

**DEFINING BASELINES
FOR
CDM ENERGY SECTOR PROJECTS**

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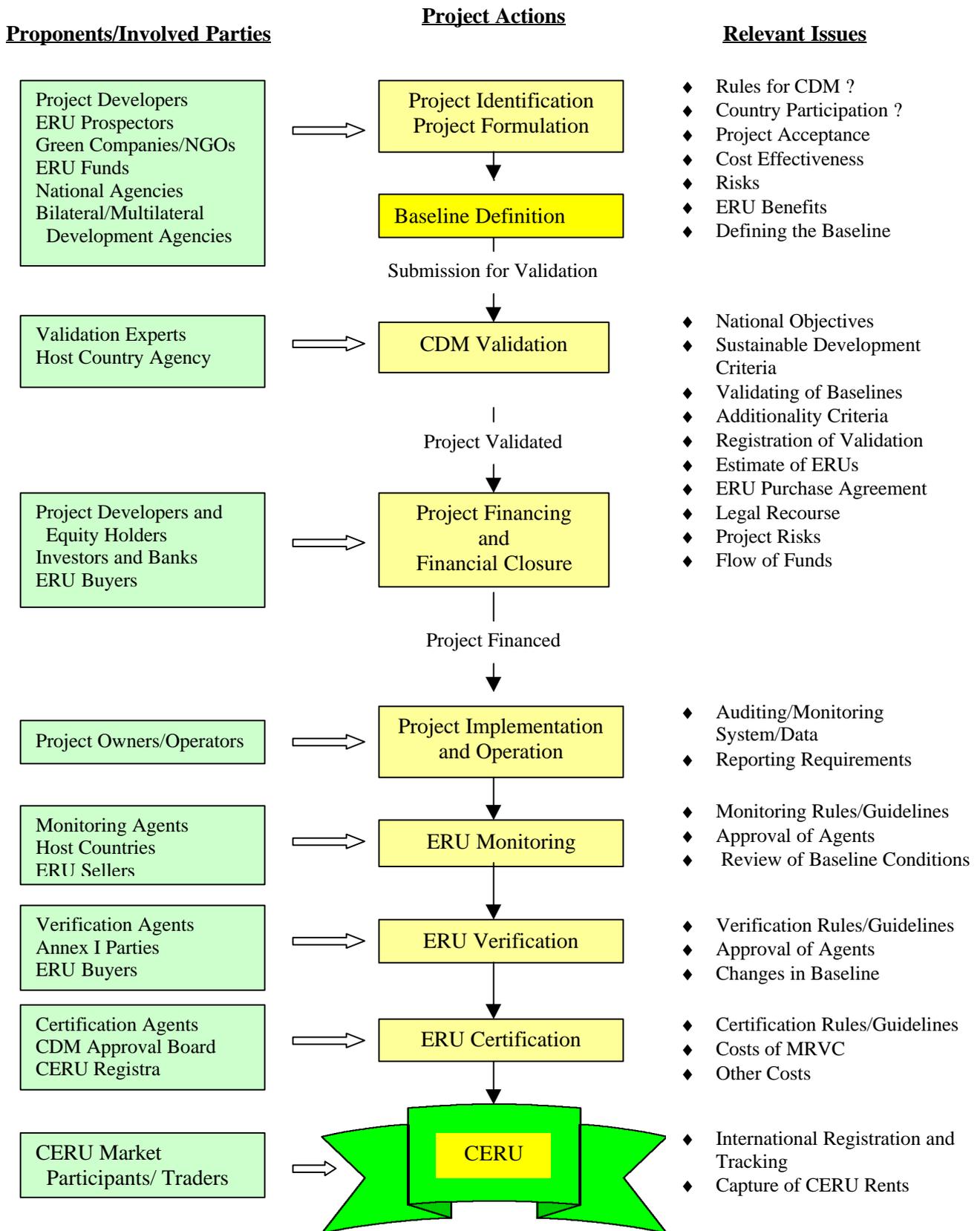
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OVERVIEW OF PRESENTATION

- Steps in the CDM Project Cycle.
- Approach, options and steps for defining energy project baselines.
- Issues relating to energy project baselines.
- Validation and verification of energy project baselines.
- Conclusions and recommendations.

Steps in the CDM Project Development Cycle



APPROACH FOR DEFINING ENERGY PROJECT BASELINES

- **Who has the responsibility for defining the baseline?**
 - The ultimate responsibility must be with the host country.
 - The actual responsibility will fall to the project developer / investor.
 - Validation and certification will discourage inflating of baselines.
- **What factors should be considered in defining the baseline?**
 - Current trends in technology and practice.
 - Financial optimums.
 - Economic optimums.
 - Projections / simulations of future expectations.
- **When should the baseline be defined?**
 - In association with the definition of the CDM project.
 - In advance to attract CDM investments.

OPTIONS FOR ENERGY PROJECT BASELINES

- National Baselines – not very practical for determining the additionality of specific energy projects. More useful for assessing the additionality of macro policy and institutional measures.
- Sectoral Baselines – also not practical for assessing the additionality of specific energy projects. Useful for assessing the additionality of sectoral policy and institutional measures.
- Sub-sectoral Baselines – potentially useful for establishing additionality benchmarks that can be periodically updated and used in lieu of more specific baselines.
- Technology Baselines – useful in establishing the additionality of technology efficiency improvements.
- Project Baselines – necessary for defining the additionality of specific CDM projects.

STEPS FOR DEFINING ENERGY PROJECT BASELINES

1. Clearly define the proposed CDM project and identify the “normal” economic benefits / outputs of the project (e.g., kWh, lumens, tons of steam, passenger kilometers, etc.). Define these benefits as: \mathbf{B}_{cdm}
2. Define the baseline project that will result in similar economic benefits /outputs. Define these benefits as: \mathbf{B}_b
3. Ensure that the “normal” economic benefits / outputs of both the CDM project and Baseline project are equal so that we are not comparing “apples against oranges”. $\mathbf{B}_{\text{cdm}} = \mathbf{B}_b$

(Steps for Defining Energy Project Baselines - continued)

4. Financial Additionality - define the financial present value (FPV) of all capital and O&M costs for the CDM project and the baseline project. Determine if the financial present value of the costs for the CDM project is greater than the present value of the costs for the baseline project. That is: $FPV_{\text{cdm}} > FPV_{\text{b}}$. If not, the CDM project is not financially additional to the baseline and should not be considered for CDM.

5. Economic Additionality - define the economic present value (EPV) of all capital and O&M costs for the CDM project and the baseline project. Determine if the economic present value of the costs for the CDM project is greater than the present value of the costs for the baseline project. That is: $EPV_{\text{cdm}} > EPV_{\text{b}}$. If not, the CDM project is not economically additional to the baseline. However, the project may be considered by the CDM to help remove barriers or change national policies.

(Steps for Defining Energy Project Baselines - continued)

6. **GHG Additionality** – define the net greenhouse gas (GHG) emissions for the CDM and the baseline project. Determine if the GHG emissions for the CDM project are less than the GHG emissions for the baseline project. That is: $\mathbf{GHG}_{\text{cdm}} < \mathbf{GHG}_{\text{b}}$. If not, the CDM project is not environmentally additional to the baseline project.

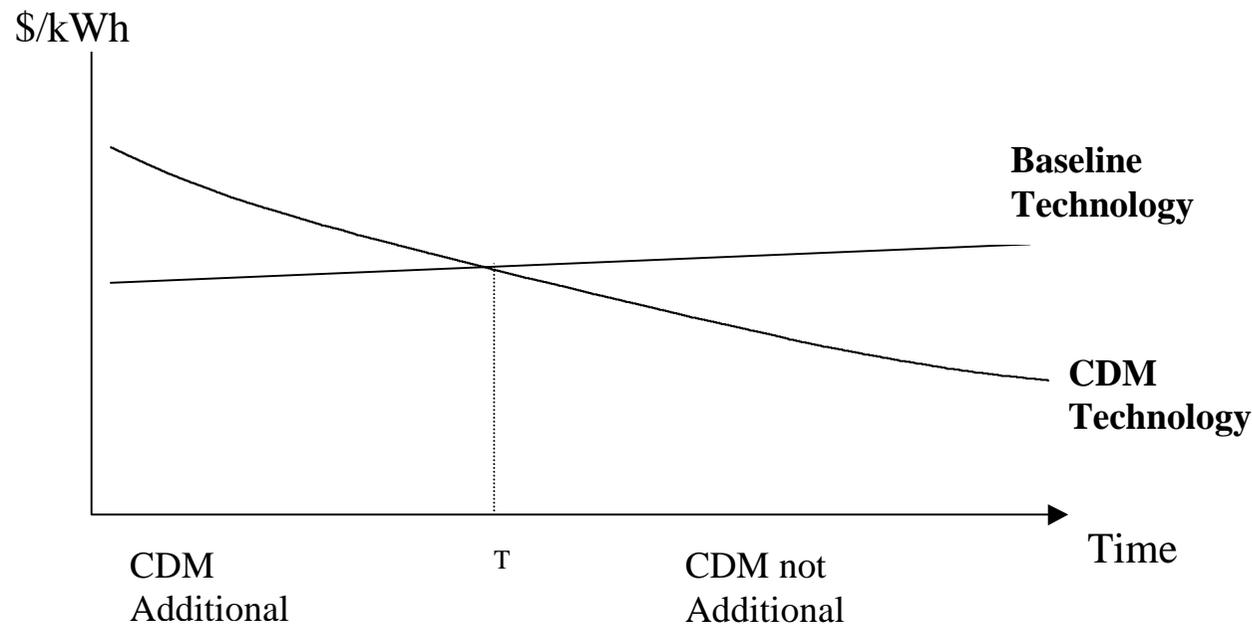
7. **ERUs of the CDM Project** – the emission reduction units (ERUs) of the CDM project can simply be represented as:
 $\mathbf{ERU}_{\text{cdm}} = \mathbf{GHG}_{\text{b}} - \mathbf{GHG}_{\text{cdm}}$.

ISSUES RELATING TO ENERGY PROJECT BASELINES

- **Measurability of baseline GHG emissions** – the baseline project is counterfactual and does not exist if the CDM project is selected. Thus the emission profile of the baseline project is hypothetical. However, the emission profile of similar baseline projects may be substituted.
- **Changes in expected baseline project emissions** may occur due to political, economic, technical and institutional uncertainties. Dealing with these uncertainties in the baseline definition phase is not practical. They should be evaluated during the verification processes for emissions from CDM projects.
- **Validity period for baseline emissions** – the period for which baseline emissions are valid should be equivalent to the period for which the baseline project is in fact replaced by the CDM project. However, it should not exceed the economic life of the baseline project.

(Issues Relating to Energy Project Baselines – continued)

- **Static versus dynamic baselines** – the problem of fixed baselines can be addressed by considering periodic adjustments to the validity of a baseline based on economic criteria. The figure below illustrates an example where the CDM option becomes less costly in time “T” than the baseline option and is therefore no longer financially additional.



VALIDATION AND VERIFICATION OF PROJECT BASELINES

- Validation of project baselines should be the responsibility of host country national CDM authorities and should be part of the overall process of validating a CDM project.
- The validation process should confirm the estimated ERU potential of a proposed CDM project.
- Verification of project baselines should be undertaken by independent CDM project verification agents and should be part of the overall process of verifying the ERUs from a CDM project.
- The verification process should confirm the actual ERU production of an implemented CDM project.
- Upon verification, the ERUs of a CDM project can be certified by the CDM Executive Board.

CONCLUSIONS AND RECOMMENDATIONS

- The process of defining energy project baselines should be simple and transparent.
- Project baselines are preferable to national and sectoral baselines as they provide a basis for a more direct evaluation of resulting CDM ERUs.
- Project baselines should allow for the determination of the financial, economic and environmental additionality of proposed CDM projects.
- Validation of CDM project baselines should be the responsibility of host countries in recognition of national sovereignty.
- Verification of CDM project baselines should be the responsibility of designated independent verification agents to ensure environmental integrity.