Comments on the Project Design Document and Application for Validation
Energy Efficient Power Generation by DB Power (Madhya Pradesh) Limited – Phase I

July 27, 2011

CDM Watch and the Sierra Club respectfully submit the following comments on the *Project Design Document (PDD)* for *Energy Efficient Power Generation by DB Power (Madhya Pradesh) Limited – Phase I.* We thank the CDM Executive Board and Designated Operating Entity (DOE), Bureau Veritas Certification Holding SAS, 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 should not receive a positive validation because it is not additional nor did it apply the correct baseline scenario. Quite simply, this project will use supercritical technology regardless of whether the CDM provides support.

This is a very large and expensive project that if approved, would generate almost 11 million CERs. Despite the large number of CERs DB Power is seeking, the impact of CDM support on project costs is relatively small—only about 3.5 percent of the overall levelized cost of electricity (LCOE). For this reason, the additionality determination is highly sensitive to the initial assumptions. With a large number of CERs at issue and a small margin of error, this project activity demands 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.[1]

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.[2] 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.

[1] CDM, *Validation and Verification Manual, Ver. 1.2, EB 55 report, Annex 1*, at 5, 7.
[2] *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, detailed explanations on all nine points can be found below:

Additionality

1. CDM support will not lead to additional emissions reductions because the Government of Madhya Pradesh has required this project to use supercritical technology.
2. 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 already refused to register one Indian supercritical plant on these grounds, and requested review of another.

Baseline assessment

3. Subcritical technology is not a plausible baseline for new large-scale, coal-fired projects in Madhya Pradesh, because the State government has required that all such plants use at least supercritical technology.
4. Supercritical technology has become the technology of choice for new large-scale coal-fired power plants in India, and therefore is a more appropriate baseline than subcritical coal technology.
5. The PDD fails to adequately assess other "realistic and credible" baseline scenarios.
6. The PDD fails to apply the E+ guidelines in determining the baseline scenario.

Investment analysis

7. The PDD significantly underestimates the project cost of the subcritical project alternative.
8. The investment analysis fails to provide the data and assumptions necessary for a reader to reproduce the results.
9. The sensitivity analysis improperly advantages inefficient subcritical technology by using an unrealistically narrow range of fuel price variation.

COMMENTS

Additionality

1. CDM support will not lead to additional emissions reductions because the Government of Madhya Pradesh has required this project to use supercritical technology.

Applicable rules

A project cannot be additional if it is "the only alternative amongst the ones considered by the project participants that is in compliance with mandatory regulations…"[3]

Discussion of non-compliance

The Government of Madhya Pradesh has mandated the use of supercritical or ultra-super critical technology for "any new project using coal as fuel, where the capacity proposed is above 660 MW."[4] This stipulation is *not* contingent upon the receipt of CDM credits.[5] The MoU between DB Power and the Government of Madhya Pradesh also requires that supercritical technology be employed on this project.[6] Thus, as a matter of both regulatory compliance and contractual obligation, if BD Power wishes to burn coal to generate electricity in a project of this size, it must use supercritical technology on this project. Accordingly, the use of that technology cannot be said to generate additional emissions reductions.

Conclusion

Because supercritical technology is "the only alternative…that is in compliance with mandatory regulations…",[7] the project activity is not additional and not eligible for validation under CDM rules.

2. 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 already refused to register one Indian supercritical plant on these grounds, and requested review of another.

Applicable rules

The *Additionality Tool* requires the project sponsor to fully consider the "project without CDM support" alternative.[8] This includes consideration of alternative tariff structures that would

[3] *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 5.
[4] Government of Madhya Pradesh, Energy Department, 6th September, 2010, *Policy*, at 2, *available at* http://www.mpenergy.nic.in/docs/Policy.pdf
[5] *Id.*
[6] PDD, at 2.
[7] *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 5.
[8] *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 5.

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 another Indian supercritical 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…."[9] 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."[10]

Discussion of non-compliance

The PDD contains no discussion of alternative tariff structures that could enable the project to proceed without CDM support. BD Power has not even attempted to make a showing that it will not be able to compete in the market without CDM support.[11] The relatively small impact of the sale of CERs on the cost of energy produced by the project and the fact that BD Power has committed to develop the project without CDM support, suggest that the project will proceed without CDM support. BD Power should be required to provide a market analysis demonstrating that the project is infeasible without CDM support and certify that it will abandon the project absent CDM support.

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*.[12]

[9] http://cdm.unfccc.int/Projects/DB/DNV-CUK1254830678.73/Rejection/IWNNWJIB1G6WAG6F9RW59N3AOLQEXP , 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 ….")

[10] 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

[11] BD Power intends to sell most of its power in the market, where there is currently a shortage of supply and its competitors do not receive CDM support.

[12] *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 5.

Baseline Assessment

3. Subcritical technology is not a plausible baseline for new large-scale, coal-fired projects in Madhya Pradesh, because the State government has required that all such plants use at least supercritical technology.

Applicable rules

In order for an alternative baseline scenario to be considered under *ACM0013*, it must be "possible realistic and credible."[13] Thus, the project participant must "exclude baseline scenarios that are not in compliance with all applicable legal and regulatory requirements."[14]

Discussion of non-compliance

The PDD erroneously asserts that "[n]either the Indian Electricity Act of 2003 nor any regulation promulgated by the relevant authority restricts the alternative" of subcritical coal as a potential baseline.[15] In fact, the Government of Madhya Pradesh has required the use of supercritical or ultra-super critical technology for "any new project using coal as fuel, where the capacity proposed is above 660 MW."[16]

In its assessment of subcritical coal as a potential baseline, the PDD correctly assumes that the project would be 1320MW, well above the threshold for application of the Madhya Pradesh energy policy barring subcritical coal plants. Under ACM0013, 660MW and above projects should have been excluded from consideration in the baseline assessment because they would not be in compliance with all legal and regulatory requirements.

Conclusion

In order to comply with the requirements of ACM0013, either the subcritical technology alternative should be excluded from the baseline assessment entirely.

4. Supercritical technology has become the technology of choice for new large-scale coal-fired power plants in India, and therefore is a more appropriate baseline than subcritical technology.

Applicable rules

In order to identify alternative baseline scenarios under *ACM0013*, the PDD must analyze "all possible realistic and credible alternatives" including "the proposed project activity without CDM benefits."[17] As part of this analysis, the PDD must "[e]nsure that all relevant power plant

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[13] *ACM0013*, *Ver. 4.0*, at 3.
[14] *Id.*
[15] *PDD*, at 13.
[16] Government of Madhya Pradesh, Energy Department, 6th September, 2010, *Policy,* at 2, *available at* http://www.mpenergy.nic.in/docs/Policy.pdf
[17] *ACM0013*, *Ver. 4.0*, at 3.

technologies that have recently been constructed or are under construction or are being planned (e.g. documented in official power expansion plans) are included as plausible alternatives."[18] If the PDD proposes a baseline scenario that is different from the power plant technologies that have recently been constructed or are under construction or are being planned, it must justify this apparent discrepancy.[19]

Discussion of non-compliance

The Baseline Assessment in the PDD erroneously concludes that the use of supercritical technology without CDM benefits is not a "realistic and credible alternative." Supercritical combustion is a quite mature and well-established technology. Supercritical processes have been in commercial use since the 1960s and have achieved broad global penetration. There are now over 500 supercritical units in operation worldwide,[20] representing more than 20 percent of installed units.[21]

More importantly, the Baseline Assessment fails to consider the extent to which supercritical plants have "recently been constructed or are under construction or are being planned" in India. A proper review of the deployment of supercritical technology in India would have shown that:

(1) India is already rapidly adopting supercritical technology, with about 40 supercritical projects that are operational or in various stages of development (see Appendix I); and

(2) supercritical technology will continue to rapidly gain market share without CDM support due to operational advantages, economic and sectoral drivers and government policies.

The Baseline Assessment makes no effort to discuss these trends, or to explain the discrepancy between the proposed subcritical baseline and the stream of supercritical projects under development as required under *ACM0013*.[22]

India is turning away from subcritical technology and is rapidly deploying supercritical units. Since the partial deregulation of the power sector in 2003, private sector actors (like the sponsor) have only invested in 1,120 MW of subcritical coal generation in all of India, and have not undertaken any such projects in the last 3 years.[23] By contrast, as of 2010, India had 37

[18] *Id*.
[19] *Id.*, at 4.
[20] Qingshan Zhu, 2005. *Clean coal technology– Gasification vs. (pulverized coal) combustion*, at 4. *available at* *http://www.interacademycouncil.net/Object.File/Draft/10/338/0.pdf*
[21] World Bank, 2008. *Clean Coal Power Technology Review: Worldwide Experience and Implications for India,* at 2. *available at* http://moef.nic.in/downloads/public-information/LCGIndiaCCTjune2008.pdf
[22] PDD, at 12.
[23] Det Norske Veritas, 2010. *Response to request for review"GHG Emission Reductions through grid connected high efficiency power generation"*, at 12-13, available at

supercritical units between 660 MW and 800 MW under construction, with a combined generating capacity of 26 GW.[24] (see Appendix I). At least two other units have come online in the last 6 months, and at least 8 more with a total capacity of 5280 MW are slated to begin operations in the next year.[25] As discussed above, the Government of Madhya Pradesh has required the use of supercritical or ultra-super critical technology for all large units, and the Government of India has also mandated supercritical technology for the "ultra-mega power projects" (UMPPs), a series of 14 projects that each have a minimum capacity of 4 GW. So far, four of the planned UMPPs are in various stages of development.[26] Going forward, about 60 percent of the 75 GW of thermal power contemplated in the 12th Five-Year Plan (2012-2017) is expected to be supercritical. The 13th Five-Year Plan (2017-2022) states that 100 percent of new coal-fired plants in shall be supercritical.[27] Supercritical units are likely to contribute up to 50 GW by 2020.[28]

Other power plant operators in India such as CPL and the National Thermal Power Corporation (NTPC) are rapidly embracing supercritical technology. CPL entirely renounced subcritical technology in 2009. At that time, its Managing Director stated that "We will not build subcritical coal-fired power plants, and believe no one else should. We should move towards supercritical and, in due course, ultra-supercritical (USC) technology, to reduce the carbon intensity of generation."[29]

NTPC's experience may be even more illustrative. NTPC is the largest state-owned power generating company in India. It operates nearly 27 GW of coal-fired capacity[30]—almost 29 percent of India's total.[31] As early as 2008, it had already adopted supercritical technology for units over 500 MW, and was moving towards even higher steam parameters (ultra-supercritical)

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http://cdm.unfccc.int/filestorage/5/L/8/5L8JTCSFON1WHYZ4KG2DPU3BE6Q0A7/3020%20RfR%20response%20DNV.pdf?t=NkV8MTMxMTE4ODIxNS43OQ==|Aat17nr3_GfKZU4WhGv-2M_yMjQ= .

[24] International Energy Agency, 2011: *Technology Development Prospects for the Indian Power Sector*, at 46. *available at* http://www.iea.org/papers/2011/technology_development_india.pdf

[25] "Media Release: Adani Power Synchronizes Country's First supercritical 660 MW unit at Mundra", December 23, 2010, *available at* http://www.adanipower.com/Data/APLMediaReleasefirst660Unit.pdf; "Barh 1 and II, 3,300MW Coal-Powered Plant Barh, India," http://www.power-technology.com/projects/barh-coal/ ; "NTPC's first supercritical tech unit commissioned," *iGovernment*, February 24, 2011, *available at* http://www.igovernment.in/site/ntpc%E2%80%98s-first-supercritical-tech-unit-commissioned-39347

[26] International Energy Agency, 2011: *Technology Development Prospects for the Indian Power Sector*, at 47. *available at* http://www.iea.org/papers/2011/technology_development_india.pdf

[27] International Energy Agency, 2011: *Technology Development Prospects for the Indian Power Sector*, at 47. *available at* http://www.iea.org/papers/2011/technology_development_india.pdf; Central Electricity Authority, *Letter of 2 February 2010*, *available at* http://www.cea.nic.in/more_upload/advisory_mop_sourcing_domestic_mfrs.pdf

[28] *Id*.

[29] "Large utilities to get priority on coal supplies," *Livemint.com*, Dec. 23, 2009, *available at* http://www.livemint.com/2009/12/23234919/Large-utilities-to-get-priorit.html (quote from a CLP managing director).

[30] http://www.ntpc.co.in/index.php?option=com_content&view=article&id=96&Itemid=175&lang=en

[31] *Ministry of Power, Government of India*. *available at* http://www.powermin.nic.in/

for upcoming projects.[32] At that time, NTPC already had six 660 MW units of supercritical technology in advanced stages of construction, and orders placed for two more.[33] It also had seven other 660 MW units and sixteen 800 MW units "upcoming."[34]

Supercritical technology will continue to rapidly gain market share without CDM support due to operational advantages, market forces and government policies. Supercritical technology offers considerable advantages over subcritical. According to NTPC's Chief Design Engineer, NTPC switched to supercritical technology for its larger boilers due to improved plant efficiency and fuel tolerance; reduced coal consumption, ash production and pollutant emissions; and superior operational performance.[35] At the same time, NTPC has concluded that the downsides are minimal or non-existent. Supercritical boilers are a "mature and established" technology that use materials that are "proven and already in use" and equally as available as sub-critical.[36] Moreover, it also has concluded that project implementation and operations and maintenance are "essentially [the] same as sub-critical."[37]

In addition to the operational benefits of supercritical boilers identified by NTPC, other non-CDM related factors are driving this technological shift. Rising coal prices and severe domestic coal shortages have provided a strong incentive for operators to install more efficient generating technology.[38] Over the last five years, persistent coal shortages have lead to reduced electricity production,[39] and have forced both plant operators,[40] and the country's main coal

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[32] *Supercritical Technology in NTPC India-A Brief Overview*, presentation by Pankaj Gupta, Chief Design Engineer, NTPC to APEC Energy Working Group's Cleaner Coal Workshop, Ha Long City, Vietnam August 19-21, 2008, at 16, 24. *available at* http://www.egcfe.ewg.apec.org/publications/proceedings/CleanerCoal/HaLong_2008/Day%202%20Session%203A%20%20Pankaj%20Gupta%20Supercritical%20Technology%20in%20.pdf

[33] Sipat-I (3x660MW) and Barh-I (3x660MW) were in advanced stages of construction, while orders had been placed for Barh-II (2x660MW). *Supercritical Technology in NTPC India-A Brief Overview*, presentation by Pankaj Gupta, Chief Design Engineer, NTPC to APEC Energy Working Group's Cleaner Coal Workshop, Ha Long City, Vietnam August 19-21, 2008, at 16, 24. *available at* http://www.egcfe.ewg.apec.org/publications/proceedings/CleanerCoal/HaLong_2008/Day%202%20Session%203A%20%20Pankaj%20Gupta%20Supercritical%20Technology%20in%20.pdf

[34] North Karanpura (3x660MW), Tanda-II (2x660MW), Meja (2x660MW), Darlipali,(4x800MW), Lara (5x800MW), Cheyyur (3x800MW), Marakanam (4x800MW). *Supercritical Technology in NTPC India-A Brief Overview*, presentation by Pankaj Gupta, Chief Design Engineer, NTPC to APEC Energy Working Group's Cleaner Coal Workshop, Ha Long City, Vietnam August 19-21, 2008, at 16. *available at* http://www.egcfe.ewg.apec.org/publications/proceedings/CleanerCoal/HaLong_2008/Day%202%20Session%203A%20%20Pankaj%20Gupta%20Supercritical%20Technology%20in%20.pdf

[35] *Id.*, at 10.

[36] *Id.*, at 13.

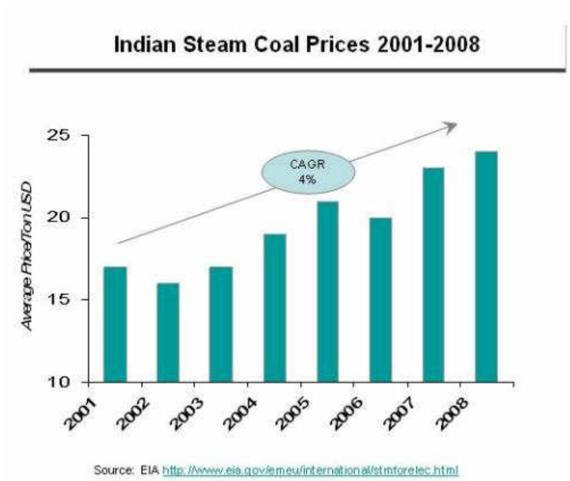
[37] *Id.*

[38] *See, e.g.*, David Victor, "He protests too much; India is already going green," *Newsweek*, Aug. 17, 2009 ("Shortages in coal, which supplies about three quarters of India's electricity, are forcing India to accelerate this trend to higher efficiency.") (LexisNexis Academic)

[39] *See, e.g.*, "Thermal plants' coal shortage worsening, *Business Line*," Apr. 4, 2005, *available at* ; "Thermal plants face acute coal shortage (coal stock at 8,689 million tonnes against normal replacement of 22 million tonnes)," *India Business Insight*, Apr. 2, 2008 (LexisNexis Academic); "Coal situation worsens at thermal stations (several stations

producer[41]-- Coal India -- to increase coal imports. As a result, Indian coal imports grew by 36 percent between 2007 and 2009, reaching 16.5 percent of total consumption in 2009.[42]

Imported coal is considerably more expensive than domestic coal, since state-run *Coal India* subsidizes domestic coal by as much as 50 percent below global prices.[43] As of 2008, coal prices were 633 percent higher in Germany and 490 percent higher in Chinese Taipei than in India (see charts below). This situation is unsustainable, and Coal India has expressed its intent to more closely align its prices with world markets.[44] Coal India raised prices by 12 percent in February, 2011. While this price hike excluded the power sector,[45] future price hikes are expected to cover all sectors.[46]



super critical with stocks for less than 4 days)," *India Business Insight*, May 9, 2008, *available at* http://www.thehindubusinessline.com/2008/05/09/stories/2008050952240100.htm ; "Corporate power crisis looms large as key thermal stations starve for coal," *Business Line*, Aug. 9, 2008, *available at* http://www.thehindubusinessline.com/2008/08/09/stories/2008080950460300.htm ; "Inadequate coal linkages hit power stations," *The Press Trust of India*, Jan. 26, 2009, *available at* http://www.highbeam.com/doc/1G1-192610842.html ; "Govt revises coal import target upwards to 35 MT in FY'10," *The Press Trust of India*, Mar. 20, 2009 (LexisNexis Academic); "Thermal stations continue to battle coal shortages," *Business Line*, Apr. 16, 2009, *available at* http://www.thehindubusinessline.com/2009/04/16/stories/2009041651511500.htm; "Shortage of coal, gas to hit power sector," *Financial Express*, Nov. 2, 2009 (LexisNexis Academic); "Indian market ready for plants, but needs steady supply of coal," *Platts Coal Outlook*, Nov. 16, 2009 (LexisNexis Academic); "India's NTPC shuts two coal plants on coal shortages," *Platts International Coal Report*, Nov. 23, 2009 (LexisNexis Academic).

[40] "Adani to invest $1.6 billion in Indonesian project," *Reuters*, *available at* http://in.reuters.com/article/2010/08/25/idINIndia-51045420100825

[41] "CIL readies war chest for acquiring overseas mines," *The Asian Age*, *available at* http://www.asianage.com/business/cil-readies-war-chest-acquiring-overseas-mines-082

[42] IEA Coal Statistics, 2010.

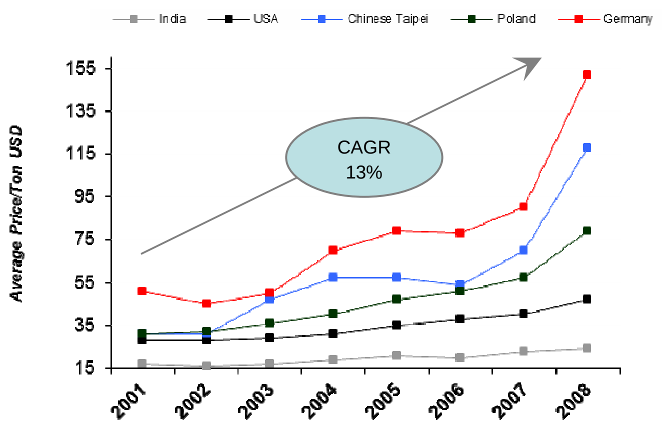
[43] "CIL to hike coal prices by 15 pc from tonight," *Times of India*, February 26, 2011, *available at* http://articles.timesofindia.indiatimes.com/2011-02-26/india-business/28636394_1_coking-coal-coal-production-cil

[44] *Id.*

[45] http://articles.economictimes.indiatimes.com/2011-03-16/news/28697785_1_price-hike-salary-hike-cil

[46] *Id.*

Selected Steam Coal Prices 2001-2008



Source: EIA
http://www.eia.gov/emeu/international/stmforelec.html

In addition, sector analysts have warned that Asian coal markets, including India, are increasingly subject to greater price volatility due to surging demand and a high correlation with oil prices.[47] Rising and volatile coal prices will squeeze plant operator profit margins. The cost of fuel inputs can account for 40-60 percent of the total cost of generation.[48]

When the costs of coal are considered, supercritical boilers are now cost-competitive or cheaper than subcritical ones. Modern supercritical plants cost only 2 percent more to install than subcritical plants,[49] and the small incremental difference in capital costs can be offset by greatly reduced variable fuel costs over the life of the project.[50] Thus, in its 2006 *Integrated Energy Policy*, the Planning Commission concluded that "[i]t should be possible to get gross efficiency of 38-40% *at an economically attractive cost* for all new coal-based plants."[51] (emphasis added). Other studies have similarly found that supercritical technologies entail no additional costs over subcritical,[52] and that supercritical units can actually deliver a lower cost of energy over their operating lifetime.[53] Indeed, the planned "Ultra-Mega Power Plants" are expected to produce

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[47] UBS, 2011. *Global Utilities Outlook 2011*, at 10.
[48] Chikkatur and Sagar, 2007. *Cleaner Power in India: Towards a Clean-Coal-Technology Roadmap*, at 50.
[49] Boben Anto, M.M. Hasan, undated. *Analysis of Supercritical technology in Indian Environment and Utilizing Indian coal*, at 113.
[50] *Id.*; "Fire without smoke making the switch (supercritical technology considerably lowers the costs of coal based power generation)," *India Business Insight*, Aug. 29, 2007.
[51] Planning Commission, 2006. *Integrated Energy Policy: Report of the Expert Committee*, at 49.
[52] Center for Science and Environment, 2010. *The Challenge of the New Balance*, at 35.
[53] MIT, 2007. *The Future of Coal*, at 19.

power at tariff rates well below those that are economically feasible from subcritical plants, due to their operational efficiency and economies of scale.[54]

Given persistent coal shortages, rising prices and the need to address massive power supply deficits, the Government of India ("Government") has placed a "very high priority [on]… developing or obtaining the technology for coal-based plants of high efficiency."[55] Towards this end, it is adopting policies to encourage power generators to move to supercritical or even ultra-supercritical technology. The Government has mandated that all of the "Ultra-Mega Power Plants" use supercritical technology.[56] In 2009, the Power Ministry and the Coal Ministry decided to use only supercritical technology for new capacity additions wherever possible.[57] Finally, the Government is considering new policies that would give supercritical generators priority access to scarce coal supplies,[58] and may even ban subcritical plants altogether.[59]

Conclusion

To address both market and policy risks, power plant operators now have a strong, non-CDM-related incentive to install supercritical technology, which is wholly unrelated to CDM status. Given these trends, and the large set of supercritical units already in operation or in planning, it is clear that supercritical technology is the coal technology of choice in India. DB Power seeks to register a project in the CDM for using a technology that is already heavily promoted by Government of India policies, widely in use, and cost effective. The project is therefore clearly non-additional.

5. 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."[60] *ACM0013* makes clear that (1) "[t]hese alternatives need not consist solely of power plants of the same capacity, load factor and

[54] *See, e.g.*, "Rs 1.19 per unit tariff feasible: Shahi," *The Press Trust of India*, Dec. 19, 2006 ("Government today said the Rs 1.19 per unit tariff proposed by Lanco Infratech for the 4,000 MW Sasan Ultra mega power project is feasible . . . "Super critical system gives you an advantage of fuel input and cost of power which has helped lowering the tariff," he said.") (LexisNexis Academic).
[55] http://planningcommission.nic.in/reports/genrep/rep_intengy.pdf
[56] International Energy Agency, 2011. *Technology Development Prospects for the Indian Power Sector*, at 47. *available at* http://www.iea.org/papers/2011/technology_development_india.pdf
[57] International Coal Report, March 23, 2009, *Platts*, at 10. *available at* http://china.platts.com/IM.Platts.Content/ProductsServices/Products/intlcoalreport.pdf
[58] "Large utilities to get priority on coal supplies," *Livemint.com*, Dec. 23, 2009, *available at* http://www.livemint.com/2009/12/23234919/Large-utilities-to-get-priorit.html (quote from a CLP managing director).
[59] "Sub-660 MW plants face denial," *Financial Express*, Jan. 5, 2010.
[60] *ACM0013*, *Ver. 4.0*, at 3.

operational characteristics”; [61] (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.”[62] The decision to exclude scenarios must be supported by “appropriate explanations and documentation.”[63]

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.”[64] 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.[65]

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 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. As the Government’s Commission’s *Integrated Energy Policy* notes, “lowering energy intensity through higher efficiency is equivalent to creating a virtual source of untapped domestic energy….[a] unit of energy saved by a user is greater than a unit produced, as it saves on production losses as well as transport, transmission and distribution losses.”[66] Accordingly, the Planning Commission found that “[s]everal [energy efficiency] options are less expensive than coal or gas-based generation, and therefore, *should be the “first resource” considered for fulfilling demand*.”[67] (emphasis added). 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.[68] The Government of India has recognized the

[61] *Id.*
[62] *Id.*, at 4.
[63] *Id.*
[64] *Id.*
[65] *Id.*, at 4.
[66] Planning Commission, 2006. *Integrated Energy Policy: Report of the Expert Committee*, at xx.
[67] Planning Commission, 2011. *Interim Report of the Expert Group on Low-Carbon Strategies for Inclusive Growth*, at 31.
[68] See, e.g., the World Bank’s recent support for mass distribution of compact flourescent light bulbs in Bangladesh. http://siteresources.worldbank.org/EXTENERGY2/Resources/ELIB_Presentation.pdf. Meg Gottstein, Planning,

critical importance of energy efficiency in closing India's chronic 8-10 percent supply deficit. Recent studies have found that end-use efficiency improvements could eliminate the supply deficit by 2013,[69] reduce effective demand by over 20 percent,[70] add approximately $500 billion to India's economy by 2017,[71] and reduce the India's cumulative CO_2 emissions by 65 Mt.[72]

Reduction of transmission and distribution losses: The PDD entirely omits any analysis of the potential for improvements in transmission and distribution efficiency, despite the fact that Madhya Pradesh suffers from loss rates of 34 percent.[73] Because these loss rates are so high, a recent evaluation by the Asian Development Bank concluded that "the most critical issue facing the power sector in Madhya Pradesh is the high distribution losses."[74] Nationally, reducing transmission and distribution losses is already a top government priority,[75] as the extraordinarily high national loss rates place a huge strain on the economy and threaten the viability of energy sector.[76] Simply raising Indian transmission and distribution efficiencies to international best practices (less than 10 percent losses)[77] could eliminate the need for as much as 30 GW worth of additional capacity.[78]

Natural gas: The PDD discusses natural gas as a credible alternative, but dismisses it after concluding that a natural gas plant would generate much more expensive electricity.[79] The basis of this assertion is that the capital cost of construction of a new gas-fired plant would be about 33 percent greater than a subcritical coal plant.[80] However, most published figures estimate the cost of a new combined cycle natural gas facility at around 35 percent of the cost of

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Financing and Building Efficiency Power Plants: Regulatory Practices in California and Other States, The Regulatory Assistance Project (2008), available at 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.

[69] Jayant Sathaye and Arjun P. Gupta, 2010. *Electricity Deficit through Energy Efficiency in India: An Evaluation of Aggregate Economic and Carbon Benefits* (Lawrence Berkeley National Laboratory).

[70] Greenpeace India. 2009. *Still Waiting*, at 14. available at http://www.greenpeace.org/india/Global/india/report/2009/11/stillwaiting.pdf

[71] Shakti Foundation, 2011. *The Hundred Billion Dollar Bonus: Global Energy Efficiency Lessons from India.*

[72] Jayant Sathaye and Arjun P. Gupta, 2010. *Electricity Deficit through Energy Efficiency in India: An Evaluation of Aggregate Economic and Carbon Benefits* (Lawrence Berkeley National Laboratory).

[73] Asian Development Bank, 2011. *Evaluation Study: India: Madhya Pradesh Power Sector Development Program*, at iv; *available at* http://www.adb.org/documents/ppers/ind/29473/29473-IND-PPER.pdf

[74] *Id.*

[75] *International Energy Agency*; *Technology Development Prospects for the Indian Power Sector*, at 69. *available at* http://www.iea.org/papers/2011/technology_development_india.pdf

[76] Planning Commission, 2006. *Integrated Energy Policy: Report of the Expert Committee*, at 4.

[77] Greenpeace India. 2009. *Still Waiting*, at 14. *available at* http://www.greenpeace.org/india/Global/india/report/2009/11/stillwaiting.pdf

[78] Shankar Sharma, 2011. *Indian Power Scenario: Huge scope for low carbon energy pathway*.

[79] *PDD*, at 25.

[80] *PDD*, at 24, 25.

a new coal plant[81]. If more reasonable construction costs are assumed, the LCOE of natural gas would likely be lower than the subcritical or supercritical alternatives, and would have substantially lower CO_2 emissions.

Solar thermal: The PDD discusses only photovoltaic sources, and summarily dismisses them as variable and incapable of producing base load power.[82] It entirely overlooks solar thermal power (or "concentrated solar power"), which can provide baseload power and has the potential to deliver 3 to 4 times the amount of power as India's coal reserves.[83] The Government of India has identified capturing the "low hanging options" in solar thermal as a national priority in the first phase of the national solar mission.[84] As both the fuel and construction costs of coal-fired power plants have rapidly escalated, the price differential between coal and solar thermal power has been dramatically narrowed.[85] Furthermore, India already has a solar power manufacturing sector to rely on for increased growth in this area.[86]

Strengthened grid connections: The PDD references the use of connected grids to import electricity, but dismisses this alternative because of the transmission deficit. However, this quick dismissal ignores the fact that the deficit is primarily a result of the focus on building new power plants, rather than investing in grid improvements and end-use efficiency.[87]

Wind and Biomass: The PDD dismisses power from wind and biomass without meaningful analysis. However, India has an enormous potential of 46 GW of wind[88] and 27 GW for biomass.[89] While windpower does not, by itself, serve as baseload generation, it can be integrated with demand-side management, transmission system upgrades, hydropower and existing fossil-fired generation to reduce or eliminate the need for additional coal-fired plants.

[81] See, National Energy Technology Laboratory, U.S. Department of Energy, *Cost and Performance Baseline for Fossil Energy Plants; Volume 1. Bituminous Coal and Natural Gas to Electiricity,* Rev. 2, November , 2010, ES-5, ES-7 http://www.netl.doe.gov/energy-analyses/pubs/BitBase_FinRep_Rev2.pdf

[82] *PDD, at 17.*

[83] 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*.

[84] Jawaharlal Nehru National Solar Mission: Towards Building SOLAR INDIA, at 3, *available at* http://india.gov.in/allimpfrms/alldocs/15657.pdf .

[85] David Wheeler, 2008. *Tata Ultra Mega Mistake: The IFC Should Not Get Burned by Coal, available at* http://blogs.cgdev.org/globaldevelopment/2008/03/tata-ultra-mega-mistake-the-if.php

[86] *An Overview of Renewable Energy in India*, at 11. *available at* http://www.geni.org/globalenergy/library/energytrends/currentusage/renewable/Renewable%20Energy%20Potential%20for%20India%5B2%5D_%5B1%5D-1_.pdf

[87] http://blog.cleantech.com/sector-insights/energy-efficiency/india-loses-45-of-the-electricity-it-produces-expect-surge-in-energy-efficiency-investment/

[88] *An Overview of Renewable Energy in India*, at 14. *available at* http://www.geni.org/globalenergy/library/energytrends/currentusage/renewable/Renewable%20Energy%20Potential%20for%20India%5B2%5D_%5B1%5D-1_.pdf

[89] "Powering India with Rice Husks? An Interview with Ratnesh Yadav from Husk Power Systems," *available at* http://sierraclub.typepad.com/compass/2011/01/powering-india-with-rice-husks-an-interview-with-ratnesh-yadav-from-husk-power-systems.html

These options should have been more rigorously evaluated both alone and in combination with other options.

Conclusion

Each of these potential alternatives is already being implemented in India, and some, such as end use efficiency, reducing transmission losses, and solar thermal, 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 subcritical technology. In particular, given the Planning Commission's determination that energy efficiency should be the "first resource" in meeting demand, 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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6. The PDD fails to apply the E+ guidelines in determining the baseline scenario.

Applicable Rules

E+ guidelines require that national or sectoral policies that give comparative advantage to more emissions intensive technologies or fuels can only be accounted for in establishing the baseline scenario to the extent that they existed prior to the adoption of the Kyoto Protocol. Where such policies are in place, the baseline scenario should refer to a hypothetical situation without the national and/or sectoral policies or regulations.[90]

Discussion of non-compliance

The Government of India has a longstanding policy of subsidizing the consumption of coal for power production by having its state-owned coal enterprises sell coal to power producers at prices that are well below market rates.[91] While this subsidy was in place before 1997, it has dramatically increased since then. In 1997 coal prices on international markets were 350 percent above domestic prices; by 2008 (the most recent year for which data was available), they were 700 percent above domestic prices.[92] The difference between the prices charged by these state-owned enterprises and prevailing international market prices represents a subsidy that gives a

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[90] EB 22, Annex 3, paragraph 7(a)

[91] http://www.coal.nic.in/chap10102.pdf

[92] Data gathered from EIA: http://www.eia.gov/emeu/international/coalprice.html , Indian Coal Ministry Annual Reports: http://www.coal.nic.in/welcome.html , BP 2011 statistical review: http://www.bp.com/sectionbodycopy.do?categoryId=7500&contentId=7068481 , and IEA Coal Statistics 2010

comparative advantage to coal-fired power plants over cleaner modes of energy production, and to inefficient coal-fired power over more efficient ones. Accordingly, under the E+ guidelines, alternative baseline scenarios should have been evaluated as if the level of coal subsidy that existed on December 11, 1997 were still in place.

Conclusion

Under the E+ guidelines, the baseline scenario should have been assessed under the hypothetical situation in which subsidies as they existed on December 11, 1997 were still in place. By conducting the analyses using the much higher current subsidy rates, the PDD improperly privileges less efficient subcritical coal.

Investment Analysis

The PDD significantly underestimates the project cost of the subcritical project alternative.

Applicable Rules

Data and assumptions presented in the investment analysis of baseline alternatives must be accurate, conservative, credible, reliable, and complete.[93] It must stand up to objective analysis when compared with other sources of information.[94]

Discussion of non-compliance

The PDD estimates that the subcritical alternative would have a project cost of 40,170 million INR (€ 629 million) for a 1320 MW equivalent facility.[95] This estimate is incredibly low. It works out to approximately € 461/MW, about half of the usual cost of around € 827/MW for such plants.[96] This assumption is the key factor[97] in generating an estimate that claims that the subcritical alternative enables generation of electricity at substantially lower cost than the base project. The PDD estimates that the natural gas alternative would have a project cost of 53,657

[93] CDM, *Validation and Verification Manual, Ver. 1.2*, *EB 55 report, Annex 1*, at 5, 7.
[94] *Id.*, at 7.
[95] *PDD*, at 23. In support of this estimate, the PDD references a tariff proceeding. However, from the reference provided it is impossible to determine the scope of the project to which the costs are applied.
[96] See, U.S. Environmental Protection Agency, *Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from Coal Fired Power Plants, Exhibit 3-2* October , 2010, http://www.epa.gov/nsr/ghgdocs/electricgeneration.pdf; see also http://www.deq.state.mi.us/aps/downloads/permits/PubNotice/341-07/AlternativesAnalysis.pdf
[97] There are a number of other questionable assumptions employed that require additional documentation. These include the debt to equity ratio, and the debt term, among others.

million INR (€ 840 million). This figure (€ 637/MW) is far higher than provided in the public literature[98].

Conclusion

The PDD used an unreasonably low estimate of project costs for the subcritical alternative, one that is a substantial outlier when compared to credible estimates of similar projects by parties that do not have a stake in the outcome of the analysis. The PDD also employs an unreasonably high estimate of project costs for the natural gas alternative. Had more reasonable assumptions been used the subcritical alternative would not have emerged as the lowest cost option.

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8. 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."[99] 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." [100] All investment analysis should be provided in spreadsheet format, with all formulas readable and relevant cells viewable and unprotected.[101] 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." [102] 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

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[98] See, National Energy Technology Laboratory, U.S. Department of Energy, *Cost and Performance Baseline for Fossil Energy Plants; Volume 1. Bituminous Coal and Natural Gas to Electiricity,* Rev. 2, November , 2010, ES-5, ES-7
http://www.netl.doe.gov/energy-analyses/pubs/BitBase_FinRep_Rev2.pdf

[99] *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 12.

[100] *ACM0013, Ver. 4.0*, at 4; *Tool for the demonstration and assessment of additionality, Ver. 5.2*, at 7.

[101] *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."

[102] *ACM0013, Ver. 4.0*, at 4; *Tool for the demonstration and assessment of additionality, Ver. 5.2*, at 7.

and benefits in the case of public investors."[103] The analysis must present a clear comparison of the financial indicators for all scenario alternatives.[104] Assumptions and input data should be consistent across the project activity and its alternatives, unless differences can be well substantiated.[105]

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 barely resembles the kind of rigorous and comprehensive analysis that would actually be required to determine if the project activity requires CDM support to be the preferred alternative. The investment analysis relies on a comparison of the levelized cost of energy (LCOE) for each alternative to justify its claim that subcritical technology would be the preferred option without CDM support,[106] 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;
- Demonstrate how revenue from the CDM would affect the financial viability of the project activity, and cause 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;
- Consider the costs of other resource inputs such as labor and water, and how they might differentially affect the LCOE for each option.

Conclusion

The investment analysis fails to assess the importance of the CDM to the project's financial viability. It asserts that subcritical 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,[107] and the proper response to such a

[103] *Id.*
[104] *ACM0013, Ver. 4.0*, at 4.
[105] *Tool for the demonstration and assessment of additionality, Ver. 5.2*, at 7; *ACM0013, Ver. 4.0*, at 4.
[106] *PDD*, at 30.
[107] *See e.g., Review of Project Activity*: *Sichuan Liangtan Hydropower Station Second Phase Project (2410), available at* http://cdm.unfccc.int/Projects/DB/DNVCUK1197870388.18/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-

woefully deficient PDD is for the DOE to refuse to validate this project activity. However, if Bureau Veritas 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.

9. The sensitivity analysis improperly advantages inefficient subcritical technology by using an unrealistically narrow range of fuel price variation.

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."[108] 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…."[109]

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."[110] 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.[111]

CUK1182338073.37/Rejection/OO2TQ0VFWPHDSIUDDMF7KXQ7SN81MN;*Review of Project Activity: BHL Palia Kalan Project (1184), available at* http://cdm.unfccc.int/Projects/DB/DNVCUK1182235542.94/Rejection/ED7ZTMB2J3G28EMMVW1C3AOS9Z6EBP

[108] *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis,* at 15.

[109] *Id.*

[110] *ACM0013, Ver. 4.0,* at 4; *Tool for the demonstration and assessment of additionality, Ver. 5.2,* at 7.

[111] *ACM0013,* Ver. 4.0, at 4.

Discussion of non-compliance

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 recent fluctuations have been much higher, and market trends suggest that prices are likely to rise significantly.[112]

The PDD seeks to justify an unrealistically narrow +/- 10% range of analysis by arguing that because Coal India last raised prices in February 2011, and previously had not raised prices since October 2009, "the coal prices had remained the same for more than a year which implies its stability and hence, any variation in these prices beyond 10%, if at all, is unlikely."[113] This is an almost comically inadequate treatment of the issue. It relies upon a single data point to the exclusion of observed market trends, coal sector analysts' forecasts, and other data sets and risk assessments. It falls far short of the kind of rigorous market analysis that a reasonable company would undertake to ensure that its decisions are in accordance with fiduciary obligations to shareholders. Just as such a cursory and conclusory analysis would not meet fiduciary standards in the corporate context, neither should it satisfy minimal standards of care in the CDM context. In short, this is a wholly inadequate determination of the appropriate range of analysis.

In fact, contrary to the PDD's assertion that coal prices have remained stable over time, they have actually fluctuated by as much as 100 percent in recent years in the Indian market, and much more in the international markets (see previous price graphs). Asian coal markets generally are increasingly subject to greater price volatility due to surging demand and a high correlation with oil prices.[114] As discussed in section 5, India is currently experiencing severe coal shortages and there is strong upwards pressure on coal prices. As a result, coal prices in India have risen 25 percent in the last quarter alone.[115] These shortages have constrained electricity production,[116]

[112] *PDD*, at 25.
[113] PDD at 26
[114] UBS, 2011. *Global Utilities Outlook 2011*, at 10.
[115] Moneycontrol, Rise in power tariffs may further fuel inflation, says RBI, *available at* http://www.moneycontrol.com/news/economy/risepower-tariffs-may-further-fuel-inflation-says-rbi-_568856.html
[116] *See, e.g.*, "Thermal plants' coal shortage worsening, *Business Line*," Apr. 4, 2005, *available at*http://www.thehindubusinessline.com/2005/04/04/stories/2005040401750500.htm ; "Thermal plants face acute coal shortage (coal stock at 8,689 million tonnes against normal replacement of 22 million tonnes)," *India Business Insight*, Apr. 2, 2008 (LexisNexis Academic); "Coal situation worsens at thermal stations (several stations super critical with stocks for less than 4 days)," *India Business Insight*, May 9, 2008, *available at* http://www.thehindubusinessline.com/2008/05/09/stories/2008050952240100.htm ; "Corporate power crisis looms large as key thermal stations starve for coal," *Business Line*, Aug. 9, 2008, *available at* http://www.thehindubusinessline.com/2008/08/09/stories/2008080950460300.htm ; "Inadequate coal linkages hit power stations," *The Press Trust of India*, Jan. 26, 2009, *available at* http://www.highbeam.com/doc/1G1-192610842.html ; "Govt revises coal import target upwards to 35 MT in FY'10," *The Press Trust of India*, Mar. 20, 2009 (LexisNexis Academic); "Thermal stations continue to battle coal shortages," *Business Line*, Apr. 16, 2009, *available at* http://www.thehindubusinessline.com/2009/04/16/stories/2009041651511500.htm; "Shortage of coal, gas to hit power sector," *Financial Express*, Nov. 2, 2009 (LexisNexis Academic); "Indian market ready for plants, but needs steady supply of coal," *Platts Coal Outlook*, Nov. 16, 2009 (LexisNexis Academic); "India's NTPC shuts two coal plants on coal shortages," *Platts International Coal Report*, Nov. 23, 2009 (LexisNexis Academic).

and have forced plant operators[117] and Coal India[118] to increasingly source coal from more expensive international markets.[119] Analysts expect this situation to worsen, as the shortage is likely to grow to 250 to 350 million tons over the next 3-4 years.[120] The Indian Power ministry predicts that the shortage will leave up to 42,000 MW of new generation capacity unable to generate electricity.[121] Moreover, while Coal India has historically subsidized domestic consumers by selling its coal at well below international rates, these subsidies are proving to be unsustainable, and Coal India has stated that it will allow its prices to rise to better reflect global markets.[122] That is why Coal India raised prices by 12 percent in February, 2011, and further price hikes are anticipated.[123]

The Indian Government is also considering a Mines and Minerals bill that would significantly raise the costs for coal mining companies.[124] New mines would be required to provide 26 percent of their profits to local residents, while royalty dues to the government would likely double.[125] With domestic coal prices heavily discounted in comparison with international prices, market analysts believe Coal India can raise prices without adversely affecting profits–a likely move considering the affect the bill is already having on Coal India's stock price.[126]

In the face of all these trends, it is fanciful to so blithely assume that coal prices will only fluctuate 10 percent from the base case over the ten-year project period. A sensitivity analysis that more accurately reflected the current volatility in the Indian coal market would almost certainly show that supercritical coal is the more financially or economically attractive baseline under certain reasonably likely market conditions. While modern supercritical plants typically cost about 2 percent more to install than subcritical plants,[127] they can deliver energy at the same or lower costs over their operating life due to their reduced fuel costs.[128] That being the case, a

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[117] "Adani to invest $1.6 billion in Indonesian project," *Reuters, available at* http://in.reuters.com/article/2010/08/25/idINIndia-51045420100825

[118] "CIL readies war chest for acquiring overseas mines," *The Asian Age, available at* http://www.asianage.com/business/cil-readies-war-chest-acquiring-overseas-mines-082

[119] IEA Coal Statistics, 2010.

[120] Sharma, Ravi. Coal shortage to rise between 250 mn to 350 mn tonne in next 3-4 yrs: Adani Power. http://articles.economictimes.indiatimes.com/2011-07-20/news/29795017_1_growmore-trade-coal-shortage-power-rates

[121] Sasi, Anil. Coal shortage may trip 42,000 MW of new projects. http://www.thehindubusinessline.com/industry-and-economy/article1991364.ece?homepage=true

[122] *Id.*

[123] http://articles.economictimes.indiatimes.com/2011-03-16/news/28697785_1_price-hike-salary-hike-cil

[124] *Share your profits mining bill will raise costs all around* http://www.firstpost.com/politics/share-your-profits-mining-bill-will-raise-costs-all-around-38372.html

[125] *Id.*

[126] Coal India slips over 12 pc since June; mining bill weighs http://articles.economictimes.indiatimes.com/2011-07-11/news/29761308_1_mining-bill-nc-jha-mmdr-bill

[127] Boben Anto, M.M. Hasan, *Analysis of Supercritical Technology in Indian Environment and Utilizing Indian Coal*, at 113.

[128] MIT, 2007. *The Future of Coal*, at 19; Center for Science and Environment, 2010. *The Challenge of the New Balance*, at 35.

rigorous sensitivity analysis would have shown that at a certain coal price, supercritical technology will surpass subcritical 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."[129] 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…."[130]

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 plainly unsupportable, and it is incumbent upon the DOE to independently determine this inflection point and the likelihood that it will occur, and to reassess financial attractiveness of the options on that basis.

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—not only in terms of technical compliance with methodologies, but in fact—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. The project is required by regulation and contract to use supercritical technology. Moreover, India is already rapidly adopting supercritical technology due to a variety of operational, market, and regulatory factors. 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 Bureau Veritas Certification Holding SAS not to validate the proposed Project. However, should Bureau Veritas afford the project proponent the

[129] ACM0013, Ver. 4.0, at 4; *Tool for the demonstration and assessment of additionality*, Ver. 5.2, at 7.
[130] *Tool for the demonstration and assessment of additionality, Ver. 5.2, Annex: Guidance on the Assessment of Investment Analysis*, at 15.

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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APPENDIX 1: SUPERCRITICAL PROJECTS IN INDIA[131]

Ultra Mega Power Projects

No.	Name/Location of Thermal Power Station	No. of Units	Unit capacity (in MW)	Utility
1	UMPP, Mundra	5	800	M/s. Tata Power Ltd.
2	UMPP, Sasan	6	660	M/s. Reliance Power Ltd.
3	UMPP, Krishnapatnam	5	800	M/s. Reliance Power Ltd.
4	UMPP, Tilaiya	5	800	M/s. Reliance Power Ltd.
5	Orissa, UMPP	5	800	-
6	Chhatisgarh, UMPP	5	800	-
7	UMPP, Tamil Nadu	5	800	-

Supercritical Thermal Power Stations Completed or Under Construction

No.	Name/Location of Thermal Power Station	No. of units	Unit capacity (in MW)	Utility
1	Hissar	2	660	M/s. HPGCL
2	Jhajjar	2	660	M/s. HPGCL
3	Talwandi Sabo	2	660	M/s. PSEB
4	Mundra, Kutch	2	660	M/s. Adani Power Ltd.
5	Meja IV, Uttar Pradesh	2	660	M/s. NTPC Joint Venture
6	Sipat-I, Bilaspur	3	660	M/s. NTPC Limited
7	New Nabinagar, Bihar	3	660	M/s. NTPC Joint venture
8	Krishnapatnam	3	800	M/s. APGENCO
9	Sholapur Thermal Power plant, Maharashtra	2	660	M/s. NTPC
10	Barh Super Thermal Power Station	3	660	M/s. NTPC Ltd.
11	Raghunathpur-II, West Bengal	2	660	M/s. DVC
12	Gidderbaha Station-I, Punjab	2	660	M/s. PSEB
13	Sahapur Thermal Power Company Limited	2	660	M/s. STPCL
14	Jewargi Power Company of Karnataka Limited	2	660	M/s. Power Company of Karnataka Company Ltd.

[131] Boben Anto, M.M. Hasan, undated. *Analysis of Supercritical technology in Indian Environment and Utilizing Indian coal*, at 113.

Proposed Supercritical Power Stations

No.	Name/Location of Thermal Power Station	No. of Units	Unit capacity (in MW)	Utility
1	Dhenknal, Orissa	2	660	M/s. Lanco Infratech Ltd.
2	Pussurar Region, Raigarh, Chhatisgarh	3	660	M/s. Infrastructure Leasing & Financial Services Ltd.
3	Chutru region of Jharkhand	3	660	M/s. Infrastructure Leasing & financial Services Ltd.
4	Chandil region of Jharkhand	3	660	M/s. Infrastructure Leasing & financial Services Ltd.
5	Bade Dumarpali, Raigarh, Chhatisgarh	2	660	M/s. Athena Chattisgarh Power Private Ltd.
6	Gondia, Maharashtra	3	660	M/s. Adani Power Maharashtra Private Ltd.
7	East Godavari, Kakinda	2	660	M/s. Spectrum Power Generation Ltd.
8	Sinnar, Nasik, Maharashtra	2	660	M/s. Fama Power Co. Ltd.
9	Nagapattinam, Tamil Nadu	2	660	M/s. PEL Power Ltd.
10	Nandgaon pet, Amravati, Maharashtra	4	660	M/s. Sophia Power Co. Ltd.
11	Tamnar Raigarh, Chhatisgarh	2	660	M/s. Opelina Finance and Investment Ltd.
12	Tamnar Raigarh, Chhatisgarh	2	660	M/s. Jindal Power Ltd.
13	Lathur, Maharashtra	2	660	M/s. Amravati Thermal Power Ltd.
14	Machillipatnam, Andhra Pradesh	2	660	M/s. Thermal Powertech Corporation (I) Ltd.
15	Gopuvanipalem, Krishna, Andhra Pradesh	3	660	M/s. Nagarjuna Construction Company Ltd.
16	Simar Thermal Power Plant, Junagarh, Gujarat	2	800	M/s. JSW Energy Ltd.
17	Salaboni Thermal Power Plant, Paschim Midnapore.	2	800	M/s. JSW Energy Ltd.
18	Manappad, Tuticorin, Tamil Nadu	2	660	M/s. Ind-Bharat Power (Madras) Ltd.
19	Mundra, Kutch, Gujarat	3	660	M/s. Adani Power Ltd.
20	Sompeta, Drikakulam, Andhra Pradesh	3	660	M/s. Nagarjuna Construction Company Ltd.
21	Central India Power, Phase-II, Maharashtra	1	668	M/s. Central India Power Company Private Ltd.
22	Tanda Expansion, Uttar Pradesh	2	660	M/s. NTPC Ltd.
23	Katwa, West Bengal	2	660	M/s. WBPDCL
24	Bakreshwar, Extension	1	660	M/s. WBPDCL

No.	Name/Location of Thermal Power Station	No. of Units	Unit capacity (in MW)	Utility
	Project			
25	Koradi Extension Project, Maharashtra	2	660	M/s. Mahagenco
26	East Coast, Andhra Pradesh	2	660	M/s. East Coast Energy
27	NSL Power, Tamil Nadu	2	660	M/s. NSL Power Private Limited
28	Marakanam, Tamil Nadu	4	800	M/s. NTPC Ltd.
29	Darlipali, Orissa	4	800	M/s. NTPC Ltd.
30	Lara, Chhatisgarh	5	800	M/s. NTPC Ltd.
31	Kudgi, Karnataka	3	660	M/s. NTPC Ltd. JV with M/s. PCKL