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"Phasing Out Greece's Dirty Sheep"

Effrosyni Kominaki

Key points

In its Communication on an Energy Union, the European Commission committed itself to take initiatives in order to accomplish the transition to a low-carbon economy and convince the EU members to comply with EU emission limit values in accordance with the Energy Efficiency Directive.

This is an indispensable move in the current situation. The reluctance of the local authorities and stakeholders in Greece and others EU states to adopt plans for the transition to new national energy models and particularly the need to alter the model of development in Western Macedonia in Greece, which is based on high lignite activity , forced the EU to take measures for the progressive abolishment of the lignite power plants in Europe so that to tackle the environmental impact they cause on the environment.

The policy brief makes three main points:

- For the countries' sustainable future, the acceleration of renewable energy sources investment is recommended, in order to achieve a transition to a post-mining era.

- The key element towards a "green future" is to move in more innovative solutions/ technologies (e.g. net metering, carbon capture & storage).

- The implementation of the present policy brief in order the Greek Government to avoid the annual penalty fees as a result of non-compliance to the EU Directives.

Effrosyni Kominaki is an undergraduate student at the Department of International and European Studies, University of Piraeus.

Introduction

Energy efficiency targets

On 30th of November 2016, the European Commission presented an update to the Energy Efficiency Directive, the "Clean Energy for All Europeans" package, which includes a range of measures that aim to cut the greenhouse gas emissions at EU level by at least 40% in 2030 compared to 1990 levels and support the transition to a low-carbon economy. These binding targets and their amendments are to be accomplished under the commitment to the Paris Agreement and the 7th goal of the Sustainable Development Goals for 2020 which was presented recently from the United Nations. More so, in the EU's Cohesion Policy a number of specialization strategies for the period 2014-2020 are addressed to the regions which are more dependent on carbon-intensive industries and on coal mining such as Western Macedonia in Greece.

Energy status

"The International Panel on Climate Change calls for urgent changes to reach the Paris Agreement targets, ensuring access to affordable, reliable, sustainable and modern energy for all. The latest data analysis shows that finance for coal has been tripled in past year, but, innovative off-grid solutions and finance models pose a challenge to meet Global Goals" (Saur Energy International, 2018). The Ministry of Environment and Energy, after having set as main priority the confrontation of the climate change, issued its policy strategy that should be implemented until 2020.

Effects on the environment

Due to the climate change the environment has been negatively affected from the CO2 emissions. The lignite power plants in Greece play a significant role to gas emissions.

Review Greece position

"Europe's energy utilities have rung a death knell for coal, with a historic pledge that no new coal-fired plants will be built in the EU after 2020" (Neslen, 2017). Nevertheless, in this initiative, Greece was the only EU country (along with Poland) that didn't sign up, on the grounds that there was no internal consensus with PPC among the opponent parties.

Despite the fact that there is a steady decline in the EU coal production and demand over the last years, some regions across the EU, like W. Macedonia in Greece, which is our benchmark, lack of an effective long-term plan to address the transition to a post-lignite era.

Human/Environment Impact

The lignite ''monoculture'' still dominates in the Region of W. Macedonia where are located 4 out of the 6 power plants. Specifically, 31% of Greece's total 96 MT of

greenhouse gas emissions in 2015 came from its 6 coal plants. Lignite is related to chronic diseases. In fact, according to the deputy regional health manager the number of cancer cases currently stands at 30.5%. According to the testimonies of the inhabitants living in the lignite villages, thousands of expropriated land have passed to PPC's hands and more than 60% of the waters in the area are lost (62,000m3 of water are wasted in the lignite power stations each year). Furthermore, five villages have been demolished and more than 4,000 inhabitants have been displaced from 1972 to 2003.

The lignite fields of Agios Dimitrios and Kardia have current operational capacity of 1597 MW and 1250 MW and its emissions have caused 58 and 35 premature deaths respectively in 2016. It's not a coincidence that the results of the detrimental impacts that the lignite power plants have on the residents of the W.Macedonia Region are obvious in the nationwide survey entitled "Natura 2000 - Here We Live", where the respondents mention that the pollution from factories / refineries" reaches 40.1% .

Prolemaida plant

There are no plans for the aforementioned lignite plants to call a halt to their operation. On the contrary, PPC sticks to the prolongation of the existing power generation model, requesting the extension of their operating hours and having scheduled the construction of new facilities (e.g. Ptolemaida V, Meliti II), which they will operate long after 2050. Concerning the new lignite unit ''Ptolemaida V'', it is considered economically non-efficient according to a WWF study, as PPC director has publicly admitted .The new power plant will cost €1,4B, adding 660MW to the total national operational energy capacity. The only investor of this project is the German KfW Banking Group. According to RWE Power International, it is estimated that the final ash quantities produced from Ptolemaida will be 7 times larger than hard coal of similar quality, which subsequently results in high operation and maintenance costs. PPC will also be obliged to establish emission control technology that will affect these costs. Moreover, the operation of Ptolemaida V will cause approximately 100 premature deaths annually, in accordance with a research of the University of Stuttgart on behalf of Greenpeace.

Recommendations

Energy alternatives / recommendations

According to estimations and projections Greece will manage to decrease the gas emissions until 2020, however the PPC strategy in W. Macedonia do not comply with the Greek government's commitments to the EU framework and directives. Actions like the establishment of the Ptolemaida V power plant and the expansion of the existing infrastructures are against the Ministry's strategy. Dealing with climate change requires actions that will mitigate the greenhouse gas emissions.

On a national level, tackling climate change is a main priority for our Government and the Ministry, thus PPCs' turn to sustainable renewable energy development is compulsory. Below are presented sustainable alternatives as a substitute to the operation of the lignite units.

o Renewable Energy a. Solar b. Wind c. Hydraulic

Taking into account the total energy mix percentages per energy sources of Greece as presented in the following chart, the second largest rate is attributed to coal. Therefore, PPC should entail a change towards a sustainable low carbon emissions plan, which will lead to an increased use of renewable energy under Kyoto Protocol for Greece.

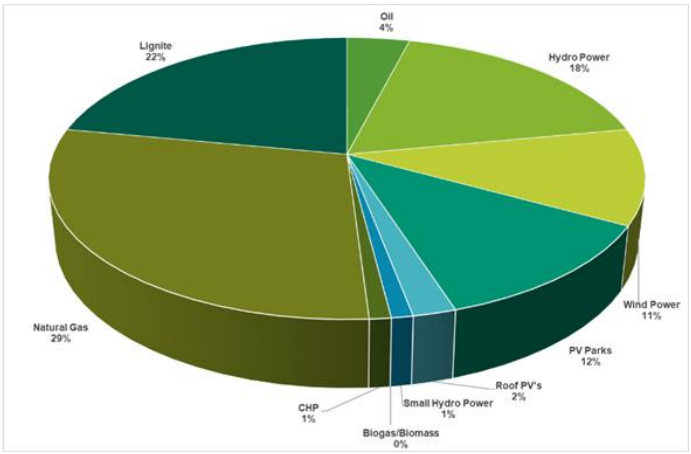

Figure 1. Total installed energy capacity in Greece as it stands on January 2016

The utilization of natural resources such as wind, solar, and water should be the PPC's first priority in W. Macedonia. The construction of Ptolemaida V is not PPC's only option: "hybrid combinations of pumped hydro energy storage stations with wind and Photovoltaics units can adequately and reliably meet the base load that Ptolemaida V has been designed for" (WWF, 2017). In addition, the use of the hydraulic power not only upgrades the energy capacity of the area but also creates a green print in the area.

It has been observed that PPC holds around 3% of the RES in Greece, which is considered one of the lowest performances in the country. For instance, projects like photovoltaic, wind and biomass plants should replace the forecasted lignite construction by implementing a fast- track procedure and taking advantage of the EU RES funding programs.

o Net metering

Throughout the recent years the Ministry has come up with the idea of "Net Metering". In simple terms there is an opportunity for the consumers (e.g. citizens, companies etc.) "to install a small PV system at their facilities and generate the bulk of the electricity they consume", hence avoiding a significant portion of the PPC bill they pay today. This will decrease significantly the need of carbon resources and assist on the independency of the consumers from the fossil fuels. Although initially PPC collaborated with the Ministry on the net metering, this effort has been abandoned and the process has been slowed down by bureaucracy. PPC should reconsider to simplify the net metering application procedures and present a stable long term price rate in order to attract more investors.

o Carbon Capture and Geological Storage

Carbon capture and storage (CCS) "is a set of new technologies, aiming mainly to capture and store CO2 emissions from power plants and industrial facilities. The goal of CCS is to prevent about 90% of CO2 from reaching the atmosphere by storing it in suitable underground geological formations" ("ec.europa.eu", 2015). The use of such kind of technology is vital for reducing gas emissions, facing the future reliance of power generation and industry on fossil fuels. The successful operation of CCS is considered crucial for near zero emission industrial installations in order to reach 2009 EU's indicative target of

Conclusion

EU policy and national legal frame

In accordance with the EU directives (BREF) the members that do not comply with the gas emissions targets will have to pay a penalty fee. The Ministry of Environment and Energy will request from PPC its share since it is the biggest contributor to air pollution in Greece. The annual fine for lignite plants in Greece for non-compliance with the BREF is about €92M-583M.

W. Macedonia has been selected to participate in a pilot European project of decarbonisation known as the "Platform on Coal Regions in Transition". The Ministry is kindly advising PPCs' President to collaborate in order to achieve a successful smooth transition to a post lignite era.

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