CDM Projects

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Introduction

- Kyoto Protocol
- What is CDM
- Stakeholders
- General process of a CDM project

Kyoto Protocol
Development History

- UN Framework Convention on Climate Change (UNFCC) adopted in 1992 and ratified in 1994
- Parties accepted the 1990 GHG emission levels
- Kyoto Protocol (KP)
  - Accepted by Parties in Dec 1997
  - “Annex B” countries have the obligation to reduce their GHG emissions if they ratify the Protocol
  - “non-Annex B” countries shall achieve sustainable development and contribute to the Protocol’s objective

Kyoto Protocol
Development History

- 55% (in terms of emissions) of annex-I countries had to ratify the KP so it comes into force
- Turning Point:
  - Russia ratified the KP on Nov 18, 2004
  - Russia represents 17.8% of Annex-I countries' emissions
- India ratified the KP on Aug 28, 2002
- The KP came into force on Feb 16, 2005

Kyoto Protocol
Actual Status

- 156 countries have, up to now, ratified or accepted the Protocol
  - 33 industrialized countries (mainly Annex B countries)
  - 123 developing countries (mainly non-Annex B countries)
- These countries represent 61.6% of GHG emitted in 1990

Kyoto Protocol
Main Objectives

- The reduction of 6 GHGs:
  - Carbon dioxide (CO2)
  - Methane (CH4)
  - Nitrous Oxide (N2O)
  - Hydroflurocarbons (HFCs)
  - Perfluorocarbons (PFCs)
  - Sulphur hexafluoride (SF6)
- All translated into CO2 eq.
- Using the global warming factor (GWF) of each gas

Kyoto Protocol
Main Objectives

- Reduce GHG by 5.2% below the world 1990 level
  - Each country has its own target
  - It represents 240 Mtons CO2 per year
- 5-years horizon (2008 to 2012)

Kyoto Protocol
Three flexible Mechanisms

- Clean Development Mechanism (CDM)
  - Generally between an Annex B country and a non-Annex B country
- Joint Implementation (JI)
  - ERU: Emission Reduction Units
  - Between countries that have a target
- International exchange of emission right
  - Between countries that have a target

Kyoto Protocol
Besides the Protocol

- European Union's trading scheme
  - Netherlands
  - Denmark (national emission trading)
- UK's emission trading scheme
- State level in Australia and USA

What is CDM?
Clean Development Mechanism

- Implemented in developing countries (non-Annex B)
- Allows project promoters to sell GHG emission reduction
  - Trading of CO2 Certified Emission Reduction (CER)
- With a sustainable development objective

What is CDM?
Article 12 of the KP

- Project implemented in a non-annex B country (India is one of them)
- GHG reduction benefit an annex B country (33 countries)
- Define an Executive Board responsible for project implementation
- CER are defined
- Executive Board can use a share of CER project to finance the process
- Retroactive since 2000

What is CDM?
Types and Categories of Projects

Project types	
	A. Electricty generation by the user
Type I	B. Mechanical energy for the user
Renewable Energy Projects	C. Thermal energy for the user
	D. Renewable electricity generation for a grid
	A. Supply side energy efficiency improvement;
	transmission and distribution
	B. Supply side energy efficiency improvement
	in generation
	C. Demand side energy efficiency
Type II	programmes for specific technologies
Energy Efficiency	D. Energy efficiency and fuel switching
Improvement projects	measures for industrial facillities
	E. Energy efficiency and fuel switching
	measures for buildings
	A. Agriculture
	B. Switching fossil fuels
Type III	C. Emission reduction by low-greenhouse gas
Other project activities	emission vehicles
	D. Methane recovery
	E. Methane ……
Type IV	Other small scale projects

What is CDM?
Requirements

- Sustainable development of the host country
- Additionality
- Real, measurable and sustainable reduction
- Approved by all concerned parties
- Credits for the 2000-2012 period

What is CDM?
Additionality

- One aspect that is the most difficult to agree on
- “CDM must result in GHG reduction that would not arise naturally.”
- DEMONSTRATION that:
  “Without the project, emissions would have been higher (baseline)”
  - Why?
  - What were the barriers?

Stakeholders

- CDM-EB: The Bonn Executive Board
- CDM-MP: Methodology Panel
- DNA: Designated National Authority
- DOE: Designated Operational Entities
- AE: Applicant Entity
- Project Participants
- CO2 certificate traders
- Buyers
  - Government
  - International funds
  - Individual companies

Stakeholders
Executive Board

- Based in Bonn
- Oversees the whole process
- Defines the CDM's application rules
- Registers project list
- Approves methodologies for Baseline and Monitoring procedures
  - Through a Methodology Panel
- Approves projects
- Registers and emits CER certificates
- Maintains the Web site:
  - http://cdm.unfcc.int/

Stakeholders
Methodology Panel

- Provides template documents
- Receives proposals for a new methodology related to Baseline and Monitoring of projects
  - Provides comments to the project promoter so he can revise/ improve his methodology
  - Make final recommendation to the Executive Board to accept or reject a methodology

Stakeholders
Methodology Panel

- NEW METHODOLOGIES:
  - Submitted by:
    - Project promoters
    - Through DOE
    - Applicant Entity (AE)
  - Public comments through the Website
  - Up to now: 31 approved methodologies

Stakeholders
Designated National Authority

- Focal point for CDM in each country that wants to host CDM projects
- Organization established by the government to all CDM related activities
- Responsibilities:
  - Evaluates and approves potential CDM projects
  - Supports project promoters
  - Publicizes a project portfolio
  - Supports the preparation of documents
  - Helps in the selling of credits
  - Keeps up the stake holder's network
  - Initiates networking between promoters and credit buyers

Stakeholders
Designated Operational Entities

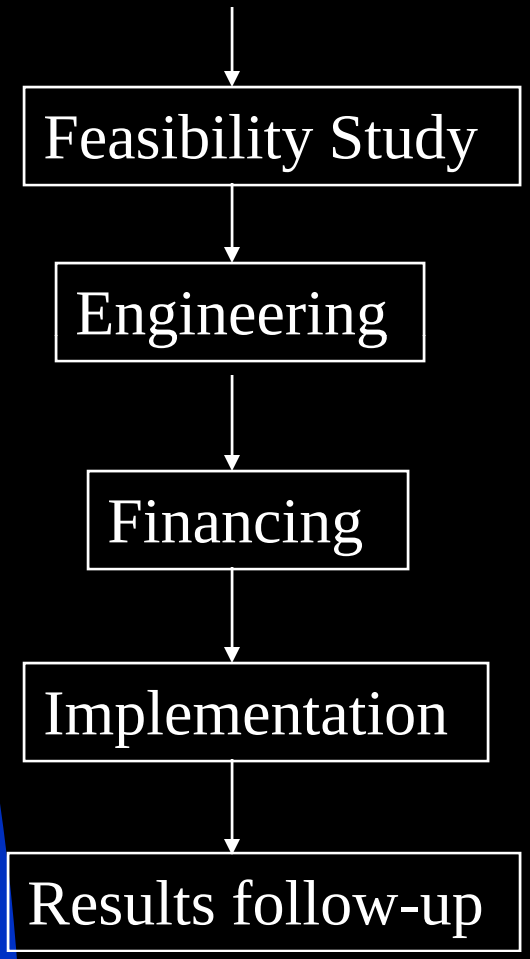
- Any organization can become a DOE
- “Applicant Entity” until it is approved
- List of DOE/AOE on the CDM Web site
- Only DOE/AOE can submit new methodologies

Stakeholders
DOE's Role

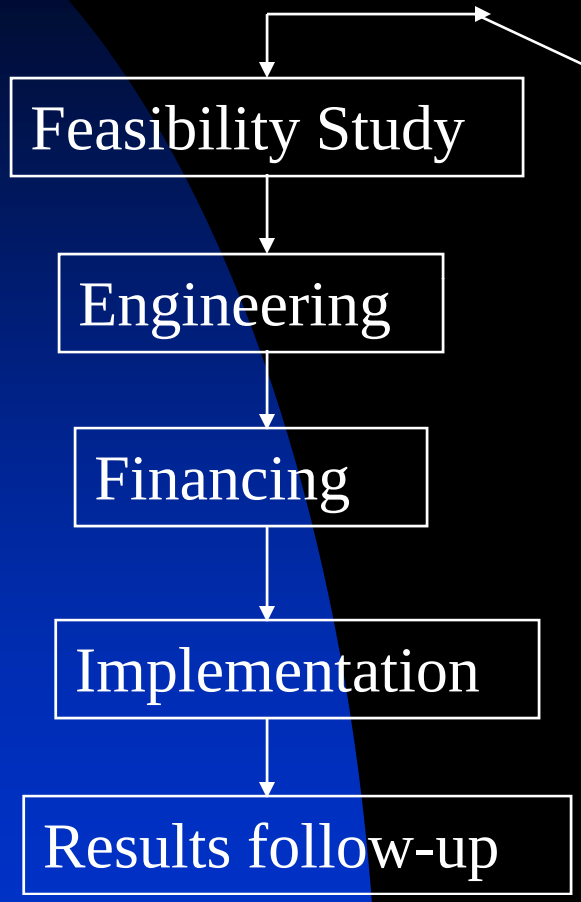
- VERIFICATION of new methodologies (NM)
  - Participants propose a NM to a DOE
  - DOE checks that it is complete
  - DOE forwards it to the MP
- VALIDATION process
  - Reviews the Project Development Document
  - Forwards it to the EB for registration
- INITIAL VERIFICATION process
  - Checks if the project has been implemented
- PERIODICAL VERIFICATION process
  - Reviews monitoring during project activity
  - Recommends to the EB to emit CER

Project Cycle

Traditional Project Cycle



Project Cycle
Traditional vs. CDM

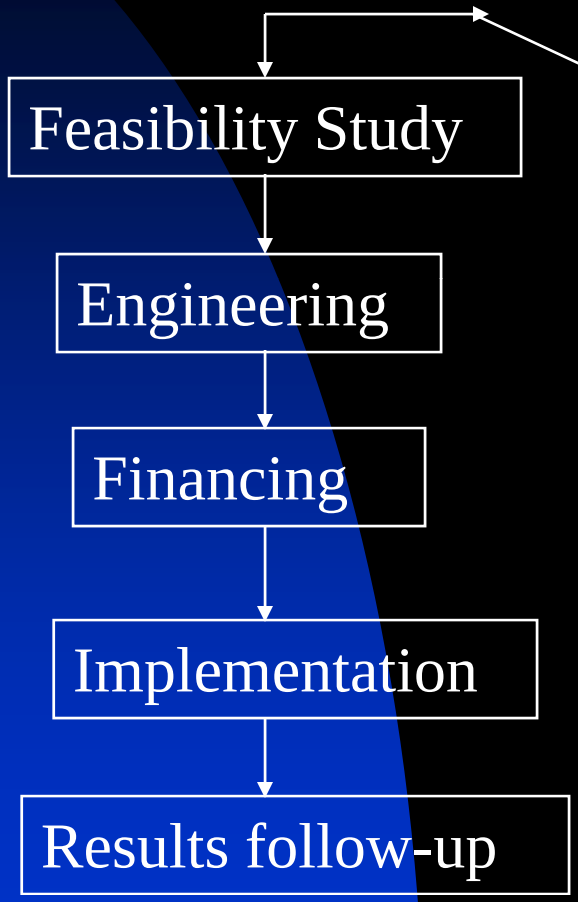


PIN – Project Idea Note

A short document (5-10 pages) prepared by the project promoter
Not necessarily part of CDM process

This is used in the earlier stage of project development to:
-Convince owner (where the project will be implemented)
-Seek financing for the project early development activity (PDD)
-Present project to National Authority
-Present project to potential buyers

Project Cycle
Traditional vs. CDM



PDD – Project Design Document

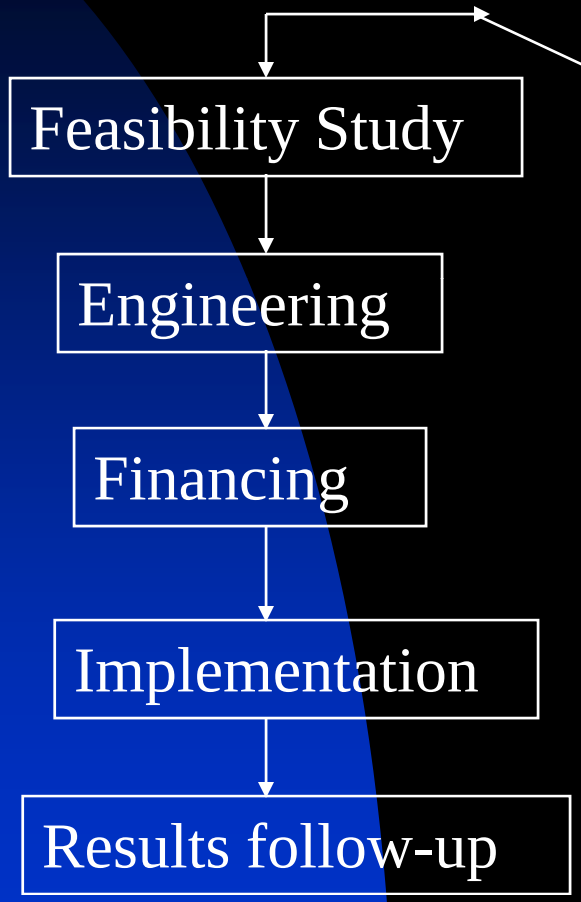
A detailed document that presents the project to the CDM Executive Board in Bonn

-Following the PDD format approved by the EB

-Including an approved Baseline and Methodology (will be presented later)

Requires the DNA LETTER OF APPROVAL

Project Cycle
Traditional vs. CDM



PDD – Project Design Document

Validation/ Registration

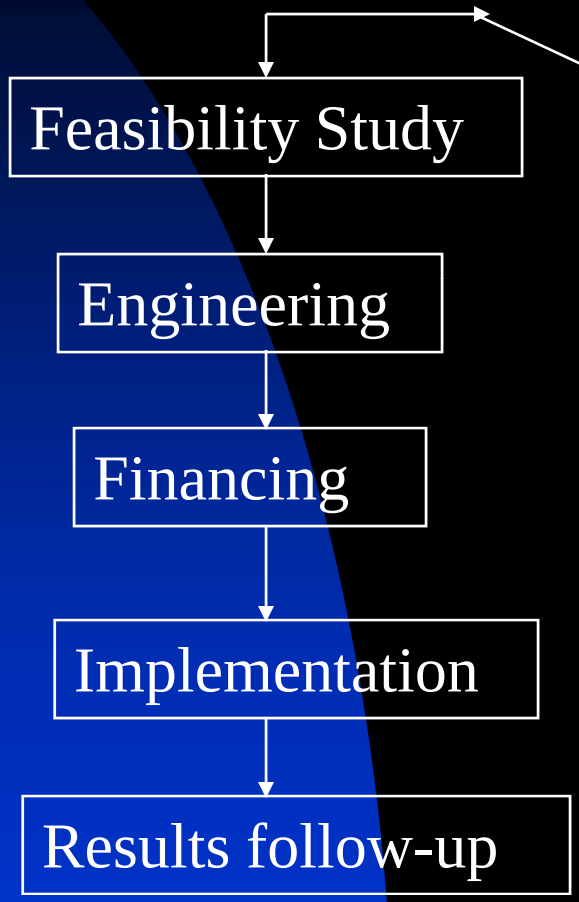
Validation:

by a DOE

Registration:

by the Executive Board

Project Cycle
Traditional vs. CDM

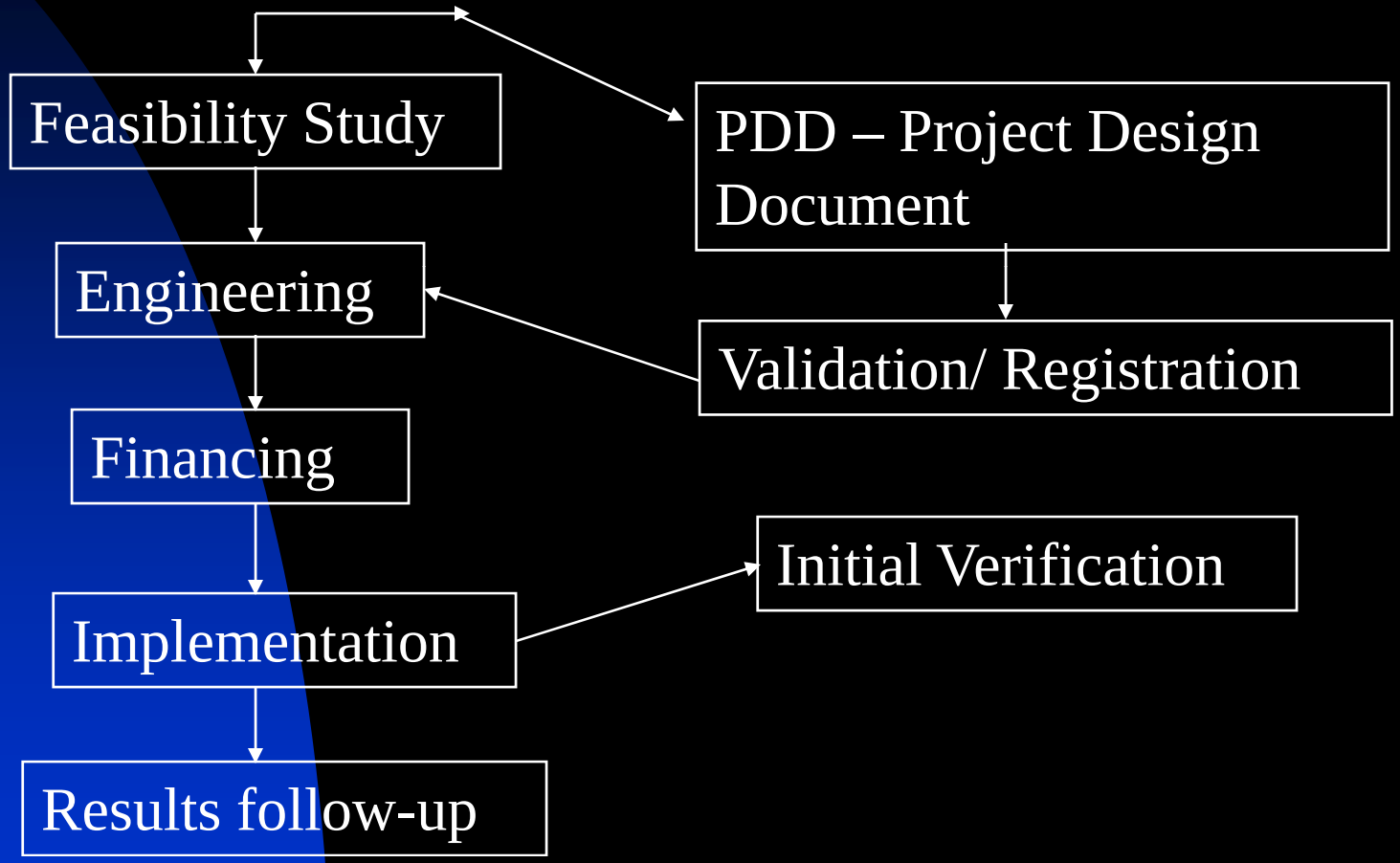


PDD – Project Design Document

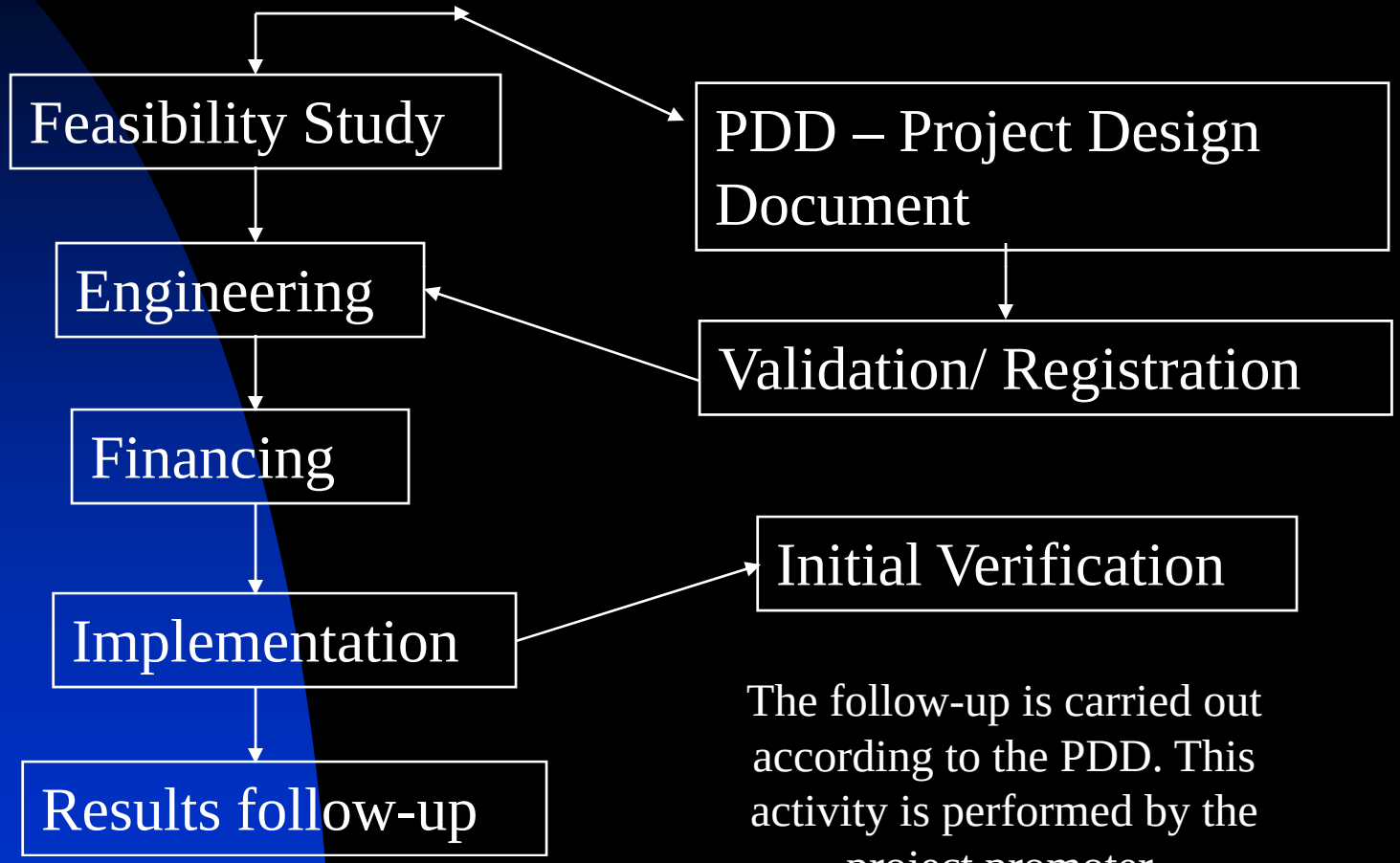
Validation/ Registration

Once registered, the project implementation is performed by the project promoter

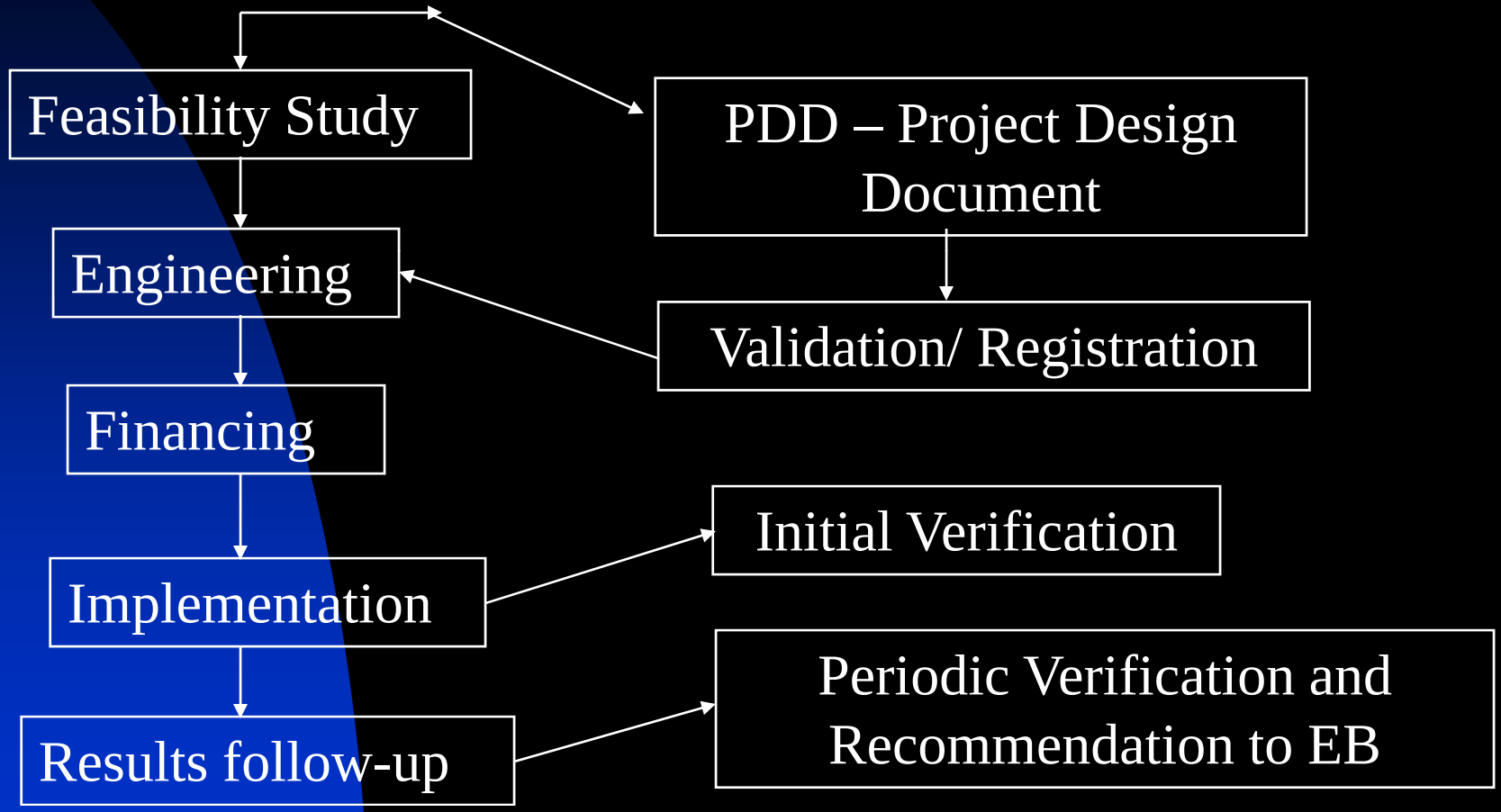
Project Cycle
Traditional vs. CDM



Project Cycle
Traditional vs. CDM



Project Cycle
Traditional vs. CDM



Small scale Projects
The three-15s rule

Type I	Renewable energy projects not exceeding 15 MW in rated capacity
Type II	Energy efficiency projects not exceeding 15 GWh/year in saving
Type III	Other project activities with no greater than 15,000 t/year of CO_2 emissions

Small scale projects
History

- Concept agreed in Marrakech (2001) and UNFCC adopted rules in early 2003
- EB realized that transaction will be too high for small projects
- Simplified procedure developed for these projects
- SAME CATEGORIES
- SAME BASIC CONCEPTS

Small scale projects
Benefits

- Transaction cost: 2% of CERs
- Bundling
- One DOE for validation & verification
- Simplified PDD
- Simplified methodologies:
  - Clear instructions for each category
  - Monitoring on a sample basis
  - Easier additionality demonstration
    - Predefined list of barriers

Small scale projects
Predefined list of barriers

- ADDITIONALITY DEMONSTRATION
  - Investment
  - Technology

    - a less technological advanced alternative involving lower risks due to the performance uncertainty or lower market share of the new adopted technology
  - Prevailing practice

    - prevailing practice or existing regulatory or policy requirements
  - Other:

    - institutional barriers or limited information, managerial resources, organizational capacity, financial resources or capacity to absorb new technologies

Transaction Cost
What is included?

- From the PDD preparation up to selling the CERs
  - Preparation of PDD or simplified document
    - including baseline
    - including monitoring
  - DOE's fees for validation and verification
  - EB's fees for registration
  - Appraisal of project and legal documents

Transaction Cost
What is included?

- After CER issuance
  - Trading agent during the CER sales
  - The EB
    - Can levy a percentage of CER
  - The DNA
    - Can levy a percentage of CER

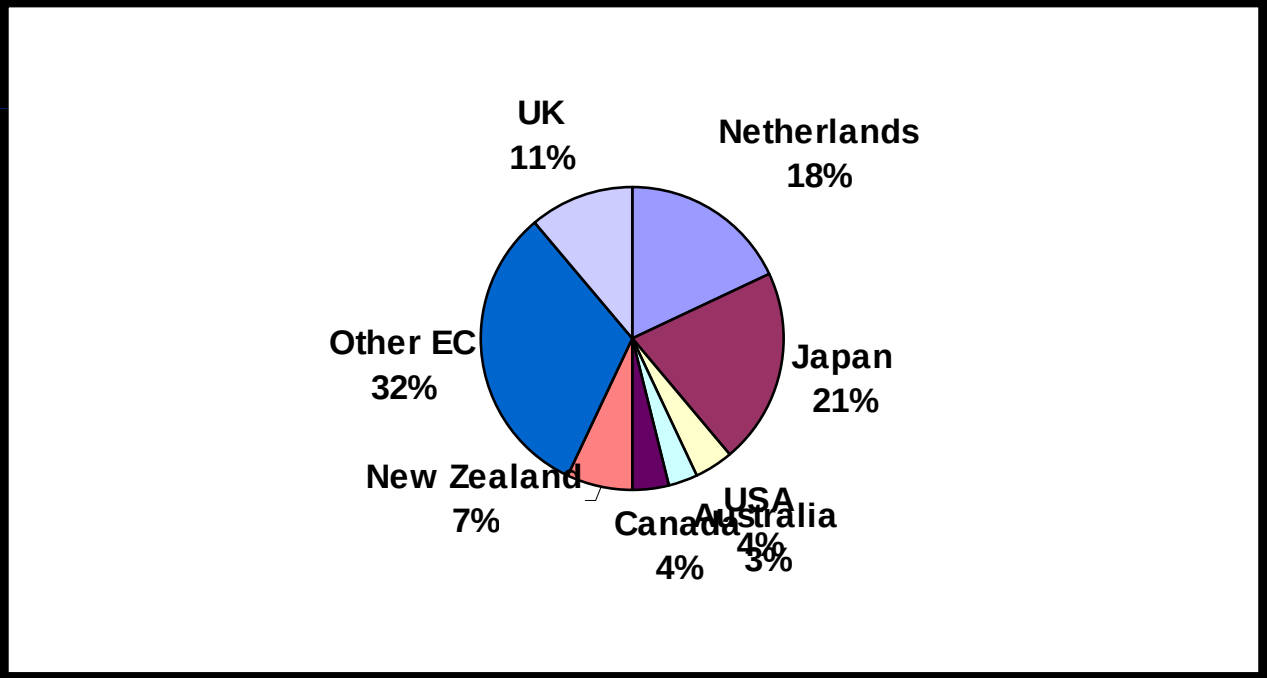
CERs market
Sale processes

- Not controlled by the EB
- Existing types of processes:
  - Buyers-initiated
    - World Bank or large funds
    - Industrialized countries (Annex B)
    - Private buyers-seller negotiation
  - Traders-initiated
    - Private traders-buyers negotiation
    - Certificate exchange (similar to stock exchange)
  - Certificate owners-initiated
    - RFP by project promoter
    - Direct negotiation with buyers

CERs market
Types of buyers

- World Bank family funds
- Regional bank funds
- Government of Annex B Countries
- Private industries
- Traders
- Exchange board

CERs market
Buyers' nationality



CERs market
Actual status

- Price of carbon credit
  - Typically between US$8-10/t CO2 in 2005
- Whatever happens, the rule is:
  - Price negotiated with the buyer depends on the risk level that he has to take

CERs market
Forecast

- Buyers need 3.5 billion t CO2e
- From 2009-2012
- Compliance cost: US$35 billion
- 2200 projects must be registered
- 400 projects in 2006
- Significant supply crunch
  - Emissions market heading for a supply crunch: World Bank
- Forecast price: US$7-21 in 2009-2012

CERs impact on Project IRR

Country	Project	IRR without carbon finance	IRR with carbon finance	Change in IRR (%)
Costa Rica	wind power	9.7	10.6	0.9
Jamaica	wind power	17	18	1
Morocco	wind power	12.7	14	1.3
Chile	Hydro	9.2	10.4	1.2
Costa Rica	Hydro	7.1	9.7	2.6
Guyana	Bagasse	7.2	7.7	0.5
Brazil	Biomass	8.3	13.5	5.2
India	Solid waste	13.8	18.8	5

CDM experience in India

- Facilitating communication between investors and project proponents as well as other stakeholders
- Facilitating capacity building for Indian institutions to be able to to propose and implement CDM projects
- Providing information on available CERs and/or CER potential to prospective buyers

CDM experience in India

- 91 projects approved by Indian DNA
  - Fuel switching: 6
  - Industrial processes: 6
  - Solid waste: 1
  - Energy efficiency: 27
  - Renewable energy: 51

Thank you.