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To:  
Executive Board of KfW

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Subject: Re-evaluation of the Ptolemaida V project in light of recent developments

Dear Board Members,

We would like to bring to your attention some key recent developments which render the reconsideration of the Greek lignite plant Ptolemaida V, co-financed by KfW IPEX-Bank, imperative. The decision to construct Ptolemaida V was taken several years ago, when the status of the Greek economy, as well as that of the European and global climate policy, were very different.

The first factor that needs to be reconsidered is the projected CO<sub>2</sub> permit price increase, which is expected to severely impact Ptolemaida V's operating costs, much sooner than originally expected, and before the new unit manages to payback its very high installation cost. Having recognized this, the Public Power Corporation (PPC) has tried very hard, but unsuccessfully, to obtain free allowances for the Greek electricity sector based on low GDP per capita arguments. However, according to the EU ETS reform proposal submitted by the European Commission in mid July<sup>1</sup>, Greece does not satisfy the requirements to receive any free allowances. Hence, all Greek lignite plants will continue to pay for every tonne of CO<sub>2</sub> they emit as they have been doing since January 2013. More to the point, the recent agreement on the establishment of a Market Stability Reserve<sup>2</sup> and the increase of the annual linear reduction factor from 1.74% to 2.2% are predicted to lead to CO<sub>2</sub> prices exceeding 30€/tn sometime between 2025 and 2030, according to several reports<sup>3,4</sup>. PPC's own reports on Ptolemaida V's economic viability have shown that at these CO<sub>2</sub> price levels Ptolemaida V will be displaced by natural gas power plants in the Greek electricity market<sup>5</sup>. As a result, the operation hours of Ptolemaida V will be decreased as will the corresponding earnings, thus deteriorating the economics of the new lignite plant.

The economic viability of the new plant will also be negatively impacted by the required retrofits that Ptolemaida V will undergo, as a result of the recent developments of the so-called "Seville process". This process, foreseen by the Industrial Emissions Directive (IED - 2010/75/EC), periodically reviews and adjusts the Best Available Techniques (BAT) and corresponding emission limit values (ELV) for all large combustion plants in order to reflect advances in anti-pollution technology. The results from the meeting of the Technical Working Group in Seville in June 2015 indicate that dramatic reductions of the ELVs are

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<sup>1</sup>"Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments", 15 July 2015  
[http://ec.europa.eu/clima/policies/ets/revision/docs/com\\_2015\\_337\\_en.pdf](http://ec.europa.eu/clima/policies/ets/revision/docs/com_2015_337_en.pdf)

<sup>2</sup> "Parliament adopts CO2 market stability reserve", 8 July 2015  
<http://www.europarl.europa.eu/news/en/news-room/content/20150703IPR73913/html/Parliament-adopts-CO2-market-stability-reserve>

<sup>3</sup>"What's needed to fix the EU's carbon market. Recommendations for the Market Stability Reserve and future ETS reform proposals", Carbon Market Watch. July, 2014 [http://carbonmarketwatch.org/wp-content/uploads/2014/07/ETS-POLICY-BRIEF-JULY-2014\\_final\\_1.pdf](http://carbonmarketwatch.org/wp-content/uploads/2014/07/ETS-POLICY-BRIEF-JULY-2014_final_1.pdf)

<sup>4</sup> "Reviewing Europe's carbon market: fight for free allocation, slightly higher prices - Carbon prices are estimated to reach €30/t in 2030, according to Point Carbon analysts", 15 July 2015, Thompson Reuters, <http://goo.gl/EUoZxw>

<sup>5</sup> "PPC strategy and planning for the role of lignite in the Greek Power System", Leonardos, Marios, PPC Planning and Mines Efficiency Manager, 6 December 2014. Presentation at the Green Institute Workshop "The transition of Greece and particularly West Macedonia towards a post-lignite era – challenges and opportunities" <http://www.greeninstitute.gr/files/LEONARDOS.pdf>

imminent. As its environmental permit indicates, Ptolemaida V's NO<sub>x</sub>, SO<sub>2</sub> and particulate matter emissions lie exactly on the upper bound of the maximum allowable levels laid down by the current BAT reference document (dating from 2006), which from 2020 onwards will no longer be valid.<sup>6</sup> Thus, PPC will be forced to consider costly retrofits for Ptolemaida V, even before its scheduled commercial operation date.

Finally, Ptolemaida V is neither unique nor the cheapest solution in terms of covering base load needs for Greece's electricity system. WWF Greece's recent scientific report<sup>7</sup>, shows that Ptolemaida V's base load can alternatively be covered by several hybrid combinations consisting of wind, PV and Pumped Hydro Energy Storage (PHES) stations. More importantly, the levelised cost of energy (LCOE) for several of these hybrid solutions is shown to be lower than that of Ptolemaida V. It is significant to note that the study focuses on the conversion of seven pairs of existing PPC-owned hydropower stations to PHES units, thus minimizing the corresponding installation cost as well as the environmental impacts. Hence, the proposed solution is realistic, economically more favourable and clearly more sustainable, compared to Ptolemaida V, while its implementation will benefit PPC as well.

Complementary to large scale solutions, the study also investigates small scale alternatives. The economic assessment performed shows that there is great potential in the development of household PV systems through the implementation of the net-metering scheme established in Greece a few months ago. Furthermore, the predicted drop of battery costs will allow the deployment of stand-alone PV systems that will eventually become directly competitive to centralised electricity production in Greece. Such a development will result in decreasing the load hours of centralised, conventional power plants, like Ptolemaida V, thus also negatively affecting their economic viability.

In light of the aforementioned recent developments, which will have a very negative impact on the economic viability of the project, we urge you to reconsider your strategy in supporting Greece's electricity sector. Moreover, it is possible, by working closely with PPC, to explore the possibilities of financing RES-based alternative solutions instead of Ptolemaida V.

We remain at your disposal for any further discussion on Ptolemaida V, the clean alternatives to its construction and Greece's overall prospects for a transition to a more sustainable and efficient energy system.

Sincerely yours,

Demetres Karavellas  
Chief Executive Officer, WWF Greece

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<sup>6</sup> The reform process is expected to conclude within 2016 and become legally binding for all plants in Europe within 4 years according to IED.

<sup>7</sup> WWF Greece «Clean Alternatives to Ptolemaida V» February 2015, [http://wwf.gr/images/pdfs/Ptolemaida%20V\\_Alternatives\\_EN.pdf](http://wwf.gr/images/pdfs/Ptolemaida%20V_Alternatives_EN.pdf)