California Air Resources Board
1001 I Street
Sacramento, CA 95814
Via Email: ccworkshops@arb.ca.gov

Barbara Haya
PhD Candidate
Energy and Resources Group
University of California, Berkeley
Email: bhaya at berkeley.edu

May 26, 2009

Comments on Criteria for Compliance Offsets in a Cap-and-Trade Program

Dear California Air Resources Board offsets committee,

Thank you for the opportunities you are providing to engage in the design of California's offsetting program. This comment addresses two design questions: (1) criteria for ensuring that offset projects are additional, (2) the design of an international offsetting program

(1) Project-by-project additionality testing is inherently vulnerable to manipulation – standardized assessments and objective project-specific criteria should be used instead

At the international level, some have proposed addressing the large numbers of non-additional projects registering under the CDM with stronger additionality testing procedures. The analysis contained in the attachment to this comment suggests that project-specific additionality testing is inherently vulnerable to manipulation. In sum, due to the complexity and subjectivity involved in project development decisions, and the range of assumptions that go into the financial projections for proposed projects used for an "investment analysis," there exist no accurate predictors of whether an individual project would be built for most project types.

This suggests that CARB should only use objective and verifiable criteria to determine which projects have a high likelihood of being additional and are worthy of generating offset credits. CARB should avoid subjective project-by-project assessments of the likelihood that an individual project is additional, as is performed by the CDM. The difference between subjective testing and objective criteria can be described thus. Subjective additionality testing, such as used by the CDM, requires the developer of a project to show that their individual project would not have been built without the CDM. Proof is left up to each individual project developer. Alternatively, CARB could define objective criteria. If an individual project met those criteria, then it would be considered additional.

This latter approach requires assessing the proportion of additional to non-additional projects that would likely be included in an offset program based on different choices of criteria, performance benchmarks and project types. It also involves updating those assessments periodically. It will be important to explicitly recognize that any form of offsetting will allow in some proportion of non-additional projects and account for these non-additional credits, such as through conservative baselines or "discounting" the number of credits generated.

The inability to test project additionality coupled with other uncertainties associated with measuring emissions against a counterfactual scenario, a feature of any offsetting mechanism, means that strong regulatory oversight is needed in determining the project types, performance standards and criteria used, as well as ensuring that protocols are effectively followed. Determining the project types allowed and performance standards and criteria used in an offsetting program should be primarily the responsibility of the CA regulatory bodies. In contrast, the CDM structure, in which the private sector proposes methodologies for different project types, which are accepted if they are determined to be scientifically sound, leaves decision-making about eligible project types in the hands of the private sector and a technical review process. There may be project types that are not conducive to offsetting which could be supported in other ways.

Please see **Attachment I** for some of the detailed analysis on the subjectivity of the investment and barriers analysis that lead to these conclusions.

(2) If international offsets are included in CA's offsetting program, CA should run its own international offsetting program rather than apply a filter on existing CDM projects.

The majority of CDM projects are most likely non-additional for two reasons. As described in the section above and the associated attachment, additionality testing is inherently inaccurate, allowing for the registration of business-as-usual projects. The CDM treats additionality testing as if it were accurate, and so does not prevent project types like large hydropower from registering for which there is substantial business-as-usual development, and does not otherwise account for the proportion of non-additional projects registering. Further, the performance of a test that is inherently inaccurate and difficult imposes uncertainty and time to the CDM registration process, undermining the value of the CDM to the project developer when the project development decision is made, and therefore weakening the incentives created by the CDM in the promotion of low carbon projects that would otherwise not be built.

Simply putting a filter on existing CDM projects would not do much to lessen the uncertainties associated with CDM registration and credit generation, or strengthen the incentives provided by the CDM.

A California-run offsetting program, if designed well, is much more likely to have an influence on the target sectors. The effects of the program are more easily monitored. Running its own program means deciding on the sectors and types of projects that CA will support internationally, and running a targeted crediting program to influence those sectors, based on knowledge of the sectors and the influence the income from credits would likely have. Such a program can also work to address barriers (technological, informational, etc.) that could limit the effects of these additional revenues and by providing additional parallel assistance. These projects could be registered under the CDM, if California wishes to make its cap-and-trade program consistent with the international system.

Attachment I – A more detailed analysis describing why project-by-project additionality testing is inherently vulnerable to manipulation

This attachment includes a description of how the CDM additionality tool works, and analysis showing why such a test is inherently vulnerable to manipulation. This analysis is based on PhD research involving interview research in India during 2004 to 2008, and the review of project documents from fifty registered CDM projects – large hydropower and wind projects in India, China and Brazil most recently registered as of June 2008.

Introduction to additionality testing under the CDM

The *"Tool for the demonstration and assessment of additionality,"*[1] is the most common method used to prove the additionality of proposed CDM projects. At its heart of the "additionality tool" are two indicators of project additionality – the investment analysis and the barrier analysis. Developers can choose to use either analysis, or both in combination, to demonstrate the additionality of their proposed CDM project. In addition, all projects must undergo the common practice analysis.

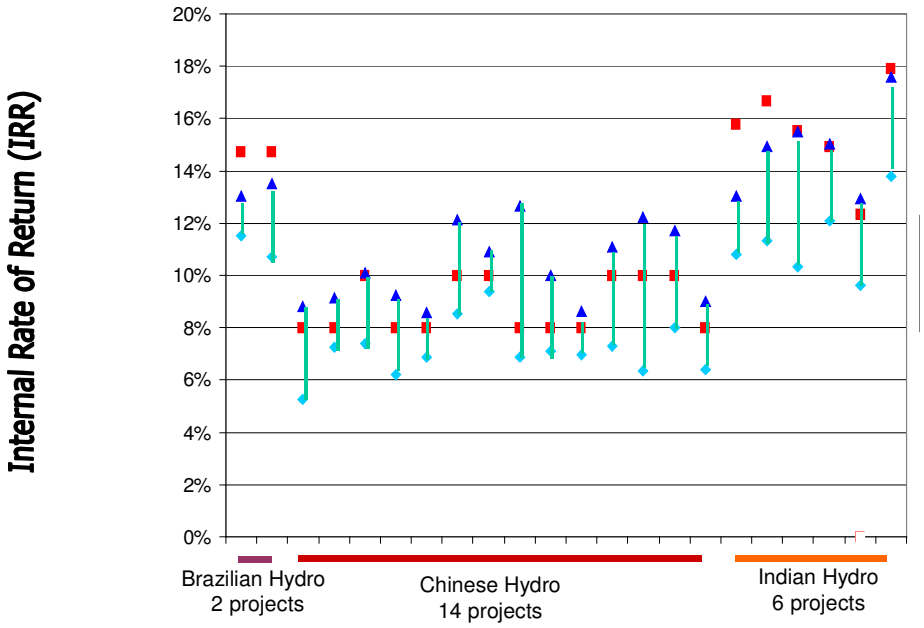
- Investment analysis: Carbon credit revenues improve the financially returns of a project, potentially making an unviable or marginally viable project viable. The investment analysis is used to show that the proposed CDM project is not sufficiently financially viable to be built without the extra revenues from carbon credit sales, using the following steps:
  - Definition of a viability benchmark. The developer defines a benchmark that should be an accurate indicator of whether the project would be built. Typical benchmarks include government-defined financial returns, most often measured as international rate of return (IRR), for the project type, the project developer's weighted average cost of capital (WACC), or the financial returns from another similar but more greenhouse gas intensive project.
  - Financial assessment of the proposed CDM project without carbon credit revenues.
  - Financial assessment of the proposed CDM project with carbon credit revenues. (This step is optional).
  - Sensitivity analysis. The most important assumptions that go into the financial assessment are varied within reasonable ranges to test how robust the investment analysis is. Projects with expected returns below the benchmark for most cases would most likely not be built without the CDM and are therefore considered additional.
- Barrier analysis: Some projects that are financially viable might face other prohibitive barriers, including lack of experience with the technology, uncertainty associated with building a project in a difficult location, and risk that tariffs might change or that utilities might not make payments as agreed. These risks can potentially be offset by the prospects of additional revenues from carbon credit sales. The barrier analysis involves describing and presenting evidence for the existence of a barrier that would prevent the proposed CDM project from going forward without the additional income from carbon credit sales, and then describing how an alternative to the project is not prevented by those barriers.

Critique of the investment analysis

The investment analysis is based on the premise that you can accurately predict if a project would be built based on one number – the difference between the expected returns from the proposed CDM project and the benchmark. If the returns are below the benchmark, it would not be built, above it, it would. Most of the 33 projects which I analyzed that use the investment analysis and calculate with- and without-carbon credit

[1] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf

IRRs show with- and without-carbon credit IRRs sitting on either side of the benchmark. The below figure illustrates this for the 22 hydro projects which I examined.



- IRR without carbon credits
- Benchmark chosen for each project
- IRR with carbon credits

In examining the investment analysis, it is important to keep in mind that the financial assessment is being performed on a proposed project in which many of the costs and revenues are future projections. The investment analysis is accurate to the extent that developers are unable to manipulate the analysis to get the desired result – a without-carbon credit result below the benchmark, and a with-carbon credit result above it. It is accurate to the extent that there is a benchmark that is a true indicator of the decision to go forward with a project and can be verified by an auditor. And it is accurate to the extent that the financial returns calculation for the proposed project involves objective values and calculation methods. To the extent that the financial assessment involves assumptions based on judgment and estimation, assessments can be manipulated to achieve the desired return values.

Five out of the six validators with whom I spoke expressed their experience that the investment analysis is manipulatable. There are many "knobs you can turn" to change the results of the financial analysis and show that a business-as-usual project is additional. Several suggested ways to lessen the manipulation, while saying that there is no way to prevent manipulation.

The above figure reveals that the investment analysis inaccurately predicted that projects would not be built in some cases. Of the 33 projects analyzed that use the investment analysis and include with-carbon credit financial returns, six projects have with-carbon credit financial returns less than the benchmark by more that a half percentage point, some by several percentage points. Four of these are hydropower projects, found in the above figure. All of these projects were built even though the investment analysis predicted that

they wouldn't be. This shows that the investment analysis was wrong for at least six out of 33 projects analyzed.

Another means for manipulating the benchmark analysis is in the choice of benchmark. Since it is possible to choose from among several benchmarks, such as a government defined benchmark or the WACC, the developer can choose the benchmark that is most useful for demonstrating the project is additional. The benchmarks used also do not incorporate project risk and the risk appetite of the particular developers building the proposed CDM project, both of which affect the actual benchmark used by the developer in their decision to build a project. The benchmark also does not including other immeasurable factors that affect project development decisions, such as a company's interest in working in a certain region.

Critique of the barrier analysis

The most common barriers cited in the CDM project applications which I reviewed are: Hydro in India: water flow uncertainty, difficult terrain, small private sector developer new to the power industry. Wind in India: regulatory uncertainty regarding the amount and timing of tariff payments to generators. Hydro in China: water flow uncertainty, electricity demand uncertainty during the flooding season, tariff uncertainty, increased investment cost due to new government rehabilitation policies. Hydro in Brazil: regulatory uncertainty due to power sector restructuring, macroeconomic crisis in the country making it difficult to access financing, public protest against the dam.

It is certainly feasible that any of these risks could be important enough to prevent the developer from going forward with the project without the ability to sell carbon credits. It is also completely feasible that such project risk would not prevent the project from being built. Certainly many projects have been developed with these barriers, but without the help of the CDM.

Typically the validator positively validates the project if there is documented evidence that (1) the stated barrier exists and (2) is significant. They judge if it is feasible that the barrier would have prevented the project from going forward, not that there is a high likelihood that it actually did. Validators prefer the investment analysis, because they view the barrier analysis as too subjective.

A detailed example might illustrate these points. One registered hydropower project in India (ref #903) was positively validated. One of the barriers listed was: challenges posed by the hilly terrain where the project is developed. The validation report notes that the validator asked the developer to "provide documentary evidence that these investment barriers are particular to this project activity and not general risks associated with all hydro projects in mountainous regions." The developer provided a geo-technical report depicting the poor nature of the terrain that might result in the caving in of the tunnel, and this report was accepted as evidence by the validator. It is certainly feasible that the risk of the tunnel collapsing could be important enough to prevent the developer from going forward with the project at its without-carbon credit returns. Or it could be a project risk which did not affect the decision. The validator does not seek to answer that question, for there is little evidence that could document the deliberations of the project developer. This example is meant to illustrate the inherent subjectivity of the barrier analysis.