



Annex 5
CONCEPT NOTE
ON DATABASE ON THE COST AND EFFICIENCY OF TECHNOLOGIES
(Version 01.0)

I. Background

1. The use of standardized baselines can potentially reduce transaction costs, enhance transparency, objectivity and predictability, facilitate access to the clean development mechanism (CDM), particularly with regard to underrepresented project types and regions, and scale up the abatement of greenhouse gas (GHG) emissions, while ensuring environmental integrity. At the sixth meeting of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), Parties agreed to decision 3/CMP.6 on the implementation of standardized baselines under the CDM.¹
2. The CMP 6 decided that Parties, project participants, as well as international industry organizations or admitted observer organizations through the host country's designated national authority, may submit proposals for standardized baselines applicable to new or existing methodologies, for consideration by the CDM Executive Board (hereinafter referred to as the Board).
3. CMP 6 also requested the Board to develop standardized baselines, as appropriate, in consultation with relevant designated national authorities (DNAs), prioritizing methodologies that are applicable to least developed countries (LDCs), small island developing States (SIDS), Parties with 10 or fewer registered CDM project activities as of 31 December 2010 and underrepresented project activity types or regions, inter alia, for energy generation in isolate systems, transport and agriculture.
4. In response to the request from the CMP at its sixth session, the Board developed the guidelines on establishment of sector specific standardized baselines (EB62, Annex 8), which was further revised by the Board (EB65, Annex 23). The Board further developed the work programme for implementation of standardized baselines (EB65, annex 22). The work programme contains the proposed work of collection of data on the cost of technologies. This proposed work is also the part of CDM management plan adopted by the Board for 2012 (EB66, Annex 2).

II. Purpose of database on cost and efficiency of technologies

5. For development of standardized baselines, using the guidelines on sector specific standardized baselines it is required to rank the technologies in the order of their GHG intensity. For this, it is essential that the developers of standardized baselines (e.g. project participants, DNAs etc.) know the efficiency of the technologies in terms of specific fuel consumption, specific electricity consumption and/or specific raw material consumption. The purpose of this database is to provide the information on the efficiency aspects of the technologies used in a sector to produce outputs, in order to help the developers of standardized baselines.
6. Additionality under standardized baselines is demonstrated by defining a positive list of technologies, which have performance above the predefined performance (additionality) threshold and are financially less attractive than the technologies that have performance below the threshold. This provision makes the demonstration of additionality more stringent than the use of only "performance or penetration benchmark". The database on the cost and efficiency of technologies will be used by DNAs or project

¹ <<http://unfccc.int/resource/docs/2010/cmp6/eng/12a02.pdf#page=2>>.



participants developing standardized baselines to develop the positive list of technologies. The cost of technologies will be used to calculate levelized cost (annual cost per unit output) of the output generated by the plant. Based on the levelized cost of each technology, it will be assessed whether all the technologies beyond additionality threshold have higher levelized cost than those below additionality threshold.

III. Database on cost and efficiency of technologies

7. The database will be populated with the cost and efficiency of technologies in different sectors. The database will be utilized through software that supports to calculate the levelized cost of the output. The software and database will be available on UNFCCC CDM website, which will have user-friendly interfaces.

8. Following are the key concepts of the database:

- (a) **Technologies:** The technologies are defined broadly as the entire plant comprising of the full set of production equipment and utilities to produce the output under consideration;
- (b) **Efficiency of technologies:** The efficiency of technology will be expressed in terms of specific energy and/or raw material consumption. The database will contain the data on efficiency of technologies i.e. design values of electricity and/or fuel and raw material consumed by the technology to produce the unit output, based on manufacturer's specifications. The database will also provide the information on the types of fuel and raw materials that can be used by the technology, if appropriate;
- (c) **Cost of technologies:** Cost of technologies will be calculated by the software as levelized cost (cost/unit output) by combining the investment cost per unit output and operational cost per unit output for each technology used in the sector for which standardized baselines are developed. The investment cost and operational cost are defined as below:
 - (i) *Investment cost:* The database will contain information on investment costs (ex-works cost plus installation and commissioning) of technologies based data from suppliers as well as lifetime of technologies in years. The software will calculate the output generated by the technology over the entire lifetime using its rated capacity and most optimum standard plant load factor, and then divide the total investment cost by the total output generated over the lifetime, to generate "investment cost per unit output";
 - (ii) *Operational Cost:* The operational cost will include the cost of electricity, fuels and raw materials, but not the cost of manpower and overheads. The average unit cost of the electricity, fuel and raw materials in the country should be supplied by the developer of standardized baseline (e.g. project participants or DNA) to the software, to generate "operational cost per unit output".

9. Following are the key points related to the development of the database and software:

- (a) **Data sources:** The database will be developed, based on the data collected from various sources including manufacturers or supplier of the technologies, preferably those who are internationally or nationally recognized;
- (b) **Global sectors and country-specific sectors:** It is assumed that globally applicable data will be available for all sectors. However, country-specific data will be collected where the



criteria for selection of technologies varies from country to country or no globally applicable data is available;

- (c) **Capacity:** Cost and efficiency of technologies are dependent on capacity of plants. The data will be segregated based on pre-determined categories of capacity of the plants (e.g. sector-specific standardized categories of the capacity). The software will consider the categories of the capacity to calculate the levelized cost or to rank efficiency of technologies;
- (d) **Aggregation of data:** There are many sectors for which different key equipment are usually not supplied by the one manufacturer, but by different manufacturers. For such sectors, the efficiency and cost of key equipment will be collected separately. The software for such sector will require users to input the information on different technologies, in order to be able to generate the aggregated efficiency of the facility and investment cost required in the facility to produce the output.
- (e) **Relative values:** The database will be used to rank the technologies by comparing their standard efficiencies and define the positive list by comparing their levelized costs. Therefore, the database will not aim to collect highly accurate values as long as approximate values suffice for comparison. This means that the data on key equipment representing major investment and operational cost should help to meet the purpose;
- (f) **Efficient data collection:** The key components of cost (considering their weights) will be identified and considered during data collection.
- (g) **Transparency and confidentiality:** The process to be followed will ensure the transparency of process to collect and maintain the data. Key relevant information will be published. However, the database will not specify data providers and any other confidential information requested by the data providers;
- (h) **Data quality:** Before the data collection, plan/procedures will be developed to ensure the quality of the data. All necessary measures will be applied to maintain the quality of the collected data to identify differences between the deployment in different countries and sectors. The level of uncertainties and the range of inaccuracy will be assessed, if applicable.

10. The database/software will take into account the factors that potentially influence cost and efficiency of technologies, such as capacity, manufacturers, regions and performance (e.g., plant load factor). Cost and efficiency of technologies are, therefore, displayed with a range. A consistent approach will be applied to select the representative values from the ranges (e.g. average, lowest/highest value).

11. Following are the deliverables:

- (a) **Web-based database:** The database will store the data on efficiency, investment cost, lifetime and nominal capacity of technologies. The database will be updated at the same frequency, at which the standardized baseline for the sector are to be updated;
- (b) **Web-based software:** User-friendly interface will be developed to allow users to select a sector and a country and provide input data related to operational cost. Using the data in the database, the software will calculate efficiency of technologies as well as levelized costs;



IV. Steps to develop database on cost and efficiency of technologies

12. Deliverables stated in paragraph 11 will be developed through the following steps:

(a) **Prioritize the sectors for the database to be first developed**

The prioritized sectors for which database will be generated initially are: (i) Cement; (ii) Steel making using arc furnace route; (iii) Cook stoves; (iv) Renewable energy. The first three sectors are the same priority sectors as those for the work on development of approaches to determine the thresholds for baseline and additionality of standardized baselines. The last sector (renewable energy) is identified due to the data availability and its potential contributions to the scaling-up of the CDM projects. Prioritizing these sectors will produce synergy and facilitate the implementation of standardized baselines.

(b) **Identify data sources through international organizations and international/national industry associations**

Most of the data on technologies will be collected from manufacturers/ suppliers of technologies. In order to identify major and valid data sources (manufacturers/ suppliers) and technologies in the sectors and facilitate data collection, the secretariat will develop institutional collaborations with international organizations and international/national industry associations. This work is under progress.

(c) **Prepare the list of technologies in each selected sector, identify and contact the key reputable manufacturers of technologies, publications on technologies and turn key contractors/ project consultants**

The technologies and key manufacturers of technologies for each selected sector will be listed, with the help of international organizations and industry associations. This list can also be developed using varied sources of information. The manufacturers will be contacted for providing the necessary information under the promise of confidentiality. The secretariat may organize workshops with manufacturers or participate in international conferences to collect experts' inputs. The key international/ national publications for the sector technology are required to be subscribed.

(d) **Collect data on cost and efficiency of technologies**

The turnkey contractors and project consultants will be contacted to collect the necessary information. Some systematically collected datasets from recognized institutions can be explored.

(e) **Design the database and develop the algorithm for the software**

The secretariat will design the framework of the database and develop the algorithm for the software. The secretariat will explore the existing formats and standards adopted by existing similar database.

(f) **Operationalize the database**

The web-based database and user-friendly software will be operationalized by the end of 2013.



V. Further guidance required from the board

13. Guidance required from the board is as following:
- (a) The Board may provide further guidance on the list of priority of sectors proposed for initial work if the rationale provided for them is not agreeable.
 - (b) Two approaches may be proposed from process point of view: (i) a sector-by-sector approach that proposes to initiate the work with focus on one sector and only when it is accomplished, the work on another sector starts; and (ii) an approach that requires to start the work with all the priority sectors. The approaches need to be weighed against the criteria such as learning from experience, overall efficiency of work that will be achieved and resources that are required to be allocated.
 - (c) The work is expected to require significant resources in 2013 when the database and software will be designed and implemented. In order to prepare for MAP 2013 as well as modify the current work plan accordingly, the secretariat looks forward for the guidance from the board on the resource allocation.

History of the document

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