Determinants of Clean Development Mechanism Projects

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Kyoto Mechanisms

- Annex I countries have binding emission reduction targets under the Kyoto Protocol
- Non-Annex I countries have no compliance obligation
- Kyoto Mechanisms: Emission Trading, Clean Development Mechanism and Joint Implementation

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Clean Development Mechanism

- CDM allows non-Annex I countries to take part in the Kyoto process without having own reduction obligations
  1. Foster sustainable development and reduce emissions
  2. Encourage technology transfer
  3. Generate and sell certificates (CERs)

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  3. Generate and sell certificates (CERs)
- CDM allows more flexible abatement for compliance parties
- Market-based concept to foster cost-efficient abatement

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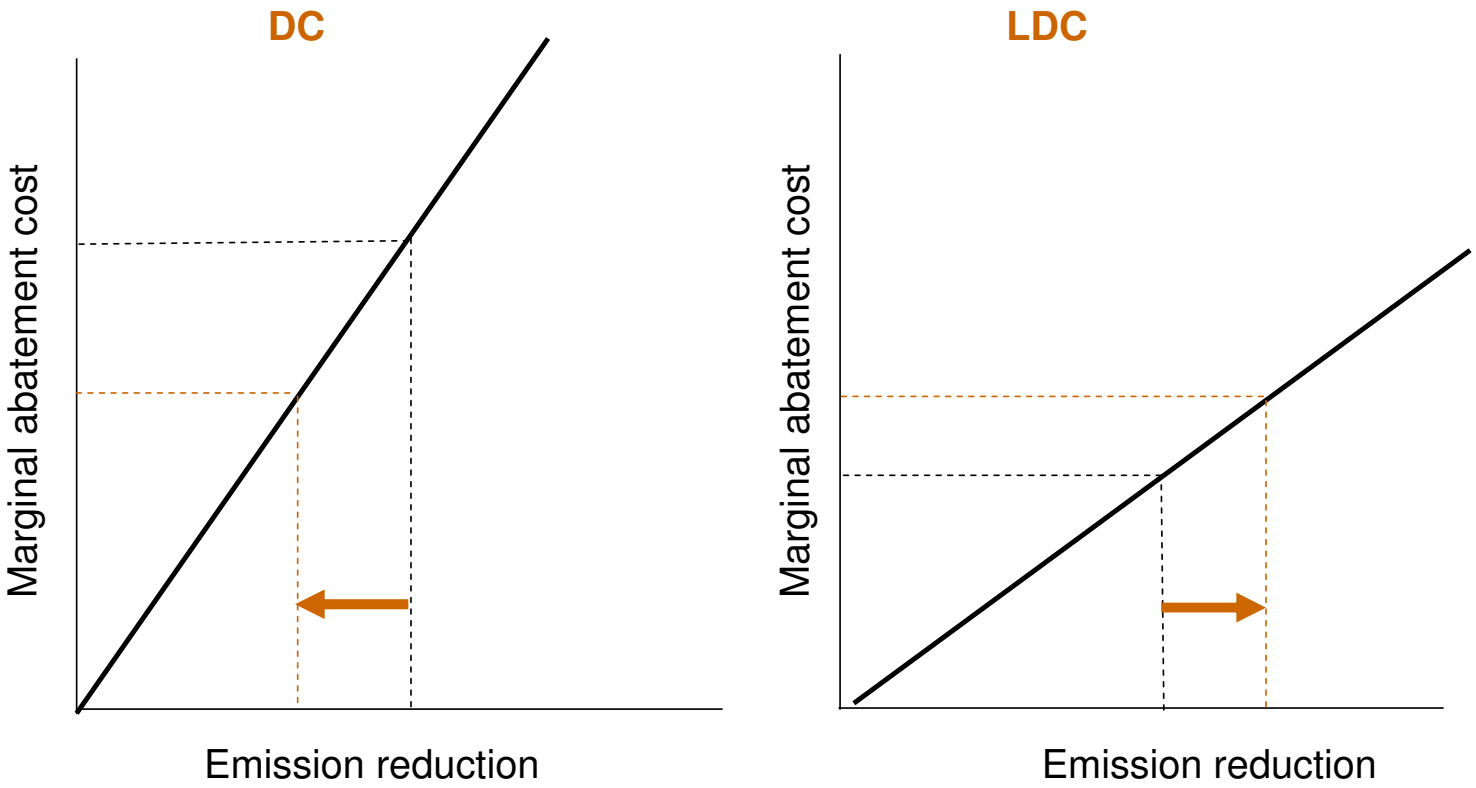
Concept of Cost-Efficient Abatement



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Determinants of Projects

- Mitigation potential:
  Low costs of mitigation make host country more eligible for projects

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Determinants of Projects

- Mitigation potential:
  Low costs of mitigation make host country more eligible for projects
- Mitigation capacity:
  Institutional capacity and ambition to develop sustainably make a country more attractive for investment
  1. General business climate
  2. Institutional capacity
  3. Environmental commitment

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The Project Cycle

- CDM Institutions
  - Executive Board (EB): registration of projects and accreditation of DOEs
  - Designated Operational Entities (DOE): Validation and request for registration of project proposals
  - Designated National Authority (DNA): Specification of sustainability criteria

The Project Cycle

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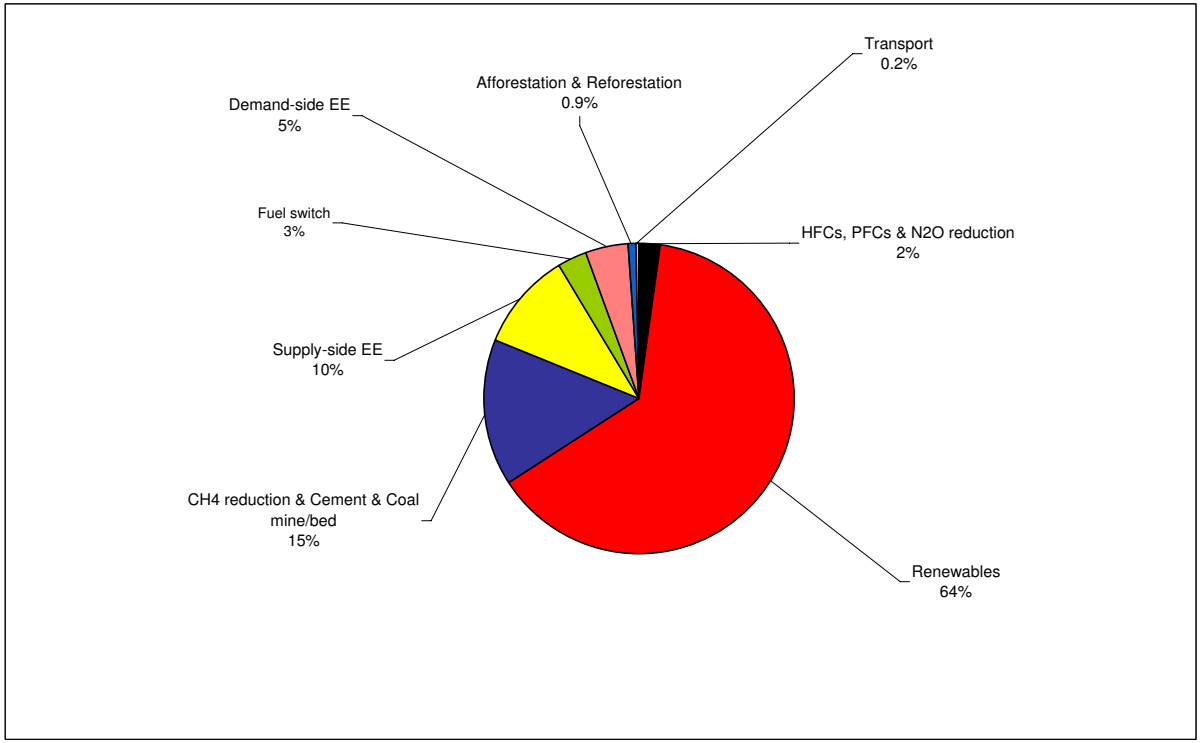
- PDD report by project developer lines out project design and expected costs
- Validation $\rightarrow$ Registration $\rightarrow$ Verification $\rightarrow$ Certification
- 1596 projects are registered, in 54 countries

Current Status

Figure: Number of CDM Projects in Each Category



Source: Risø CDM Pipeline.

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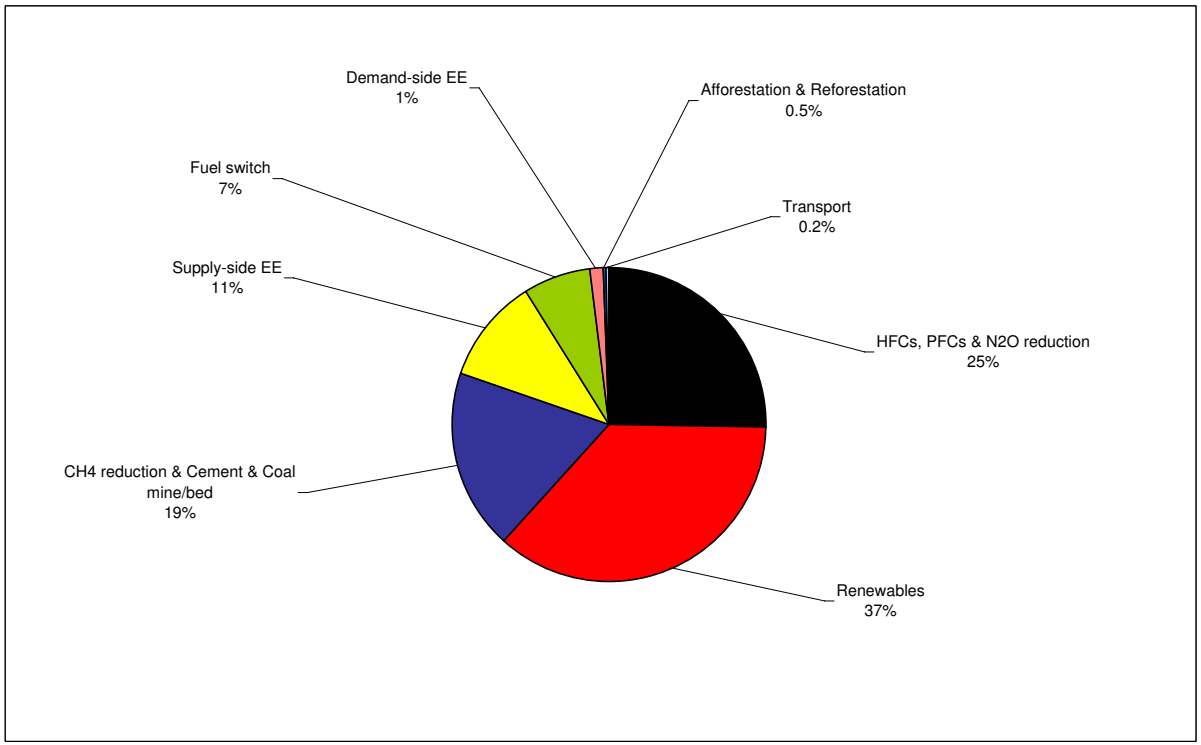
Current Status (continued)

Figure: Expected CERs Until 2012 in Each Category



Source: Risø CDM Pipeline.

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Count Data Model

- Dependent variable: Number of projects
- Poisson model gives the probability of observing a certain number of projects y in an interval of given length:
  $P(y_i = y|x_i) = \frac{e^{-\lambda_i}\lambda_i^y}{y!}$ (Cameron and Trivedi, 1986)
- Negative Binominal Model:
  - Overdispersion and excess zeros
  - NB model is less restrictive than a Poisson model
  - $E[y_i|x_i] = \exp(x_i'\beta)$ and $Var[y_i|x_i] = E[y_i|x_i]$

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Determinants

- Mitigation potential: CO_2 per GDP
- Mitigation capacity:
  1. General business climate: FDI stock
  2. Institutional capacity: WB Governance Indicators
  3. Environmental commitment: Kyoto participation, Ratification of Multinational Environmental Agreements (MEA)

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Descriptive Statistics

Variable	Obs	Mean	Std.Dev.
ln CO_2	134	8.70	2.42
Regulatory Quality	134	-0.30	0.74
MEA	134	44.82	22.04
Kyoto	134	4.90	2.66
FDI	134	16624.72	56406.38
GDP	134	57654.98	184464.90

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Results

Table: Count Data Models

Parameter	NB2	
ln CO_2	0.56821	(0.000)
GDP	3.34E-06	(0.026)
FDI	-6.80E-06	(0.023)
Regulatory Quality	0.53235	(0.008)
MEA	0.01741	(0.086)
Kyoto	0.39610	(0.000)
Constant	-7.9145	(0.000)
LR test of λ=0	chibar^2(1)= 595.6	(p=0.000)

Note: p-values in parentheses. Robust standard errors.

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Discussion

- Mitigation potential plays an important role
- Confirms the idea of cost-efficient allocation

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Discussion

- Mitigation potential plays an important role
- Confirms the idea of cost-efficient allocation
- Institutional capacity and environmental commitment influence allocation
- Better functioning institutions reduce risk of delays in the project cycle and the issuance of certificates

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Discussion (continued)

- FDI stocks do not parallel the allocation of CDM projects

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- Niederberger and Saner (2005) claim that FDI and CDM investment differ with respect to the investment structure and the underlying motivation

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Conclusion

- Aims of CDM: Reduce emissions and enhance sustainable development
- Currently CDM is the only tool to include China, India in the Kyoto Process

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- Currently CDM is the only tool to include China, India in the Kyoto Process
- No global coverage of CDM
- Foster programs that encourage institution building

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