EUROPEAN COMMITTEE OF SOCIAL RIGHTS
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9 May 2006

Collective Complaint No. 30/2005 **Case Document No. 5**
Marangopoulos Foundation for Human Rights v. Greece

RESPONSE FROM MFHR TO THE GREEK GOVERNMENT'S OBSERVATIONS ON THE MERITS

registered at the Secretariat on 10 March 2006

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MARANGOPOULOS FOUNDATION FOR HUMAN RIGHTS

RESPONSE TO THE HELLENIC GOVERNMENT'S OBSERVATIONS ON THE MERITS OF COLLECTIVE COMPLAINT No. 30/2005

1. The Marangopoulos Foundation for Human Rights (hereinafter, 'the complainant', or 'the MFHR') has the honour to present its response to the Hellenic government's (hereinafter 'the State', 'Greece', or 'the defendant') observations, and the Public Power Corporation's (hereinafter 'DEH' or 'the Corporation') memorandum on the merits of Collective Complaint No. 30 (hereinafter, 'the Complaint'), brought under the 1995 Protocol Establishing a Collective Complaint Mechanism (hereinafter, 'the Protocol'), alleging multiple instances of non-compliance with the European Social Charter of 1961 (hereinafter, 'the Charter'), and declared admissible by the European Committee of Social Rights (hereinafter, 'the Committee') on 10 October 2005.

I. 1. Introductory Remarks on the State's Observations

2. The Complaint's subject-matter involves environmental, health and labour issues. However, the State's observations are signed only by the Ministry of Labour, and there is no indication whatsoever that the other competent ministries – Environment, Health and Development – contributed in any way. The complainant views this attitude as a barely disguised form of contempt for the protection of social rights, displayed mainly towards the Greek people, but also towards the Committee.

Furthermore, it is significant that the public authority's response is limited to the first seven pages of the Observations, whereas the Private Corporation, DEH, presented the bulk of the Observations, essentially taking over the State's role in the proceedings. It should be remembered that in the admissibility phase, the State had expressed "reservations" about its "responsibility for actions and omissions on the part of [DEH]". The intimate relation between the Corporation and the State is therefore made absolutely clear in the Observations. DEH is often 'more statist than the State': even in cases where the State acknowledges its own shortcomings, DEH is eager to state the contrary.

This choice severely impairs the State's capacity to autonomously demonstrate its compliance with the Charter. The State delegated its opportunity to defend its policies in diverse fields – environmental and labour monitoring and enforcement as well as public-health – to DEH, the health-endangering activities of which are the cause of the present Complaint. This demonstrates serious ignorance of the nature of the Charter, and the obligations the State has undertaken: whatever the performance of private actors, it is the State's duty to demonstrate that appropriate legal frameworks and policies exist, and that they are enforced.

3. This attitude is further reinforced by the State's dependence on data and studies provided exclusively by DEH, and by the manner in which such studies are presented throughout the Observations. The studies and data presented are of questionable quality and pertinence. The data are old, unreferenced, and quoted out of context. The studies were not peer-reviewed or published in referenced publications, nor were they made available to the wider public or provided in full. The small amount of studies, as well as their reference periods, show that the assessment of the impacts of the lignite-cycle is not a priority for the State, and has never been one.

4. The MFHR believes it is appropriate to explain why it has presented the present Complaint. Greek environmental protection is, in general, not effective. This has been repeatedly corroborated by European Union (EU) mechanisms, and particularly the European

Court of Justice (ECJ)[1]. Despite numerous condemnations and notifications, Greece has been extremely slow to take the appropriate measures to comply with EU standards.[2]

The regions where lignite is mined and incinerated for energy production have been particularly neglected for the last fifty years in the name of providing allegedly cheap energy to the rest of the country. DEH boasts of contributing to the local economy both by providing employment in an otherwise poor area, and by paying an administrative fee to the local authorities. As is shown below, employment in unfair conditions violates Greece's Charter obligations. Moreover, the administrative fees paid pale in comparison to the benefits of the free and nearly exclusive usage of Greek lignite reserves.

Local populations face an everyday dilemma: they depend economically on the Corporation, but see their quality of life and social rights being sacrificed. Those who have successfully attempted to obtain remedies before domestic jurisdictions faced the determined refusal of the administration to comply with court rulings upholding the right to health and to a healthy environment. They are thus powerless and hopeless.

5. The present response further substantiates the Complaint's assertion that severe environmental degradation is caused by the operation of mines and lignite-fired power plants. Distinguishing itself from the vague and unsubstantiated allegations of the State, the MFHR has endeavoured to prove the existence of pollution and its evolution in a detailed, scientific and fully referenced manner.

Furthermore, the measured impacts of environmental degradation on human health are discussed, and the epidemiological studies of the State are questioned on grounds of pertinence, method and selectivity of their presentation by the State.

Because of the complexity of the case, the complainant focuses on specific processes, activities and omissions that constitute distinct and autonomous instances of non-compliance by the State with its Charter obligations. Under Article 11, the complainant will show that the unregulated operation of both mines and power plants causes ill-health that the State can but refuses to remove. This is aggravated by the lack of health information and mitigation policies, as well as the absence of studies assessing impacts. Under Articles 3§1 and 3§2, the complainant will demonstrate that: the hazardous working conditions in the mines and power plants are not effectively regulated or monitored, and that safety regulations are not enforced; finally, under Article 2§4, the compensatory measure imposed by the Charter for work of this nature – additional paid holidays or reduced working hours – is not provided for.

II. 2. Observations regarding the right to the protection of health

6. The State's Observations deny the existence of pollution from lignite mine and power plant operation, and consequently, deny as well the existence of any verified health problems in the regions affected.

Firstly, the State asserted that "(…) any 'air pollution' systematically referred to in the complaint is not documented but based on general references in the literature, disregarding the real data of measurements and specialized studies" (emphasis omitted)[3]. *Secondly*, the State alleged that "[a]ll the above, (…) prove there is no risk for public

[1] Some recent examples include ECJ judgments: C-68/04 of 6 June 2005; C-364/03 of 7 July 2005; C-119/02 of 24 June 2004; C-420/02 of 18 November 2004; C-83/02 of 5 June 2003. Also, Notice of Action brought on 27 October 2005 by the Commission against Greece (Case C-390/05).

[2] One such instance pertains to the case of Greece's failure to clean up an illegal waste dumpsite in Crete, for which it was already condemned by the ECJ in 1992, then in 2000, and lately in October 2005 for failing to take all the measures necessary to ensure compliance with Council Directive 75/442/EEC of 15 July 1975 on waste management. ECJ Judgments: C-502/03 of 6 October 2005, C-387/97 of 4 July 2000 C-45/91 of 7 April 1992.

[3] *State's Observations*, p. 30.

health from PPC activities in the areas of Kozani and Megalopolis. Therefore, whatever mentioned [sic] in the complaint on the non compliance of our country with Article 11 of the Charter is totally unwarranted."[4]

7. The complainant, in refuting these allegations, will further demonstrate that: there is, in fact, air pollution in the areas where lignite is extracted, transported and incinerated for the production of electricity (2.1); there is sufficient evidence that the existing levels of air pollution in the regions concerned constitute a threat to health of the affected populations (2.2); and, finally, that the State has failed to adopt those measures that could have eliminated, or palpably reduced, the public-health threat (2.3).

2.1 Lignite and air pollution in Greece: Fact, not Fiction

8. The Complaint had made clear that most anthropogenic emissions of pollutants in Greece were due to the use of fossil fuels in the transport and electricity-generation sectors of the economy[5]. As Greece has essentially relied for the last forty years on a high-sulphur, low-calorific content lignite to face most of its energy demand, and will continue to do so in the foreseeable future, the environmental and health impacts of this policy should be widely scrutinized and should be the object of serious national and international concern.

9. The environmental impacts of heavy industrial operations – such as the lignite cycle – are local (2.1.1, *infra*), national, regional and global (2.1.2). At the local level, the Complaint focused especially on the health impacts of particulate matter – total suspended particles (TSP), particulate matter <10μm (PM_{10}), and particulate matter <2.5μm ($PM_{2.5}$) – dispersed over a wide area by the mining, transport and burning of lignite, as well as during the management of fly-ash caught by filters (electrostatic precipitators).

10. At the national, regional and global level, greenhouse gas emissions from lignite-fired power plants – particularly CO_2, SOx and NOx – have a huge impact on present and future generation's health and the abatement of these emissions is a well known point in the international agenda. Despite the uncertainties of the current scientific knowledge, it is clear that acidifying substances and greenhouse gases – beyond their local impacts – also affect global climate, and cause acid rain and extreme weather phenomena.

2.1.1 Pollution in Megalopolis and Ptolemaïda: A Well Documented Phenomenon

11. The Complaint alleges that the continuous employment of old, high-polluting technology, incompatible with the 'best available technology requirements' (BAT), has severely affected the environmental quality in the regions where lignite extraction and combustion takes place. Under this argument, the levels of particulate matter and flue gases emitted from the power plants as a product of the lignite combustion constitute an important indicator of the

[4] *State's Observations*, p. 39-40. Studies by Professors X. Kondakis **(Annex 14)** and Katsougiannopoulos **(Annex 12)**, for the Megalopolis and Ptolemaïda sites, respectively.
[5] *Complaint*, §§39-41.

technologies used for the prevention and suppression of pollution, as well as of the compliance of the State with its commitments under environmental legislation and the Charter.

In its observations, the State, via DEH's memorandum, alleged that:

1. "[F]or the reduction in the **emissions of particulates**, the electrostatic filters of all old units of the Public Power Corporation in Northern Greece have been replaced and as a result the emissions of particulates do not exceed under normal circumstances 100μg/m^3"[6];
2. "In the wider region of Megalopolis steam power plants there is no excess of air quality limit values for total suspended particles"[7];
3. "In Kozani basin the ground concentrations of suspended particles are generally lower from the respective limits and are declining on account of the progress of electrostatic precipitators replacement projects in the lignite units of the basin"[8]; and,
4. there were no excessive established limit values of air quality for sulphur dioxide and nitrogen acids.[9]

12. This same statement of compliance is put before national authorities repeatedly[10]. However, there are available data refuting the above allegations. These studies and analyses contained in published scientific papers, will be summarized below.

It should, however, be stressed preliminarily that it seems very surprising that the State and DEH can argue so assertively that the particles emissions do not exceed the provided limit values, as it appears quite probable that the particles emissions were not actually measured by the State or DEH. Measurements of Total Suspended Particles (TSP) were not taken before 1983, and even now most measurement stations do not measure the most dangerous particles (<10μm), precisely those that most easily escape DEH's electrostatic precipitators.

According to the European Pollution Emission Register (EPER)[11] data, PM_{10} quantities registered for all Greek power plants are not *measured*, nor *calculated*, but only *estimated* ("E"). This indicator "is used when the emissions are determined by expert judgement, not based on publicly available references. The indication of 'E' applies also for guesses of the emissions in case of absence of recognised emission estimation methodologies or good practice guidelines."[12]

It is therefore astonishing that based on 'guesses' and 'expert judgement' of an unverifiable quality, the State is adamantly asserting that the best environmental standards are

[6] *State's Observations*, p. 6.
[7] *Id.*, p. 29.
[8] *Id.*
[9] *Ibid*.
[10] See *infra*, § 81.
[11] EPER's database is compiled based on the reports that the EU Member-states produce and submit to the Register. This register was (accessible at: <http://www.eper.cec.eu.int/eper/find_facility.asp?i=>, last visited on 8 March 2006) created on the basis of Article 15(3) of Council Directive 96/61/EC concerning integrated pollution prevention and control.
[12] EPER reference document, available at <http://www.eper.cec.eu.int/eper/documents/eper_en.pdf> (last visited on 8 March 2006), p. 49.

respected, while there is a wealth of fully referenced, publicly available, and peer-reviewed studies stating – precisely and verifiably – the contrary.[13]

13. From the two areas concerned – Megalopolis and Kozani-Ptolemaïda – particulate matter concentration was worse in latter area due to topographic and meteorological characteristics, combined with the greater number of power plants (three-fourths of the Greek lignite installed capacity). In Megalopolis, the main environmental and health issues were the unabated use of lignite with excessive sulphur content, and the high concentration of radionuclides – radioactive trace elements – in the fly-ash.[14]

2.1.1.1 Regarding particulate matter

14. Concern with particulate matter, and particularly with PM_{10}, is due to the fact that it affects the upper respiratory system, and may cause rhinitis, lung damage, bronchitis, risk of cardiac arrest, carcinogen effects, and premature death[15].

A 2003 article concerning particulate matter distribution in areas located in the Kozani-Ptolemaïda basin finds that dust emissions seem to be the most serious problem in the area, as the measured ambient concentrations of suspended particles are at high levels and exceed local

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[13] It should also be highlighted that in the information provided to EPER, on national emissions, Greece is provides neatly rounded numbers as will repeatedly be seen throughout this response to the State's observation (see, for instance, Greece's SOx and NOx emissions on **Table 5 of Annex 40**).

[14] See *Complaint*, §§95-97. Lignite combustion in power plants leads to the enrichment of ashes in naturally occurring radionuclides, such as ^{238}U, ^{226}Ra, ^{210}Pb, ^{232}Th and ^{40}K due to a phenomenon known technically as *technologically enhanced naturally occurring radioactive materials* (TENORM). Public fears of the environmental and health effects of above-normal radioactivity in fly ash explain that studies have been conducted by the National technical University of Athens since the early 80s. Simopoulos *et al*. found that the radon (^{226}Ra) discharges from lignite burning could be used to estimate population doses incurred via inhalation, ingestion and irradiation, showing that the total collective effective dose equivalent commitment from Greek lignite (23 man Sv/GWa) is much larger than the value 2 Sv/GWa, given by the UN's Scientific Committee on the Effects of Atomic Radiation for world-wide coal burning (**Annex 9:** Simopoulos S.E. and Angelopoulos, M.G. "Natural Radioactivity Releases from Lignite Power Plants in Greece" in *Environ. Radioactivity* 5 (1987), pp.379-389, at 388). A more recent study using soil samples from the Megalopolis lignite field found that within a 10 km radius from the power plants (populated by about 12.000 people) there is a hot spot for radon activity on surface soil, with the measured gamma-ray dose being up to twice as high as the calculated dose. However, based on dosimetric calculation the study concludes that collective dose equivalent commitment from external irradiation in the Megalopolis region is low compared to other published doses (**Annex 10:** Rouni, P.K. Simopoulos S.E. *et al.* "Radioenvrionmental survey of the Megalopolis lignite field basin" in *The Science of the Total Environment*, 272 (2001) 261-272, at 269 and 272). A further study finds that the Megalopolis fly-ash deposits do not differ significantly from the rest of the Megalopolis lignite field basin, despite the high radon content of fly-ash buried therein (**Annex 11:** Karangelos, D.J., Simopoulos, S.E. *et al.*, "Radioenvironmental survey of the Megalopolis power plants fly ash deposits" in *Radioactivity in the Environment*, 2005, vol. 7, pp. 1025-1029). According to Prof. Simopoulos, author of the above studies, no research on the deleterious health effects of the higher radiation levels in fly-ash has been conducted in Greece (correspondence with the MFHR). Dosimetric calculations are estimates based on UNSCEAR models. Specific cohort- or cross-sectional medical studies on the existence or not of impacts from environmental radiation having not been conducted, it can be asserted that considerable uncertainty regarding the safety these emissions still exists.

[15] See table 1, on page 26 of the *Complaint*; see also §§52ff.

and international standards[16]. The study indicates that measuring stations in the region measure TSP, a far less precise indicator of health-threatening particles than PM_{10} and $PM_{2,5}$ measurements, as larger particles are not inhaled and therefore fail to penetrate the respiratory system as easily as the smaller ones. Only the Kozani measurement station held records of PM_{10} concentrations and found that these "exceeded the EPA limits for all years"[17].

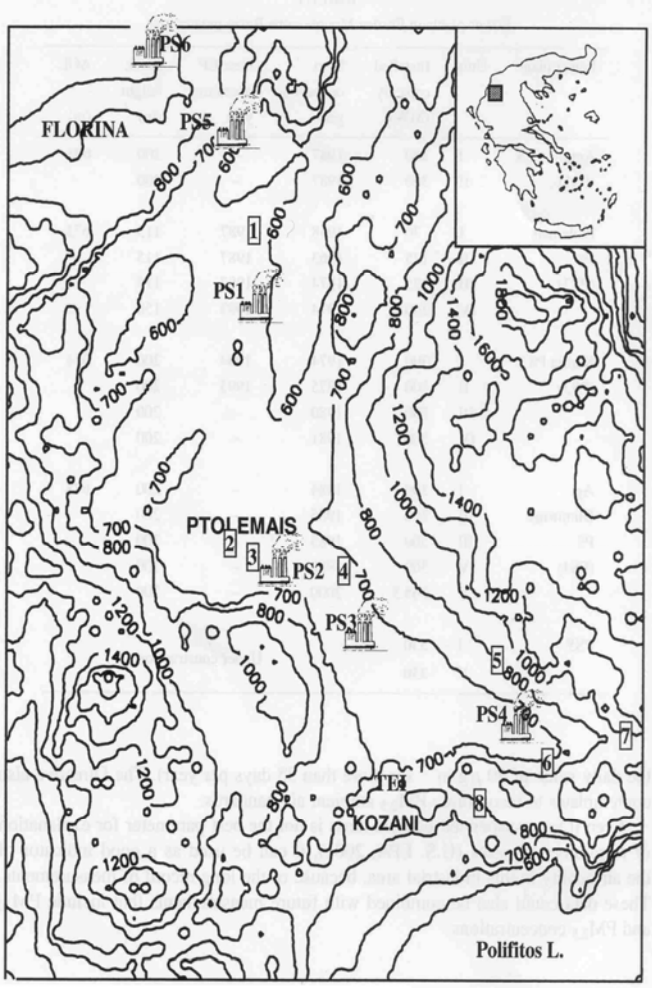

Figure 1 – Topography of the Kozani-Ptolemaïda Basin, indicating the main emission sources (PS1-6), and the locations of the two major towns, Kozani and Ptolemaïs. Graphic reproduced from the article by Athanasios G. Triantafyllou "Levels and Trends of Suspended Particules Around Large Lignite Power Stations" in *Environmental Monitoring and Assessment* **89:** 15 – 34, 2003, p. 18.

The TSP concentrations of a 16-year series were studied, and **it is found that the EU TSP limit values were exceeded numerous times at the various monitoring stations both inside and outside the Kozani-Ptolemaïda basin**, home to 150.000 inhabitants, even though a trend to reduction in TSP concentration was observed, allegedly due to improvement of filter technology[18]. Moreover, seasonal differences in concentrations were only found in measurement stations outside the valley, or in stations inside the valley but far from power plants. **This suggests that pollution levels remain constant closer to the power plants while seasonal atmospheric changes become significant as one moves away from the power plants**.[19]

15. The findings of the above study must be analysed in the light of a more recent study, regarding the Kozani-Ptolemaïda basin, finding that the **electrostatic filters used by DEH cannot hold back the most health-endangering particles**, *i.e.* the ones with a diameter less than 10μm. This finding considerably weakens the public-health importance of the previous finding of a downward trend in TSP concentrations[20]. Not only are smaller particles more

[16] Triantafyllou, A.G.: 2003, 'Levels and trend of suspended particles around large lignite power stations', *Environmental Monitoring and Assessment* 89, 15-34 **(Annex 1)** at p. 20)
[17] *Ibid.*, p. 26. PM_{10} measurements for Kozani took place in the period 1996-1998.
[18] *Id.*, pp. 21, 30.
[19] *Ibid.*, p. 28.
[20] According to this study, "[a]bout 80% of the escaping particles is smaller than 10μm. A percentage of about 15% is in the fraction of lower than 2,5 μm, which is of paramount importance for human health"

dangerous to health, but because of their mass, they may remain suspended for longer periods and might be carried farther from the emissions source. This study suggests that the downward trend in TSP concentrations is not indicative of an effective PM_{10} abatement policy.

The same study finds that during the seven-year measurement period in the city of Kozani (pop. 50.000), exceedance of limit levels was observed in 70% of the days, at the highest category[21], meaning **not only that limit levels were frequently exceeded but that pollutant concentrations were extremely elevated** (175-200μg/m^3, whereas the limit level was 50 μg/m^3). Certainly the urban environment of Kozani contributes to the levels of particulate matter concentration, but other measurement stations, such as Klitos, a semi-rural settlement, also observed extreme excess levels in 65% of the days monitored.[22]

Finally, according to a third study on the Kozani region, there was "a relatively high concentration of PM_{10} during the entire 24-hour period, which exceeded the value of 50μg/m^3 during the whole day"[23], except in cold and transient periods when limit-levels were respected only in the early morning. Yearly daily averages exceeded limit levels during the whole study period (1996-2000), for each period of the day.[24]

The study focuses on urban sources of pollution, particularly fugitive dust due to road traffic and dust resuspension, stating that "[t]hese dust sources, together with aerosol due to industrial activities in the greater area, coupled with unfavourable conditions for dust dispersion, seem to be responsible for the high PM_{10} concentrations in the area"[25]. The study concludes that "a complex system of PM sources and meteorological conditions modulates the levels of particulate pollution. The influence of traffic during rush hours, *the influence of the elevated stack emissions in the greater area during the noon and early afternoon hours due to convective conditions* as well as the formation of a stable boundary layer in the night seem to be the main reasons this situation was observed" (emphasis added).[26]

16. The last finding shows that in the particular topographical and meteorological circumstances of the northern lignite centre (see Figure 1, above), a number of unrelated causes converge to produce high level of particulate matter concentration, in violation of national and international limits.

(Triantafyllou, A.G.: 2005, 'Particulate matter over a seven year period in urban and rural areas within, proximal and far from mining and power station operations in Greece, *Environmental Monitoring and Assessment*, 159-165, **Annex 2**).

[21] According to the article "the exceedance category with the highest frequency was 175% above the limit set by the European Community (50μg/m3)", *Id.*, lines 300-314, Figure 8 and accompanying explanatory text.

[22] *Ibidem*.

[23] Triantafyllou, A.G.: 2002, "Respirable Particulate Matter at an Urban and Nearby Industrial Location: Concentrations and Variability and Synoptic Weather Conditions during High Pollution Episodes", *Journal of the Air & Waste Management Association*, Volume 52, 289, **Annex 3**, Figure 4(1).

[24] *Ibid.*, p. 290.

[25] *Ibid*., p 288.

[26] *Ibid.*, p. 295.

This is a natural and sound scientific statement, quite different from the State's simplistic assumption, based on a study allegedly prepared with data from 1996-2000, that "there are no sources emitting suspended particles with a high content of toxic and hazardous substances" and that "the main source of suspended particle's emissions is the diesel oil combustion (…) ranging from 30% up to 51% in the cold period and from 2% to 22% in the warm period"[27]. **This non referenced study seems to suggest that the problem with particulate matter is whether or not they contain 'hazardous substances'. That is not the point: inhaling enough particles composed of the most anodyne substances will provoke health problems, although hazardous substances increase the risk and severity.**

Moreover, even were it true that the main source of emissions is the diesel oil combustion engine – a fact that cannot be verified since the study was not produced – it does not clarify whether diesel oil combustion is or is not related to lignite extraction, transport and combustion activities. Nor does it supply evidence that resuspended particulate matter is not combined with that of exhaust gas from diesel combustion engines. The allegation would suggest that 'ordinary traffic' is the source of emissions, but there is no reason to believe this is the case. Moreover, even ordinary traffic in this once rural area of Greece is intimately linked with DEH's activities, with hundreds of heavy vehicles contributing to transporting thousands of tons of soil, lignite and ash, massive excavators and the engines of conveyor belts, etc[28]. Finally, even were these emissions completely unrelated to DEH's activities, it would still be necessary to mitigate DEH's particular burden to the overall suspended and resuspended particulate matter.

17. It is rather ironic that the epidemiological study of 1999, submitted by the State to prove that health problems from pollution did not exist in the Kozani region, recognizes that average values of PM_{10} and NOx, at levels such as 180-200μg/m³, are not a rare occurrence and that further observance and monitoring is necessary in order to draw conclusions for better control of particles emissions. [29]

18. To the best of our knowledge, there are no publicly available atmospheric PM_{10} concentration studies for the Megalopolis region[30]. The State would seem to agree, as in its Observations, it limits itself to stating that there are "no excesses of air quality limit values for [TSP]"[31], without quoting any evidence, or study. Nonetheless, the State alleges that two measurement stations for TSP exist in the region, and another three stations would apparently be

[27] *State's observations*, p. 29-30.
[28] According to the Greek ExternE Study, at p. 32, appended as **Annex 5 to the Complaint** unit V of Aghios Dimitrios alone consumes 160 tons of diesel per month.
[29] See page 126 of **Annex 12**, which is fully discussed below, at p. 19; See, also, footnote 72, for the study's full reference.
[30] *State's Observations*, p. 29.
[31] *Ibid*.

envisaged[32]. Therefore the best data available on Megalopolis come from the EPER data set, based on PM_{10} estimates presented by the State. Some salient features of this data are discussed below.

Although Megalopolis A (units I-III) has an installed capacity of 550MW, it emits slightly more PM_{10} than Kardia (1200MW, the fourth most polluting power plant in Europe, according to WWF[33]), and has, by far, the worst PM_{10} to MW capacity ratio of the whole energy generation sector.

Megalopolis B (Unit IV, 300MW capacity) produces 13 times less PM_{10} per MW, 0,28% of national emissions, thanks to more modern filtering technology. In its observations, the State admits that improvements in units I and II of Megalopolis A are not envisaged, although these will continue operating.

19. The above scientific studies clearly show that the State and DEH's allegations about compliance with the particulate matter emissions levels are void, since they have all found constant exceedances of the limit values provided in the relevant domestic and international norms. Furthermore, these studies have shown that the filters used by DEH, despite their alleged effectiveness, cannot hold back the most dangerous particles produced in the course of the lignite combustion. Therefore, even if the technological upgrades mentioned by DEH are taking place, limit-level exceedances are still occurring and, consequently, the State is not complying with its international obligations. All of this while practical, down-to-earth advice given by experts is ignored: "it seems possible to decrease PM_{10} concentrations in the area simply by washing the streets."[34]

2.1.1.2 Regarding nitrogen oxides and sulphur dioxide

20. The State's observations also allege that there is no exceedance of limit values for sulphur dioxide and nitrogen oxides. Once more, available data contained in scientific papers refute the State's allegations.

More specifically, as regards the emissions of **nitrogen oxides**, an article that focuses on NOx emissions produced by Greek thermal power stations, finds that "according to official data, the Greek electricity generation sector is found responsible for an annual production of more than 70 Ktn of nitrogen dioxide during the years 1995-2002, marginally violating the EU emissions ceilings concerning the limitation of 'NOx' production from large combustion installations (2001/80/EC)"[35], and adds that "after 1999, the NOx production increased gradually, despite the introduction of natural gas in the local markets"[36].

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[32] *Ibid,* p. 28.
[33] WWF Power Switch Campaign: "Dirty Thirty: Europe's worst climate polluting power stations", October 2005, **Annex 36** (available at <http://powerswitch.panda.org/news_publications/news_detail.cfm?uNewsID=23411>, last visited on 8 March 2006).
[34] Triantafyllou, 2002 **(Annex 3)** p. 295.
[35] J.K.Kaldellis *et al.*: 2005, 'Detailed examination of the Greek electricity sector nitrogen oxides emissions for the period 1995-2002', *Environmental Science and Policy* 436, p. 5-6. **(Annex 4)**
[36] *Ibid.*, p. 6.

Furthermore, the above paper finds that Aghios Dimitrios and Kardia, the two biggest national thermal power plants located in the Kozani-Ptolemaïda basin, "are together responsible for almost 50% of the NOx annual release. Moreover, during the last 3 years of the studied period, a considerable NOx production increase has been observed from the operation of these two [power plants]"[37]. Calculation results concerning the Aghios Dimitrios power plant show a continuous increase after 1999, whereas regarding Kardia, a substantial expansion of emissions factors has been observed after 1999, pushing the corresponding values above 2.5 g/kWh by 2003.[38] Similarly, when it comes to Ptolemaïda thermal power stations, it is found that "all Ptolemaïda units' emissions factors approach the 2.0 g/kWh during the last 3 years presented"[39], whereas the Aminteo power plant emissions factor "also presents a remarkable amplification after 2000"[40]. Regarding the Southern Greece thermal power stations, the paper finds that except for a slight decrease in the three Megalopolis A units, the Megalopolis B power station presents gradually increasing emission factor values, approaching the level of 2.0 g/kWh by 2003.[41]

The authors of the paper conclude the discussion of the results finding that "excluding the rather hypothetical case that a considerable renewable energy production is realised, (…) the expected annual NOx production of Greek electricity generation sector should exceed the 80 ktn by 2010, the limit for Greece being 70 ktn per year. For the time being, the annual NOx per cap release from the Greek electricity generation sector is almost 6.5 kg, a value that is higher than the corresponding EU mean (5.4 kg/cap)"[42] and reiterating that **"[t]he conclusions drawn are rather discouraging. For the entire period analysed, there has been a significant increase of NOx emissions resulting from…the emphatically insistence of the Greek state to meet any further electricity demand using low quality lignite, imported heavy-oil and natural gas. If this situation is not drastically altered during the next few years, the Greek national electricity production sector will significantly overload the local environment and the Greek citizen's health, strongly prejudicing the EU effort to control the increased flue gases release"** (emphasis added).[43]

21. *Furthermore, and according to the EPER dataset[44], in 2001 NOx emissions from the electricity generation sector constituted over 25% of national emissions. Lignite-fired power plants alone are responsible for 17% of national emissions (86% in the Kozani-Ptolemaïda centre, 14% in the Megalopolis centre).[45]*

22. *The above analysis shows clearly that the State's allegations of complying with NOx limit values are not corroborated by its own statistics. It also shows that the State is in non-compliance not only with the NOx limits imposed by the European Union legislation, but also with its commitments under the Charter, as it is apparent that it takes no effective measures to*

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[37] *Ibid.* It should also be noticed that according to WWF these two power plants are the first and fourth most polluting power plants of Europe. See above, note 33.
[38] *Ibid.*
[39] *Ibid.*, p. 7.
[40] *Ibid.*
[41] *Ibid.*
[42] *Ibid.*, p. 11.
[43] *Ibid.*, p. 12.
[44] See footnote 11, *supra*.
[45] See Table 1, below, p. 13. See Table 3 of **Annex 40**.

remove as far as possible the causes of ill-health, but rather takes steps in the opposite direction.

23. As regards the **sulphur dioxide** emissions, the data available to the complainant show that in 2002, the State was already in violation of the emissions ceiling provided by the Directive 2001/80/EC, which for Greece is 320 ktonnes/year. Thus, in 2002, annual production of SO_2 due to Greek electricity generation was over 350 ktonnes/year, demonstrating, in addition, an increasing trend.[46] Furthermore, according to the same study, based on accurate estimations concerning the expected SO_2 production by the Greek electricity generation sector, "a significant electricity-related augmentation is expected in air pollution, during the next five years, in comparison with 2002, which for SO_2 approaches 19.5%"[47]. **Taking into account the fact that lignite is still expected to be responsible for 77% of the energy produced in Greece by 2020[48], one can easily infer that the greatest portion of the current as well as the prospective exceedances of SO_2 limits will emanate from the lignite-fired power stations that operate in the regions of Kozani-Ptolemaida and Megalopolis**.

24. According to the EPER data set for Greece, in 2001 lignite fired power plants alone produced over 54% of Greek SO_2 emissions, of which 72% were emitted in Megalopolis and 28% in the Kozani-Ptolemaïda. The emission to MW ratio of the power plants is lowest in Ptolemaïda (10,94 tons of SO_2/MW per annum) and highest in Megalopolis A (I-III) (292,73 tons of SO_2/MW per annum). The average emission ratio for Megalopolis is nearly twelve times superior to that of the Kozani-Ptolemaïda centre. Although most of this is attributable to the higher sulphur content of the lignite of Megalopolis, the fact that flue gas desulphurization is not practiced in Megalopolis A units I and II certainly aggravates the level of emissions.[49]

25. The complainant wishes to remark that the State, throughout its observations, including DEH's memorandum, repeatedly alleges absolute compliance with its commitments regarding emissions limit values, but emphatically omits to provide any actual information on the details and parameters of measurements, as well as any full reference to the studies it cites, in order for the allegations to be verifiable. Therefore, the State and DEH's allegations are not only refuted by the scientific data, analyses and assessments the complainant is fully citing, but are also neutralised by their unwillingness to provide any credible proof that would substantiate their claims.

Although the State and DEH assert, in their observations, MFHR's complaint as "not documented but based on general references in the literature, disregarding the real data of measurements and specialised studies"[50], it is more than apparent that this description fits better the State's observations, since they are based on general references to vague results of extremely poorly referenced studies. The same is true for the conclusions of the program

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[46] J.K. Kaldellis *et al.*: 2004, 'The impact of Greek electricity generation sector on the national air pollution problem', *Fresenius Environmental Bulletin*, Volume 13-No.7, Figure 5, p. 651.
[47] *Id.*, p. 654. **(Annex 5)**
[48] Directorate General for Energy/ European Commission. *European Union Energy Outlook 2020*, published in November 1999 (quoted by: ICAP/Delos report **[Annex 3 of the Complaint]**, p. 269-271).
[49] See **Annex 40,** Tables 3 and 4.
[50] *State's Observations*, p. 30.

implemented by the Aristotle University of Thessaloniki[51], which the State cites, and which allegedly found no increased concentrations of elements causing environmental problems. Unless the State decides to present and fully reference the measurements and studies it refers to, its observations remain unsubstantiated allegations; and all the above should be considered in the broader context of the ample access that the State and DEH have to measurements and data and to the MFHR's respective limited access.

2.1.2 Lignite combustion impacts on national emissions

26. Not only does the pollution caused by the lignite cycle affect the health of workers and residents of the Megalopolis and Ptolemaïda areas, but it also represents a fundamental burden to national and regional environment and health, as illustrated in Figure 2.

There is no denying that the energy sector is one of the greatest causes of national pollution, and that a small number of interventions in a limited number of industrial facilities could bring about a considerable improvement to air quality on the national and regional levels. This policy is, for instance, much easier, cheaper and faster to implement than a nation-wide integrated urban- and transport-focused emissions control scheme, both because of the smaller number of policy addressees and the narrower set of measures required. Both policies should be undertaken in combination, of course. But the State's attempt to blame other sources of emissions for the national failure to achieve emissions reduction is, as demonstrated, false.[52]

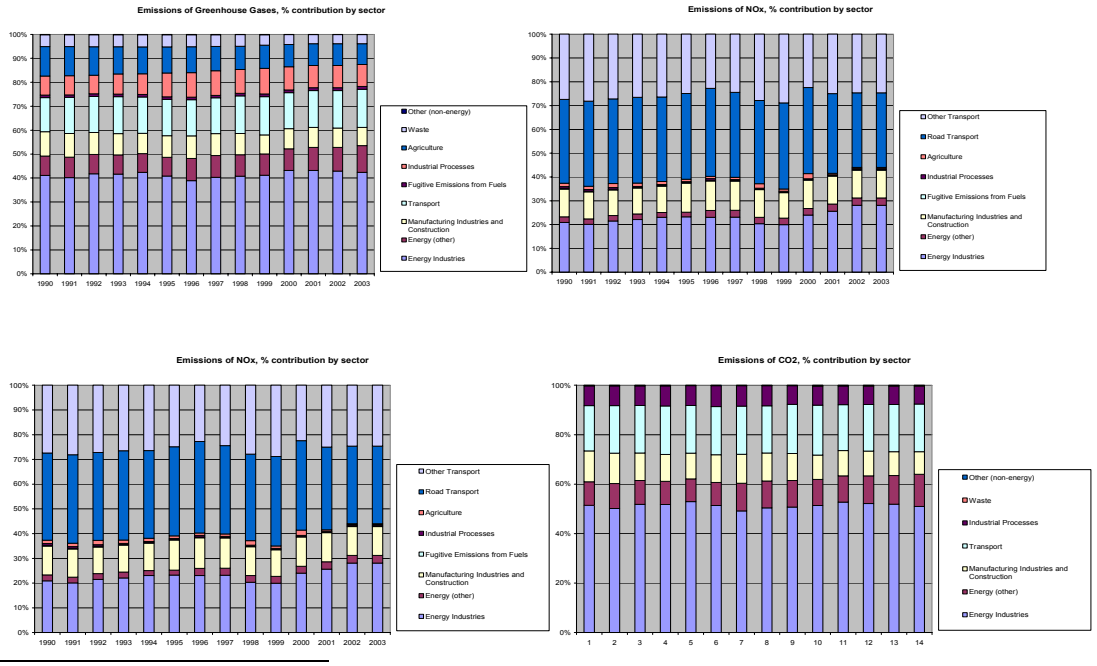


Figure 2 – Evolution of emissions of greenhouse gases, NOx, SOx, CO_2 and PM_{10}, by sector of economic activity from 1990 to 2003. For a larger version, See Graphs 2-6 of **Annex 40** These graphs show that the energy sector – energy industries and energy (other) – have regularly constituted over 50% of greenhouse gas emissions, from 25-30% of NOx emissions, over 80% of SOx emissions, about 60% of CO_2 emissions and over 40% of PM_{10} emissions.

[51] *Ibid.*, p. 29.

[52] We [illegible] gation that most part[illegible] came f[illegible] atement that, taken a[illegible] is the r[illegible].

27. The burden of the energy sector in national emissions is mainly due to the continued reliance on poor quality fossil fuels and, in particular, lignite. The 5130MW installed capacity of the lignite-fired power plants represent roughly 43% of the national installed capacity, but they are responsible for an astounding 95% of CO, 85% of CO_2, 67% of NOx, 79% of SOx and 92% of PM_{10} emissions of the electricity generation sector, according to data available for the year 2001 from EPER[53]. According to the same data set, the electric sector's contribution (counting only installations larger than 50MW) to the national emissions in 2001 can be summarized as follows:

Table 1 – Contribution of lignite to the national emissions in 2001[54]

	CO_2	NOx	SOx	PM_{10}
Lignite units	40,6%	17,1%	54,2%	28,8%
All other units	7,0%	8,2%	13,7%	2,2%
Total for energy generation	**47,6%**	**25,3%**	**67,9%**	**31,0%**

It should be noted that the data obtained from both EPER and Eurostat is collected on the basis of voluntary reporting by the State, of dubious quality as already mentioned[55]. Even taking the lower values of the more conservative estimates given by the EPER data set[56], it is patently obvious that controlling emissions from the 7 large lignite combustion plants, owned

[53] Data on installations for the year 2001, compared to national emissions by sector for the year 2001, all available at <http://www.eper.cec.eu.int/eper/introduction.asp?i=> (last visited on 8 March 2006). Data on installed capacity of power plants taken from DEH's Annual report 2004, and from J.K. Kaldellis *et al.* 2005, **Annex 4**, p.4. See also **Annex 40,** Tables 3 and 4**.**

[54] The apparent discrepancies between these results and those displayed in Figure 2 can be easily explained by differences in reported total emissions and in methodological differences between the EPER and the Eurostat data sets. Most notably, the higher values in Figure 2 concern both electricity production and other energy-related emissions (transmission, distribution, heating), cover a 13 year time-span, and are presented here mostly to highlight the regularity and dimension of the energy sector's impact on national emissions. The EPER data set, on the other hand, concerns only large combustion plants and does not include other energy-related sources of emissions for the year 2001.

[55] Above, at p. 4.

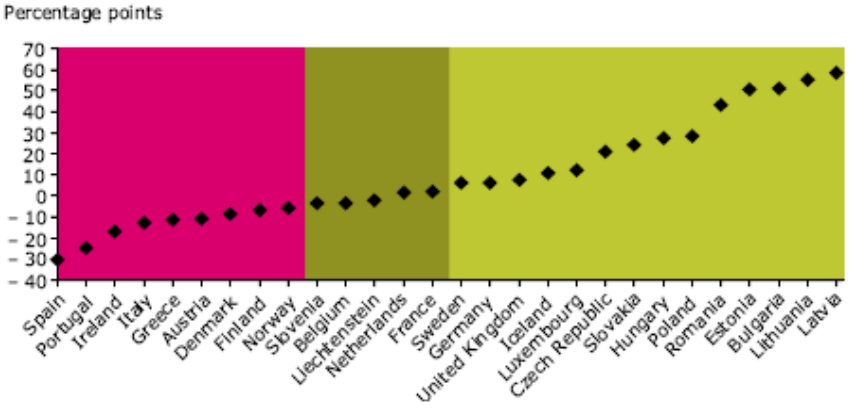
[56] In any case, the figure for CO_2 emissions quoted in Table 1 matches that made public by the Ministry of the Environment, and referred to in the *Complaint* §42.

by the same private enterprise, would be relatively simple and would have considerable impact on national emissions, all other variables constant.

Greece's performance over time: systematic missing of benchmarks

28. The production of energy is responsible for a considerable part of the pollution burden in all industrial societies, particularly so in Europe, where renewable sources are not abundant. European law provides benchmarks setting measurable targets based on which progress can be objectively assessed. The European Environment Agency's (EEA) report entitled "*The European environment – State and Outlook 2005*" presents a scorecard[57], displaying achievements for its members, among which the 25 EU Member-States. Greece's performance in the field of air pollution is clearly insufficient**. Greece's greenhouse gas reduction practice is rated – along with other 8 of 32 States – as "not on track to meet the target"** (see Figure 3, below). **Greece is about 10% off its target despite the fact that the projection includes Kyoto mechanism of emissions trading.**[58]

Figure 3 Distance to Kyoto target, linear target path, 2002



29. Although Greece's current performance in per capita emissions of both acidifying substances (SOx, NOx and NH_3) and ozone precursors (NOx, Non Methane Volatile Organic Compounds – NMVOCs, etc.) is considered 'average' by the report, the State is considered to be in a margin of 5 percentage points from the target line for both. This is despite the fact that "emissions of acidifying substances in Europe have been reduced substantially (by 44% […] between 1990 and 2002), mainly due to the increased use of pollution-abatement equipment,

[57] European Environment Agency, 2005. *The European Environment – State and outlook 2005*. Copenhagen, Office for Official Publications of the European Communities, p. 412 (**Annex 6:** hereinafter 'the European Environment'; this EEA report can be freely downloaded at <http://reports.eea.eu.int/state_of_environment_report_2005_1/en/tab_content_RLR>, last visited on 8 March 2006).

[58] See the discussion on the supplementary nature of the Kyoto mechanism, below, p. 49. Figure 3 is taken from *The European Environment*, p. 414.

e.g. flue gas desulphurisation, together with the use of low-sulphur fuels in power plants"[59]. The issue at stake is whether measurable improvement is taking place, i.e., whether Best Available Techniques (BAT) are being implemented as required by international and European law, and whether such measures are having positive effects. If they are not, then supplementary palliative measures are required to safeguard fundamental rights such as health.

30. Flue gas desulphurization and low-sulphur content fuel, as clarified below[60], are not being used by the State and there is no plan to do so in the near future. It is obvious from the quoted text that **Greece is not only going against the European trend, but endangering progress made by other countries**. It should be underlined that Greece's targets under the EU National Emissions Ceilings Directive (NECD)[61] are the only ones to envisage an *increase* of emissions: Greece produce 493 thousand tons of SO_2 in 1990, and will be allowed to produce up to 520 thousand tons in 2010. **This target is only three tons lower than the eight times more populous Germany, EU's largest lignite producer!**

To keep these figures in context, the similar absolute values for Germany and Greece represent radically different things: to reach its target Germany must reduce its SO_2 emission by 90% (target it had nearly achieved as soon as 2000), whereas Greece is allowed to increase it by up to 5,47% (See Figure 4). As the EEA report puts it, in a diplomatic understatement of the point, "[o]f course the agreed targets are also the result of a political negotiation"[62]. Indeed they are.

[59] See *The European Environment*, p. 421.
[60] See the section entitled "2.3.1.2.2 Best available techniques? Continuous use of outdated, high-polluting technology ", at p. 37.
[61] *Directive 2001/81/EC of the European Parliament and of The Council of 23 October 2001on national emission ceilings for certain atmospheric pollutants*, L 309/22, Official Journal of the European Communities (27/11/2001).
[62] See *The European Environment*, p. 421.

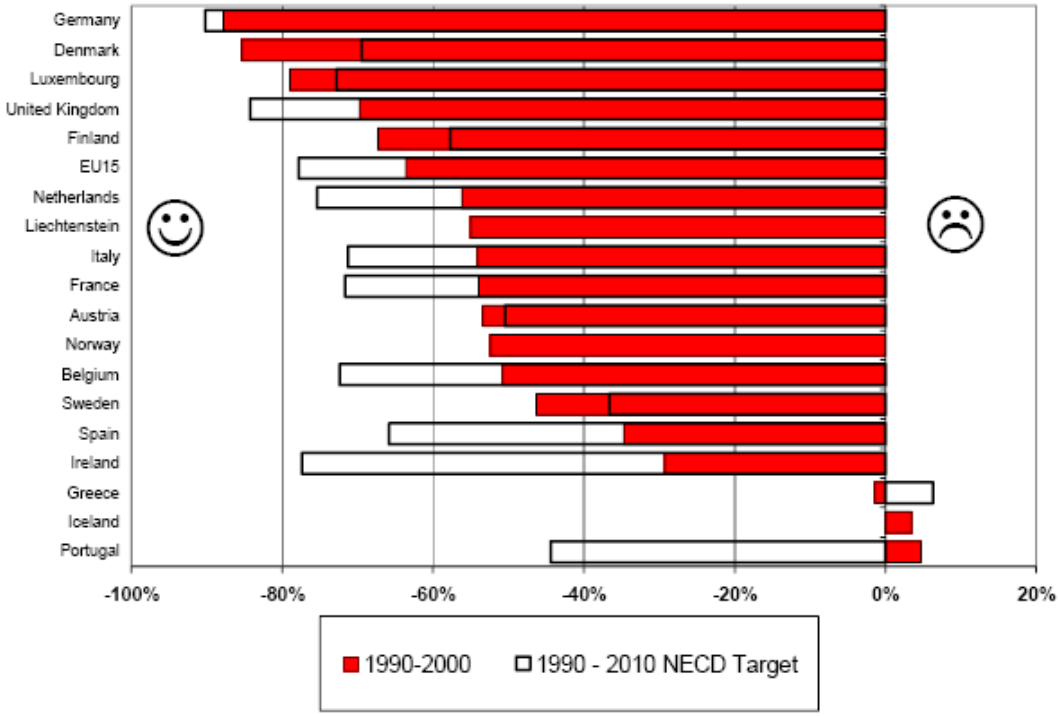


Figure 4 - Change in national SO_2 emissions since 1990 compared with the 2010 NECD targets EU15 (reproduced from EEA, "AP1 – EEA31 emissions of SO_2", 2003, available at <http://themes.eea.eu.int/Environmental_issues/air_quality/indicators/AP1%2C2003/ap1_emiss_SO2_FnlDrft_2003.pdf> (last visited on 8 March 2006).

31. With respect to PM_{10} emissions a further study by the EEA[63] also shows that Greece is moving in the opposite direction from Europe: while in the EU "reductions in emissions of SO_2, NOx and primary PM_{10} from energy industries and a change from solid fuels to gas and non-fossil sources have contributed significantly to a 29% reduction in total PM_{10} emissions between 1990 and 1998", in Greece these emissions increased 10%[64]. A more recent study by the EEA shows that in the period 1990-2002, whereas Europe decreased its particulate emissions by 39%, Greece's emissions were stable. Throughout Europe, improvements in the Energy sector accounted for 46% of the total reduction, while road transport accounted for 22%.[65]

The State, via DEH's memorandum, alleges that measures adopted so far "led to the reduction of particles' emission coefficient from the large combustion facilities by around 85% in the decade 1990-2000"[66]. This statement, if true, means that the amount of particle emissions

[63] See EEA, "YIRO1AP5c Emissions of primary particulates and secondary particulate precursors 2001" in *Indicator fact sheet Environmental Signals 2001: Chapter air pollution*, 2001, **Annex 7**, available at <http://themes.eea.eu.int/Environmental_issues/air_quality/indicators/particulates/yir99ap5c.pdf> (last visited on 8 March 2006).
[64] See the first table on page 4 of **Annex 7** as well as the table entitled "EEA18 Percentage change in the emission of primary and secondary fine particulates (PM_{10})" at p. 2.
[65] EEA (Indicator Management Service [IMS]), "Emissions of primary particles and secondary particulate precursors (CSI003) – May 2005 assessment", last modified in 28 October 2005, study available at: <http://ims.eionet.eu.int/IMS/ISpecs/ISpecification20041001123025/IAssessment1116511151442/view_content/> (last visited on 8 March 2006).
[66] *State's Observations*, p. 33.

per unit of energy produced has declined, but does not however clarify whether the total amount of particulate emissions has declined. **The increase in installed capacity in the entire energy sector – with the introduction of gas, and hydro power plants – has lowered the emissions factor in general, but this does not prove or suggest that emissions factor for lignite units has improved.** It is also disingenuous to present this as a major accomplishment when one considers that it only applies to one of four major pollutant categories (PM_{10}), and is not accompanied by clear data on what the impact has been on total emissions.

32. Greece's lack of commitment to reaching its targets is particularly grave to fellow EU countries when one has in mind that "[t]he southern European countries are more predisposed to ozone formation. This means that there is not a level playing field in terms of the relation ozone precursor emissions and ozone formation, and poor performance in emission reduction in southern countries will lead to greater levels of impact, for example on human health, than similar poor performance in more northern countries".[67]

The references made above serve the purpose of demonstrating the overall inefficiency of Greek environmental policy in monitoring and controlling air quality, on both the local and national levels. The MFHR's claim according to which Greek environmental policies lead the country to violate its Kyoto protocol targets, will be addressed in detail later.[68]

2.2 Environment and Health: the Toll of Lignite

33. The State's Observations contain no information about population-wide health assessments or about formulating an appropriate public-health response to environmental threats. This is so because public authorities have carried out no general or specific epidemiological studies of their own[69]. **This poor performance of the State in the promotion of health in regions where specific health hazards result from the "public interest" in cheap energy explains that DEH – in over 45 years of activity – has only two studies to invoke**[70]. Full reference to these studies, including dates, data and methods used, is not provided by DEH. The specific detailed conclusions finding that the populations' health is not affected by the described activity, as DEH alleges, are not quoted but rather misused. It is also highly significant that only a paragraph in the *Observations* is dedicated by DEH to the defence of this point.

The State alleged that the lignite cycle had no measurable negative public health impacts in Kozani-Ptolemaïda and Megalopolis. This astounding claim not only flies in the face of all relevant scientific knowledge – there is no longer a scientific debate over *whether* there

[67] See *The European Environment*, p. 423.
[68] See p. 49, below.
[69] *Complaint*, §§ 98-103.
[70] *State's Observations*, § 2.5 of DEH's Memorandum, p. 39.

are impacts, but rather to *what extent* they can be mitigated – but the presentation of the conclusions of the above studies is also incorrect, as will be shown below.

The Committee should note that the State's observations in no manner question the validity of the studies presented in the Complaint[71], although these studies reach radically different conclusions, and were provided in full. Scientific findings are challenged in a systematic and concrete manner: if the State wishes to challenge the validity of the studies presented in support of the MFHR's claims, they must provide proof – methodological, or other – that such studies are not reliable, as the complainant will presently do with the studies presented in DEH's memorandum.

34. The complainant obtained copies of the two studies referred to in DEH's memorandum, and found a number of problems with the methodology used, the age and quality of the data, and with the manner in which conclusions were drawn by the authors and how these were used by DEH in it's memorandum.

It is necessary to comment on a few **general methodological issues** of both studies. *Control groups are not well-established*: for epidemiological comparisons to be fruitful, populations in rural or semi-urban areas must be compared to like populations and not to the national average (which in Greece is dominated by the urban populations living in the highly polluted Athens).

Important methodological choices – characteristics of the control groups, time-spans covered, parameters chosen, diseases controlled for or omitted form the study, population characteristics controlled for or not – were *never justified with reference to the specialized literature*. For instance, studies use health insurance booklets of low reliability to analyse morbidity without ever justifying this work method.

Finally, *conclusions reached by the authors are not fully justified* or compared to those of similar studies in the abundant international literature. For instance, if a study reaches the conclusion that hospitalization rates in a rural area follow the national trends, one must question why such dissimilar populations would have similar hospitalization patterns.

The complainant is not in a position to pass judgement on the quality of scientific work, but it is revealing **that DEH does not cite a single peer-reviewed article in its memorandum**. The studies presented, carried out by hygiene laboratories exclusively, have not been examined and approved by physicians with greater specialized knowledge, such as pneumologists, cardiologists and others with relevant expertise.

Epidemiological Studies concerning the Kozani-Ptolemaïda region

[71] See *Complaint*, §§76ff.

35. The "Epidemiological Study on Health Problems of Kozani's Population"[72], concluded in 1999, used statistical data provided by the National Statistical Service of Greece and Kozani's population is compared with the entire Greek population. Kozani was a medium-sized settlement, of semi-rural character, and cannot therefore be meaningfully compared to the Greek average. The data set contained old – mostly prior to 1993 – and irrelevant data: hospitalisation figures are not disaggregated by cause (respiratory, cardiac, traffic accident, etc.). The study contains contradictory information about the age structure of the local population: on the one hand mortality rate increase is attributed to an ageing population; and, on the other hand, the increase of births is alleged to result from the fact that the population is mostly composed of young people.[73]

36. Furthermore, the study attributes increased hospitalization rates to the good quality of social security in the region, and not to increased health problems[74], as can be seen in the findings of the general conclusions on morbidity:

> *"We were concerned, of course, and intensively so, with the probability that such trend* [increase in hospitalization] *is true and reflects real health problems* [and not the improvement of social security in the region] *and hospitalisation needs. We do not reject this probability which, if true, tends towards a decrease* [in hospitalizations]*, a strong decrease or complete elimination, since the trend of Kozani prefecture's curve steadily approaches Greece's."* [75]

37. This study, funded by DEH and using data up to 1993, concludes that increases in hospitalization are due to improvements in social security infrastructure and not to 'real health problems'. But it adds that if an upwards trend in hospitalizations were due to health problems, the tendency in Kozani would probably follow Greece's, i.e. would decrease over time.

38. It is a surprising statement, because – as shown on a Figure reproduced below[76] – the evolution of hospitalizations of persons born in Kozani from 1970-1993, regardless of their place of hospitalization, states quite the contrary. It shows that **hospitalization rates** (number of hospitalizations per 1.000 inhabitants) **are constantly above the national average, and peak most notably in periods when new power plants started-up**: 84-87, years in which Aghios Dimitrios and Amynteo stations started, and a first peak from 75-81, years in which Kardia started-up.

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[72] Katsougiannopoulos, V. (Dir.), *Epidemiological Study on Health Problems of Kozani's Population***,** Aristoteleion University of Thessaloniki, Hygiene Laboratory, Medicine Section, Kozani – Thessaloniki, 1999, 222 p, **Annex 12**. DEH's memorandum, at p. 40, asserts that the author is called Koutsogiannopoulos, but no such professor exists.

[73] *Epidemiological Study on Health Problems of Kozani's Population*, 1999, **Annex 12**, p. 6.

[74] *Ibid*.

[75] Ibid., p. 221

[76] *Ibid.*, figure 4, at page 216.

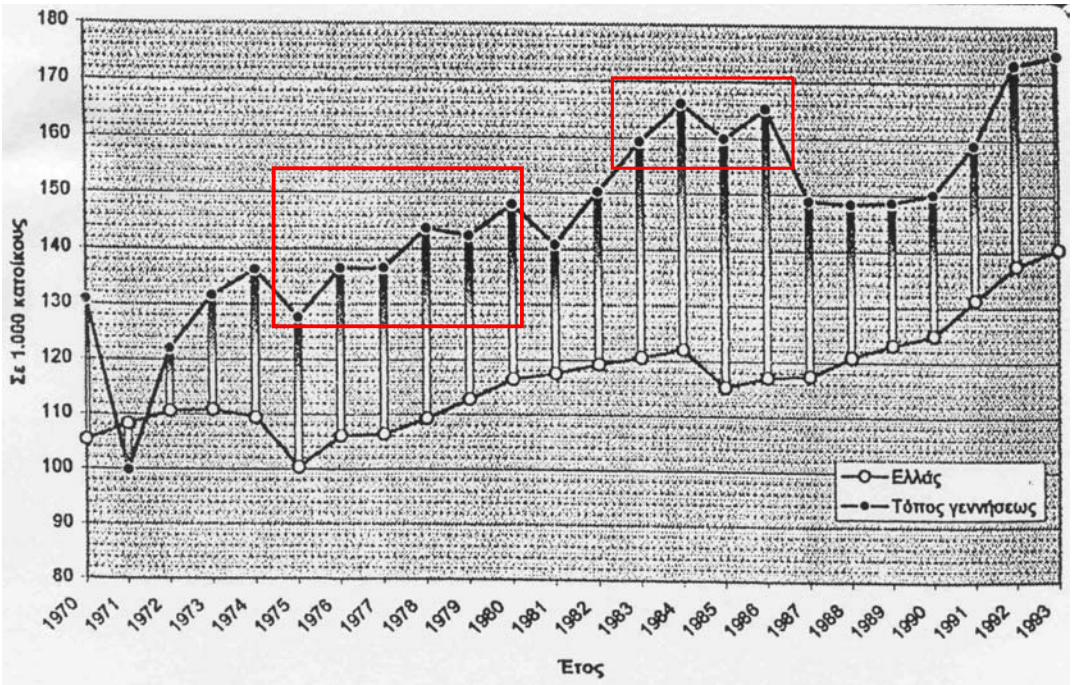


Figure 5 – Rate of hospitalization (per 1.000 inhabitants) in Greece (-○-) and in Kozani (-●-) from 1970 to 1993 (Figure 4, p. 216 of the *Epidemiological Study on Health Problems of Kozani's Population*). (Red highlights added)

39. Moreover, when place of birth, place of treatment and place of residence are disaggregated, as in the Table reproduced below[77], what one sees is **that people living in, or born in Kozani Prefecture, have constantly had a higher morbidity rate** (as measured by hospitalization) than the overall Greek population, and the trend also follow lignite-cycle peak periods.

[77] *Epidemiological Study on Health Problems of Kozani's Population*, 1999, p. 216, Figure 3.

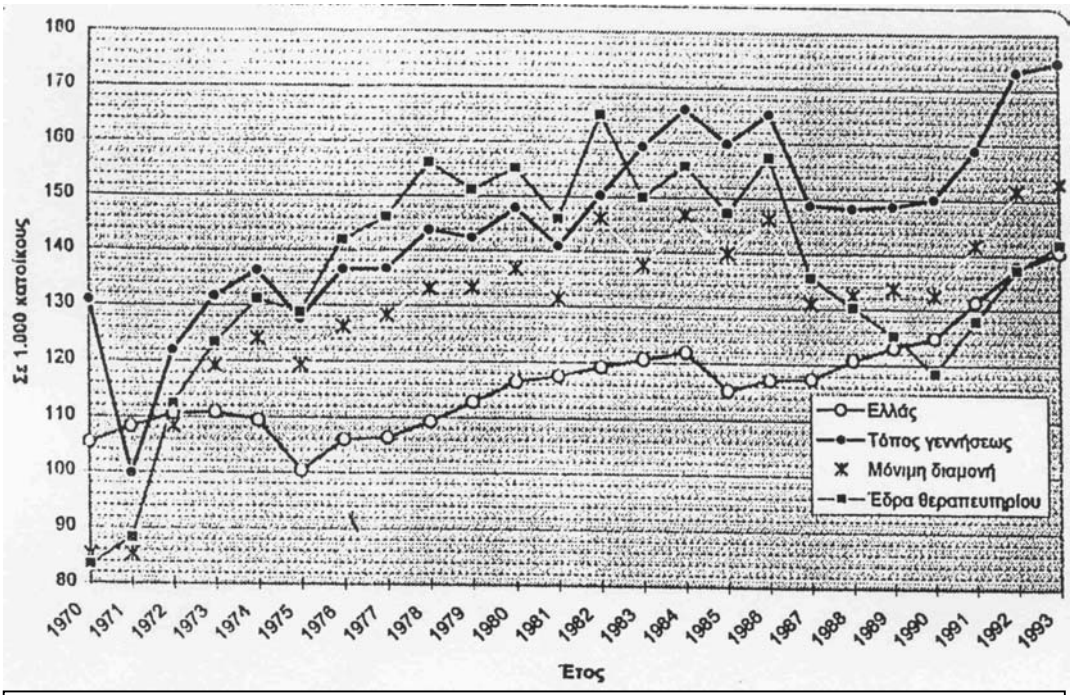


Figure 6 – Rate of hospitalization in Greece (-○-) and in Kozani prefecture based on place of birth (-●-, Kozani Prefecture), place of residence (-x-, Kozani Prefecture), and place of treatment (-■-, Kozani Prefecture), from 1970 to 1993 (Figure 3, p. 216 of the *Epidemiological Study on Health Problems of Kozani's Population*)

40. Even if one admits that the social security system's efficiency is high, it only concerns first degree care (free or highly subsidized access to general physicians and pharmaceutical products, prior to hospitalization), which, normally, should have resulted in a *decrease* of hospitalization due to improvement of preventive care. This argument is further strengthened by the conclusion that Kozani's inhabitants prefer to be hospitalized in other regions, such as Thessalonica or Athens, probably for cases that need more specialized care, such as heart- or neurosurgery.[78]

41. The presentation of mortality rates is done in absolute numbers[79]. These numbers are not statistically evaluated and are, therefore, meaningless. Even the finding of increase in deaths caused by diseases related to environmental pollution, such as respiratory[80] or circulatory[81] diseases, cannot be assessed in an effective way, as long as no statistical evaluation is provided for. The same conclusion can be drawn as to intertemporal variations of mortality rates[82].

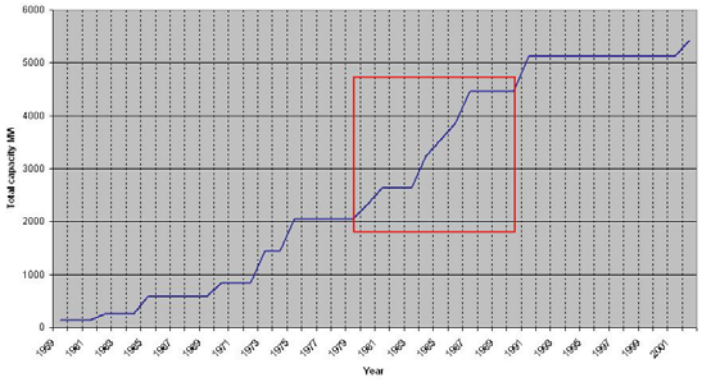
42. Moreover, the **'impressive and rapid increase' of deaths due to cardiovascular problems** found in the study – higher in Kozani than in the rest of the country, although Kozani's population is demographically younger – is attributed by the authors to:

1. the fact that doctors of Kozani simply declare as cause of death the cardiovascular problems without any precise reference to the exact medical cause of death, and
2. the "common truth" that industrialization of rural areas has changed the way of living causing increased morbidity and mortality from diseases of the cardiovascular system.

[78] *Ibid,* **Annex 12**, p. 222. Also note that this is reflected in Figure 6 of the present response, where disaggregated data shows that in the periods 1970-1972 and then 1991-1993, persons born or living in Kozani were hospitalized more often than the national average, but not in hospitals in Kozani.
[79] *Ibid*., p. 45.
[80] *Ibid*., p. 54.
[81] *Ibid*., p. 56.
[82] *Ibid*., **Annex 12**, p. 51.

Once again, no bibliographic references are provided in order to assess the importance of those conclusions in this specific case[83]. **It should be noted that starting in 1980 circulatory problem-related mortality in Kozani jumped from an average of 218 to an average of 446 per 100.000**[84]. The 80's saw the largest increase in operation of lignite-fired units (8 new units, see Figure 7), most notably the Aghios Dimitrios station, the most polluting power plant in Europe. The explanations given by the Hygiene laboratory for this doubling of mortality rates are not based on any scientific authority or factual data but represent, at the best, an informed guess by an individual researcher.

Figure 7
Greek lignite installed capacity, 1959-2002



The current pertinence and reliability of the above conclusions is even more doubtful since, as the study admits, data on mortality were available only for the period from 1965 to 1990, i.e. 9 years before the completion of the study[85]. Therefore, the 90s, decade during which environmental pollution increased all over the world, is excluded from this study. This is important since health effects can be more severe in combination with the pollution resulting from other sources, such as transport-related emissions, etc. Moreover, **the study itself acknowledges the weaknesses of morbidity findings as data could not be disaggregated according to relevant parameters such as patients' gender, age, smoking habits, and profession**[86]. This weakness is in stark contrast to the studies presented in the Complaint which used control groups, and disaggregated data according to place of residence, smoking habits, age, gender, etc.[87]

Further evidence: The Komanos relocation study

43. A further study[88], not referenced by the State, was made by the Hygiene Laboratory of Patras University in 1990. It was one of two health studies carried out in that year that eventually lead to the relocation of the village of Komanos[89] – repeatedly requested by the inhabitants –, which was then within the perimeter of mining, dumping, and transport activities of the nearby lignite centre and power plant stacks.

44. Professor Kondakis' study compares mainly Komanos to Nea Kardia in order to assess the health effects of air pollution on Komanos' inhabitants. Nea Kardia is a village created by inhabitants of Kardia, another village within the territory of mines, that had been relocated before 1980 so that the mines of Kardia could operate freely. The new location of Nea Kardia

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[83] *Ibid*., pp. 57-58.
[84] Arithmetic averages obtained using the data presented on page 56 of *Epidemiological Study on Health Problems of Kozani's Population*, 1999 (See also **Table 6 of Annex 40**).
[85] **Annex 12**, p. 70.
[86] *Epidemiological Study on Health Problems of Kozani's Population*, 1999, **Annex 12**, p. 221.
[87] See *Complaint*, §§85ff.
[88] Kondakis, X. (Dir.), *Study on the Effects of Air Pollution on Health of Komanos' Inhabitants in Kozani*, Hygiene Laboratory, Patras University, 1990, 132 p. **(Annex 13)**
[89] It should be noted that according to inhabitants, DEH's sudden concern for inhabitants' health was due to its manager, Professor Xanthopoulos, subsequently Rector of NTUA and presently, Secretary General of the Ministry of Environment. The then manager of DEH was of different culture and more conciliatory than previous ones. After the presentation of the studies to DEH's Governing Board the relocation of the village was decided. The reason of the relocation was officially the existence of lignite deposits in the village's subsoil and not the inhabitants' health, as the latter finding would engender concerns in a much wider area.

was close to Ptolemaïda, in an area that is considered to be affected by air pollution as well. Moreover, all adult inhabitants of this village lived in an area where mines and power plants operated since 1960, so they had already been affected by pollution throughout their life.

45. Although the study did not conclude that the mortality rate in Komanos is higher than the corresponding rate for Macedonia and for the entire country, it admits that male inhabitants present a higher mortality rate due to respiratory diseases than female inhabitants. **Moreover, it is observed that there is a statistical correlation between monthly rates of men's deaths and monthly average values of particles.** In order to explain this result, two possible explanations are provided:

1. many local men have worked for a long period in mines, and respiratory diseases they developed should have been aggravated in periods of high air pollution. Moreover, the average age of death – 72 years – shows that those persons who worked in the mines, did so until 1970 under "unknown" working conditions; and,
2. smoking is more frequent in men and as a result, air pollution affected them at a higher degree.[90]

The above conclusions may explain why DEH has not invoked this study, since its findings, even though no specific problem for Komanos' habitants is recognized, admits the close relation between mortality and air pollution, especially for workers at the mines. Despite its methodological weaknesses this study corroborates the findings of the Sichletidis *et al.* study described in the Complaint. [91]

46. Additionally, as to children's morbidity, the study uses the social security health insurance booklet provided by DEH and Social Security Fund ('Ίδρυμα Κοινωνικών Ασφαλίσεων', ΙΚΑ), which is inappropriate, because it is well known that doctors rarely complete these booklets, as it is not mandatory. As a result, 9 out of 10 visits to doctors are never declared and even those that are declared contain no relevant clinical information. The same situation exists in hospitals that do not respect these formalities, which explains why these booklets are never used in epidemiological studies.

Epidemiological study concerning the Megalopolis region

47. The State and DEH further invoke the findings of another study focusing on the area of Megalopolis[92], conducted on the basis of a contract between DEH and the University of Patras, which allegedly shows that the mortality and morbidity rates in the Municipality of Megalopolis are not affected by the operation of the mining and lignite centre in the area.

48. Once more this study is quite old, and although completed in 1992, the data and measurements it uses stop at 1989. This is relevant because, in 1989, the Megalopolis B power plant was started-up, increasing the region's installed capacity by 54% and adding another 2.7 million tons of CO_2, 28000 tons of SO_2, and 186 tons of PM_{10} per year to the already rich mix of pollutants in the Megalopolis area. **Therefore the impacts of this surcharge of pollution have not been measured by this, or any other study**. The study also uses an arbitrary control group, of all other semi-urban (2000-10000 inhabitants) areas of Greece. This control group probably includes other regions of Greece that host DEH installations and are as, or more polluted, than Megalopolis (such as the mostly rural areas in the Eordea valley).

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[90] *Study on the Effects of Air Pollution on Health of Komanos' Inhabitants in Kozani,* 1990, **Annex 13**, p. 97

[91] See section 3.2.3.4 of the *Complaint*, at p. 28.

[92] Kondakis, X. (Dir.), *Study on the Environmental Conditions (Air and Water Pollution) and on the Effects on Health of Inhabitants in the area of the Megalopolis Power Plant*, Patras, 1992, 199 p. **(Annex 14)**

49. As regards the study's findings on **mortality**, described by the State as 'negative', the complainant observes the following. *First*, the study compares the mortality in Megalopolis for the years 1980-1989, and for the rest of Greece from 1980-1982, without explaining why the shorter control group reference period was chosen. Moreover, **contrary to the State's suggestion, the study does find that mortality rates in Megalopolis are higher than the national average for cardiovascular diseases in both men and women** (cardiovascular disease is responsible for 6,43% [men] and 8,70% [women] more deaths in Megalopolis than in the average semi-urban settlement), although no similar difference is reported in respiratory diseases. The study also finds that the rates of infections and neoplasia (in women) are slightly higher in Megalopolis than in the rest of the Greek semi-urban areas. [93]

50. DEH's memorandum claimed that "the study on pupil's absenteeism from elementary schools was negative". It should be first noted that **the absenteeism study used only data for 56 days because, although pupil absenteeism data were available for the planned 130 days, DEH's TSP measurements were not**. Additionally, the data and measurements of the study show literally that "**TSP concentrations above 120 µg/m3 are followed by an increase in the number of absences from school** (more than 20 absences per day)" (emphasis added) [94].

However, the authors of the study chose, quite inexplicably, to attribute the absences observed during and after days with high TSP concentrations to the temperature – in those days lower than 8 degrees Celsius. They provide no reason for attributing such absenteeism to weather and not to the TSP concentrations. According to the study, increases in TSP concentrations are also attributable to the lower temperatures as, allegedly, colder weather increased the demand for electricity leading to increase in lignite combustion. Although this assumption seems to be false[95], **it is striking that although the study shows a clear link between TSP concentration, lower temperatures and absenteeism, only the weather is blamed**.

51. Finally, DEH's memorandum alleges that "the morbidity study was also negative"[96]. The morbidity study, though, is based exclusively on the examination of 49 family health insurance booklets, the reliability of which has already been questioned. Moreover, the study covered only women and children's morbidity, without justifying this choice. It is quite obvious that male and female life patterns in semi-urban regions are quite different: men are traditionally spending much more time outside their houses, whereas women, especially women with small children, stay at home and are therefore less vulnerable to environmental pollution.

The morbidity study also arbitrarily limited the diseases or afflictions studied from the booklets. Only cases of respiratory, skin and ophthalmologic diseases were analysed. Infectious as well other, more serious diseases, such as neoplasias and cardiovascular diseases were unjustifiably excluded, despite the high prevalence of the latter. This approach erroneously considers that air pollution only harms the respiratory system. **A serious site-specific morbidity study should have included men, and would have conducted clinical examinations and direct interviews with the families.**

Restating the case: air pollution and health

52. The Complaint provided evidence on the multiple adverse health effects of environmental air pollution[97], and additionally described how these effects on health had been found to exist in the areas where lignite is used for electricity generation[98]. In addition to those

[93] *Study on Megalopolis Populations Health*, 1992, **Annex 14**, p. 93.
[94] *Ibid.*, p. 138.
[95] At least with respect to the Northern lignite centre according to measurements of the seasonal variations in the Triantafyllou study (2002, **Annex 3**), pp. 26-27, and the Triantafyllou study (2005, **Annex 2**), lines 206ff. See also, notes 21, and 23, above. Higher particulate matter concentration in the warm period is explained both by increased electricity demand and lack of rain a natural airborne particle precipitation mechanism.
[96] *State's Observations*, p. 40.
[97] *Complaint*, §§76-79.
[98] *Ibid.*, §§80-97.

observations, and to the refutation of the State's epidemiological studies, the complainant would add the following.

It was asserted, and not challenged by the State's observations, that air pollution has deleterious effects on health. The mechanisms by which pollutants, such as particulate matter and sulphur dioxide, affect human health are multiple and not completely understood. Acidific ultrafine particles may provoke alveolar inflammation causing acute changes in blood coagulability and release of mediators able to provoke attacks of acute respiratory illness in susceptible individuals[99]. Moreover, sulphur dioxide is a known respiratory irritant and bronchoconstrictor.

53. Air pollution does not simply affect the respiratory system. According to the American Heart Association, "[t]he putative biological mechanisms linking air pollution to heart disease involve direct effects of pollutants on the cardiovascular system, blood, and lung receptors, and/or indirect effects mediated through pulmonary oxidative stress and inflammatory responses"[100]. Elderly patients, those with underlying coronary or pulmonary disease, lower socioeconomic populations, and diabetics may be at particularly increased risk. A growing body of studies demonstrate that this curve is without a discernible threshold below which PM concentrations pose no health risk to the general population[101]. Although exposure to ambient air pollution poses smaller relative risks for incident cardiovascular disease than obesity or tobacco smoking, **because it is ubiquitous, the absolute number of people affected is enormous, and exposure occurs over an entire lifetime**[102]. A study in 12 European cities[103] showed that increases in sulphur dioxide (SO_2) and particulate matter (PM_{10}) are associated with short-term increased total mortality, the effects of the two pollutants being independent. This association is believed to be causal. It was found that an increase of 50μg/m^3 in sulphur dioxide or PM_{10} resulted in a 3% increase in daily mortality. Prolonged exposure resulted in estimates comparable with the one day effects[104]. This mortality increase shows that even when limit-levels are adhered to on the average, occasional exceedances have palpable immediate effects on mortality.

Two conclusions follow from these scientific findings: first, **compliance with pollutant limit-levels does not, *per se*, guarantee that avoidable mortality and morbidity are being effectively reduced**; second, **exceedance of limit-levels produces direct, and immediate responses in human mortality and morbidity**.

54. To the complainant's best knowledge, the only current studies conducted in Greece are those co-ordinated by professor Sichletides, author of one of the studies used in the Complaint[105]. These studies focus on re-examining individuals who were first examined 20 years ago when they were schoolchildren. They also periodically re-examine inhabitants of

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[99] Seaton A, *et al*. "Particulate air pollution and acute health effects". *Lancet* 1995; 345:176-8.

[100] American Heart Association's Scientific Statement, "Air Pollution and Cardiovascular Disease - A Statement for Healthcare Professionals From the Expert Panel on Population and Prevention Science of the American Heart Association", published in *Circulation*, 2004;109:2655-2671, **Annex 15** (Available at <http://circ.ahajournals.org/cgi/content/full/109/21/2655>, last visited on 8 March 2006), p. 2663 (Hereinafter 'AHA statement'). Beyond respiratory and circulatory diseases, a correlation between ambient air pollution and male infertility has been reported: "Ambient air pollution exceeding has also been associated with increased DNA fragmentation in human sperm, and may thereby increase the rates of male-mediated infertility, miscarriage, and other adverse reproductive outcomes" (Rubes *et al.*, "Episodic air pollution is associated with increased DNA fragmentation in human sperm without other changes in semen quality", Human Reproduction Vol. 20, No.10 pp. 2776–2783, 2005, **Annex 16**).

[101] *AHA Statetment*., **Annex 15**, p. 2666.

[102] *Ibid*, p. 2662.

[103] K. Katsouyanni, *et al.* "Short term effects of ambient sulphur dioxide and particulate matter on mortality in 12 European cities: results from the APHEA project" *BMJ* 1997; 314:1658.

[104] This European finding is further corroborated by studies in the USA: "The most recent analysis of the National Mortality and Morbidity Air Pollution Study (NMMAPS), based on data from 90 of the largest cities in the United States, estimated that daily total and cardiopulmonary mortality increased in the short term by 0.21% (± 0.06 standard error [SE]) and 0.31% (±0.09 SE), respectively, for each 10μg/m^3 increase in PM_{10} (measured over a 24-hour period)." (*AHA Statement*, **Annex 15**, p. 2655).

[105] See **Annexes 12-14** of the *Complaint*.

many villages that had been first examined 10 years ago. The same protocol of study is applied to inhabitants of Florina (where the Melitis power plant is located). Hopefully these studies will allow an accurate assessment of the burden of atmospheric pollution in northern Greece, over a long period of time.

As with other studies the complainant has referenced, these are a private initiative, not funded by the State or DEH, and conducted by a team of Thessalonica University and volunteer practicing physicians. One wonders why the State undertook the obligation under Article 11 of the Charter, if it is not willing to assume the burden of investigating and determining well-known domestic causes of ill-health.

2.3 State Failure: Refusal to Protect Health

55. Having established that environmental pollution due to the mining, transport and combustion of lignite exists, and having further demonstrated that considerable health problems arise from this pollution, the complainant can now analyse the specific instances of non-compliance with Article 11 of the Charter.

2.3.1 The obligation to remove the causes of ill-health

56. The Complaint asserted, and the present response will further substantiate, that: in the **operation of lignite mines**, insufficient regard has been given to the environmental impacts of the operation of conveyor belts, and to the management of dump-sites for fly ash and other solid waste; and, in the **operation of lignite-fired power plants** insufficient regard has been given to the environmental impacts of: the continuous use of outdated, ineffective anti-pollution technologies, in particular filters; the inadequate licensing regime for combustion plants; the inadequate environmental monitoring and enforcement mechanisms; and, the continued reliance on fossil fuels, leading to the transgression of the Kyoto Protocol targets.

2.3.1.1 The operation of the lignite mines without regard to environmental impact

57. The lignite cycle is a complex process which starts with the extraction of lignite in open-cast mines, and finishes with the disposal of captured fly-ash in dump-sites, often within depleted mines. The mine is, therefore, the Alpha and Omega of the cycle. Although most of the emissions of air pollutants in the cycle are produced during the combustion in power plants, considerable environmental degradation results from the mining – which involves extracting and separating of millions of tons[106] of lignite, ash and overburden –, transport – involving

[106] According to the ExternE program report on the Greek lignite cycle (**Annex 5** of the *Complaint*), Unit V of Aghios Dimitrios alone consumes 3,7 million tons of lignite each year (for an installed capacity of 366,5MW). To extract these, from 12,2 to 18,5 million cubic meters of overburden must be dug,

hundreds of kilometres of conveyor belts, as well as road transport –, waste disposal – fly-ash is transported, dumped and covered in layers of earth – and soil rehabilitation – transforming the crater-like depleted mine into a more natural landscape.

2.3.1.1.1 Dispersion of particulate matter due to inadequate usage of conveyor belts and stockpiling

58. The Complaint stated that over 100km of conveyor belts were used to transport lignite, overburden and fly-ash to different dumpsites. It was noted that, in contravention to legislation, the conveyor belts operated at high speeds, without being covered, and that water sprays used to humidify were either absent, not used, or inefficient. All of this produced avoidable dispersion of particulate matter causing respiratory problems to workers and inhabitants. According to local sources conveyor belts crossed populated areas, and only 10km were covered.[107]

59. DEH's memorandum alleges that to avoid dust dispersion from excavation materials, either spraying networks were used or tank-wagon vehicles. Transport trucks are alleged to use special covers[108]. Additionally, according to DEH, conveyor belts were often not covered because of high lignite humidity and voluminous work pieces[109]. After being crushed into smaller parts, lignite was allegedly transported in belts with "state-of-the-art" dust aspiration systems[110]. Finally, DEH informs the Committee that conveyor belts adjacent to residential areas shall be covered in the current year.[111]

60. DEH's response on this issue is quite puzzling, as the Corporation's memorandum states at the same time that conveyor belts comply with existing legislation[112], that they are covered[113], that they do not need to be covered[114], that it is impossible to cover some conveyor belts[115], and that others belts will be covered during the current year[116]. Despite the difficulties in explaining this technical matter to laypersons, the response is both vague and unhelpful. **It is also surprising that a company employing 28 thousand employees cannot precisely state when upgrades will be carried out, and why now, and not before**. No precise information concerning the length and characteristics of the belts is given.

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transported, and piled. Assuming the same ratio, the total amount of soil moved every year in order to produce electricity from lignite amounts to 180-274 million cubic meters.

[107] *Complaint*, §73.
[108] *State's Observations*, p. 18.
[109] *Ibid*, p. 40.
[110] *Ibid*.
[111] *Ibid*., p. 11.
[112] *Ibid.*
[113] *Ibid.*
[114] *Ibid*, p. 40.
[115] *Ibid,* p. 11.
[116] *Ibid,* p. 11.

61. As the complainant had mentioned, local inhabitants have repeatedly expressed concern about the operation of conveyor belts next to populated areas. **The problem is acknowledged by DEH as in its memorandum it is stated that conveyor belts adjacent to these areas will be covered "in the current year".** The Megalopolis Citizen's Intervention Movement[117], for instance, has complained to the Prefecture about slope dumping from heights superior to 12m – dispersing great amounts of dust –, and the operation of fly-ash conveyor belts without covers, in infringement of regulations. No consequences from their complaint have followed.[118]

62. Infringements of environmental law by the operation of conveyor belts have also been found by authorities. For instance Decision 864/2004 of the Thessaloniki Administrative Court of Appeal upheld fines that had been applied against DEH for, among other things, the operation of uncovered conveyor-belts in the Aghios Dimitrios station, inspected in September 1997. In decision 866/2004 of the same Court, another inspection in September at the same station found again that conveyor belts were uncovered, that spraying of the ash and of roads in the lignite yard was not undertaken, thus violating the approved environmental terms of operation[119]. The fact that the complainant cannot provide more recent examples should not surprise as it has taken over seven years for the final court decision to be taken, thereby rendering the violations established by the monitoring bodies public.

63. As regards the management of pre-combustion lignite and of post-combustion ash, it is a well known fact that if environmental management measures are not strictly adhered to, dispersion of particles upon dumping and resuspension of particles due to wind constitute important sources of inhalable particles[120]. DEH's memorandum states that "ash management includes humidification during transport, eliminating dust release in the atmosphere" and that "[flying ash] is sprayed and mixed with wet ash so as to ensure elimination of any suspended particles' emissions."[121]

64. The practice described by DEH simply reproduces the requirements of environmental terms of operation. As seen above, public concern and a few isolated administrative sanctions suggest that the environmental management of DEH's mining activities is not as exemplary as the company's memorandum suggests.

65. The complainant underlines, moreover, **that it would be the task of the competent *public* authorities to provide evidence of effective compliance with those terms by DEH, and not for the company itself to certify that it does not violate the law**. Since the competent ministries – Development and Environment – have not responded to the present Complaint, it is doubtful that the Ministry of Labour has any relevant proof of compliance by DEH with

[117] «Παρεμβατική Κίνηση Πολιτών Μεγαλόπολης».
[118] See, *infra*, §106-108.
[119] See also, other instances of violations at §109, *infra*.
[120] See Triantafyllou, 2005, **Annex 2**, pp. 99-102.
[121] *State's Observations*, p. 40.

environmental standards. In any case, it has produced none. DEH's self-interested statements must therefore be given no weight.

2.3.1.1.2 Soil rehabilitation and the usage of depleted mines as solid waste dump sites

66. Depleted lignite mines are huge craters, covering thousands of hectares[122] nationwide. Their exploitation involves moving millions of cubic meters of soil that must be transported and later used to cover fly-ash and other solid waste. This upsetting of the landscape doesn't only impact the topography of the land but, through the elimination of vegetation, causes erosion, and moreover creates a permanent risk of resuspension of particles over a vast area, prolonging the hazards related to suspended particulate matter. According to one study referred to by the State, by 1999 only 800 hectares of depleted mines had been fully restored.[123]

67. Moreover, these sites are being used to dump **not only fly-ash enriched by naturally occurring radionuclides** (through the process of technologically enhanced naturally occurring radioactive materials), the safety and impacts of which are currently under debate[124], **but also asbestos** concrete coming, admittedly, from DEH's power plants[125], as well as – according to news articles and local inhabitants – from other sources in northern Greece.[126]

68. According to article 5 of Joint Ministerial Decision 50910/2727/22.12.2003[127], the creation of a network of national facilities for waste disposal taking into account the "best available technologies not entailing a huge cost" is required. The waste management site in the

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[122] According to the *State's Observations*, p. 14, 190.000 *stremma* (19.000 hectares) have been expropriated for both lignite centres, most of it to make place for the five major lignite mines of Greece.

[123] *Study on Health problems of Kozani's Population*, 1999, **Annex 12**, p. 76. The State alleges, at p. 15, that 2.700 hectares of recovered forest land and 900 hectares of cultivation land have been created.

[124] The *State's Observations* at p. 17 presents the alleged results of an unreferenced study that would conclude that "the agricultural exploitation of the mine's rehabilitated surfaces can by no means harm the health of individuals who will consume the products since the cultivated soils are similar to the rest of the lands of Ptolemaida basin". This would allegedly be the consequence of the "lower level of trace elements' and heavy metals' content in the nuts and cereals cultivated on rehabilitated soils" as compared to other soil in the region. As the studies were not presented in full, the complainant cannot fully assess its conclusions. However, the study apparently did not assess the effects of radioactive elements in buried fly-ash (see footnote 14) on the safety of agricultural products. Moreover, it is not appropriate to compare agricultural products cultivated on rehabilitated soil exclusively with those cultivated on other land in the Kozani-Ptolemaïda basin, because dispersion of particulate matter containing radioactive trace elements would affect even 'natural' land in the region, making the comparison less useful.

[125] *State's Observations*, compare pp. 19 and 38. It would seem that not even DEH is certain as to the provenance of the asbestos it is dumping in the depleted mines, as it first states that "the asbestos land filling area (…) involves waste coming *exclusively* from the AHS [power plant] of the region" (emphasis added), only to assert later that "[a]sbestos cement waste *mainly* comes from the (…) upgrading of PPC Units Cooling Towers" (emphasis added).

[126] See *Complaint*, §101, p. 33.

[127] *State's Observations*, p. 38.

Kardia mine is part of this network and the Ministry of Environment is quoted as stating that the project "is a decisive step in the whole industrial waste management system and environmental impact is dealt with in an integrated manner so as to ensure a high environmental protection level".

It is absolutely inappropriate that the Minister charged with supervising the site's compliance with environmental terms should be spilling praise on this private-operated waste management site and this attitude raises serious doubts on the objectivity and impartialness of the environmental monitoring. It is a further illustration of the functional proximity between the private operators of DEH and the highest public authorities.

2.3.1.2 The operation of the lignite-fired power plants without regard to environmental impact

69. Electricity generation from lignite in thermal power plants transforms this low calorific-value fossil fuel into thermal energy, some 40% of which is converted through turbines into electricity. **Every day, a single 1200MW power plant consumes 54.000 tons of lignite, producing 8.100 tons of ash which are caught in electrostatic precipitators and disposed of in dump sites**. Assuming these filters had an efficiency rate of 99,9% - which they do not, according to the State[128] – **an average of 8,5 tons of fly ash would still be released every day into the atmosphere and dispersed in a wide region**. In the Kozani Prefecture the installed capacity is nearly four times as much, and so, presumably, are the emissions. Of the tons of fly-ash that precipitators fail to capture, 80% of them are in the <10μm range, and 25% in the <2,5μm range, **the most dangerous to human health**[129]. Besides suspended particulate matter, other air pollutants have a much larger range, and long-term effects for both national and global environment. The electricity generation process produces liquid and solid waste that must be disposed of appropriately, and are often not. Because of these obvious and important environmental impacts, the operation of these power plants is subject to stringent European and national requirements[130]. **Each unit should operate in compliance with specific environmental terms that should be established on the basis of individual environmental impact assessments that take into consideration its characteristics and specific location. As the complainant demonstrates below, these requirements are rarely, if ever, met**.

2.3.1.2.1 Environmental fairy-tale licensing to ensure 'cheap' energy

[128] The State alleges, at p. 32, that the total performance rate of power plants electrostatic precipitators has increased from 97,29% in 1987 to 99,8% today.
[129] See Triantafyllou, 2005, **Annex 2**, lines 90-95.
[130] See *Complaint*, p. 15, §§46-63.

70. As announced in the complaint[131], the Greek Citizen's Advocate (Ombudsman) examined petitions lodged by local residents and mayors, referring to DEH's lignite-fired power plants of Kardia, Aghios Dimitrios and Ptolemaïda, and concerning a number of environmental issues such as lack of approved environmental terms, imminent expiration of temporary permits, and emissions exceeding. The Ombudsman made his conclusion public in October 2005[132]. **These cases illustrate the lack of an effective environmental policy, as well as the disastrous effects on inhabitant's welfare, resulting from the collusion of interests between the Private Corporation and State authorities**.

71. According to the domestic legislative framework already described in the Complaint[133], any productive activity can only be authorized after having obtained approval of its environmental terms, specific to its nature, location, and environmental impact. Ministerial Decisions approving the environmental terms of lignite-fired power plants are issued for a period of 6 years, and a renewal request can be filed only *after* their expiry. This renewal practice, contrary to the principle of prevention, is further compounded by the notoriously slow bureaucratic handling of the requests by the competent authorities, resulting in hazardous activities being pursued without approval of environmental terms for long periods.

Continued operation of power plants with expired environmental terms

72. The Ministerial Decisions that approved the environmental terms for the power plants of Kardia, Aghios Dimitrios and Ptolemaïda expired on 19/07/2002, 18/07/2002 and 24/10/2003 respectively[134], and were all given a joint extension of operation until July 2005[135]. More specifically, although explicit administrative procedures exist for the licensing of individual power plant units by ministerial decisions, **Greece disregarded said procedures and granted, by law, a joint temporary permit** – that expired on 31 July 2005 – without due regard to the formal requirements for each specific unit. **This *sui generis* procedure is an astounding violation of the existing law and of the basic principles of environmental management**: not only does it call a four-year permit 'temporary', but it also disrespects the established procedures, and the requirement that permits be site-specific. In the words of the Ombudsman, that the complainant fully endorses, this policy:

> *"(…) of deviation from the stipulated administrative procedure for licensing for each unit separately will be perpetuated for a lengthy period. It is obvious that in this way the individual features of each unit, as to its nature, the age of the installations, the maturity of the procedures for licensing, the location of the establishment and the impacts on the environment,* ***are not assessed****. The example*

[131] *Ibid.*, §71.
[132] Greek Ombudsman, *Findings* in *Cases 6536 & 6537/2004*, *Subject: 'Licensing Status of the Steam-Generated Electric Power Stations (SEPSS) of the Public Power Corporation (PPC) at Kardia, at Aghios Dimitrios, and at Ptolemaida in the Prefecture of Kozani'* (**Annex 18,**original and translation annexed, also available at <http://www.synigoros.gr/reports/dei_ptolemaida.pdf>, last visited on 8 March 2006).
[133] See Section 3.2.1.2. of the *Complaint*, "Greece's Legislative Framework", §§ 46-60.
[134] MD 29827/19.7.96 with regard to I-II-III and IV Units of "Kardia", MD 29828/18.7.96 with regard to I-II-III and IV Units of "Aghios Dimitrios", and MD 29826/24.10.1997.
[135] Article 8, Law 2941/2001, Official Gazette A 201 (12/09/2001). MD Δ6/Φ1/7740/2001 had established the regular procedures that should be followed for lignite-fired power plants to obtain permits.

of the way that the Aghios Dimitrios [power plant] *lags behind (…) as to the procedure for approval of the environmental terms in comparison with* [Kardia and Ptolemaïda]*, and as to the impacts on the environment and the need for the replacement of the electrostatic filters, is typical."* (emphasis added) [136]

73. The Ombudsman also points out the constitutional issues raised by this practice: **environmental authorisation by Law falls outside the jurisdiction of the Supreme Administrative Court** (*Conseil d'Etat*), **thereby denying access to justice and judicial review**. The *Conseil d'Etat* has already interpreted Article 24 of the Greek Constitution as determining that a Unit cannot be authorised to operate simply by law, without the approval of specific environmental terms[137]. Therefore, although only individual permits satisfy the form required by law, if for any reason a joint permit of operation must be issued, **it has to be based on individual and specific environmental assessments for each unit, in order to comply with the Constitution**. This has not occurred in the present case. Moreover, because the joint permit was adopted by law, no jurisdiction in Greece can directly review and annul it.

74. In light of such a serious situation, **the Ombudsman requested prompt action from the competent Ministers** to ensure the protection of the environment and public health and re-establish legal certainty.

It seems that the Greek authorities adopt the same strategy whether they have to act in response to national or international organs, as in the ombudsman's case – as well as in the present Complaint[138] – **they did not even respond to the his request**. On the contrary, the Ombudsman read in a newspaper[139], as anyone else, that the validity of the 'provisional' authorisation of DEH's units had been extended till 31 December 2008 by an amendment in a draft law regulating several other unrelated issues[140].

As if this disrespect of the law were not enough, **the authorisation of Aghios Dimitrios' units was eventually given without any environmental terms approved**. With this latest act, the units covered in the Law – all lignite units in Greece whose permits had expired – **have received 'temporary authorisation' to operate for 8 uninterrupted years**, i.e., ever since DEH's partial privatisation.

Moreover, it is provided in the same law (Article 24, paragraph 4) that "further extension of permits duration can be provided for public interest reasons by a decision of the Minister of Development". This provision regularizes the arbitrary practice described and clearly demonstrates that environmental and health protection are not considered a public interest of the same value as 'cheap' electricity generation.

Governmental and corporate response to expired environmental terms

75. It is extremely significant that it is only one year after the expiry of the environmental terms for the units of Kardia and Aghios Dimitrios that the Ministry of Environment reminded DEH that they should have submitted proposals on harmonization with Directives 2001/80/EC in combination with Directives 2001/81/EC and 96/61/EC[141].

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[136] *Ombudsman's Findings*, p. 4 (**Annex 18**, Greek version) and 6 (English translation provided by the complainant).
[137] *Conseil d'Etat*, Minutes of elaboration 187/2000.
[138] See Introductory Remarks, on the lack of response by all competent authorities. See also **Annex 19**, *Administrative Response* to the Ombudsman's Findings (available at <http://www.synigoros.gr/reports /dei_ptolemaida_2.pdf>, last visited on 8 March 2006).
[139] *Ελευθεροτυπία* (Eleftherotypia), 24/08/2005.
[140] Article 24, paragraph 1 of Law 3377/2005, Official Gazette A 202 (19/08/2005).
[141] Ministry of Environment document, registry number 118107/10.07.2003 **(Annex 20)**.

DEH, in its response to this request, promised that future – but undetermined – upgrading of electrostatic filters would allegedly bring Aghios Dimitrios and Kardia in line with community law requirements. **This is pretty much the same "referral to the future" argument that DEH's memorandum pursues in the present Complaint to justify its present failures and to push back its responsibility**. In addition, they promised to submit, in a short time, a Plan on Emissions Reduction of existing DEH's Units. After making such proposals, DEH demanded, in a rather commanding tone[142], the immediate renewal of environmental terms. It should be noted that according to the Ministry[143], **replacement or improvement of electrostatic filters could not be implemented in the short-term and even once implemented would not produce the expected results** in terms of reduction as illustrated, in improvements undertaken for units I and II of Kardia from 1991-1994[144]. The above-mentioned Plan on Emissions Reduction[145] was submitted by DEH only after a specific deadline was imposed by the Ministry, 4 months after the corporation said it would 'soon' submit it[146].

It is noteworthy that the Minister of Environment had also made assurances, in the context of this ombudsman inquiry, that new environmental terms of Aghios Dimitrios Units would provide for filters' improvements and new stricter limit values, in order to comply with community law and improve environmental quality of the region. So far, no environmental terms were approved.

76. According to the Directorate of Air Pollution and Noise Control of the Ministry for the Environment and with regard to the Aghios Dimitrios power plant: "Despite the expiration of the decision approving the environmental terms, DEH continues to implement those terms, *except for the limit values of particles which are technically impossible to comply with*"[147]. The Ministry of Environment suggests, in its correspondence with the Ombudsman, that expiry of environmental terms is not a matter of concern, since the expired ones are still implemented in practice. [148]

Moreover, the Ministry alleges that it is very common that industrial installations operate with expired environmental terms, since applications for renewal are filed after the expiry of the old ones[149]. This astonishing statement from the authorities charged with the protection of the environment is all the more disturbing because it is a simple administrative practice embodied in Joint Ministerial Decisions (JMD): it would be sufficient for the authorities to require, in the JMD approving environmental terms, that application for renewal be filed prior to expiry, within a reasonable time-limit. As the Ombudsman has stated, the conclusion about the tacit prolongation of old environmental terms approval is incorrect – and the complainant would add that it is *arbitrary* –, since every administrative act containing a date of expiry becomes null after that date and no extension, explicit or tacit, can be presumed to exist.[150]

77. This position of the State echoes DEH's stance on the matter. In a response to the Ombudsman, DEH reminds that the public interest for electricity generation is the enterprise's fundamental obligation; that, consequently, it should not be exposed to any litigation on the

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[142] DEH's document, registry number 1018/31.07.2003 **(Annex 21)** states: "(…) we notify you that units operation of Aghios Dimitrios and Kardia, after upgrading of old and addition of new electrostatic filters (Units III and IV of Kardia and Units I-IV of Aghios Dimitrios) will be in accordance with requirements of Directives 2001/80 (…) [and] the Plan on Emissions reduction of existing Units for the purpose of the National Allocation Plan will be submitted soon. Consequently, please, go ahead with immediate renewal of environmental terms for Aghios Dimitrios and Kardia".

[143] Ministry of Environment Document 131564/28.04.04, p. 2, §3, *b)*. **(Annex 22)**

[144] The Kardia improvements were supposed to bring the average PM emissions down to the 50mg/m^3 limit levels, and failed to do so, according to the Ministry. See above, footnote 143.

[145] DEH's document, registry number 1548/13.11.2003. **(Annex 24)**

[146] Ministry of Environment document, registry number 120034/5.11.2003 **(Annex 25)**.

[147] Ombudsman's document 6536.2.3 & 6537.2.3/30.07.2004, p. 3, paragraph 1 **(Annex 23)**.

[148] Ministry of Environment Document 131564/28.04.04, **Annex 22**, p. 3.

[149] *Ibid.*

[150] *Op.cit.*, footnote 147.

basis of environmental legal provisions of a *procedural nature*, as serious problems could be created in its operation and its relations with local authorities, endangering electricity supply safety.[151]

Here, spelled quite explicitly, is DEH's understanding of the matter: the law, regulations, and other 'secondary' considerations are seen only as potential obstacles to security in electricity supply. Unfortunately, by its attitudes and practices, the State clearly subscribes to the same view.

78. It is understandable that DEH hesitates to reduce activity of the five units of Aghios Dimitrios, that alone cover 23-25% of total energy needs of Greece, in order to materialize all the improvements promised. Nonetheless, the bottom-line is that this attitude reveals an issue of inadequate mindset: DEH repeatedly says that no problem arises from the operation of power plants without environmental terms, since they comply with the expired ones.

This mentality, reinforced by lenient ministerial behaviour, frustrates the whole purpose of environmental assessment and management: environmental terms are to be assessed regularly so that *stricter*, *better* and *more effective* standards, according to the current technology and site-specific circumstances, can be established, thereby improving gradually and consistently the environmental quality of the region. **The State's constitutional and international obligation is to reduce pollution levels, guaranteeing the best possible environment to fulfil the right to health.**

Exceeding of particles emissions: the case of Aghios Dimitrios

79. In the Aghios Dimitrios units, exceeding of limit-levels of particle emissions **was first reported in 1997** and since a technical solution could not be easily found, a special Technical Committee was established to research the issue. It was recognized by the Ministry that exceeding of particles emissions is still observed on a daily basis and this explains the unfeasibility of an effective environmental study in accordance with relevant legislation. [152]

The problem is aggravated by DEH's difficulty to comply in the short-term with EU legislation both on emission limit values and Best Available Techniques (BAT), as was admitted during the meeting that the Ombudsman held with the Ministry of Environment, DEH, Kozani Prefecture and the Environmental Inspectorate.[153]

80. According to DEH[154], the "occasional" exceeding of emissions after 1997 was due to attributes of the fly-ash and more specifically high level of CaO but after the modification of lignite extraction methods there was a significant reduction of exceedings. Nonetheless, and still according to DEH, since 2002 Aghios Dimitrios is supplied with lignite of an extremely poor quality, a fact that "could not be foreseen". Among measures adopted was a widespread study of the deposit that will supply Aghios Dimitrios for the next 25 years.

It is incomprehensible, truly unbelievable, that a company that became a colossus in the energy sector exclusively thanks to abundant lignite deposits of the Greek subsoil, has not conducted widespread and serious studies about its fuel reserves and, particularly so, with regard to Aghios Dimitrios, responsible for such a large amount of the national energy output.

81. DEH stated in the same response to the Ombudsman that the first new electrostatic filters would normally be activated in fall of 2005 (the completion date has now been further postponed to 2007[155]). They alleged, additionally, that according to measurements effectuated

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[151] DEH's document, registry number 802/17.06.2004 **(Annex 26)**.
[152] *Op. cit.*, Ombudsman's document, footnote 148, paragraph 3.
[153] *Memorandum of meeting concerning the operation of DEH's Units in Kardia, Aghios Dimitrios and Ptolemaïda of Kozani Prefecture*, Ombudsman's document 6536/6537.2.6 (30.03.2005), paragraphs I and II **(Annex 27)**.
[154] DEH's document, Response to the Ombudsman, registry number 497/27.04.2004, **Annex 28**, paragraph 4.
[155] *State's Observations*, p. 6.

by the nine stations installed, air quality is complying with adopted limit values and values for ground-level particles concentration are 'in general' lower than the limit.

82. In his findings[156] communicated to the Ministers of Development and Environment, **the Ombudsman concluded that the problem of air pollution provoked by exceeding of particles emissions from Aghios Dimitrios units, although it was first detected in 1997, persists to this day**. Exceeding of limit levels is very high and occurs on an almost daily basis. The Ombudsman has asked for immediate measures, since serious hazards for public health are imminent, but his call for action has been ignored by the competent authorities.

The long-term solution of replacing or improving the filters that DEH espouses, even were it to be carried out competently and in time, a hardly likely prospect given the company's history, is patently inadequate and insufficient.

Shifting goal-posts: Repeated modification of environmental terms

83. Furthermore, the Ombudsman observed that approved environmental terms were repeatedly modified by subsequent Ministerial Decisions[157], because it was impossible for the company to comply with previous terms with regard to particles emissions, mainly due to delays in technological upgrading and adjustment to BAT[158]. This, of course, frontally contradicts the allegation that expired terms are complied with. Moreover, **this practice of shifting the goal-posts is well-known**: by reducing expectations or requirements, the State legalizes DEH's violations of pre-existing standards, and normalizes health-threatening practices.

Incapacity of the administration to cooperate: further facilitating DEH's lawlessness

84. What is made abundantly clear by the documents brought to light by the Ombudsman enquiry is that no one is willing to take the responsibility for non-compliance with environmental legislation, the Ministry and DEH push responsibility to each other, and the health of affected populations is continuously endangered.

Apart from the transfer of responsibility between State and Corporation, there are serious issues of cooperation between the Ministry and local authorities, further demonstrating the lack of commitment to safeguarding environment and health. For instance, the Kozani prefecture refused to renew the Aghios Dimitrios power plant solid waste management permits (for ash, fly ash, and overburden). In response, the Ministry of Environment invites the Prefecture to issue the abovementioned authorisations "[…] so that new environmental terms are complete and no reference to pending permits or waste limit values to be determined is made"[159]. Instead of technically assisting the local authorities to carry out their role in an effective and well-informed manner – so that waste disposal permits satisfy the formal and practical requirements of the law –, the Ministry's concern is purely formal: that the new environmental terms be issued without any apparent gaps. Delegation of powers to local authority does not relieve the State from its obligation to protect health; but in this case, the most polluting power plant of Europe was allowed to dump its solid waste in the Kozani region without any approved terms, and continues to do so.

85. Moreover, the incapacity of the administration is further illustrated by the lack of provisions on water use in Greece. Two different issues arise: firstly, the State should adopt the adequate legal framework on water use by industrial installations; and, secondly, DEH should

[156] Ombudsman's document 6536.2.7 & 6537.2.7/27.07.2005, **Annex 29**, pp. 1-2, paragraph I.
[157] JMD 63875/14.10.98 and 58286/31.7.2001.
[158] *Ombudsman's Findings*, **Annex 18**, p. 3 (Greek version) and 4-5 (English translation provided by the complainant).

[159] Ministry of Environment document, registry number 94455/24.09.2002 **(Annex 30)**.

not be allowed to use as much water as it wants without due regard to local needs, as is currently the case.

86. Liquid waste management also raises serious concerns. According to official documents, the Kozani prefecture has not granted liquid waste management permits for Aghios Dimitrios, Ptolemaïda and Kardia[160]. Despite this fact, all units are still operating non-stop.

Incomplete transposition of EC law

87. Moreover, the Ombudsman concluded that the incorporation of Community law in national law was accomplished three years after the deadline set by the directives and in an insufficient way. Directive 96/61/EU (IPPC directive)[161] was incorporated by Law 3010/2002[162], but without any reference to Article 10 of the directive, according to which,

> *"Where an environmental quality standard requires stricter conditions than those achievable by the use of the best available techniques, additional measures shall in particular be required in the permit, without prejudice to other measures which might be taken to comply with environmental quality standards"*

Article 11 of the Directive was also not transposed. The provision stipulates that "Member States shall ensure that the competent authority follows or is informed of developments in best available techniques". JMD 29457/1511[163] that finally transposed into national law Directive 2001/80/EC[164] – although almost 3 years after the deadline stipulated – contains no relevant provision imposing to the competent authorities to follow BAT evolution and monitor their application in practice.

88. It should be highlighted that the Court of Justice of the European Communities (ECJ) in its recent decision in Case 364/03 found that:

> *"(...)**by not defining the policies or strategies for progressively adapting in line with the best available technology** the steam turbine units and the gas turbine units of the power station operated by the Dimosia Epicheirisi Ilektrismou [DEH] (public electricity undertaking) situated in Linoperamata on the Island of Crete, the Hellenic Republic has failed to fulfil its obligations under Article 13 of Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants."*[165] (emphasis added)

The relevance of this case is that it shows that Greece had already been found in violation of the BAT convergence requirements of EC Law by not having a general policy of technological improvement.

89. By further failing to transpose the IPPC Directive provisions mentioned above, Greece has failed to establish mechanisms to ensure the continuous improvement of anti-pollution technologies and, when such technologies would be insufficient to achieve pollution reduction, has failed to adopt supplementary measures to comply with environmental quality standards and its Charter obligation to protect human health.

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[160] Ministry of Environment document 131564/28.04.04 **(Annex 22)**, p. 3 and Ombudsman's document 6536.2.3 & 6537.2.3/30.07.2004, **Annex 23**, p. 4, paragraph 7.
[161] Official Journal L 257, 10/10/1996 P. 0026-0040.
[162] Official Gazette A 91 (25/04/2002), see Complaint paragraph 47.
[163] Official Gazette B 992 (14/07/2005).
[164] Official Journal L 309, 27 November 2001, P. 0001-0021.
[165] Case C-364/03, *Commission of the European Communities v. Hellenic Republic*, Judgment of 7/07/2005.

90. In concluding this overview of the State's practice in environmental licensing the following points should be highlighted. **As shown, the State fully endorses DEH's corporate culture of prioritizing industrial operation over compliance with regulations at the expense of human health**. Both government and corporation seem to misunderstand the purpose of environmental management. Instead of endeavouring to achieve the best possible environment under current technological and environmental constraints, they seem to believe that 'sustainable development' is achieved by keeping current pollution levels stable, whatever its cost to human health and welfare. Moreover, the driving force of improvements in Greek practice has been a desire to not be further chastised by EU authorities over its sloppy environmental performance. As shown, environmental licensing is meaningless when the State is not willing to challenge a corporation's practices.

The State's reliance on DEH's willingness to effectively apply long-term solutions does not excuse the State from its international responsibility to protect the population's health. This autonomous obligation exists regardless of what private-sector enterprises such as DEH, are supposed to do in order to comply with their domestic legal obligations. The State does not have, and has never had, a "Plan B" for when the company fails to carry out its obligations.

2.3.1.2.2 Best available techniques? Continuous use of outdated, high-polluting technology

91. The Complaint asserted that the State has failed to remove as far as possible the causes of ill-health by allowing the continuous employment of old, high-polluting technology incompatible with the "best available techniques" (BAT) requirements. The State and DEH both assert that BAT requirements are, or will soon be, complied with.

92. Below, a comparative presentation is undertaken of the "best available techniques" requirements under Directive 96/61/EC and of the technology that DEH is currently applying or alleges that it will apply. This comparison will clearly show that DEH's technology is far from being compatible with the "best available techniques" (BAT) requirements, and that therefore the State is in non-compliance with its obligations under Charter Article 11§1.

93. As regards the power plants located in Aghios Dimitrios, Kardia, Ptolemaïda, Megalopolis A (units I-III), the capacity of which is higher than 300 MW_{th}, as well as the plants located in Melitis-Florina and Megalopolis B, the individual capacity of which equals 300 MW_{th}, the use of the "best available technologies" consists of the following:

***Regarding particulate matter emissions*[166]:**
For Plants >300 MW_{th}

EU Requirements	DEH's alleged technologies:

[166] European Commission, Integrated Pollution Prevention and Control (IPPC) Bureau, *Reference Document on Best Available Techniques for Large Combustion Plants*, [available at <http://eippcb.jrc.es/cgi-bin/locatemr?lcp_final_0505.pdf>, last visited on 8 March 2006], May 2005, p. 271.

• Electrostatic precipitator (ESP) or Fabric Filters (FF) in combination with • Wet Flue-gas Desulphurisation (FGD-wet)	**Aghios Dimitrios:** • Electrostatic precipitator upgrade to be completed 2007 • No reference to any FGD-wet system **Kardia:** • units I-II, ESP replaced in 1994 • units III-IV allegedly upgraded since 1987 • No reference to any FGD-wet system **Ptolemaïda:** • ESP allegedly upgraded since 1987 • No reference to any FGD-wet system **Megalopolis A:** • Units I-II cannot be upgraded due to limited lifespan; • Unit III allegedly undergoing upgrade (expected conclusion in 2006) • No reference to any FGD-wet system

For Plants 100-300 MW_{th}

EU Requirements	DEH's alleged technologies:
• Electrostatic precipitator (ESP) or Fabric Filters (FF) in combination with • Wet Flue-gas Desulphurisation (FGD-wet), Flue-gas desulphurisation by using a spray dryer (FGD-sds) or Flue-gas desulphurisation by dry sorbent injection (FGD-dsi)	**Melitis-Florina:** • Unspecified particulate abatement technology • Fuel desulphurization unit • No reference to any specified FGD system **Megalopolis B (IV):** • Alleged high-efficiency ESP • Fuel desulphurization unit • No reference to any specified FGD system

94. The complainant would like to demonstrate two crucial issues under this topic: on the one hand, the inefficiency of existing technologies in DEH's units; on the other hand, that technologies required by the EU are not applied.

95. On the first point, assessing the efficiency of the existing particulate matter reduction technology, the complainant will limit its argument to the age of the electrostatic precipitators used, since the State has not provided sufficient information for anyone to reach a judgment on technical aspects of ESP technology applied.

The State and DEH declare, for example, that in Kardia and Ptolemaïda power plants the electrostatic precipitators were upgraded in 1987 and in two units of the Kardia power plant they were replaced as recently as 1994, further alleging that this satisfies its obligations to apply BAT. **One obviously wonders how up-to-date and efficient filters upgraded, not even replaced, 20 years ago might be**. In addition, the most modern filters in this group of lignite-fired combustion units, the 1994 Kardia I and II ESPs, are inefficient, according to DEH and the State[167].

[167] Minister of Environment document, registry number 131564/28.04.2004, **Annex 22**, p. 2, §3, *b)*. This document asserts that filter upgrading would did not, in the case of Kardia I and II, reduce particulate matter emissions to the expected levels, see above, footnote 144.

Aghios Dimitrios, with ESP filters that started operation from 1984-1991 is alone responsible for nearly 10% of the national emissions of PM_{10}. The alleged upgrading of the ESPs of this power plant is expected to conclude in 2007. According to a 2005 scientific study[168], the ESPs of Aghios Dimitrios station, using technologies from twenty years ago, do not capture the particles that are most dangerous to human health (<10μm). **This shows that the most polluting power plant of Europe was allowed to operate from 1984 to – the complainant can only hope – 2007, using obviously inefficient and health-endangering technology.**

Regarding Megalopolis A (units I-III), responsible for over 21% of the electricity generation industry's PM_{10} emissions, the State and DEH openly admit that electrostatic filters cannot be replaced due to limited lifespan of Units I-II. These units have been operating since 1970, and the State provides no evidence of any improvement taking place in filter technology. Moreover, despite the inefficiency of the technology applied, no alternative plans to control particulate matter emissions are put forward by the State, clearly suggesting that these units will continue functioning with obsolete filters in place, and profusely polluting.

96. On the second point, for particulate matter emissions reduction, **BAT require that the use of electrostatic precipitators be *combined* with specific flue-gas desulphurisation techniques**, such as FGD-wet. However, the State and DEH make no reference whatsoever to such flue-gas desulphurisation technologies, and refer exclusively to electrostatic precipitators when discussing particles abatement technologies. This suggests either that they completely ignore the existence of this requirement, or that they are knowingly not complying with it.[169]

There is no evidence whatsoever, in the State's Observations, in DEH's memorandum, or in the publicly available literature, that other ESPs used in the lignite units are more efficient, or more up-to-date. Neither is there any indication that other required techniques are used. This is indicative of the State's gross disrespect, not only of its commitments under the BAT requirements, but also of its more general and essential responsibility to ensure the right to the protection of health.

Regarding SO_2 emissions[170]:

For Plants >300 MW_{th}

EU Requirements	DEH's alleged technologies:
• Low sulphur fuel, • Wet Flue-gas Desulphurisation (FGD-wet), • Flue-gas Desulphurisation by using a spray dryer (FGD-sds), • Seawater scrubbing, • Combined techniques for the reduction of NO_X and SO_2	**Aghios Dimitrios:** • No reference **Kardia:** • No reference **Ptolemaïda:** • No reference **Megalopolis A:** • Units I-II: no desulphurisation, • Unit III desulphurisation system promised • No special reference to desulphurisation methods, or to seawater scrubbing and combined techniques

For Plants 100-300 MW_{th}

EU Requirements	DEH's alleged technologies:

[168] See above, footnote 20, p. 6.
[169] See §§97-99, below, where the State's allegation that flue gas desulphurisation is not necessary due to characteristics of the fuel is refuted. See also footnote 175, *infra*.
[170] IPPC Bureau, *Reference Document on Best Available Techniques for Large Combustion Plants*, p. 274.

- Low sulphur fuel,
- Wet Flue-gas Desulphurisation (FGD-wet),
- Flue-gas desulphurisation by using a spray dryer (FGD-sds),
- Flue-gas Desulphurisation by dry sorbent injection (FGD-dsi, up to about 200 MW_{th}),
- Seawater scrubbing,
- Combined techniques for the reduction of NO_X and SO_2

Melitis:
- Unspecified 'fuel desulphurisation' system
- No reference to any FGD system

Megalopolis B (IV):
- 'problematic SO_2 controls' are now allegedly "sufficient"[171]
- New desulphurisation unit promised

97. When it comes to the technology for SO_2 emissions abatement, it is striking that the three power plants with the highest rated capacity in MW_{th} – Aghios Dimitrios, Kardia and Ptolemaïda – operate without any desulphurisation technology whatsoever. In its Observations, the State alleges that "the highest alcalic constituents content of the lignite ash in northern Greece, which retain largely (90%) the sulphur dioxide produced by the incineration[, resulting in] a significant reduction in the emissions of such pollutant"[172]. DEH's memorandum further underscores "that there is not excessive sulphur dioxide [sic] in soil concentrations, neither in the area of Megalopolis, nor in the area of Kozani"[173].Both argue that lignite in northern areas is low in sulphur content to justify the total lack of desulphurisation technologies in the aforementioned units. However, according to the European Commission BAT document, "the use of low sulphur fuel can be a supplementary technique, but generally is not itself sufficient to reduce SO_2 emissions"[174]. **This statement clearly demonstrates that even if lignite in the areas of Kozani and Megalopolis were low in sulphur content, a statement the MFHR disputes, this is not sufficient to reduce SO_2 emissions, thus DEH is obliged to install and operate desulphurisation techniques.**

The fact that they so emphatically assert the opposite, namely that lignite low in sulphur content makes desulphurisation techniques unnecessary, clearly shows that they ignore, or do not want to comply with internationally recognised findings and standards. In Germany for instance, where the average lignite sulphur content is lower than in Greece, flue gas desulphurisation has been universally adopted, bringing about a decrease in SO_2 emissions between 1990 and 2000, of over 80%. At the same time, Greek emissions have remained stable.[175]

98. Furthermore, the State and DEH's stance on this issue becomes quite incoherent, as they later allege in their Observations that, in spite of the fact that lignite in Megalopolis is low in sulphur content, they have "put forward the installation of a fuel desulphurisation system in Unit III of Megalopolis steam power plant of 70 million euros" and the "upgrading of the fuel desulphurisation system in Unit IV of Megalopolis steam power plant, of 10 million euros"[176].

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[171] *State's Observations*, p. 6.
[172] *Ibid.*
[173] *Ibid.*, p. 33.
[174] IPPC Bureau, *Reference Document on Best Available Techniques for Large Combustion Plants*, p. 272.
[175] The average sulphur content of German lignite varies from 0,15-2,1% according to Michel, J.H. *Status and Impacts of the German Lignite Industry* (Air pollution and climate series, n.18), p.12 (available at <http://www.acidrain.org/pages/publications/reports/APC18.pdf>, last visited 8 March 2006). In Greece, it varies between 1,3-1,7% in the Southern mines (Externe Study, p. 30; **Annex 5** of the *Complaint*). Although the State provides no technical parameters of what constitutes 'low sulphur content' in lignite, it is remarkable to observe that in Germany, though the average sulphur content of its lignite is similar or lower to Greece's, has generalized the use of flue gas desulphurization and achieved impressive reductions in SO2 emissions (See Figure 4, at p. 16), whereas Greece wishes to persuade the Committee that it can operate without such abatement technology.
[176] *State's Observations*, p. 33.

The State cannot have it both ways. Either desulphurisation is not necessary because lignite sulphur content in Greece is low, or it is necessary. The complainant firstly argues that Greek lignite is not low in sulphur content, and secondly that desulphurisation is required in all units, regardless of fuel sulphur content, as established by the European IPPC Bureau, in its latest Reference Document on BAT. It would seem that even DEH believes that desulphurisation is necessary since it is ready to spend 80 million euros for just two units – and present it as an accomplishment. Consequently, **the State must explain why desulphurisation is necessary in selected units, and not in all of them. It clearly fails to provide any explanation.**

99. Finally, according to IPPC Bureau's document on BAT, "the effect of natural desulphurisation according to the use of low quality lignites with a low sulphur and high alkaline ash content may also achieve SO_2 removal (…) but will lead, because of the low quality of the fuel, to high dust emissions and higher amounts of residues."[177] This statement demonstrates that **the State and DEH, by relying on natural desulphurisation, namely by not installing flue gas desulphurisation systems in areas where lignite is low in sulphur content, not only fail to reduce SO_2 emissions, but also contribute in the production and emission of higher amounts of particulate matter.** As shown above, particulate matter emissions are also not adequately abated. Thus, the non-installation of desulphurisation systems causes more serious damage to the environment and human health, both in quantitative as well as in qualitative terms. The above remarks clearly show, once more, that the State is failing to protect health.

***Regarding NOx emissions*[178]:**

For Plants >300 MW_{th}

EU Requirements	DEH's alleged technologies:
• Combination of Primary Measures to reduce NO_X, such as air- and fuel-staging, low NO_X burner, reburning, etc.	• No reference to any NOx abatement technology is made for any power plant

For Plants 100-300 MW_{th}

EU Requirements	DEH's alleged technologies:
• Combination of Primary Measures to reduce NO_X, such as air- and fuel-staging, low NO_X burner, reburning, etc.	• No reference to any NOx abatement technology is made for any power plant

100. The Observations of the State and DEH's memorandum **ostentatiously fail to mention any techniques applied by the latter for the control and reduction of NO_X emissions, a fact that shows that they ignore, or willingly avoid complying with, internationally recognised findings and standards for NO_X emissions reduction**.

In either case, this constitutes another instance of the State and DEH's non-compliance with BAT requirements, which clearly refutes their allegations to the contrary. Moreover, the State and DEH's stance appears, once more, incoherent, as it contradicts their assertion that "in the areas of Megalopolis and Kozani-Florina there were no excessive established limit values of air quality for sulphur dioxides and **nitrogen acids**"[179]. Assuming that by nitrogen acids, the State and DEH refer to nitrogen oxides (NO_X), one wonders why they both fail to make the slightest reference to the techniques that contribute to their alleged abatement of NO_X emissions.

However, the State and DEH's silence, combined with the results of studies clearly finding a constant and significant increase of NO_X produced by the electricity production

[177] IPPC Bureau, *Reference Document on Best Available Techniques for Large Combustion Plants*, p. 273
[178] *Ibid.*, p. 277.
[179] *State's Observations*, p. 29.

sector[180], definitely lead to the conclusion that the State and DEH fail to implement NO_X emissions reduction BAT.

101. In concluding, the complainant observes that the State's reply is incoherent and uninformative. Particulate matter abatement policy uses a limited number of techniques required, and those techniques applied are not consistently implemented, and are in practice inefficient. SO_2 emissions abatement techniques are absent in nearly all power plants, on the contradictory premise that they are not necessary. This policy increases not only SO_2 but also particulate matter emissions. Although NOx emissions from electricity generation have risen constantly, the State provides no evidence of the use of any techniques to abate them. By systematically failing to apply BAT, the State violates its obligation to remove as far as possible the causes of ill-health.

2.3.1.2.3 Ineffective monitoring and enforcement mechanisms

102. In this section, and in addition to the arguments presented in the Complaint[181], the complainant will provide the Committee with **further evidence of the inadequacy of the environmental monitoring and enforcement mechanisms**. As shown above, environmental *licensing* in Greece fails, for a number of reasons, to achieve its substantial aims: environmental and human health protection through a constant and verifiable improvement of standards. Moreover, the lignite cycle's operation in practice does not even adhere to BAT requirements set in EC law. The collusion of interests between State and corporation explains part of the problem, which is aggravated by the local community's economic dependence on the Corporation. In this context, environmental monitoring is not carried out on a fact- and science-based manner, and sanctions are generally not applied or, when applied, are not sufficient to modify the infractor's behaviour.

103. The Complaint alleged that the *environmental inspectorate*, or other organs charged with the monitoring of environmental quality, was not sufficiently funded, equipped and staffed and, therefore, could not operate efficiently. The State makes no comment on this issue. If the complainant's assessment of the inefficiency of the monitoring mechanism had been false, even the Ministry of Labour – which actually responded to the Complaint – could have found information contradicting the above claim.

DEH's alleged good level of communication and cooperation with environmental agencies and authorities[182] is irrelevant to the assessment of their efficiency. Throughout the 48 pages of the State's observations not one example is given of monitoring authorities finding irregularities, formally declaring their existence, and applying the sanctions of the law. To the

[180] J.K.Kaldellis *et al.* (2005), **Annex 4**, footnote 35 *supra*, p. 9.
[181] See *Complaint*, §§60-63.
[182] See, for instance, in the *State's Observations*: "the competent authorities (both on a local and central level) are informed directly on any operational problems or excess of limit values" and "moreover, procedures are in place in order for data to be transmitted automatically to the competent environment department of Arcadia Prefecture Administration" (p. 28) and "the air quality measurement station in Kozani and Florina region are equipped with a wireless retransmission system of measurements connected with the competent service of Kozani Prefecture Administration" (p. 29).

contrary, **the State repeatedly endorses the Corporation's assertions, never presenting its own, detailed and autonomous finding on matters of fact**.

104. The structure of the response itself shows that the Greek State, in order to prove before the Committee its compliance with the Charter, relies exclusively on DEH's self-declared environmental performance. For these reasons the complainant requests that the Committee find that the inefficiency of the State's environmental monitoring mechanism constitutes non-compliance with Article 11§1 of the Charter.

105. The Complainant will further demonstrate the inefficiency of the *enforcement mechanisms* by showing that: *firstly*, **sanctions** dependent on political decision-makers, such as Prefectures, **are not applied** and the inhabitants' specific complaints about infringements are treated by competent authorities in an incomplete, defective and inadequate manner; *secondly*, in the cases where sanctions are imposed by competent authorities, the **fines imposed are not sufficiently costly** to oblige the violator to cease the violation or deter future or repeated violations; and, *thirdly*, even in the cases where high level courts or other bodies, such as the Ombudsman, find that applicable law was violated with the complicity of the Administration, resulting in health endangering situations, **the decisions are not executed**. Needless to say, the non enforcement of law results in arbitrariness and affected persons remain helpless and hopeless.

106. On the *first issue*, an illustrative example comes from a local citizen's movement of Megalopolis[183] that in 2004, nine months after the approval of environmental terms of operation for the lignite mines, requested the competent authority[184] to investigate the following important issues:

i) monitoring of the timetable provided for filters' replacement in units I-III and desulphurisation in unit III; according to the inhabitants of Megalopolis, exposed areas had to be cleaned every 2-3 days to remove fly-ash;

ii) insufficient operation of desulphurisation of unit IV: DEH's practice of notifying the Prefecture about days during which said unit did not operate provided no protection to inhabitants' health;

iii) monitoring of environmental terms about ash and cast/plaster dumping;

iv) information on progress of biological treatment of DEH's urban and industrial waste;

v) monitoring of the height of dumping (limited by terms to 12m);

vi) request of information on whether the old dumpsite at Thoknia, restored and reforested, was being used for sterile dumping of slag and slag aggregates;

vii) Prefecture's control on the 60m decrease of the water-horizon's level, potentially affecting potable water supply;

[183] *Megalopolis Citizens Intervention Movement*.
[184] In this case the Directorate of Environment of Arkadia Prefecture

viii) concealing of natural sinkholes;

ix) prosecution of persons responsible for damages to the archaeological site of Trapezounta (see below §107) and risk of landslips;

x) access of inhabitants to information about air pollutants values;

xi) measurements according the law of water quality and on water-horizon and access to relevant information;

xii) aggravated particulate matter pollution due to fly-ash resuspension because spraying of fly-ash is not carried out appropriately through the summer months;

xiii) request of information on whether measures had been taken to avoid that the water at the mine's bottom contaminate the Alfeios river;

xiv) information about environmental restoration;

xv) pollution of water-horizon due to waste dump of the entire region; and,

xvi) information about sudden landslides and possible solutions.

107. According to the President of the Movement[185], their complaint was followed by a formal visit to the mine, which resulted in a fine of 10.000€ because of minor infractions in the set-up of the activities of some work teams. For the rest of allegations and questions no response was provided by the Prefecture. Subsequently, the Megalopolis Movement communicated their complaint to the Public Prosecutor's Office. It should also be stressed that inhabitants do not have access to measurement data from DEH's monitoring stations.

In addition, the Movement alleges that although the Department of Classic and Prehistorical Antiquities of Sparta, after an inspection on 18.1.2005, found that there was a great and irreparable risk for the archaeological site due to landslides, the inspection on the same date by the assistant Director of the Prefectural Environmental Directorate found that there was no infraction, no risk and, consequently, no problem at all. It is noteworthy that relevant questions were discussed in the Parliament, especially because of the important deterioration of the last 2 years.[186]

108. *Secondly*, even when the authorities are willing to implement the law, the complainant wonders if the fines (even the highest) imposed could persuade DEH to proceed to the required improvements. The direct costs and indirect profit-losses associated to the realisation of technical improvements, for instance in Aghios Dimitrios units I-IV, are much higher than the fines eventually paid. Moreover, improvements are not indispensable as permission to operate is given regardless of approved environmental terms[187]. And finally, since the suspension of activity is never imposed, even in cases where major infringements are found, DEH considers fines as just a very small part of the enterprise's operational costs. We should not forget that the enterprises' revenues for the year 2004 were of €4.1 billions, and that its total assets are worth

[185] Interview with Dr. Christos Kasselouris, President of the Megalopolis Citizen's Intervention Movement, on 25 February 2006.
[186] Press release of the Megalopolis Citizen's Intervention Movement, 5.2.2005 **(Annex 35)**.
[187] See *supra*, p. 30.

€11.2 billion[188]. Despite the already demonstrated infringements, **there has not been in over 40 years of DEH's operations, a single case of suspension of operation due to administrative sanctions.**

Some indicative fines imposed by Kozani's Prefecture for violation of environmental terms demonstrate that the above description fits reality perfectly:

i) for Aghios Dimitrios Station, after a local inspection, it was established that emissions of units I-IV on 20 and 21.3.2003 were 422, 323, 475, 296 and 533, 389, 518, 325 mg/m³ respectively, although the limit value is 150 mg/m³. For the above infringements, a fine of €5.000 was imposed on 6.5.2003[189];

ii) for Kardia Station, it was found during the inspection that particles emissions of units III and IV were at 324 and 286 mg/m³, although the limit value approved was 225 mg/m³ (the EU limit-level is 150mg/m^3 for TSP, or 50 mg/m^3 for PM_{10}). Consequently, a fine of €5.000 was imposed[190];

iii) during a subsequent inspection at Aghios Dimitrios Station on 2.9.2004, it was established that units' I-IV values were 305, 417, 432, 223 mg/m³, although limit value is 150 mg/m³. DEH had argued that exceeding was due to Olympic Games, but the Prefecture responded that the Olympic Games finished on 29.8.2004 and that the reduction of the load was never attempted in order to reduce particles emission despite the repeated exceeding. For the above reasons, the Prefecture imposed on DEH on 7.10.2004 one of the highest fines possible, €55.000[191];

iv) a later inspection of Aghios Dimitrios Station proved that emissions were not lower, although the Olympic Games had concluded 2 months earlier. It was established that emissions of units I-III were of 370, 473, 449 mg/m³ respectively, although the limit value was 50 mg/m³. The highest fine possible was imposed on DEH by the Prefecture (€60.000).[192]

109. Decisions of Administrative Courts of Appeal dismissing DEH's requests for quashing fines imposed by the Prefectures confirm that infringements happen on a regular basis, proving both that the phenomenon is not recent or isolated, and that improvements that should be undertaken are not.

From **decision 864/2004**[193], it results that after an inspection on 2.7.1997 at Aghios Dimitrios units I-IV, the following infringements were established: (i) exceeding of particles emissions, (ii) lack of hourly average values measurements of particles emission, (iii) lack of continuous measurements, and, (iv) uncovered conveyor-belts in the station. The Court upheld the decision imposing a fine of €29.347 and endorsed the findings on DEH's infringements.

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[188] *DEH Annual Report 2004*, p. 2.
[189] Kozani's Prefecture document, registry number Π38.1201/6.5.2003 **(Annex 31)**.
[190] Kozani's Prefecture document, registry number Π38.1202/6.5.2003 **(Annex 32)**.
[191] Kozani's Prefecture document, registry number Π38.3780 /7.10.2004 **(Annex 33)**.
[192] Kozani's Prefecture document, registry number Π38.189 /19.1.2004 **(Annex 34)**.
[193] Thessalonica Administrative Court of Appeal, Judgment of 19.05.2004.

In a similar decision (**866/2004**[194]), the inspection of 23.7.1997 at the same units had led to the following findings: (i) uncovered parts of conveyor-belts, (ii) failure to spray the ash, (iii) failure to spray the roads in the lignite yard, (iv) exceeding of particles emissions, and, (v) lack of measurements of the average hourly particles values. A fine of the same value had been imposed and endorsed by the Court.

According to another decision (**870/2004**[195]), an inspection later during the same year (on 13.11.1997) found also exceedings of particles emissions from units II and IV and the same fine was imposed.

It seems that DEH never hesitates to appeal against the prefectural decisions imposing fines with the rather 'standardized' allegations about lignite quality. Even when the courts reject DEH's appeals, and fines are upheld, it is more convenient and less expensive to pay them than to carry out the necessary changes in order to comply with the law.[196]

110. *Thirdly*, a recent case before the Supreme Administrative Court (*Conseil d'Etat*) also reveals the lack of political willingness to enforce judgments finding a violation of environmental requirements.

The municipality of Ptolemaïda and 20 inhabitants of Mavropigi, which is situated in the abovementioned municipality, lodged an appeal with the *Conseil d'Etat* against JMD 105947/6.2.2003 by which environmental terms for the operation of DEH's mine in "Dytiko Pedio" were approved. It should first be highlighted that the same applicants had appealed against the previous relevant decision and, on the day of the hearing, the decision was withdrawn by the Administration and subsequently re-issued. The new decision's content was identical except for the addition of the signature of the Minister of Agriculture (besides those of the Ministers of Environment and Development).

The applicants requested the annulment of JMD 105947/6.2.2003, as there was no previous environmental approval for the mine's emplacement in the land plot. The case was referred to the plenary of the *Conseil d'Etat* because of its great importance**. The *Conseil d'Etat* annulled the JMD on the ground that due to lack of autonomous localization approval[197], the environmental impact study had not taken into consideration several parameters and factors, limiting itself to determining specific working methods**. More specifically, the JMD took for granted the exploitation of the whole area of "Dytiko Pedio", the evolution of works, the destruction of the public forest of Mavropigi (406 stremmata [±40 hectares]), and most importantly, the non relocation of the village of Mavropigi, despite the inhabitant's desire to relocate, and the existence of a specific study, submitted by the municipality, showing the

[194] Thessalonica Administrative Court of Appeal, Judgment of 19.05.2004.
[195] Thessalonica Administrative Court of Appeal, Judgment of 19.05.2004.
[196] In the State's observations upgrading or replacement of technologies are listed as having prices ranging from €10 millions to €130 millions.
[197] *Conseil d'Etat*, Judgment 998/2005 of 1.4.2005. See also the strong protest of the Kozani Bar Association regarding the illegal operation of DEH's lignite mine in Mavropigi, **Annex 39**.

impact of the mining activity on the village. The *Conseil d'Etat* also considered that the Kozani Prefectural Council's positive opinion on the authorisation of the mine's operation had been taken assuming the relocation of Mavropigi.

According to Judgment, the environmental terms approval was issued illegally, as the mine's location had not been taken into consideration. Consequently, JMD 105947/6.2.2003 was invalidated and the mine should have stopped operating, at least until the issuance of a new environmental terms approval in accordance with law.

However, the mine of "Dytiko Pedio" still operates, despite the judgment of the highest administrative court. The competent ministries allege that the operation is approved by the JMD which, as already mentioned, was withdrawn on the day of the first hearing and was 'resurrected' with the same content. **In practical terms, the administration alleges that a decision identical to the one declared illegal and annulled by the Supreme Administrative Court is enough for the operation of the mine, even though it had been withdrawn**.

111. The administration's manoeuvre described above reveals that environmental requirements are mere formalities and that political willingness to protect the environment and health is completely absent. A certain slowness in the administrative handling of cases such as these could be tolerated if they ultimately led to effective environmental improvements. But in practice what emerges from these cases is that the Administration prefers to practically void court decisions by its tolerating and clearly supporting DEH's environmental and social indifference.

112. The practice brought to light in the above example is made even clearer by an **older case brought before the Ombudsman by inhabitants of Kokkari at the island of Samos**, concerning the power plant operating in their region[198]. The applicants alleged that the Prefecture and DEH had not executed the judgment 4577/1998 of the *Conseil d'Etat* about the settlement and embankment of a torrent in DEH's site. Inhabitants of Kokkari, which is classified as protected cultural site[199], further alleged that the operation of DEH's station had deteriorated the environment and their quality of life because of the air pollution, the visual annoyance, noise, vibrations, soil and water pollution, waste canalization to the sea, fuel leakage and oil spills appearing in the waters of the touristic area of Kokkari. They also alleged that the station operated without legal licensing and although DEH was aware of the decision suspending the embankment of the torrent and the redirecting of the river without any prior approval of the location and environmental terms[200], it continued the works. In addition, they underscored the lack of mechanisms of environmental information and monitoring, as the law requires, and consequently, the absence of documented environmental data.

[198] Complaints 1114/20.11.98 & 894/9.2.99.
[199] According to PD 29.8/12.9.80 (Official Gazette D΄510).
[200] *Conseil d'Etat*, Decision of the Section of Suspensions 805/96.

The Ombudsman's examination of the case concluded to the following **instances of misrule**[201]: a) the Prefecture's decision on the torrent's settlement was issued without the prior approval of location, any environmental impact study submitted by DEH, and any environmental terms approved; b) refusal by the Ministry of Environment to apply the law, despite a judgment of the *Conseil d'Etat*. According to the Ombudsman, the Ministry of Environment's interpretation of legal requirements might facilitate the decision-making and execution of works, but has no legal basis; c) non compliance with the *Conseil d'Etat*'s final judgments and conservative measures; d) the operation of the station concerned without any legal licensing of operation, waste management and without any measures for the protection of the environment; e) no involvement of the competent authorities, so that DEH was never monitored on anti-pollution measures; f) failing of the Prefectural Services to provide the Ombudsman with data requested during the investigation; g) failing of systematic monitoring with regard to environmental protection that, in combination with insufficient access to information (no collection of data), constitute an obstacle to the observance of procedures for environmental protection; h) failing of the administration to determine what the BAT requirements were; and, finally, i) that the non execution of the decision of the *Conseil d'Etat* encouraged *de facto* practices ("politique du fait accompli"), causing "severe, irreparable environmental problems". The Ombudsman concluded that the examination of these cases confirmed the general findings that are included in his annual report of 2000, in the section "Quality of Life" demonstrating:

> ***"the inertia, the tolerance and in several cases, the complicity of the Administration, that legitimate an interminable cycle of arbitrariness, which relies on consolidated practices that are supported by the lack of planning, decisiveness and information"***. (emphasis added) [202]

113. In concluding this section, the complainant observes that the weaknesses of the monitoring bodies, avowed by the State, have led to the impossibility to assess and correct environmental performance, thereby damaging nature and human health in irreparable ways. Moreover, the complainant notes that environmental control is not regularly carried out by the authorities, and cannot be carried out by affected populations due to lack of transparency and inadequate data collection and sharing by the operators and State. Sporadic controls and monitoring that do take place result in light or ineffective sanctions being applied. To the complainant's, and to the State's best knowledge, not one instance of suspension of activities of DEH's mining, combustion plant, or waste disposal operations, has ever taken place in Greece despite the numerous infractions observed. The ineffective sanctions, in those rare occasions

[201] Ombudsman findings, *Autonomous Station of Energy Generation in Kokkari at Samos*, May 2000, available in Greek at <http://www.synigoros.gr/porismata_pz.htm> (last visited on 8 March 2006).
[202] *Ombudsman's Annual Report*, 2000, p. 168, available in Greek at <http://www.synigoros.gr/annual_2000_gr.htm>, last visited on 8 March 2006.

where they are applied, are judicially challenged, and court decisions upholding them, even those of the highest courts, are not executed, with the quiescent support of local and national administration. Finally, the problems described are not new, nor do they reveal any political variations. Successive administrations change, DEH's legal status changed, and environmental and health protection continues to be sacrificed in the name of short term profit.

2.3.1.2.4 Non-compliance with the Kyoto Protocol Targets

114. In closing its response on Article 11§1, the complainant would like to draw the attention of the Committee to one last claim made in the Complaint. It was asserted that the overwhelming impact of Greece's energy generation sector on greenhouse gas emissions made it doubtful whether the country could meet its Kyoto Protocol targets.

115. A detailed exposal of Greece's national emissions has been undertaken above[203], and concluded that the energy sector is responsible for the largest part of anthropogenic emissions in Greece. The operation of lignite centres alone accounted for the following percentage of national emissions in 2001: 40,6% of CO_2, 17,1% of NOx, 54,2% of SOx and 28,8% of PM_{10}[204]. Although in all European countries the burden of electricity generation in emissions is high, as compared to other sectors, it is found that Greece is also not complying with the targets and benchmarks established by European and global environmental law. Moreover, even where it is complying, it should be noted that compliance has not been achieved by emission reductions, but rather by the Kyoto flexible mechanism of emissions trading, and by EU targets tailored to allow Greece to increase emissions.

116. The complainant believes that it is absolutely crucial for the Committee, when assessing a State's compliance with its obligations under Article 11§1, to evaluate its commitment to carry out in good will and effectively the binding commitments it has accepted under international law relating to human health and the protection of environment. As shown above this is not Greece's case[205], both as regards the Kyoto Protocol and EU environmental legislation in general.

117. Although compliance with international standards is not only possible, but mandatory, it is not necessarily *sufficient* to satisfy the requirements of Article 11. Compliance with the standards set in the Kyoto protocol can theoretically be achieved by a mix of policies including, among others, emissions trading. That does not, however, imply that air quality, and therefore human health, is adequately protected in accordance with the Charter.

[203] See above, p. 12.
[204] See Table 1, at p.13.
[205] See above, pages 12 and 37.

118. The State, via DEH's memorandum, discusses the issue of Greece's compliance with the Kyoto Protocol[206]. The State argues, firstly, that greenhouse gas emissions are set to increase by 39.2% until 2010, whereas the binding target for Greece, under the Kyoto Protocol, is +25% in relation to 1990 levels. Furthermore, the State stresses that the commitment period for the implementation of the Protocol is from 2008 to 2012.

The above remark infers a clear admission by the State that the Kyoto targets set for Greece will not have been met by the middle of the commitment period (2010). Moreover, as to the fact that the Kyoto Protocol commitment period has not yet started, and therefore the reduction targets are not yet binding, article 3, paragraph 2 of the Kyoto Protocol provides that "[e]*ach Party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitments under this Protocol.*"

The fact that the greenhouse gases emitted by Greece will be almost 15% above the limit set by the Kyoto Protocol **shows that the State is not making the 'demonstrable progress' required and therefore is already not complying in good will with its obligations under the Protocol**.

119. The State further argues, that "[t]he fulfilment of targets could be achieved either by limiting emissions, or by using flexible mechanisms stipulated by the Protocol".[207]

In response, the complainant observes that article 17 of the Kyoto Protocol establishes the *principle of supplementarity* in the use of the flexible mechanisms. More specifically, the above article provides that *"[t]he Parties included in Annex B may participate in emissions trading for the purposes of fulfilling their commitments under Article 3.* ***Any such trading shall be supplemental*** *to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments under that Article."* (emphasis added)

Therefore, **each state is bound to *primarily* reduce greenhouse gas emissions for the purpose of fulfilling its commitments, and the flexible mechanisms *should only be used as a supplement* to domestic actions for the emissions reduction**. [208]

120. It should be stressed that the State's plea to comply with the Kyoto Protocol by using the flexible mechanisms shows that it has missed a very crucial point: **the obligation to remove the causes of ill-health contained in the Charter cannot be realised through buying emissions, but rather through the *actual reduction* of emissions that cause ill-health**[209]. The

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[206] *State's Observations*, p. 36.
[207] *Ibid*., p. 36.
[208] The European Environmental Agency has also found that Greece might meet its targets with the use of the flexible mechanism, but probably not without its use (EEA, *The European Environment*, 2005, **Annex 6**, p. 454).
[209] The Committee, under the reporting procedure, has already highlighted the intimate relationship between emissions reduction and human health: "On the basis of OECD figures and the second report on the implementation of the Rio Convention, the Committee notes that, with regard to controlling emissions of traditional pollutants resulting from human activity and of greenhouse gases, there was a general increase

complainant does not expect the Committee to declare that Greece has failed to comply with Kyoto protocol if for no other reason, for the fact that it lacks the jurisdiction to do so; rather, the complainant expects the Committee to declare that, by not 'making demonstrable progress' towards the reduction of emissions, and by relying *exclusively* on flexible mechanisms to comply with the Kyoto Protocol, Greece fails to comply with the Charter.

This failure to reduce emissions is particularly grave when one considers that it would require a rather simple policy of improvement of technologies in a small set of large combustion installations, to bring about a considerable improvement in air quality nation-wide, thereby ensuring the protection of human health.

2.3.2. The obligation to provide advisory and educational facilities

121. Given the already demonstrated weaknesses in the licensing of activities, monitoring and enforcement of legislation, and the existence of measured health impacts of environmental degradation, it is clear that the State has failed to remove the causes of ill-health.

But the State's obligations do not end there. Under the Charter, the State should attempt to mitigate the negative effects of environmental pollution and empower individuals to take personal responsibility for their health in areas affected. Once more, the State has failed to do so, as shown below.

2.3.2.1 Non involvement of populations in environmental assessment

122. It should be by now more than obvious that the State's environmental assessment, monitoring and enforcement are not transparent. Although improvements such as the creation of the environmental inspectorate and the ratification of the Aarhus Convention are to be lauded, consequent action must follow, and has so far failed to materialize.

123. The State's observations have provided no concrete information on the participation of the affected populations in any kind of environmental assessment[210]. When populations have involved themselves, it has been despite, and not thanks to, the administration. As shown above[211] **not only are populations denied involvement in the preventive environmental assessment, but they are even denied access to existing information and thereby impeded from exercising their right to challenge assessment, and the operation of highly-polluting installations**. Worst, when individuals and communities, after prolonged struggle and unmeasured losses, conquer through judicial means the declaration of the right to the protection

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in the level of such emissions in Greece from 1990 to 1996. Emissions of sulphur oxides and nitrogen oxides were particularly high (levels of the former were twice the OECD average)." (References omitted, *Conclusions XV-1* (Greece), adopted 1 January 2001, pp. 294-254)

[210] Some generic references to participation can be found throughout the *State's Observations*, for instance at pages 13 ("elaboration of communication channels with… local communities") and 26 ("consensus of the local community" is allegedly taken into account in the spatial planning phase of 'big energy projects'). Contradictorily, at p. 12-13, no mention is made of public participation in the environmental impact assessment of mining projects or in environmental management.

[211] See, p. 42, *supra*.

of health, their victory is meaningless due to repeated disrespect by the State of these court rulings.[212]

2.3.2.2 Non involvement of populations in health assessment

124. A second aspect of the right to advisory facilities is also denied by the State. The Complaint asserted, and the State did not refute, that **health assessment – for the scientific and fact-based measurement of the real impacts of the lignite cycle on people's health – has rarely been carried out**, and has never involved affected populations in a way that would allow them to participate meaningfully, i.e. express and obtain response to their concerns.

125. As demonstrated above, in over 45 years of DEH's activities the State could only present, via DEH's memorandum, two epidemiological studies the quality and conclusions of which have already been discussed above[213]. Both studies were conducted based exclusively on old data collected by State organs, there being no mechanism whatsoever for the participation of persons affected, nor specific clinical exams with the persons suffering the effects that the studies are supposed to measure. It is nowadays a common practice, when conducting social, environmental or health assessment, to create opportunities for the targeted groups to discuss with and question researchers.

The complainant would add that these opportunities for contact between health specialists, public authorities and communities are precisely what is needed to "encourage individual responsibility in matters of health". It also empowers participants to contribute directly in the formulation of an adequate public-health policy response to issues that most affect them.

2.3.2.3 Absence of a public health information policy

126. According to the Committee's latest conclusion on Greece, "health education must be provided throughout school life" and Greece is expected to confirm in its next report that it forms part of school curricula[214]. Given the well known risks threatening the health of children and adults in the regions where lignite is used for energy generation, local curricula should reflect an increased concern for the prevention, detection and treatment of most common respiratory and cardiovascular diseases. Thanks to better information, medical care intervention

[212] See, §§110 and 112, *supra*.
[213] See the discussion at pp.17ff.
[214] Conclusions XVII-2 (Greece), adopted 30 September 2005, vol. 1, p. 312-313

could take place earlier, and appropriate measures for the protection of health would be taken as soon as possible, thereby avoiding that diseases develop undetected for many years[215]. It has also been established that early protection of the respiratory system of children reduces propensity to diseases at a later age.[216]

127. Not only in schools should information be more widely provided. In the areas affected by the lignite cycle, measures should be taken – and have not been – to assist individuals in managing health risks, both on a regular and on an urgency basis, i.e. when limit levels are exceeded, and when seasonal or other conditions increase risks incurred by the populations. Simple public broadcasts combined with an early warning mechanism could easily contribute to mitigate adverse health outcomes that are known to occur[217]. If the State cannot immediately eliminate the sources of pollution, it is unconceivable that it cannot, at least, put together a public information and communication policy to reduce the effects.[218]

128. Although the State has relied on lignite for its energy supply security for the last 45 years, it has so far failed to adopt any measure whatsoever to provide advisory and educational facilities and to encourage individual responsibility in matters of health of those populations most burdened by the externalities of the lignite cycle. This deliberate choice fails all tests of proportionality: if one assumes that energy generation is an important public aim, as the complainant and the State certainly do, the means to achieve it must be proportional. The populations of Megalopolis and Kozani-Ptolemaïda have been forced to pay an unacceptable price for the country's energy independence, for decades. **Until the State finally ensures the protection of health for all, the least it should do, is to provide the populations affected with the means to protect themselves.**

2.3.3 The Obligation to prevent diseases as far as possible

129. No authority competent in matters of health responded to the Complaint. The State did not refute or provide evidence contrary to the Complaint's assertions on Article 11§3. The administration is, in this matter as in others, in denial. No health problems exist, because no

[215] According to one specialized study: "[t]he substantial morbidity associated with COPD is often underestimated by health-care providers and patients; likewise, COPD is frequently underdiagnosed and undertreated." (Romain A Pauwels, Klaus F Rabe. "Burden and clinical features of chronic obstructive pulmonary disease (COPD)", *Lancet* 2004; 364: 613–20, **Annex 17**). This finding is consistent with the one reached, for the Kozani area, by the study of Sichletidis *et al.* referenced in the *Complaint*, §98.
[216] See *Complaint*, §93.
[217] See above, §53.
[218] It should be noted that the State has alleged that real-time communication of air quality measurements to authorities either is (pp. 28-29), or will soon be (p.29, see also footnote 182, *supra*), a reality. Nonetheless, it does not indicate what purpose this communication might have in mitigating adverse health impacts of exceedances of concentration in air pollutants. Possibilities such as washing the streets after high particulate matter emissions periods, are not even mentioned by the State (see footnote 34, above).

pollution exists, therefore no population wide health-assessments are required, no long- or short-term strategies of mitigation for inexistent problems are required, and so forth.

Paragraph 3 of Article 11, establishes an autonomous obligation to prevent endemic, epidemic and other diseases as far as possible. The environmental and health impacts of the lignite cycle are well known, and diseases such as chronic obstructive pulmonary disease (COPD), severe rhinitis, lung cancer, and circulatory diseases have been associated with degradation of air quality. There has been no public policy response to the health concerns observed in the areas affected.

2.3.3.1 Absence of population wide health assessment

130. The complainant has asserted the need to *involve affected populations in health assessment*. But regardless of this additional requirement of the Charter, the complainant would be more than satisfied if, at least, the State carried out or funded *motu proprio* adequate and periodic medical research in the assessment of the prevalence, causes and health responses to the main diseases known to affect the inhabitants of these regions. This requirement is not only in the interest of pure science: public authorities and citizens cannot reach sound public policy choices, compare cost-benefit of competing alternative policies, evaluate progress made or assess the efficiency of policies without adequate information on health being competently gathered, analysed, discussed and made public.

131. From the medical studies quoted (but not provided) by the State it emerges clearly that studies are not carried out frequently, and that available statistical data are outdated and not appropriate to conduct serious analysis of the health situation in the regions[219]. If tools for research are lacking, they must be developed. The studies quoted by the complainant – all of which were self- or EU-funded –, carried out in the context of academic cooperation programmes, suggest possible fields of future research, and analytical methods compatible with international scientific requirements.

132. By not carrying out appropriate and regular epidemiological studies, the state has failed in its obligation to prevent diseases as far as possible because it denies itself, and affected populations, of indispensable information to respond to diseases that are known to be associated with the externalities of lignite-based electricity generation.

2.3.3.2 Absence of health mitigation policies

[219] On the lack of medical studies measuring the impact of radiation from fly-ash on human health, see below, note 14.

133. The Complaint asserted[220] that neither long-term, nor urgency mitigation policies of any sort had been set-up by the State to reduce risks incurred by the populations affected by the lignite cycle. Here again, the State provided no information as to any practices or future plans.

134. If the State had adequate and timely information as to the real levels of pollution in the areas affected, something the complainant doubts, it could establish long-term policies to mitigate the effects of said pollution. As demonstrated above, **the State does not have the information, and does not act upon what information it has[221] in any manner consistent with its obligation to prevent, among others, respiratory or cardiovascular diseases caused or aggravated by air pollution**. A serious strategy, with communication, environment and health aspects should have been devised, and was not. Over the long-term this strategy could have spared an uncounted amount of DALYs[222], and resulted in greater awareness and responsiveness by the population and authorities to the health-threats occurring in the region.

135. Moreover, not only is there no long-term strategy, but in this age of instant communication, there appears to be no public health response to continuous or occasional pollutant limit-level exceeding. If the goal of environmental monitoring is to achieve an improvement of air quality and well-being through technological upgrade, over a long period, there should be an adequate policy for all those circumstances where monitoring fails, or improvements fail to materialize. It is not unthinkable, but rather mundane, that limit level exceeding be followed by some consequence, be it public announcements, reduction of operation of power plants, suspension of certain mining activities, etc. But as abundantly shown above[223], **there is no alternative plan for when emissions exceed limit levels, no public response, and no communication to the affected persons**.

136. In the light of the above observations, the complainant requests that the Committee declare that Greece does not comply with Article 11, paragraph 3 because it has not conducted population-wide health assessment, and has failed to adopt any mitigation policy whatsoever, that might have contributed to prevent diseases as far as possible.

III. 3. Observations regarding the right of lignite mine workers to additional paid holidays or reduced working hours

137. As regards the State's obligations under Article 2, paragraph 4 of the Charter, and in light of the Committee's inclusion of lignite mining among the "dangerous and unhealthy activit[ies]", it was argued in the Complaint that the State has failed in its duties to ensure just

[220] *Complaint*, §§101, 103.
[221] See above footnote 182.
[222] *Disability-adjusted life years*; "[o]ne DALY can be thought of as one lost year of healthy life and the burden of disease as a measurement of the gap between the current health of a population and an ideal situation where everyone in the population lives into old age in full health." (Romain A Pauwels, 2004, **Annex 17**).
[223] See p. 42.

conditions of work, by denying lignite miners additional paid holidays or reduced working hours. No evidence has been produced by the State that working conditions have rendered lignite-mining a non-hazardous occupation but, to the contrary, both medical studies[224] and the State[225] acknowledge that it is a hazardous activity.

More specifically, the complainant argued that the State infringes upon its obligations both directly, by failing to establish a legal framework imposing that reduced hours and additional paid holidays be granted to all lignite mine-workers in Greece, as well as indirectly, by failing to ensure that the employment and contractual policies set by DEH comply with the standards to which the State has committed itself.

138. In its response to these arguments, the State remarks that "the issues concerning the reduced working hours, the granting of additional holidays or additional paid days of leave to the employees of the Public Power Corporation at lignite mines may be regulated on the basis of the procedure of Collective Labour Agreements and, of course on the conditions laid down by the law"[226]. **The State's declared position clearly demonstrates that there is essentially no law providing for additional paid holidays or reduced working hours for lignite miners**. Had their existed such law, the State should at least refer to it or to the specific provisions that would demonstrate the existence of a legal framework ensuring lignite miners just conditions of work.

A general reference by the State to "the conditions laid down by the law" is meaningless and does not substantiate the State's allegations. It is very disturbing that the State has essentially delegated the realization of its international obligation under the Charter to the social partners – employers and employees – thus divesting itself from its own responsibilities under international law. It should be stressed that when a State undertakes such a specific substantive obligation as the one contained in Article 2§4, it should promptly ensure that, in the absence of a collective agreement or contractual policy providing for additional paid holidays or reduced working hours, the law guarantees the fulfilment of this obligation.

The Committee has repeatedly required precise information on the issue of lignite miner's working conditions in the context of the reporting procedure since 1999[227]. **It is unacceptable, but not surprising, that the State has so far failed to provide a straightforward answer**. It is equally unacceptable that the State, having known since then that there is a non-compliance with the Charter – reason why it has kept silent on this point – has taken no measures to remedy the gap in the legal framework.

139. DEH claims in its memorandum that mine workers retire earlier, that workers in guarding (night shift) posts are entitled to more leave, and that those working on Sundays and holidays are granted either bigger compensation or additional leave[228]. DEH's argument demonstrates, once more, that they miss the **crucial point**: according to Article 2(4), the mere fact of working in lignite mines entitles all lignite miners, regardless of post or working day, to reduced working hours or additional paid holidays.

DEH concedes that its lignite miners get some benefits exclusively when working on Sundays or holidays. Moreover, workers are given additional leave when they work on night-shift/guard posts. These provisions relate to paragraphs 1 (reasonable daily working hours), 2 (public holidays with pay), and 5 (weekly rest periods) of Article 2, but evidently not to paragraph 4.

Whatever benefits lignite miners are granted for other reasons, and on the same grounds as any other worker in any occupation, they are still specifically entitled to reduced working

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[224] See *Complaint* §§87ff, where prevalence of respiratory diseases among miners is demonstrated to be much higher than in the overall population, and also the Study on Komanos' inhabitant's health **(Annex 13)**, above, p. 22.

[225] *State's Observations*, p. 23.

[226] *Ibid.*, p. 4

[227] ESCR, Conclusions XIV-2 (*Greece*), adopted on 01.01.1999, p. 332: "As Greece is a major producer of bauxite, lignite, nickel and asbestos, the Committee enquires whether measures to reduce working hours and award additional holidays are also prescribed for workers employed in the sectors mining these products, and whether agricultural workers benefit from similar measures".

[228] *State's Observations*, p. 23.

hours or additional holidays for the simple fact that they are employed in a hazardous profession. DEH plainly admits that this is not the case with its mine-workers, and therefore demonstrates that the State is not complying with its obligation.

Moreover, as regards DEH's argument on the early retirement of mineworkers, the complainant wishes to observe that **Article 2§4's aim is to reduce the frequency and intensity of exposition of lignite miners to the hazardous conditions under which they have to work, and not reduce the overall exposition to the above conditions over a lifetime**[229]. Therefore, early retirement may be a *supplementary* measure, but is still insufficient and does not ensure the State's compliance with the requirement of article 2§4.

140. As is well known, even though collective agreements do regulate most issues raised by Article 2 generally – although not those of Article 2§4 – the Charter imposes minimum standards the compliance with which is the duty of the State, and not of social partners. Collective agreements are entered upon with a view to granting workers a *more* favourable regime than that provided for by general law or international standards. **In cases, as the one before the Committee, in which collective agreements establish *lower* standards, it is the State's obligation to raise those standards, by law**.

141. Finally, apart from its responsibility as a general regulator of economic activity, the State *autonomously* fails to comply with Article 2§4 by not ensuring, via its *de facto* control over DEH's operation and employment policies, that the Charter standards are applied at least in its relations to its own employees. Until 2001, DEH was fully owned by the State, and its employees enjoyed a mixed statute. After its privatisation the Corporation has remained under State control and supervision, but has been granted greater flexibility in the pursuit of its objectives.

As the *de facto* employer, the State could, at any time, have adopted employment practices that would comply with the Charter requirements. The State has been aware since 1999, if not earlier, that its practices were not in line with Charter requirements under Article 2§4. Under DEH S.A.'s statutes, changes in employment policy do not require qualified majorities of the Assembly of shareholders. Nothing would, therefore, have impeded DEH's management – directly nominated and supervised by the State – to modify its policies, had it wanted to do so. It has not done so, and has not provided any justification.

142. In concluding its response to the State's observations on Article 2§4, the complainant asserts that no provision in the law, regulations or collective agreements establishes the right for lignite miners to additional paid holidays or reduced working hours. Additionally, the State has at least since 1999 two different, autonomous paths to ensure compliance with this Charter provision, and has failed to take either one of them. The complainant therefore requests the Committee to find that Greece has not complied, in both its capacities as regulator and operator, with the requirements of Article 2, paragraph 4 of the Charter.

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[229] This is a well established principle of the Committee's practice under the reporting procedure: "*As regards dangerous or unhealthy occupations, the report states that Section 286 of the Labour Code provides that workers engaged in "particularly hazardous types of production and work" may only work a certain maximum number of years in such activity before being transferred to other suitable work. The list of occupations or activity concerned and the maximum number of years permitted shall be decided by the Cabinet of Ministers upon proposal of the Minister of Health and the Minister of Labour and Social Policy. According to the report and supplementary information provided by the Government several lists for different purposes have been approved by the Cabinet of Ministers and are applied in practice. Referring to its statement above concerning the reduction of length of exposure, the Committee nevertheless wishes to point out that it does not consider early retirement to be a relevant and appropriate measure to achieve the aims of Article 2§4 of the Revised Charter."* (Conclusions 2003, Bulgaria, vol. 1, p. 24); and *"It appears from supplementary information provided by the Government that this classification of workplaces is done with a view to determining reductions in the standard retirement age and does not at the outset give rise to reduced working hours or additional paid holidays. Referring to its statement above concerning the reduction of length of exposure, the Committee nevertheless wishes to point out that it does not consider early retirement to be a relevant and appropriate measure to achieve the aims of Article 2§4 of the Revised Charter."* (Conclusions 2003, vol. 2, Romania, p. 364).

IV. 4. Observations regarding the right to safe and healthy working conditions

143. Before responding to the substance of the State and DEH's allegations regarding Article 3 of the Charter, the complainant notes that the State observations do not respond to the Complaint in a concrete and documented way. Although it emerges from the structure of the observations submitted by the State that the Ministry of Labour is the competent authority to respond to the complaint *in totum*, the Ministry's response, even in its own area of competence, is incomplete and shoddy.

The complainant would expect that the Ministry of Labour would provide the Committee with more concrete data, that would be available from the competent Inspectorates, on: the number of occupational doctors and their exact responsibilities; the compliance by DEH with its obligation to evaluate and prevent occupational risks for each activity; the general policy of the State and DEH towards occupational accidents and diseases; and, finally, the State's programme and schedule for improvement of the admitted "weaknesses of the agencies inspecting the operation of ore mines and quarries of the country"[230]. None of these is provided; the State limits itself to repeating the general provisions of the existing legal framework.

4.1 Failure to adopt safety and health regulations

144. As an introductory statement to this section, the complainant would like to highlight that in DEH's memorandum, besides the superfluous repetition of the legal framework already presented in the Complaint[231], it is alleged that all regulations and instructions required by law have been issued[232]. The complainant must clarify, *firstly*, that it is the State's burden to provide evidence that these regulations in fact exist and, more importantly, that they are applied; *Secondly*, since DEH exercises the State's prerogative to respond, it would be easy for DEH to append at least a sample – e.g., of a risk evaluation of mines and of stations – in order to dispel doubts about their existence and appropriateness. The same procedure could have been followed for workers' medical records and personal files that allegedly exist.

It has already been established that exceeding of particles emissions is a daily occurrence in the regions where lignite is extracted and burned[233]. DEH admits this fact in certain cases[234]. It would be of great interest in the context of this procedure that the Corporation present the concrete measures adopted to protect workers and, particularly, to clarify whether workers are effectively informed and what specific, individual measures are taken for their protection.

4.1.1 Absence of an occupational diseases tallying and compensation scheme

145. More specifically, as regards occupational diseases, the State does not provide the Committee with any information whatsoever on the legal and practical framework and procedures put forward for their detection, tallying and for the compensation of workers affected by them.

The State, in furtherance of a well-established practice of non-transparency, does not make public any statistical data on occupational diseases. It is noteworthy that Greece does not systematically count or provide any information on occupational diseases, not even to the European statistical agency (EUROSTAT). Therefore, Eurostat clearly points out that the data

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[230] *State's Observations*, p. 7.
[231] *Complaint*, section "3.4.1. Greece's Legislative Framework", p. 38, §§114ff.
[232] *Ibid.*, p. 21-22.
[233] See above, p. 3. Also note that the findings that high particulate matter concentration levels remain stable throughout the year in the proximity of power plants.
[234] See §§79ff, *supra*.

from Greece cannot be compared to those of the rest of Europe, due to a too low incidence of accidents and other health-related problems were recorded.[235]

Not only does the State refrain from publishing statistical data on occupational diseases, but it also fails to produce any scientific studies conducted either by the State or DEH, concerning occupational health of miners employed at the lignite mining and combustion facilities. **It must, therefore, be assumed that no such study exists**.

146. At the same time DEH's memorandum alleges that individual preventive health assessment is carried out routinely[236], and that out of 7000 employees in the lignite centres, "200 of them suffered from lower respiratory diseases, and 100 of them suffered from upper respiratory system diseases."[237]

The obtuseness of this statement is striking. Some obvious methodological and medical considerations are required:

1. to what time period do the numbers presented refer to? How do they compare to the past, or current conditions?
2. of the 300 workers allegedly presenting respiratory symptoms, how many work in the mines? What other useful parameters are known for those workers (age, sex, time of employment, place of residence, smoking habits, previous medical history, exact work post, etc.)?
3. why are the numbers so perfectly round? Had there been a serious investigation into the medical status of the lignite centre employees, how likely would it be that the results would be round three figure numbers?
4. why is the prevalence of upper respiratory disease inferior to the prevalence of lower respiratory disease? In the general population, the figures would be inversed, as inhalable particles (<2,5μm), responsible for most of the lower respiratory diseases are less frequent, although more dangerous.
5. why is it that a study conducted in 1999, funded by the EU, fully presented in the Complaint[238], and not challenged by the State at any point, finds the prevalence rate of upper respiratory disease among lignite mine workers to be over 70%, regardless of place of residence whereas DEH's mysterious, dateless, round figures suggest a rate of about 1,5%?

147. By presenting the above figures to the consideration of the Committee, the State once more endorses DEH's contempt for social rights and human intelligence. They must consider that the Committee, the complainant, and the Greek public have no idea of how data on occupational disease should be presented.

148. Greek law provides in general for social security benefits in cases of diseases and accidents. However this mechanism is ineffective and unfair, as it fails to distinguish between occupational and non-occupational diseases and accidents. Essentially, the procedure and pecuniary benefits are exactly the same regardless of whether the respective disease is an occupational one or not.

Finally, it has to be stressed that each of the approximately 27 Greek social security funds has its own data on occupational diseases and accidents, aggregated using variable and

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[235] See for instance EUROSTAT, *European social statistics: Accidents at work and work-related health problems (Data 1994-2000)*, 2003, where it is clearly stated, at p. 65, that "(...) the data for Greece should not be compared with the other countries since a too low incidence of occupational accidents and work-related health problems was recorded by the survey in this country." (available at <http://epp.eurostat.cec.eu.int/cache/ITY_OFFPUB/KS-BP-02-002-3A/EN/KS-BP-02-002-3A-EN.PDF>, last visited on 8 March 2006).

[236] *State's Observations*, pp. 41-45.

[237] *Ibid*, p. 45.

[238] **Annex 12** of the *Complaint*.

not comparable methods and indicators, and not all of them actually count instances of occupational diseases, even though most of them are required by law to do so.

The above remarks clearly demonstrate that the State has failed to establish a concrete and effective scheme for tallying and compensating occupational diseases, thereby violating its obligations under article 3 of the Charter. It also demonstrates, in the particular context of lignite extraction and combustion activities, where diseases are frequent due to the hazardous nature of the work, that no activity-specific framework or compensation scheme has been established.

4.1.2 Ineffective regulations regarding the presence of Occupational Doctors

149. The complainant, having evaluated the requirements stipulated by the relevant legal provisions on the number of Occupational Doctors that DEH is obliged to employ, argued that this number is insufficient. More specifically, as DEH has declared, the enterprise employs 35 Occupational Doctors covering the whole national territory (mainland interconnected system and autonomous islands system), 100 Safety Officers on full and part-time employment, and 55 Auxiliary Nursing Staff Employees[239]. The complainant wishes to remind the Committee that DEH is an enterprise with 28.000 staff members, and therefore employs one occupational doctor per 800 employees.[240]

The applicable law, as already stressed in the Complaint, does not provide for cases when an enterprise is scattered in more than one municipalities or prefectures. DEH is dispersed in 53 prefectures and each centre of activity is situated far from the others, leaving therefore a void, which leads to results such as the employment of only one occupational doctor for one thousand workers. As DEH states, "in Western Macedonia and Megalopolis energy centres, for around 7.000 employees, 7 Work Doctors are employed[241]". It should be stressed that the seven work doctors are supposed to cover, 7 days a week, 24 hours a day, a total of 13 very large industrial installations (6 mines, 7 large combustion power plants), dispersed in two very wide areas, in two different prefectures[242]. This means that all preventive and reactive care is carried out by a very small and presumably overworked staff or not carried out at all.[243]

This absurd situation is perhaps *legal* under Greek domestic law, but is certainly not *reasonable*. The current domestic legal framework admits such unreasonable situations, clearly demonstrating its insufficiency. DEH's memorandum, while trying to defend the Corporation by asserting its compliance, illustrates the patent insufficiency of the legal framework. The point missed once more, is that **this Complaint is not about DEH's compliance with the domestic legal framework, but rather whether *the framework itself* complies, in the context of Article 3, with the Charter. It clearly does not.**

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[239] *State's Observations,* p. 41.

[240] The Greek national average, according to the WHO is one doctor per 227 inhabitants, and roughly one nurse per 3 inhabitants.

[241] *State's Observations,* p. 41.

[242] A geographical representation of the two mining sites is available at DEH's website: <http://www.dei.com.gr/%28A602AE81616EDF67ACC4B608D9B4E10CFCB61475A9F434D2%29/images/oryxeia-map-large.gif> (last visited on 8 March 2006).

[243] As to other medical or work safety staff beyond the individual occupational doctors, the following must be stressed. It is alleged DEH's Safety Officers do not receive extra wages for their safety responsibilities and are not required to have specific experience or scientific knowledge. Very often this post is delegated to the youngest worker or the worker that is considered as the most "incompetent" or "unproductive". See the appended minutes of the MFHR's interview with Dr. Paraskevi Batra **(Annex 37)**, Associate Professor at the National Technical University of Athens, whose research has focused on the energy sector's occupational accidents.

The State, in legislating, omitted to regulate situations or the specific circumstances in which an enterprise's activities are dispersed in multiple autonomous geographical areas, thereby failing to adopt safety regulations satisfying both the *letter* and the *spirit* of Article 3§1.

150. In conclusion to the allegations regarding the insufficiency of the legal framework on occupational health and safety, the complainant requests that the Committee find that Greece has not complied with Article 3§1 because: it has not established a framework for the detection, tallying and compensation of persons suffering from occupational disease; and, additionally, the existing legal requirements on occupational doctors fail to reasonably regulate situations where an enterprise's activity is dispersed in multiple autonomous geographical areas.

4.2 Failure to adopt enforcement measures in health and safety at work

4.2.1 Inadequacy of occupational accident monitoring

151. The Complaint asserted that the overall high number of occupational accidents in Greece resulted from the inefficiency of occupational health and safety monitoring and enforcement mechanism.

Regarding this point, the State argues that the overall number of occupational accidents decreased since 1977 citing that "while in 1977 3,81% of the insured persons suffered an occupational accident, in 2002, such percentage had decreased considerably to 0,82%"[244]. These numbers, even if true, do not prove that occupational accidents have decreased. What the numbers suggest is that either the number of accidents decreased, or the number of insured persons decreased, or a mix of both occurred. It is hard to assess Greece's statistics as they are notoriously considered unreliable by Eurostat[245]. Moreover, the growth of the informal labour market in Europe is a well documented fact, particularly in dangerous sectors such as the building industry. Finally, the figures quoted represent only two years in three decades, and there is no evidence that they reveal a constant trend in the time series. **Had the ministry been able to provide concrete evidence of as constant decrease trend, it would have done so**. In any case, without further clarifications, one cannot assess the meaningfulness of the quoted numbers.

152. The incoherence of the State's comments increases constantly. The complainant observes that the State acknowledges an "increase in fatal occupational accidents observed",[246] blames it on foreign workers and the Olympic games projects, and then supplies a table of the fatal occupational accidents for the last four years, alleging that "the percentage is already continuously decreasing"(sic)[247]. The State should make up its mind, so to say: either there was, or there wasn't, an increase in fatal accidents.

If there was an increase, moreover, it is unacceptable to present, as an explanation for the increase, that "in our country there is a great percentage of foreign workers who have objective difficulties (language problems, lack of education, low level of work experience, etc.)."[248]

It might startle the Ministry of Labour, but Greece is not the sole European country receiving migrant workers. Moreover, it is completely improper for the State to put the burden of compliance with labour safety legislation on workers and not on employers. If employers realise that the workers cannot comply with safety regulations, then they should not employ them. Hence, if the State, through its monitoring system, realises that employers take advantage of foreign workers that do not properly understand safety regulations, it should impose to the employers the respect of the law through appropriate means. In no case is the foreign worker

[244] *State's Observations*, p. 2.
[245] See above, footnote 235.
[246] *Ibid.*, p. 2.
[247] *Ibid,.* 11 lines below the first quote.
[248] *State's Observations*, p. 2.

responsible for not understanding the safety regulations, or for "elevating" the number of accidents!

If on the contrary, a decrease in fatal accidents has occurred, as suggested by the table on fatal accidents[249], one wonders why the State has not only contradicted itself, but also limited itself to provide information from the last four years. Moreover, by presenting total national figures of the Labour Inspectorate Body (SEPE), the State does not clarify whether these are also representative of the situation in mining operations or in the power plants. SEPE, as acknowledged by the State[250], is not competent to inspect Ore Mines, which fall under the Mining Inspectorate's jurisdiction. Therefore, **assuming that the data on fatal occupational accidents presented by the State are credible, they are useless for the purposes of the present Complaint**: it is not clarified if figures presented concern SEPE or Mining Inspectorate data, or both; moreover, data presented are not disaggregated by type of activity.

153. Furthermore, DEH, in its memorandum[251], invokes statistical data on occupational accidents that are evaluated based on frequency and severity indicators, or fatal result. The complainant argues that if such data were effectively and properly evaluated, and if they corroborated DEH's conclusions about a decrease in the number and importance of accidents, the State and DEH would surely move to present these evaluations completely. Since they have failed to do so, the Corporation's allegation of work accident indicator improvements is yet another void self-interested, and unreferenced declaration of an enterprise that tries to defend its working methods[252]. **The State does not provide an autonomous assessment – corroborating or not – the figures presented by the company, although it would be its duty to do so.** The Committee should also bear in mind that DEH is not just a minor economic actor but one of the largest and most powerful enterprises of Greece, with over 6.700.000 customers, and 28.000 employees. It would be hardly difficult for such a powerful Corporation to provide pertinent information on this matter, had it chosen to.

154. Specialists that have worked and conducted studies on the relevant issues state that it is difficult to assess statistics on occupational accidents in the energy sector and make comparisons based on them, because of the way these statistics are collected and disaggregated by DEH (e.g., they are not disaggregated by Directorate General or activity type)[253]. For data to be useful and comparable over time, there is a need to establish an adequate protocol for the collection and treatment of data in each unit, specialty, and work place separately. Aggregate, or total, numbers allow to 'hide' local problems, or to distribute and 'water-down' the importance of work accidents in certain sectors by mixing, for instance, a high number of positions in low-risk activities (e.g., administrative) with a small or average number of high-risk activities (e.g., mining).

In any case, however, responding to the State and DEH's arguments concerning the alleged decrease in occupational accidents, **the complainant would like to underline again the essence of the argument under article 3 of the Charter: the State has failed to provide for adequate and effective monitoring and enforcement *mechanisms*, regardless of the current trend – increase or decrease – in occupational accidents indicators.**

4.2.2 The Mining Inspectorate's avowed inefficiency

155. Regarding the inefficiency of the State to effectively enforce measures concerning health and safety at work, it is impressive to witness that although the State concedes the

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[249] *Ibid*, p. 3.
[250] *Ibid*., p. 1.
[251] *Ibid.*, p. 22.
[252] It is also, incidentally, insincere. Before the annual report of 2004, published in June 2005, i.e. after the filing of this Complaint, no mention to work accidents had ever been made. The *Annual Report 2004* mentions a decrease in work accidents in the following, misguiding, manner: "The accident ratio of PPC mines *continued to decrease* during 2004" (emphasis added), at p. 22. If there were, indeed a continuous trend, one would have expected this to be mentioned in previous annual reports, or to present it with data concerning previous years.
[253] See **Annex 37**.

weaknesses of the Inspectorate of Mines[254], DEH makes efforts to persuade the Committee of the opposite. Thus, according to DEH, there is close cooperation between the Inspectorate and DEH's Directorates. The cooperation is so successful that, according to DEH, "in cases where legality is infringed", although DEH has devoted several pages to convince that this never happens, the Directorates inform the Inspectorate through letters and they ask for "on the spot inspections"[255]. Even if one admits the above-mentioned allegation, further information on sanctions and reparatory measures would be indispensable to prove the fruitfulness of DEH's cooperation with the Inspectorates. One would expect such an enterprise to maintain an archive of every infringement observed, of every sanction imposed and every improvement accomplished.

156. Moreover, and at the risk of being repetitive, the complainant wishes to stress **that it is the State's burden to prove the efficiency of its monitoring mechanisms**; the enterprise cannot, at the same time, be the target and evaluator of the monitoring mechanism. And in this case, it seems that the State is itself less persuaded of the Mine Inspectorate's effectiveness and efficiency, as it avows "existing weaknesses… due to lack of personnel"[256] and stresses the serious efforts that the Inspectorate makes despite these limitations. The complainant must highlight that inspectors carry out a valuable work in extremely difficult circumstances because the State has not provided them with the adequate means to carry out their obligations effectively. The complainant further underlines that **it is remarkable that at the same time in which the Ministry acknowledges the weaknesses of the system, and praises the efforts of the inspectors, it fails to support said efforts by delineating a clear strategy and schedule of improvement of the inspectorates.**

4.2.3 Inefficiency of the sanctions regime

157. In addition to the inefficiency of the monitoring framework established above, existing enforcement measures have demonstrated themselves to be insufficient, as penalties imposed – pecuniary and non-pecuniary – are not sufficiently dissuasive.

158. As to the table presented by the State about sanctions imposed[257], no clear conclusions can be drawn from it. A simple table with no specific information cannot prove that the inspection is complete and effective. A serious response by the Ministry of Labour would have included details on the number of inspections by competent bodies, the number of enterprises inspected, the number of workers covered by those inspections, the infractions found, whether the same infractions had previously been found (recidivism), the precise sanctions imposed, and the follow-up measures established. This, in any case, is the Committee's interpretation of the reporting requirements on the effectiveness of inspections. Greece should be aware of these requirements, as the Committee, under the reporting procedure, has already examined the State's practice on the matter and required very precise clarifications.

In the context of the present complaint, this duty to provide information refers to both monitoring bodies: Mining Inspectorate and Labour Inspectorate, since both potentially hold information that would assist the Committee in reaching an informed conclusion. **The weaknesses of the mining inspectorate, acknowledged by the State, are no excuse for the absolute lack of public information on the matter of inspections carried out in the mines. Moreover, it is also highly significant that the State does not mention a single instance in which, due to irregularity of activities, sanctions were applied to the operation of mines, be it fines or temporary suspension of activities. No criminal or disciplinary investigation or sanction seems to have ever been applied due to serious negligence of supervisors resulting in fatal accidents.**

[254] *State's Observations*, p. 7.
[255] *Ibid.*, p. 24.
[256] *Ibid.*
[257] *Ibid.*, p. 3.

159. The abovementioned table of sanctions allegedly imposed, which the complainant supposes[258] refers only to SEPE inspections, raises multiple questions: *first*, although SEPE was established in July 1999, the State should have data regarding prior periods, in order to compare –as effectively as possible – with the more recent figures; *second*, by not providing the total number of inspections carried out, it cannot be ascertained whether the number of irregularities found is proportionate[259], and whether improvements are being made; *third*, by failing to provide data disaggregated by sector of economic activity (energy, construction, shipyards, etc.), the Committee cannot evaluate the breadth of inspections being carried out (and in the context of the Complaint, whether inspections have any impact on the lignite-cycle working conditions); *fourth*, by not communicating the causes and categories of enterprises whose activities were suspended, it is impossible to assess the seriousness of the causes, or the distribution of suspension orders according to economic activity, or cause of suspension; *fifth*, and more importantly, there is no evidence that any of the inspections or infractions had any relation with the operation of lignite-fired power plants.

Nonetheless, from observing the table, and analyzing the Labour ministry's rationale for increase in fatal accidents, the following simple and reasonable thought emerges: since 2004 was the year during which the greatest part of Olympic Games projects took place and concluded, and since, as it is suggested, mostly foreign workers were employed in these projects, it appears contradictory that, precisely in this year, the sanctions decreased. It seems that another "public interest" – that of completing the projects for the Olympic Games in time – trumped human safety, once more explaining the more flexible inspections practices of that period.

160. Finally, the *insufficiency of the penalties imposed by labour inspectorates*, the values of which according to specialists remain the same since 1994, contributes to the ineffectiveness of the enforcement mechanism[260]. Additionally, SEPE does not have a "pricelist" of the fines that should be imposed for each specific violation, nor is there an increase in pecuniary punishment depending on the frequency of accidents, or recidivist companies. This leads to procedures and dealings that are not transparent and to an overall ineffective and non-dissuasive work accident enforcement mechanism.[261]

161. As indicated in the Complaint, **the ineffectiveness of enforcement mechanisms combined with the down-sizing commitments of the now private DEH, have led** to the shedding of hundreds of work positions[262] in the mining and combustion facilities, made possible thanks to **an extensive policy of sub-contracting small enterprises that do not ensure adequate working conditions**.[263]

Additional information provided to the complainant by the trade union "Εργατική Αλληλεγγύη" ("Labour Solidarity"), further illustrates the problems indicated. This trade union represents workers in Kozani, Ptolemaïda and Florina that work for contractors in the region and especially for those that cover DEH's needs. These workers, employed in the mines and the

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[258] Although the table does not state so, the limited time series coincides with the creation of SEPE; moreover the value of fines imposed in the year 2000 narrowly matches the ones reported by the Committee in its previous Conclusions on the matter.

[259] Under the reporting procedure the Committee had already found "…that the number of violations recorded is extremely low in comparison with the number of visits, and would like to receive comments from the government on this subject, particularly as concerns the sufficiently unexpected nature of visits" Conclusion XVI-2 (Greece), Vol. 1, p. 333.

[260] Using the data provided by the Ministry in the referred table, one observes that the average fine value is in the ranges from €709 to €1249. Taking the total numbers of inspections carried out by the Labour Inspectorate (SEPE) for the years 1999-2004 (accessible, in Greek, at <http://www.ypakp.gr/index.cfm?Level1=2&Level2=9&Level3=1&Level4=0&Level5=0&Level6=0>, last visited on 8 March 2006), one comes to the conclusion that only 4,2% of inspections resulted in fines, the average value of which was €1106.

[261] See **Annex 37**.

[262] According to DEH's annual reports, from 2000 to 2004, 1066 positions in the generation and mining business were suppressed (an 8% decrease).

[263] See *Complaint*, §§129-131.

power plants, are estimated at around 2.500. As the trade union's declaration[264] reveals, their salaries range from €500 to €600, and they receive hourly wages, which is prohibited in industrial activities. These wages include Christmas and Easter bonuses, as well as paid annual leaves. These labourers working under extremely difficult conditions[265] receive no benefits for unhealthy occupation.

They do not enjoy the benefits that would accrue, after a 3-year period, to employees that continuously carry out as temporary employment, needs of a permanent nature. The complainant is informed that sub-contracted enterprises force their employees to renounce this benefit. Moreover, these workers do not benefit from salary raises provided by the annual collective agreements. Workers also allege that time allotted to briefing and debriefing, equipment maintenance and storing is deducted from their 8-hour daily working time resulting in payments for only 7-hours. Half-hour pauses that are not actually taken, are also deduced from their remuneration.

Due to these working conditions, they describe their status as a form of modern slavery, as they are compelled to sign contracts of part-time employment, with the above multiple deductions, although they work for 8 or more hours a day. These workers desperately ask, and the complainant fully shares their indignation: how is it possible that these practices are allowed to persist for many years despite the dozens of complaints filed to the competent inspectorates?

162. In concluding its response to the State's Observations under Article 3§2, the complainant will highlight the following points. Greece's labour monitoring and enforcement mechanisms are not efficient for multiple reasons including, understaffing, lack of funds and equipment, and lack of legal means. This situation is acknowledged by the State's assertion that the weaknesses of the mining inspectorate are well known. It is further acknowledged because the State, in providing information, is incapable of indicating a single instance in which DEH was sanctioned for irregularities in the working conditions of power plant employees. Even were this silence due to a simple oversight, the fact remains that SEPE inspections are not frequent enough, do not lead to dissuasive pecuniary sanctions, and never lead to any stricter sanctions. For all these reasons, the complainant requests that the Committee declare that Greece has not complied with its obligation under Article 3§2 to provide for the enforcement of occupational safety and health regulations by measures of supervision.

V. 5. Concluding observations

163. Due to the complexity of the Complaint, the MFHR requests that, should the Committee find in its favour, it establish precise, discrete instances of non-compliance, thereby allowing a clear, principled and benchmarked follow-up to its recommendations. In light of this request, the complainant wishes to observe that, in its opinion, the following instances of non-compliance have been proved.

164. With respect to Article 11§1:

The State has failed to remove the causes of ill-health by:

- **Allowing the continuous operation of lignite mines without due regard to the environmental impacts of the operation of uncovered conveyor belts and unregulated dump- and solid waste management-sites; and by**
- **Allowing the continuous operation of lignite-fired power plants without due regard to the environmental impacts of: ineffective and arbitrary**

[264] Declaration of the Labour Solidarity Trade Union **(Annex 38)**

[265] *State's Observations*, at 22, state "[m]ines operate on a 24-hour basis, during the whole year regardless of weather conditions. Therefore, workers are directly exposed to weather conditions (very low temperatures in winter months, with heavy snow and frost, or heavy rains, whereas very high temperatures in summer time)."

environmental licensing practices; the continuous use of outdated pollutant abatement technology in violation of best available techniques requirements; ineffective environmental monitoring and enforcement mechanisms, allowing environmental regulations to be violated without any consequences; and, not 'making demonstrable progress' towards the reduction of emissions, and relying exclusively on flexible mechanisms to comply with the Kyoto Protocol.

165. With respect to Article 11§2:

The State has failed to provide advisory and educational facilities and encourage individual responsibility in matters of health by:

- **Denying affected populations participation and access to information in environmental assessment;**
- **Denying affected populations effective participation in health assessment; and,**
- **Not providing an adequate health information policy for children and adults focused on the more common health concerns in the areas affected.**

166. With respect to Article 11§3:

The State has failed to prevent diseases as far as possible by:

- **Not providing for regular and effective population-wide health assessment; and,**
- **Not establishing long-term and urgency public-health policies focused on mitigating the adverse effects of environmental pollution.**

167. With respect to Article 2§4:

- **The State has failed to ensure that lignite mine workers are given additional paid holidays or reduced working hours: in its capacity as *regulator*, by not adopting the appropriate legal framework; and, in its capacity as *operator*, by not compelling DEH to adopt an appropriate contractual and employment policy.**

168. With respect to Article 3§1:

The State has failed to issue health and safety regulations by:

- **Not adopting an adequate framework for the tallying and compensation of occupational diseases; and,**
- **Not adopting effective regulations on the presence of occupational doctors regarding large enterprises dispersed in multiple areas.**

169. With respect to Article 3§2:

The State has failed to adopt enforcement measures in health and safety at work by:

- **Depriving the specialized Inspectorate of Mines of funds and staff required to conduct effective monitoring; and,**
- **Not establishing an efficient sanctions regime in both general and specialized enforcement mechanism, capable of applying sanctions severe enough to change the infractor's behaviour.**

VI. 6. Petition

170. The Marangopoulos Foundation for Human Rights, having regard to the legal and factual arguments presented, once more invites the European Committee of Social Rights to find that the Hellenic Republic has:

(a) Failed to comply with its obligations under Article 11, paragraphs 1, 2, and 3;

(b) Failed to comply with its obligations under Article 2, paragraph 4, both as operator and as regulator; and,

(c) Failed to comply with its obligations under Article 3, paragraphs 1, and 2.

Athens, 8 March 2006.

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President of the MFHR