

TECHNOLOGY BASED CDM: A CONCEPTUAL FRAMEWORK

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1. RATIONALE

Additionality test is the most important measure to ensure the environmental integrity of CDM projects under the current regime. This procedure could in some cases increase greatly the transaction cost of CDM project development but in the reality has not served very well the purpose of establishing it. Free riding is a serious problem in the current CDM market.

Projects which face real barriers and have real additional emission reduction benefits, however, in many cases are not attractive to investors in the carbon market, for mainly uncertainty reason. Uncertainties come from two major aspects: 1) whether or not the project will be eligible under CDM? 2) how many emission reductions will the project achieve?

A reasonable balance need to be struck between the issues of environmental integrity and certainty (i.e. project attraction), to ensure real emission reduction benefits of CDM projects and a booming CDM market. Technology based CDM could address well these two issues: 1) give a clear signal to the project owners on the eligibility of their projects under the CDM and thus create certainty; 2) establishing a sound baseline for relevant technologies could effectively eliminate the risk of free riding.

2. SOME KEY CONSIDERATIONS

2.1 Technologies to be covered

Generally speaking, all technologies that can generate emission reduction benefits, including all of the technologies already covered by the current CDM scheme, could be included under this mechanism. Considering cost-effectiveness, it may be more practical to include only technologies that have great emission reduction potentials. This is actually a judgment process and is closely linked with the cost of establishing, verifying and reviewing the baseline for one specific technology. Different countries could have different choices on the coverage of technologies and different emission baselines for the same technology. However, for each technology involved, relevant countries should justify their choice and this is to be reviewed by the international CDM governing body, as the current CDM EB. The technology list should be dynamic and updated periodically.

2.2 Coverage of projects

Regardless of which technology is to be covered, two options exist on the coverage of projects, i.e. covering only new projects or both new and existing projects. Covering only new projects could eliminate possible free riding of existing projects, however may discourage emission reduction efforts, including for example retrofit, in existing projects. If all projects are to be covered, however, the issue of free riding needs to be addressed carefully.

A reasonable solution could be that: 1) all projects will be covered; however, 2) different emission baselines should be developed for existing and new projects using

the same technology and located in the same region/country, i.e. lower baselines should be developed for existing projects to encourage retrofit activities.

2.3 Baseline determination

Developing appropriate emission baselines is very important to the prevention of free riding risk. To do so, it is necessary to review the emissions performance of relevant sectors in which the technologies are used. There are different options to determine the baselines, for example: 1) 20% better than the average unit emissions in relevant regions/countries/districts; 2) average unit emissions in the past 3 years in relevant regions/countries/districts; 3) average unit emissions of the most recent 5 projects in relevant regions/countries/districts; 4) unit emissions of relevant technologies that are most economically attractive, etc. Under this mechanism, it is possible that different technologies utilized in the same sector and with the same types of output could have quite different baselines. For example, renewable power technologies may use the average emissions of the power sector as the emissions baseline, while very high efficiency coal-fired power technologies may use the emissions of other coal-fired power technologies as their baselines.

Different countries may have quite different characteristics, so it is not adequate to define clearly the coverage of baselines, for instance international, regional, and national or district. However, it seems not feasible to determine international baselines that could be applied throughout the world. As for whether regional, national or district baselines should be developed, different countries may have different choices which should be justified by the countries and approved by the governing body of the mechanism.

Each baseline approved shall be reviewed periodically and updated when necessary, to reflect the associated changes, for example cost, technical performance, application, etc. Accordingly, some technologies that have been eligible could no longer be eligible under this mechanism after certain period of time and the eligible technology list would be updated.

Baseline determination under this mechanism needs in some cases detailed information about relevant industries and/or technologies. This would need the active participation of the industries.

2.4 Payment

Once the baseline has been determined, it will be clear for the project developers on whether their projects would be eligible under the mechanism and how many emission reduction benefits could be generated. With this certainty, payment for the emission reductions to be achieved could be made at different stages, part before the operation of the project and part after the generation of the emission reductions. Specific percentages of payment at different stages could differ case by case, while the percentage of payment before project operation under this mechanism could be significantly larger than that in the current situation, with the purpose of promoting the early operation of the project.

2.5 Management and Institutions

To make this mechanism operational, necessary institutions need to be set up for

management purpose. The management structure could be very similar to the current one: an international governing body (including any supporting technical group), national authorities, and independent entities. National authorities should propose technologies to be included under this mechanism and corresponding emission baselines with specific justifications; the proposals would be assessed and approved by the governing body; the independent entities would assess and ensure the correct calculation of emission reductions. National authorities would also be responsible for the update of list of eligible technologies and the emission baselines.

2.6 Ensure smooth links to current CDM

Technology based CDM could be well linked with the current CDM. For example, 1) the current institutional arrangement could be well maintained and utilized; 2) the project cycle under this mechanism could be the same as the current CDM project cycle, with the exception that the baseline determination process is greatly simplified and the additionality test is omitted. It is possible that for a certain period of time, this mechanism and the current CDM could co-exist.

3. COMPARISONS WITH CURRENT CDM

3.1 Environmental effectiveness

Compared with the current CDM, the risks of free riding and exaggeration of emission baselines and thus emission reductions could be greatly eliminated through the carefully selection of eligible technologies, careful determination of relevant emission baselines, and the strong participation of the host country governments and relevant industries. Under the current CDM, it is rather difficult to verify project-specific information, especially financial information because of the access difficulty of outsiders, and to verify even information about relevant sectors because of the access difficulties of both project developers and the validators. The participation of the host country governments and the industries could help to overcome this possible barrier.

Furthermore, before developing a project, the project developers could know in advance the eligibility of their projects under this mechanism and the rough amount of emission reductions to be achieved by their projects, and this could thus encourage the realization of emission reduction potentials in relevant industries.

3.2 Data requirements and availability

Compared with the current CDM, this mechanism may require more data about relevant industries and technologies. However, through the participation of the host country governments and the industries, this should not be a severe problem. For project developers, the requirement for data will be greatly reduced and the data will be mainly about the general project-specific technical information. Such data could be rather easily accessed and verified by the validators.

3.3 Costs of establishing and implementing the technology based CDM

Generally speaking, the overall cost of establishing and implementing this mechanism will be much lower than that for the current CDM. However, the cost allocation could be rather different. Under the current CDM, the transaction costs of developing CDM project are mainly born by project developers. Under this mechanism, the transaction

costs are mainly born by the host country governments and the industries. Under the current CDM, the transaction costs happen mainly in the project developing process, while under this mechanism, the cost mainly before the period when a project could be developed. Since the transaction costs will be mainly born by the host country governments and the industries, it is possible that some governments may choose not to propose emission baselines for certainly technologies that they think may have limited emission reduction potentials. For this reason, it may be necessary to keep the possibility of proposing baselines by project developers.

3.4 Conclusions

Compared with the current CDM, project developers will bear less risks and less cost, while the environmental integrity will not be sacrificed. Realization of real emission reductions is thus encouraged.