



## Comments on the Project Design Document and Application for Validation

### *Zhejiang Yueqing 2 x 660MW Ultra-supercritical Power Generation*

September 7, 2011

CDM Watch and the Sierra Club respectfully submit the following comments on the *Zhejiang Yueqing 2 x 660MW Ultra-supercritical Power Generation Project*. We thank the CDM Executive Board and Designated Operating Entity (DOE), China Environmental United Certification Center Co., Ltd., for recognizing the integral role of transparency in the CDM validation process, and for taking this comment into consideration.

**According to our research, this project is not additional and should not receive a positive validation. Quite simply, ultra-supercritical technology is already common practice in China, and this project will proceed using ultra-supercritical technology regardless of whether the CDM provides support.**

This is a very large and expensive project. Yet according to the PDD, the difference in the levelized cost of energy (LCOE) between the ultra-supercritical project activity and the proposed supercritical baseline is only .00062 Euro/kWh. For this reason, the additionality determination is highly sensitive to the initial assumptions. With such a small margin of error, this project activity demands particularly close scrutiny. The DOE's effectiveness in ensuring the accuracy, credibility and completeness of claims by the project sponsor using conservative assumptions, and in testing those assumptions against objective evidence from sources other than the sponsor, is particularly important in this context.<sup>1</sup>

We are confident that after a rigorous examination of the PDD, project documents, and other relevant sources, you will agree that this project should not be eligible for registration and decline to validate it. However, should you afford the project proponent the opportunity to provide clarifications or corrective action, we respectfully request that stakeholders be given the opportunity to comment on any further submissions before a validation decision is made.<sup>2</sup> The PDD, as submitted, omits assumptions and calculations that are required to be disclosed under CDM rules and that are integral to a rigorous review of the project. If the project is validated without further opportunity for public comment, the project proponent would improperly benefit from filing an inadequate PDD by avoiding public scrutiny of key elements of its proposal.

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<sup>1</sup> CDM, *Validation and Verification Manual, Ver. 1.2, EB 55 report, Annex 1*, at 5, 7.

<sup>2</sup> CDM, *Validation and Verification Manual, Ver. 1.2, EB 55 report, Annex 1*, at 9.



## SUMMARY OF COMMENTS

According to our research, the project activity, as presented in the PDD, is not eligible for validation under ACM0013, the *Additionality Tool*, and other CDM rules, for the following reasons:

### Additionality

1. The project sponsor failed to evaluate alternative tariff structures that would enable the project to achieve a better rate of return without CDM support. The CDM Executive Board has refused to register other projects on these grounds.
2. The use of ultra-supercritical coal technology is already “common practice” in China and in the East China Grid.

### Baseline assessment

3. The PDD fails to adequately assess other “realistic and credible” baseline scenarios.

### Investment analysis

4. The investment analysis fails to provide the data and assumptions necessary for a reader to reproduce the results.
5. The sensitivity analysis improperly advantages supercritical technology by using an unrealistically narrow range of fuel price variation, and by failing to properly account for China’s dispatch rules.

## COMMENTS

### Additionality

- 1. The project sponsor failed to evaluate alternative tariff structures that would enable the project to achieve a better rate of return without CDM support. The Executive Board has refused to register other projects on these grounds.*

### Applicable rules

The *Additionality Tool* requires the project sponsor to fully consider the “project without CDM support” alternative.<sup>3</sup> This includes consideration of alternative tariff structures that would obviate the need for CDM support. Applying this rule in its *Review of the Project Activity (3020): GHG Emission Reductions through grid connected high efficiency power generation*, the Executive Board declined to register the proposal by an Indian supercritical coal project on the grounds the project proponent had not demonstrated additionality because it “had not considered a tariff that would enable it to achieve its ROE benchmark and implement the project activity without considering CDM revenues...”<sup>4</sup> Moreover, in its recent Request for Review of another Indian supercritical project, the Executive Board similarly challenged the failure to consider alternative tariffs, and instructed the DOE to “provide a sensitivity analysis of the tariff as this is a key parameter to the IRR calculation.”<sup>5</sup>

### Discussion of non-compliance

The PDD contains no discussion of alternative tariff structures that could enable the project to proceed without CDM support. Indeed, the project proponent has not even attempted to show that it could not offer competitive tariff rates without CDM support. The small impact of the sale of CERs on the cost of energy produced by the project suggests that the project will proceed without CDM support. The project proponent should be required to provide a market analysis demonstrating that the project is uncompetitive without CDM support and certify that it will abandon the project absent CDM support.

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<sup>3</sup> *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 5.

<sup>4</sup> <http://cdm.unfccc.int/Projects/DB/DNV-CUK1254830678.73/Rejection/TWNNWJIB1G6WAG6F9RW59N3AOLQEXP> , See also, *Final Ruling Regarding the Request for Registration of Rincon Verde LFGTE Project (3432)* (“The DOE has failed to substantiate additionality of the project activity, in particular, the suitability of ... the electricity tariff assumed in the PDD... The (insufficiently justified) tariff is a significant component in determining the additionality of the project activity, and with a 10% increase in the electricity tariff, the IRR for the project activity crosses the benchmark ....”)

<sup>5</sup> Registration Request for Review: Greenhouse Gas Emission Reductions Through Super Critical Technology - Jharkhand Integrated Power Ltd. (4629), available at <http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1301452084.68/Review/QHZKRH4KHWRXTR5711DV4J3PE9PFBV/display>



## Conclusion

By failing to consider alternative tariff structures that would improve the project's returns without the use of CDM revenue, the project sponsor has failed to meet its obligation to fully consider the "project without CDM support" as required by the *Additionality Tool*.<sup>6</sup>

## 2. *The use of ultra-supercritical coal technology is already "common practice" in China and in the East China Grid.*

### Applicable rules

The *Additionality Tool* requires that the generic additionality tests be complemented with a "common practice" assessment to determine whether "the proposed project type (e.g. technology or practice) has already diffused in the relevant sector and region."<sup>7</sup> The "common practice" serves as a check on the credibility of additionality claims. "Where similar activities are widely observed and commonly carried out, it calls into question the claim that the proposed project activity is financially unattractive or faces barriers."<sup>8</sup>

The "common practice" analysis consists of two steps. First, the project proponent must analyze "any other activities that are operational and that are similar to the proposed project activity."<sup>9</sup> Similar project activities include those that "are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc," but do not include other CDM project activities.<sup>10</sup> Based on this analysis, the project proponent must describe the extent to which "similar activities have already diffused in the relevant region."<sup>11</sup>

Second, where similar activities are observed, the project proponent must demonstrate "why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers."<sup>12</sup> To overcome this burden, the project proponent must distinguish the project from other similar activities and show "why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot

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<sup>6</sup> *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 5.

<sup>7</sup> *Additionality Tool*, at 10.

<sup>8</sup> *Id.*

<sup>9</sup> *Id.*

<sup>10</sup> *Additionality Tool*, at 10.

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*



use or did not face the barriers to which the proposed project activity is subject.”<sup>13</sup> Where similar activities are observed, and “essential distinctions between the project activity and similar activities cannot reasonably be explained,” the proposed project is not additional and not eligible for CDM support.<sup>14</sup>

#### Discussion of non-compliance

Ultra-supercritical coal technology is already “common practice” in China, and its deployment is expanding rapidly. According to the International Energy Agency (IEA), as early as 2007 China had 10 GW of ultra-supercritical coal generation in operation.<sup>15</sup> By early 2010, 21 sets of 1000 MW ultra-supercritical were operational, and twelve additional sets were under construction.<sup>16</sup> The IEA expects that by 2020 China will have 80-90 GW of ultra-supercritical generation online.<sup>17</sup>

Given the existence of these similar activities in the host country, the project activity cannot be additional unless the project sponsor can show “essential distinctions between the project activity and similar activities” such that “the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers.”<sup>18</sup> However, the PDD makes no effort to distinguish the proposed project from the other ultra-supercritical projects in operation in China. Instead, it asserts that its review of similar activities should be limited to the East China Grid (ECG) and that all of the ultra-supercritical projects in the ECG are within the CDM system.

Neither of these arguments is correct. First, the “common practice” analysis clearly anticipates that similar projects in the host country will be considered, and the PDD offers no explanation why projects outside of the ECG are not “similar.” Second, the PDD erroneously claims that there are only two such projects in the ECG, and that both are within the CDM process.<sup>19</sup> Our research has found at least five ultra-supercritical projects that have been brought online in the ECG without CDM support. As the table below shows, there are at least three operational ultra-supercritical power plants in the East China Grid that have not applied for CDM benefits. In addition, two other projects entered the validation process, but are already operational and have never been validated. Moreover, all of these projects started construction before ACM0013 was adopted. For these reasons, they should be considered similar for “common practice” purposes, as they provide further evidence that ultra-supercritical plants can be brought on-line without CDM support.

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<sup>13</sup> *Id.*

<sup>14</sup> *Id.*, at 11.

<sup>15</sup> International Energy Agency, 2009. *Cleaner Coal in China*, at 101.

<sup>16</sup> China’s power structure further optimized in 2009, *Xinhua New Agency*, Jan, 25, 2010, available at <http://www.istockanalyst.com/article/viewiStockNews/articleid/3806305>.

<sup>17</sup> International Energy Agency, 2009. *Cleaner Coal in China*, at 101.

<sup>18</sup> *Id.*

<sup>19</sup> PDD, at 17.

**Ultra-Supercritical Coal-Fired Power Plants That Started Construction in the East China Grid Before Adoption of ACM0013**

Project Developer(s)	Province / Project	Generating Capacity	Construction Start Date	Operational Start Date
Huaneng Power International Inc.	Zhejiang / Huaneng Yuhuan Power Plant	4000 MW (4 x 1000 MW)	July 2004 <sup>20</sup>	November 2006 <sup>21</sup>
China Power Investment Corp	Jiangsu / Kanshan Power Plant	1200 MW (2 x 600 MW)	<i>Unknown</i> <sup>22</sup>	2006 <sup>23</sup>
**Guodian (Group) Corp. <sup>24</sup>	Jiangsu / Taizhou Power Plant	1000 MW	December 2005 <sup>25</sup>	December 2007 <sup>26</sup>
Huadian Group	Anhui / Wuhu Power Plant	1320 MW (2 x 660 MW)	August 2006 <sup>27</sup>	<i>Unknown</i>
**Shanghai Electric Power Co. <sup>28</sup>	Shanghai / Shanghai Waigaoqiao No.3	2000 MW (2 x 1000 MW)	February 2006 <sup>29</sup>	April 2008 <sup>30</sup>

\*\* Denotes projects proposed under ACM0013, as listed on <http://cdm.unfccc.int> as of February 16, 2010.

<sup>20</sup> China Huaneng Power Starts Building 4,000 MW Power Plant in Zhejiang, *China News Digest*, July 7, 2004 (LexisNexis Academic).

<sup>21</sup> China Huaneng launches 1,000 MW coal-fired generating unit, *Asia Pulse*, Nov. 29, 2006 (LexisNexis Academic).

<sup>22</sup> *Kanshan Power Plant De-NOx Project Contract Signature Ceremony*, China Environmental Protection Co., Ltd, (Dec. 30, 2005), <http://www.cepe.cn/en/News/ShowInfo.aspx?ID=1> (showing that plans to develop this plant existed at least as early as 2005).

<sup>23</sup> Coal-fired power plants in China-Jiangsu, *Power Plants Around The World*, available at <http://www.industcards.com/st-coal-china-jiangsu.htm>

<sup>24</sup> Jiangsu Guodian Taizhou Ultra-supercritical Power Project, Project Design Document, <http://cdm.unfccc.int/UserManagement/FileStorage/LB72VCQDUA5YGTRNHP4FEKI18O603X> (Project construction began on December 12, 2005).

<sup>25</sup> *Id.*

<sup>26</sup> China Guodian Corporation's Installed Capacity Surpasses 60,000 Megawatts, *Market Wire*, Jan. 16, 2008 (LexisNexis Academic).

<sup>27</sup> Wuhu thermal power plant starts construction in Anhui Province, *China Business News On-Line*, Aug. 28, 2006 (LexisNexis Academic).

<sup>28</sup> Shanghai Waigaoqiao coal-fired power project using a less GHG intensive, Project Design Document, <http://cdm.unfccc.int/Projects/Validation/DB/YJEI7E0ZDE5RAV9OAYC80LNLGHPABU/view.html>.

<sup>29</sup> Waigaoqiao Power Plant Kicks off Phase III Construction, *SinoCast*, Feb. 20, 2006 (LexisNexis Academic).

<sup>30</sup> Shanghai Electric says another 1000MW generator set operates, *SinoCast*, Apr. 30, 2008 (LexisNexis Academic).



## Conclusion

Because the project proponent fails to distinguish the proposed project from the numerous other ultra-supercritical projects that have been brought online in China and in the ECG, it has failed to show that ultra-supercritical plants are not “common practice.” Accordingly, the project should not be considered additional and is not eligible for validation.

## Baseline Assessment

### *3. The PDD fails to adequately assess all “realistic and credible” baseline scenarios.*

#### Applicable rules

In addition to assessing the project activity without CDM benefits, the PDD must also analyze all other “possible realistic and credible alternatives that provide outputs or services comparable with the proposed CDM project activity.”<sup>31</sup> *ACM0013* makes clear that (1) “[t]hese alternatives need not consist solely of power plants of the same capacity, load factor and operational characteristics”;<sup>32</sup> (2) the alternatives “may not be available to project participants, but could be available to other stakeholders within the grid boundary...”; and (3) “realistic combinations of [facilities, technologies, outputs or services] should be considered as possible alternative scenarios to the proposed project activity.”<sup>33</sup> The decision to exclude scenarios must be supported by “appropriate explanations and documentation.”<sup>34</sup>

The PDD must include “all relevant power plant technologies that have recently been constructed or are under construction or are being planned (e.g. documented in official power expansion plans)” as plausible alternatives, and should include a “clear description of each baseline scenario alternative, including information on the technology, such as the efficiency and technical lifetime.”<sup>35</sup> If the type of power plant identified as the baseline scenario differs from those that have recently been constructed or are under construction or are being planned, the project participants shall explain this discrepancy.<sup>36</sup>

#### Discussion of non-compliance

The PDD fails to adequately consider all realistic and credible alternatives to the proposed baseline, or to fully assess all options that are currently being implemented. It also

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<sup>31</sup> *ACM0013, Ver. 4.0*, at 3.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*, at 4.

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*, at 4.



entirely fails to explore ways that plausible alternatives can be realistically combined to produce an alternative baseline scenario. Alternatives that do not receive the kind of analysis required under *ACM0013*, alone or in combination, include low- or zero-carbon alternatives such as:

***Energy efficiency and demand side management:*** Energy efficiency and demand side management should be considered on par with expanded supply in delivering energy services. Towards this end, “efficiency power plants”—i.e., bundled sets of energy efficiency programs that can deliver the energy and capacity equivalent of a large conventional power plant—should have been considered on the same basis as supply alternatives in the baseline scenario analysis.<sup>37</sup> A World Bank study found that with proper policies and incentives, China could avoid the need to build more than 100 GW of electric capacity by 2020 through demand side management programs.<sup>38</sup> The Government of China has adopted a range of ambitious energy efficiency policies and initiatives,<sup>39</sup> and has endeavored to reduce CO<sub>2</sub> emissions per unit of GDP by 17 percent between 2011 and 2015.<sup>40</sup> It has also communicated its intention to the UNFCCC to lower its CO<sub>2</sub> emissions per unit of GDP by 40–45 percent by 2020 compared with the 2005 level.<sup>41</sup>

***Natural gas:*** The PDD summarily dismisses natural gas as a credible alternative, contending that it can only provide peak power.<sup>42</sup> This assertion is contradicted by CDM monitoring reports that indicate that natural gas is operating at base load levels in East China Grid.<sup>43</sup>

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<sup>37</sup> See, e.g., the World Bank’s recent support for mass distribution of compact fluorescent light bulbs in Bangladesh. [http://siteresources.worldbank.org/EXTENERGY2/Resources/ELIB\\_Presentation.pdf](http://siteresources.worldbank.org/EXTENERGY2/Resources/ELIB_Presentation.pdf). Meg Gottstein, Planning, Financing and Building Efficiency Power Plants: Regulatory Practices in California and Other States, The Regulatory Assistance Project (2008), available at [www.raponline.org](http://www.raponline.org); David Moskovits, Meeting China’s Energy Efficiency Goals Means China Needs to Start Building Efficiency Power Plants (EPP), The Regulatory Assistance Project (2005), available at [www.raponline.org](http://www.raponline.org).

<sup>38</sup> Zhaoguang Hu, David Moskovitz, and Jianping Zhao, *Demand Side Management in China’s Restructured Power Industry* (December 2005), World Bank Energy Sector Management Assistance Program.

<sup>39</sup> Nan Zhou, Mark D. Levine, and Lynn Price, 2010. *Overview of Current Energy Efficiency Policies in China* “Energy Policy”, Volume 38: Issue 11. available at [http://china.lbl.gov/sites/china.lbl.gov/files/Overview.Energy\\_Policy\\_November2010.pdf](http://china.lbl.gov/sites/china.lbl.gov/files/Overview.Energy_Policy_November2010.pdf)

<sup>40</sup> <http://www.environmentalleader.com/2011/03/08/china-accelerates-energy-efficiency-goal/>

<sup>41</sup> UNFCCC, 2011. *Compilation of information on nationally appropriate mitigation actions to be implemented by Parties not included in Annex I to the Convention*, FCCC/AWGLCA/2011/INF.1

<sup>42</sup> PDD, at 10.

<sup>43</sup> Beijing No.3 Thermal Power Plant Gas-Steam Combined Cycle Project Using Natural Gas, CDM Monitoring Report 1, July 1, 2008, available at <http://cdm.unfccc.int/UserManagement/FileStorage/1U6UFGCPOX5I30W4LDIEYYH3QMP354>; Beijing No. 3 Thermal Power Plant Gas-Steam Combined Cycle Project Using Natural Gas, CDM Monitoring Report 2, November 14, 2008, available at <http://cdm.unfccc.int/UserManagement/FileStorage/3768L5FRHBXMCIWJUG0SONVTKD294>; Beijing No. 3 Thermal Power Plant Gas-Steam Combined Cycle Project Using Natural Gas, CDM Monitoring Report 3, June 22, 2009, available at <http://cdm.unfccc.int/UserManagement/FileStorage/>





**Wind, solar PV, solar thermal, hydro and biomass:** The PDD dismisses wind as incapable of providing baseload power, and solar PV, hydro and biomass as incapable of delivering adequate capacity.<sup>44</sup> While none of these options may be able to replace the baseload component of the project by themselves, they could be integrated with demand-side management, transmission system upgrades, and existing fossil-fired generation to reduce or eliminate the need for additional coal-fired plants. Accordingly, these options should have been more rigorously evaluated in combination with other options. Moreover, the PDD entirely overlooks solar thermal power (or “concentrated solar power”), which can provide baseload power at scale.<sup>45</sup>

**Strengthened grid connections:** The PDD argues that power cannot be reliably imported from a neighboring grid because it includes substantial amounts of seasonal hydropower in its energy mix.<sup>46</sup> This assertion fails entirely as a market analysis. Rather, the PDD should have included a detailed analysis of whether, and at what price, power actually is available from other grids.

### Conclusion

Each of these potential alternatives is already being implemented in China, and some, such as end use efficiency, are a matter of national priority. Yet contrary to the requirements of *ACM0013*, the PDD makes no effort to explain the discrepancy between such actions and the baseline scenario. The PDD also makes no effort to assess how these alternatives can be combined in ways that would produce a more attractive baseline than supercritical technology. In particular, given the emphasis the Government of China has placed on energy efficiency in its national planning, it is difficult to see how the PDD could not consider it as a potential baseline, either alone or in combination with other alternative scenarios.

Despite the methodology’s requirement that exclusions be supported by “appropriate explanations and documentation”, the PDD offers no evidence other than conclusive statements about the various risks associated with each alternative. Under *ACM0013*, the PDD must clearly justify the conclusion that these and other alternatives are not plausible options. It has not met this test.

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Z5P1Y4N8QHUEWG32DLIOMB9KJ6S0T7; Qinghai Ge-ermu Gas Turbine Power Plant Project, Monitoring Report (Version 01), Oct. 22, 2009, *available at* <http://cdm.unfccc.int/UserManagement/FileStorage/03PE95K2HYWQ4JI6L1DVRUSXN7OTZ8>.

<sup>44</sup> PDD, a11.

<sup>45</sup> Ummel, Kevin. Center for Global Development Working Paper. *Concentrating Solar Power in China and India: A Spatial Analysis of Technical Potential and the Cost of Deployment*.

<sup>46</sup> PDD, 12.

## Investment Analysis

### 4. *The investment analysis fails to provide the data and assumptions necessary for a reader to reproduce the results.*

#### Applicable Rules

ACM0013 and the *Additionality Tool* both require a comprehensive investment analysis to determine the baseline scenario and whether “the project activity would be financially viable without the incentive of the CDM.”<sup>47</sup> The investment analysis must be “presented in a transparent manner and all the relevant assumptions should be provided in the PDD, so that a reader can reproduce the analysis and obtain the same results.”<sup>48</sup> All investment analysis should be provided in spreadsheet format, with all formulas readable and relevant cells viewable and unprotected.<sup>49</sup> The analysis must clearly present all “[c]ritical techno-economic parameters and assumptions (such as ... fuel price projections, lifetimes, the load factor of the power plant and discount rate or cost of capital)...,” and must justify those assumptions “in a manner that can be validated by the DOE.”<sup>50</sup> It should “[i]nclude all relevant costs (including, for example, the investment cost, fuel costs and operation and maintenance costs), and revenues (including subsidies/fiscal incentives, ODA, etc. where applicable), and, as appropriate, non-market cost and benefits in the case of public investors.”<sup>51</sup> The analysis must present a clear comparison of the financial indicators for all scenario alternatives.<sup>52</sup> Assumptions and input data should be consistent across the project activity and its alternatives, unless differences can be well substantiated.<sup>53</sup>

#### Discussion of non-compliance

The investment analysis is deficient with respect to virtually all of the requirements set forth in ACM0013 and the *Additionality Tool*. It lacks the rigorous and comprehensive analysis that would be required to determine if the project activity requires CDM support to be the

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<sup>47</sup> *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 12.

<sup>48</sup> ACM0013, Ver. 4.0, at 4; *Tool for the demonstration and assessment of additionality, Ver. 5.2*, at 7.

<sup>49</sup> *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 13. The Guidance is clear that this requirement cannot be avoided on grounds of business confidentiality:

“In cases where the project participant does not wish to make such a spreadsheet available to the public an exact read-only or PDF copy shall be provided for general publication. In case the PP wishes to black-out certain elements of the publicly available version, a clear justification for this shall be provided to the UNFCCC secretariat by the DOE when requesting registration.”

<sup>50</sup> ACM0013, Ver. 4.0, at 4; *Tool for the demonstration and assessment of additionality, Ver. 5.2*, at 7.

<sup>51</sup> *Id.*

<sup>52</sup> ACM0013, Ver. 4.0, at 4.

<sup>53</sup> *Tool for the demonstration and assessment of additionality, Ver. 5.2*, at 7; ACM0013, Ver. 4.0, at 4.



preferred alternative. The investment analysis relies on a comparison of the levelized cost of energy (LCOE) for each alternative to justify its claim that supercritical technology would be the preferred option without CDM support,<sup>54</sup> but fails to:

- Show the calculations it used to generate the LCOEs, or present them in spreadsheet form so they could be replicated;
- Show any of the calculations it used to generate values for other key variables or to reach its conclusions, or present them in spreadsheet form so they could be replicated. To cite one example, it does not explain why it assumes over 50 additional people will be required to run the ultra-supercritical plant;<sup>55</sup>
- Demonstrate how revenue from the CDM would affect the financial viability of the project activity, and cause ultra-supercritical technology to become the preferred option;
- Offer credible fuel price projections and explain the methodology and assumptions used to generate them;
- Assess how the risk of regulatory changes, such as increased pollution control requirements or a carbon tax or cap and trade regime, might affect the LCOE of each alternative;

### Conclusion

The investment analysis fails to assess the importance of the CDM to the project's financial viability. It asserts that supercritical technology would have the lowest LCOE, but fails to demonstrate how it reached that conclusion. By providing its data only in chart form, without showing the relevant calculations and assumptions, the PDD makes it impossible for the reader to "reproduce the analysis and achieve the same results." The Executive Board has rejected previous proposals based on these same deficiencies,<sup>56</sup> and the proper response to such a woefully deficient PDD is for the DOE to refuse to validate this project activity. However, if China Environmental United Certification Center allows the project sponsor to amend the PDD to include this material, it must also afford the public an opportunity to comment on the supplementary material. Otherwise, the project sponsor would evade public scrutiny of its investment analysis by submitting an inadequate PDD.

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<sup>54</sup> PDD, at 14.

<sup>55</sup> PDD, at 14.

<sup>56</sup> See e.g., *Review of Project Activity: Sichuan Liangtan Hydropower Station Second Phase Project (2410)*, available at

<http://cdm.unfccc.int/Projects/DB/DNV/1197870388.18/Rejection/MAXJNK4XZBW732JI3W56I249GFEQE3>

*Review of Project Activity: 10 MW Somasila Hydro Power Project for a grid system by Balaji Energy Pvt. Ltd. (1201)*, available at: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1182338073.37/Rejection/OO2TQ0VFWPHDSIUDDMF7KXQ7SN81MN>;

*Review of Project Activity: BHL Palia Kalan Project (1184)*, available at

<http://cdm.unfccc.int/Projects/DB/DNV/1182235542.94/Rejection/ED7ZTMB2J3G28EMMVW1C3AOS9Z6E BP>



**5. *The sensitivity analysis improperly advantages supercritical technology by using an unrealistically narrow range of fuel price variation, and by failing to properly account for China's dispatch rules.***

Applicable rules

ACM0013 and the *Additionality Tool* require the PDD to include a “sensitivity analysis” for all alternatives, to ensure that conclusions regarding the financial attractiveness of the project are robust with regard to reasonable variations in the critical assumptions (e.g. fuel prices, load factor, etc.). Guidance for the *Additionality Tool* requires DOEs to closely assess whether the range of variations is reasonable in the context of the project. Past trends should be a guide for determining a reasonable range, but generally variations “should at least cover a range of +10% and –10%, unless this is not appropriate in the context of the specific project circumstances.”<sup>57</sup> Moreover, “where a scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative the DOE shall provide an assessment of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis....”<sup>58</sup>

The sensitivity analysis can provide a valid basis for selecting the baseline scenario or alternative “only if it consistently supports (for a realistic range of assumptions) the conclusion that the pre-selected baseline scenario [or alternative] is likely to remain the most economically and/or financially attractive.”<sup>59</sup> Where the sensitivity analysis clearly reaffirms the result, the most economically attractive alternative should be considered the most plausible baseline scenario. However, where the sensitivity analysis is not fully conclusive, the alternative with the lowest emission rate among those that are the most financially and/or economically attractive should be selected as the baseline scenario.<sup>60</sup>

Discussion of non-compliance

A rigorous sensitivity analysis is particularly important for this project, because the difference in the levelized cost of energy (LCOE) between the ultra-supercritical project activity and the proposed supercritical baseline is so small—only .00062 Euro/kWh (0.32205 RMB/kWh v. 0.31652 RMB/kWh). Accordingly, the investment analysis will be particularly sensitive to initial assumptions, and quite minor variations in key inputs could significantly alter the analysis.

The PDD’s sensitivity analysis does not account for reasonable variations in the price of coal. It limits its analysis to the minimum range of analysis of +/- 10 percent, despite the fact that

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<sup>57</sup> *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 15.

<sup>58</sup> *Id.*

<sup>59</sup> *ACM0013, Ver. 4.0*, at 4; *Tool for the demonstration and assessment of additionality, Ver. 5.2*, at 7.

<sup>60</sup> *ACM0013, Ver. 4.0*, at 4.



coal prices have recently spiked in China,<sup>61</sup> and observed fluctuations in price have reached at least 60 percent during the last few years.<sup>62</sup> In the face of such experience, it is unrealistic to assume that coal prices will only fluctuate 10 percent from the base case over the ten-year project period. A rigorous market analysis, of the kind a company would have to conduct consistent with its fiduciary obligations, would therefore include a much broader coal price sensitivity analysis.

At a certain coal price, ultra-supercritical technology will surpass supercritical as the most financially or economically attractive alternative. The Additionality Tool requires that the sensitivity analysis determine if this “switching price” will occur within a “realistic range of assumptions.”<sup>63</sup> It further requires the DOE to independently assess “the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis....”<sup>64</sup> Given the razor thin cost differential between the LCOE for the project activity and the supercritical alternative (0.00062 Euro/kWh),<sup>65</sup> a proper analysis undoubtedly would have shown that the “switching price” will occur within a “realistic range of assumptions.”

The PDD also fails to properly consider reasonable variations in plant load factors under China’s dispatch rules. The PDD assumes a uniform variation in load factor between plants, while under China’s 2007 energy-saving approach to power dispatching, more efficient plants receive priority access to the grid.<sup>66</sup> Thus, depending on grid demands, an ultra-supercritical coal-fired power plant may operate for more hours each year than a less efficient supercritical one. The sensitivity analysis should have accounted for potentially higher loads at the more efficient ultra-supercritical plant. To do this properly, the PDD should have analyzed revenue in addition to LCOE, as at a certain load differential, the additional hours of generation could potentially make the ultra-supercritical plant more financially attractive.

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<sup>61</sup> See, e.g., Coal Rise Set To Hit China Power Producers’ Profits, *MarketWatch*, Jan. 18, 2010, available at <http://www.marketwatch.com/story/coal-rise-set-to-hit-china-power-producers-profit-2010-01-18>.

<sup>62</sup> China’s power plants forecast profit plunge on higher coal prices, *Business Daily Update (China)*, June 25, 2009, available at [http://www.chinadaily.com.cn/bizchina/2009-01/19/content\\_7410446.htm](http://www.chinadaily.com.cn/bizchina/2009-01/19/content_7410446.htm) (coal prices at the Qinhuangdao Port of Hebei province rose and fell by over 60% between May and November 2008).

<sup>63</sup> ACM0013, Ver. 4.0, at 4; *Tool for the demonstration and assessment of additionality*, Ver. 5.2, at 7.

<sup>64</sup> *Tool for the demonstration and assessment of additionality*, Ver. 5.2, Annex: *Guidance on the Assessment of Investment Analysis*, at 15.

<sup>65</sup> PDD, at 15.

<sup>66</sup> [http://www.gov.cn/zwggk/2007-08/07/content\\_708486.htm](http://www.gov.cn/zwggk/2007-08/07/content_708486.htm). See also Regulatory Assistance Project, *China’s Power Sector: A Backgrounder for International Regulators and Policy Advisors*, Feb. 2008, available at [http://www.raponline.org/docs/RAP\\_ChinaPowerSectorBackground\\_2008\\_02.pdf](http://www.raponline.org/docs/RAP_ChinaPowerSectorBackground_2008_02.pdf) (“The rule modifies the current practice of dispatch based on average total cost (i.e., contract price) to one based on the environmental (primarily emissions) impacts and thermal efficiencies of the units. The dispatch, or loading, order of units calls for the operation of non-emitting resources first, then by low-emissions resources, and, lastly, the highest emitting units.”) [hereinafter “Regulatory Assistance Project Backgrounder”].



## Conclusion

By narrowly limiting the range of price variation considered in the sensitivity analysis, the PDD implies that there is no “switching price” between the technologies. This suggestion is unsupported, and it is incumbent upon the DOE to independently determine this “switching price” and the likelihood that it will occur, and to reassess financial attractiveness of the options on that basis. The DOE should also consider how China’s dispatch rules will affect load variability, and determine if ultra-supercritical technology would be more financially attractive within a realistic range of assumptions.

## **CONCLUSION**

The role of the CDM within the Kyoto framework is to assist developing countries in achieving sustainable development and allow developed countries to meet their emission reduction obligations, with the ultimate objective of reducing overall global emissions and averting dangerous interference with the climate system. Unless a project is additional and contributes to sustainable development it cannot contribute towards these fundamental goals.

This PDD is riddled with fundamental flaws, and fails to demonstrate that the project activity will produce additional emissions reductions as a result of CDM support. On a purely technical basis, the PDD fails to comply with several important provisions of the *ACM0013*, the *Additionality Tool*, and other CDM tools and guidelines. But even if the project proponents were to correct the PDD’s technical deficiencies, the project activity would not be additional. Thus, approving CDM benefits for this project would lead to excess issuance of CERs, beyond any actual emissions reductions, and undermine the objectives of both the Kyoto Protocol and the UNFCCC.

Based on these concerns, we call on China Environmental United Certification Center not to validate the proposed Project. However, should the DOE afford the project proponent the opportunity to provide clarifications or corrective action, we respectfully request that stakeholders be given the opportunity to comment on any further submissions.

Respectfully submitted,

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