and capacity payments.

Therefore, during the period from 2011 to 2014, final electricity consumers have paid approximately 10,650 million Euros for the production and use of coal as well as for the maintenance of absolutely dispensable plants, judging by the overcapacity in the Spanish electricity system. This is the result of policies that are only focused on buying votes and extending at the expense of consumers, the survival of old, dirty and inefficient coal-fired power plants.

Even though uncompetitive coal mines cannot survive beyond 2018 and the EC stressed the temporary character of the preferential dispatch mechanism, the Spanish Government has already proposed new mechanisms to promote the burning of indigenous coal[101].

100 Data obtained from Greenpeace Spain.

101 See section 3.2 of this document.

3.2. An attempt to extend the aid to the burning of indigenous coal: proposal for a capacity mechanism to invest on denitrification

From 31 December 2014, when the preferential dispatch mechanism was no longer in force, electricity generation from indigenous coal started to compete in the electricity market. As combustion plants did not have the obligation to consume indigenous coal, the mining sector in Spain was highly affected, as there was a huge decrease in the demand of indigenous coal, which was also caused by the decline in the price of imported coal –from 75 to 55 dollars per tonne, from January to July 2015[102]. At that same time the price for indigenous coal price was about 80 Euros per tonne in the case of hard coal from the North and 40 Euros per tonne in the case of lignite from Aragon.

Therefore, the coal mining sector has claimed that the Government must approve a new mechanism to encourage the burning of indigenous coal in power plants. In response to this, the Government has designed a new aid scheme to support the burning of indigenous coal embodied in a draft order "which regulates the capacity mechanism for the environmental improvement in certain electricity production plant", also known as "denitrification aid".

This new aid implies that combustion plants would have a commitment to purchase and burn indigenous coal and in exchange they would be given a financial compensation aimed for investments in equipment that imply a decrease in NOx emissions and that are necessary for those combustion plants to comply with the IED ELVs from July 2020, date when the TNP expires. In fact, a condition for combustion plants to receive such aid is to be included in the TNP. The draft order estimates that the costs of this aid would involve up to 405 million Euros, as the aid could benefit about 4,500 MW of installed coal capacity.

It is important to bear in mind that this mechanism is subject to the application of the European Commission Guidelines on State aid for environmental protection and energy 2014-2020[103]. Nevertheless, the proposed mechanism is contrary to them for several reasons:

- The payments under this mechanism are subject to the use of a fossil fuel. According to the EC guidelines "A measure addressing a generation adequacy problem needs to be balanced with the environmental objective of phasing out environmentally or economically harmful subsidies, including fossil fuels", which is not the case of the proposed aid.

- The payments are not intended to encourage plants to emit lower levels of NOx than those set out in the IED. They are intended for combustion plants which are subject to an exemption that allows them to emit much higher levels of NOx. Therefore, it does not contribute to the environmental protection the EC Guidelines intend. According to the EC Guidelines, a State aid may be compatible with the internal market under article 107(3)(c) of the Treaty on the Functioning of the European Union (TFEU) if they go beyond EU standards or increase the level of environmental protection in the absence of EU standards.

[102] Diario de León, *Industry announces the commitment of coal-fired power plants to burn indigenous coal from 1 July,* 26.06.2015.
[103] OJ C 200, of 28.06.2014, p. 1.

- It is an aid for the costs that combustion plants would need to face anyway, in order to comply with the IED, and it somewhat compensates the normal commercial risk of the electricity production activity. Therefore, it is not designed to favour the early adaption to future EU rules, and is incompatible with the EC Guidelines.

- The aid does not respect the "polluter pays" principle because its beneficiaries are responsible for the pollution caused under the TNP.

Therefore, if the EC approves this mechanism, it will be in breach of its own guidelines. Also, the proposed State aid will encourage the use of fossil fuels, something contrary to the current measures planned against climate change, without any progress being made with regards to the current environmental legislation.

In addition, the CNMC in a report published on September 30 2015[104], concluded, that in order to analyze if installing denitrification equipment would be cost-effective for the plants under the proposed mechanism if the aid was not approved, they would have to use parameters which could vary significantly in the long-term. These parameters refer to the variable production costs of the plants –which depend on the costs of fuel and CO_2 emission allowances among others– , the performance of each plant, the variable and fixed operation and maintenance costs –these last ones depend on several factors such as the size of the plant–, and market and demand prices. Therefore, they could not make any significant conclusion regarding the need for aid to ensure the continuity of the plants under the proposed mechanism.

In the same report, and despite the EC has not yet pronounced itself on the validity of this mechanism, the CNMC concluded that the proposed aids cannot be conceived as a capacity payment or as an environmental aid and that the plan contravenes EU State aid rules because it selectively favours one technology and because it will not increase the level of environmental protection compared with what would be achieved anyway[105]. The proposed State aid scheme is suspended, pending the approval by the EC.

4. Conclusions

Reducing CO_2 and other GHG emissions is the only way to guarantee that the global temperature increase stays below 2° C. Therefore, it is necessary to stop burning fossil fuels and the worst of them all in terms of emissions is coal. Despite this, Spain is still burning coal in 27 LCPs. However, as was previously discussed, abandoning the use of coal would not be harmful at all. It would be highly beneficial from an environmental, economic and public health point of view.

Most of these plants are more than 30 years old, inefficient, polluting and costly. Despite this, successive Governments have been extending the life of these plants based on arguments related to the characteristics of the Spanish electricity system which are no longer valid in the 21st century, such as the security of supply.

104 CNMC, IPN/DE/009/15 *Informe sobre la propuesta de orden por la que se regula el mecanismo de capacidad para la mejora medioambiental en determinadas instalaciones de producción de electricidad*, 30 September 2015.

105 Ibid.

The TNP is only a new mechanism, as well as the NERP was, which Spain has opted for in order to allow LCPs to emit above the appropriate ELVs which guarantee the reduction of pollution and its impacts. Since the approval of the IED, in the year 2010, Spanish coal-fired LCPs have had six years to undertake the necessary works that would ensure they could keep functioning according to the ELVs set out in the IED for existing plants from 1 January 2016. However, during that time, the Spanish Government did not take any action to require those plants to adapt to EU Law.

During the period from 2011 to 2014, coal-fired LCPs –indigenous or imported– have benefited from numerous subsidies, which, together with the revenues received from the normal functioning of the electricity market accounted for a total of more than 10,600 million Euros. In particular, indigenous coal, has not only benefited from 1,300 million Euros from the preferential dispatch mechanism, but has also received 22 billion Euros for its extraction since 1992. In the end, all of these costs have affected citizens. While extraction aid has been charged to the GSB –citizens pay it with their taxes–, the aid for the burning of coal has been paid by consumers through their electricity bill as well as through their health.

It is too expensive to continue extending and encouraging the use of a fossil fuel that, firstly, is not necessary to ensure the security of supply of the Spanish electricity system, contrary to what the Spanish Government insists on arguing. Secondly, it continues to exist largely because of subsidies for its extraction, in the case of the indigenous coal, and for its burning, in the case of imported coal and indigenous coal. Finally, it was responsible for about 13% of total national emissions of GHGs in 2014 and around 3,700 million Euros per year in health costs[106] which can reach levels in the range of 4,337 to 11,884 million Euros once the TNP enters into force.

[106] CAN Europe, *European Coal Map*. Available online at: http://www.coalmap.eu/#/

Greenpeace demands

A responsible Government that takes into account all the factors which the functioning of coal-fired power plants implies, must:

- Specify a coal phase-out plan which guarantees the end of coal in Spain by 2025, which includes measures for the gradual decline in the use of coal and a fair transition for all workers in the sector.

- Remove all dirty and inefficient energy subsidies including public fund incentives to environmental investments, as it is a mechanism subject to the continuous use of a fossil fuel and establish a calendar of progressive abandonment of such fuels. Therefore the draft ministerial order by which the Government will subsidise each power plant which burns indigenous coal with 90,000 Euros/MW must be withdrawn.

- Promote that LCPs that were both under the LLD and the TNP stay under the LLD, as this would guarantee the closure of 4,277 MW by 2023.

- Regulate and ensure that power stations that have opted for the TNP reduce their emissions in accordance with the IED prior to 1 July 2020 and, from the year 2021 reduce their emissions to be in line with the BAT-AELs agreed in the new LCP-BREF.

- A long-term planning with the ultimate goal to achieve 100% of energy demand from renewable energy and to reduce energy demand to less than a half in comparison to the levels of demand prior to the crisis, by 2050.

Annex I. List of Illustrations and Tables

ILLUSTRATIONS

TABLES

Greenpeace is a global independent organization which carries out campaigns to change attitudes and conducts in order to protect and conserve the environment and promote peace.

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