

CLIMATE INVESTMENT FUNDS

CTF/TFC.12/7
October 8, 2013

Meeting of the CTF Trust Fund Committee
Washington D.C.
October 28, 2013

Agenda Item 8

COST-EFFECTIVENESS OF CTF PROJECTS

PROPOSED DECISION

The Trust Fund Committee, having reviewed document CTF/TFC/12/7, *Cost-Effectiveness of CTF Projects*, takes note of the overview of the application of the concept of cost-effectiveness in CTF-financed plans and activities provided by the CIF Administrative Unit and the MDBs, and agrees that going forward the following information will be requested:

- a) The calculation of CTF investment per ton of CO₂-equivalent reduction is a requirement for all CTF projects/programs when a proposal is submitted to the Trust Fund Committee for funding approval. It is not considered a threshold and does not constitute an eligibility criterion for approving CTF funding for projects/programs.
- b) A threshold for CTF eligibility may be established at the marginal cost of USD 200 per ton of CO₂-equivalent reduced. Since the technologies supported by the CTF are typically far below that threshold, it is suggested that instead of requiring every project/program to undertake marginal abatement cost analysis, only projects/programs for which CTF investment per ton of CO₂-equivalent reduced exceeds [\$200/ton] provide an estimate of marginal abatement cost as defined in Section II.
- c) When estimating CTF investment per ton of CO₂-equivalent reduced (or marginal abatement cost), methodology and assumptions should be presented explicitly and clearly, including project boundaries, baselines, lifetime of technology or investment, type of GHGs included, and emissions conversion factors. Indirect GHG reduction such as through replication, should be estimated separately and presented clearly. In addition to CTF investment per ton of CO₂-equivalent reduced, estimate on total project costs (CTF investment plus co-financing) per ton of CO₂-equivalent reduced should also be provided.
- d) In addition to the above, CTF proposals will provide an analysis, where applicable and feasible, of the expected reduction in the cost of the technology due to technological progress and scale effect at a global level, and/or through organizational learning and scale effects at the country level.
- e) The CIF Administrative Unit, in collaboration with the MDBs, will compile, update, and report on the estimates of CTF investment per ton of CO₂-equivalent reduction for all approved CTF projects as an annex in the semi-annual operational reports.
- f) The MDBs will report every two years, beginning in 2014, to the Trust Fund Committee on the current and planned work of each MDB in GHG analysis and the development and application of methodology for estimating GHG emissions reduction and their joint efforts to harmonize GHG estimation methodology among the MDBs.

I. INTRODUCTION

1. Cost-effectiveness is one of the investment criteria for CTF operations. According to the CTF operational guidelines (for both public and private sector operations), all project/program proposals are required to include an assessment of cost-effectiveness of the CTF investment in terms of “CTF investment per ton of CO₂-equivalent reduced”. Although CTF project proposals typically provide dollar per ton estimates at the time of submission to the Trust Fund Committee for funding approval, there is no uniform methodology for measuring cost-effectiveness, and it is not clear how cost-effectiveness has been used, or could be used, as a CTF investment criterion.

2. Recently a member of the Trust Fund Committee member requested a discussion on cost-effectiveness of CTF projects. This discussion paper has been prepared by the CIF Administrative Unit in collaboration with the MDBs in response to that request. The purpose of this paper is to share information and perspectives of the CIF Administrative Unit and the MDBs on their understanding of cost-effectiveness and to provide a few thoughts on the way forward so as to facilitate the discussion at the Trust Fund Committee meeting.

II. DEFINITIONS OF COST-EFFECTIVENESS

3. Cost-effectiveness in general refers to the benefits achieved for a given level of expenditure. In the CTF context, cost-effectiveness has been defined in two ways.

4. First, according to the CTF investment criteria,¹ each project/program is required to provide information on the estimate of CTF investment per ton of CO₂-equivalent reduced. This calculation is done by dividing the total amount of CTF funds requested for the project/program over the total amount of CO₂-equivalent estimated to be reduced or avoided over the lifetime of the investment. Since CTF funds are typically part of a larger investment in a project, such definition of cost-effectiveness takes the leveraging effect of the CTF into account. By this definition, other things being equal, a CTF project that leverages more co-financing (from the CTF point of view) is more cost-effective than a similar CTF project with less co-financing.

5. Second, a threshold of cost-effectiveness was established for CTF projects/programs in the CTF investment criteria with a view to maximizing the impact of the CTF’s limited resources. This threshold was set at US\$200/ton CO₂-equivalent. It should be noted, however, this threshold is defined as the marginal abatement cost so that “CTF co-financing will ordinarily not be available for investments in which the marginal cost of reducing a ton of CO₂-equivalent exceeds US\$200....”² In the context of CTF investment criteria, this threshold appeared to have been introduced to guide the type of technologies for support by the CTF so that CTF investments would avoid pre-commercial technologies and focus on deployment of commercially available technologies.³

¹ *CTF Investment Criteria for Public Sector Operations*, February 9, 2009. The cost-effectiveness investment criterion also applies to the CTF private sector operations.

² See footnote 1.

³ According to the *CTF Investment Criteria for Public Sector Operations*, “The CTF will not support technologies that are still in the research stage, but should be focused on deployment which may include commercial demonstration of new low-carbon technologies. Priority will be given to proposals for commercially available, significant mitigation potential technologies. Lower priority will be awarded to projects that are at the technically viable stage, but with low mitigation potential.”

III. COST-EFFECTIVENESS CALCULATIONS OF CTF PROJECTS

6. In practice, CTF proposals at the time of submission to the Trust Fund Committee for funding approval typically provide an estimate of cost-effectiveness as tons of CO₂-equivalent reduced per dollar of CTF investment. Some proposals also provide an estimate of tons of CO₂-equivalent reduced per dollar of total investment (which includes CTF funds plus co-financing). Among the 36 CTF projects approved by the Trust Fund Committee and reported in May 2013 semi-annual operational report, preliminary estimates suggest that the cost-effectiveness of CTF projects averages about CTF \$4/ton CO₂-equivalent, ranging from less than CTF \$1 to CTF \$40 per ton of CO₂-equivalent reduced.

7. The available cost-effectiveness calculations of CTF projects/programs have been more or less in line with the first definition outlined in Section II. These calculations could provide useful information on cost-effectiveness of CTF investments; however, comparing such calculations among projects/programs, especially those in different sectors or using different technologies or financial instruments, may not provide useful information for making funding decisions (see Section IV below).

8. At the project or program level, CTF proposals typically undergo economic analysis, including cost-benefit analysis, but seldom provide calculations on the marginal abatement cost in line with the second definition of cost-effectiveness discussed in Section II. However, it appears that Trust Fund Committee members sometimes apply the US\$200/ton CO₂-equivalent threshold to assess the measurement of cost-effectiveness under the first definition (CTF investment per ton of CO₂-equivalent reduced). This may lead to confusion between the two definitions of cost-effectiveness.

IV. ADDITIONAL CHALLENGES IN MEASURING/COMPARING COST-EFFECTIVENESS

9. There are other inherent challenges in measuring and comparing cost-effectiveness among CTF projects as defined as CTF investment per ton of CO₂-equivalent reduced. The wide range of dollar per ton estimates can be attributed to a number of factors: (a) technologies deployed, (b) intervention strategies, (c) level of co-financing, and (d) methods used to estimate GHG emissions reduction.

10. **Technologies deployed.** CTF supports a wide range of technologies in renewable energy, energy efficiency, and sustainable urban transport sectors. It is difficult to compare dollar per ton cost-effectiveness between different sectors and even within the same sector. For example, wind or geothermal energy technologies are typically more mature and less costly than concentrated solar power (CSP) technologies, thus more “cost-effective”. It is not clear how such information would be useful as an investment criterion in determining which technology or project to support or prioritize.

11. **Intervention strategies.** The financial instruments that have been deployed by the CTF projects vary from grants to loans with different terms and tenors, from loans to guarantees, and from direct investments to the use of financial intermediaries. Comparing cost-effectiveness of

projects using different financial instruments or funds with different concessionality may also lead to misleading results and conclusions regarding cost-effectiveness.

12. **Level of co-financing.** The leveraging or co-financing ratio of CTF projects vary a great deal from project to project. For example, among the 36 approved projects presented in the May 2013 semi-annual operational report, the average co-financing ratio is 1 dollar CTF investment to 8 dollars co-financing, but the ratio ranges from less 1:1 to more than 1:30. Regardless of the source of financing, assuming that both CTF finance and the co-financing it leverages aim to achieve the same project objective, a project with high co-financing ratio would be more cost-effective (by definition) than a similar project with low co-financing ratio.

13. **Methods to estimate GHG emissions reduction.** Currently there is no uniform methodology among the MDBs to estimate greenhouse gas (GHG) emissions reduction. Some MDBs have attempted to develop standard methods for calculating GHG emissions sector by sector. Some MDBs, along with a number of bilateral and multilateral agencies, have also attempted to harmonize the methods they use to calculate GHG emissions reduction. However, much of the harmonization efforts are still work in progress. At the request of the CTF Trust Fund Committee, the CIF Administrative Unit and the MDBs have developed simple guidelines for monitoring and reporting results on GHG emissions reduction, without getting into detailed methodological issues or attempting to streamline methods used by the MDBs.

V. COST-EFFECTIVENESS AND OTHER INVESTMENT CRITERIA

14. CTF investment criteria for public sector operations consist of the following:⁴

- a) potential for GHG emissions savings
- b) cost-effectiveness
- c) demonstration potential at scale
- d) development impact
- e) implementation potential
- f) additional costs and risk premium

15. When the CTF was established, these investment criteria were intended to be used “to assess and prioritize the proposed pipeline of programs and projects, with a view to maximizing the impact of CTF resources.”⁵ Cost-effectiveness is one of the six investment criteria, and the

⁴ See footnote 1. In addition to these investment criteria, the private sector operations have the following additional investment criteria: financial sustainability, effective utilization of concessional finance, mitigation of market distortions, and project risks (*CTF Private Sector Operations Guidelines*, revised document, October 24, 2012).

⁵ See footnote 1. It was also suggested that “the CTF will develop a common database where feasible to support the decision-making process using these investment criteria.”

objectives of the CTF are not just about supporting least-cost technologies that would simply maximize GHG emissions reduction. Other investment criteria outlined above are also important, but there are often trade-offs among different investment criteria, e.g., between cost-effectiveness and potential for GHG emissions savings, demonstration at scale, or development impact. Consequently, CTF may choose to support more expensive technologies, such as CSP, which may be less cost-effective than some alternatives but which have the potential to demonstrate at scale and save significant amount of GHGs while generating other economic and social benefits.

16. Furthermore, prioritization of projects/programs at the country level is done when the CTF investment plan is developed – a process that is led by the recipient countries with the support of the MDBs. Each recipient country and the participating MDBs may have their own strategic or practical considerations in determining which projects/programs to prioritize for CTF funding, but only a few countries applied marginal abatement cost analysis explicitly in the prioritization exercise. Once an investment plan is endorsed by the Trust Fund Committee, the projects and programs under the endorsed investment plan are allowed in the pipeline. There is, therefore, little scope in applying marginal abatement cost analysis as a tool to prioritize the pipeline of projects/programs. In the event that new countries are allowed to develop investment plans for consideration by the CTF, the Trust Fund Committee may consider requiring marginal abatement cost analysis as a prioritization tool to explain how and why alternative activities have been considered but are not prioritized for CTF support.

17. In practice, another measure of cost-effectiveness (in CTF investment per ton of CO₂-equivalent reduced) and other investment criteria are addressed at the project/program level rather than at the investment plan or pipeline level. Each project/program proposal provides a section explaining how the project/program meets all the relevant investment criteria. Given the current state of affairs with the CTF, it seems practical and reasonable to continue the current practice of addressing the investment criteria at the individual project/program level.

VI. PROPOSED WAY FORWARD

18. Given the many challenges in measuring and comparing cost-effectiveness of CTF projects, the following steps are proposed to improve the reporting on cost-effectiveness of CTF investments.

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- d) In addition to the above, CTF proposals will provide an analysis, where applicable and feasible, of the expected reduction in the cost of the technology due to technological progress and scale effect at a global level, and/or through organizational learning and scale effects at the country level.⁶
- e) The CIF Administrative Unit, in collaboration with the MDBs, will compile, update, and report on the estimates of CTF investment per ton of CO₂-equivalent reduction for all approved CTF projects as an annex in the semi-annual operational reports.⁷
- f) The MDBs will report every two years, beginning in 2014, to the Trust Fund Committee on the current and planned work of each MDB in GHG analysis and the development and application of methodology for estimating GHG emissions reduction and their joint efforts to harmonize GHG estimation methodology among the MDBs.

⁶ This is stipulated in the CTF investment criteria; see footnote 1.

⁷ The CTF semi-annual operational report started providing these estimates in May 2013.