

Development of a Carbon Finance Methodology for Buildings

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Approved Building Methodologies

	Large-Scale	Small-Scale
Whole Building		II.E. EE & fuel switching measures for buildings III.AE. EE & RE measures in new residential buildings
HVAC	AM60 Efficient chillers	II.C. EE in end-use technologies II.G. EE in thermal applications of non-renewable biomass
Lighting	AM46 Efficient bulbs for households	II.C. II.J. Demand-side activities for efficient lighting technologies
Plug loads		II.C. III.X. EE & HFC-134a recovery in residential refrigerators
On-site RE		I.A. Electricity generation by the user I.C. Thermal energy for the user I.E. Switch from NRB for thermal applications by the user III.AE.

Status of “Building Sector” CDM

(excluding biomass for cooking)

	Methodology	Available Since	Projects Registered	Description
Whole Building	II.E.	November 2002	6	Moldova multi-family residential (3), India hotel / office (2), South Africa low-income single-family
	III.AE.	July 2009	0	None at validation (new methodology)
Energy Efficiency	AM46	February 2007	0	1 CFL PoA at validation (Ecuador)
	AM60	November 2007	0	None at validation
	II.C.	November 2002	4	India CFLs (several other types of lighting projects and CFL PoAs at validation)
	II.J.	August 2008	0	13 CFL projects/PoAs at validation (India, Rwanda)
	III.X.	November 2008	0	1 utility DSM refrigerator project at validation (Brazil)
On-Site RE	I.A.	November 2002	2	Solar PV, several PoAs at validation (Bangladesh)

Data Sources: UNFCCC; UNEP Risoe CDM/JI Pipeline Analysis and Database, 1 November 2009

Barriers to Investment in Green Buildings

□ General

- Those who invest don't directly benefit in speculative market
- EE not a consideration in building design / procurement
- Lack of expertise/capacity
- Additional up-front capital cost

□ Public Sector

- Lack of leadership

□ Private Developers

- Financial institutions do not know how to value EE

Plus: CDM-Specific Barriers

□ General

- Lack of viable methodologies
- High transaction costs per CER
- Challenge to aggregate many small actions
- Post-2012 uncertainty

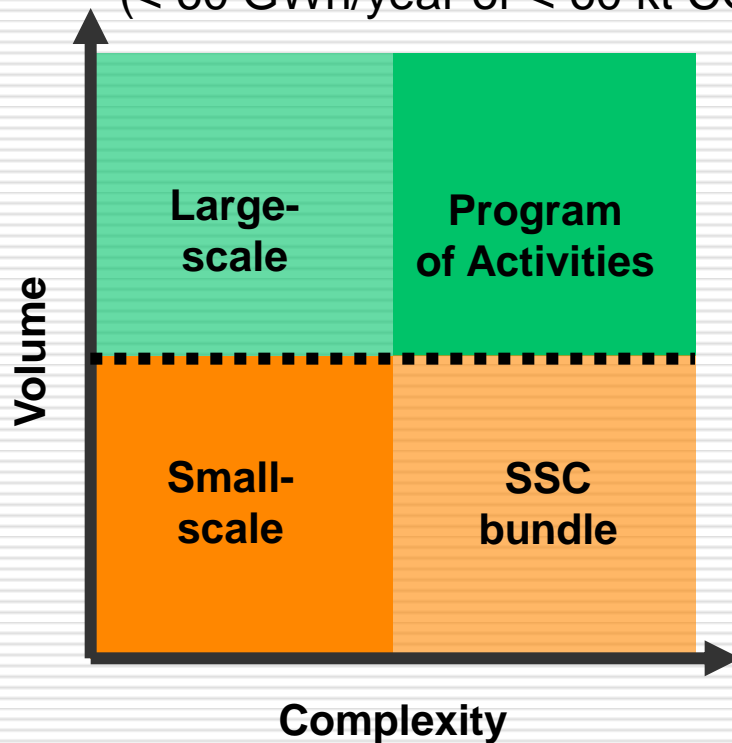
□ CDM Programs of Activities

- Liability concerns of DOEs
- Lack of experience
- Challenge to identify competent managing entities

CDM Implementation Modes

Individual project activities

- Large-scale
- Small-scale (SSC)
(< 60 GWh/year or < 60 kt CO₂/y)



□ Program of Activities

□ Bundling small-scale projects via intermediary

CDM Program of Activities (PoA)

Voluntary program

- > government
- > private

PoA
(Program of Activities)

- > coordination
- > incentives

CDM Program Activities

CPA

CPA

CPA

CPA

- > implementation
- > monitoring

CPA could be:

- > geographic area (municipality)
- > sector / company
- > industrial installation (large chemical plant)



Programmatic CDM Models

- ❑ Government incentives to promote voluntary standards or agreements
- ❑ Public infrastructure investment programs
- ❑ Technology supplier programs
- ❑ ESCO or utility DSM programs
- ❑ Energy efficiency financing facilities

Proposed SSC Methodology

- Relies on use of DOE-2.2 building energy simulation model
- Comprehensive scope
 - Commercial & residential
 - Retrofit & new construction
 - Electricity & fossil fuels
 - Measures: EE, on-site RE, fossil fuel switch, design
- Methodology will be generic, but calibrated model must be approved for use
- Baseline energy use simulated for the baseline building
 - Project building characteristics
 - Weather data
 - Benchmark building model (i.e., calibrated operating assumptions / modeling rules, derived from measured data for retrofits, if available)

Summary & Outlook

- ❑ Carbon market has yet to incentivize investment into green buildings
- ❑ Need to address both typical barriers and barriers to leveraging carbon finance
- ❑ Project-based approach unlikely to make major contribution (verdict on PoA outstanding)
- ❑ Need to consider new approaches
- ❑ Carbon finance will never be a “silver bullet” to realize building mitigation potential, but it may:
 - Channel additional investment
 - Raise awareness of building energy use & impacts
 - Develop monitoring and evaluation capacity
 - Generate building performance data
 - Promote building code compliance
 - Disseminate best practices