

SEPA 09 – 2nd Giessen Workshop on
Solar Energy Partnership between Africa and Europe



Clean Development Mechanism in Africa Options & Limits



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Lahmeyer International GmbH

Agenda

LAHMEYER INTERNATIONAL

CDM PRINCIPLES

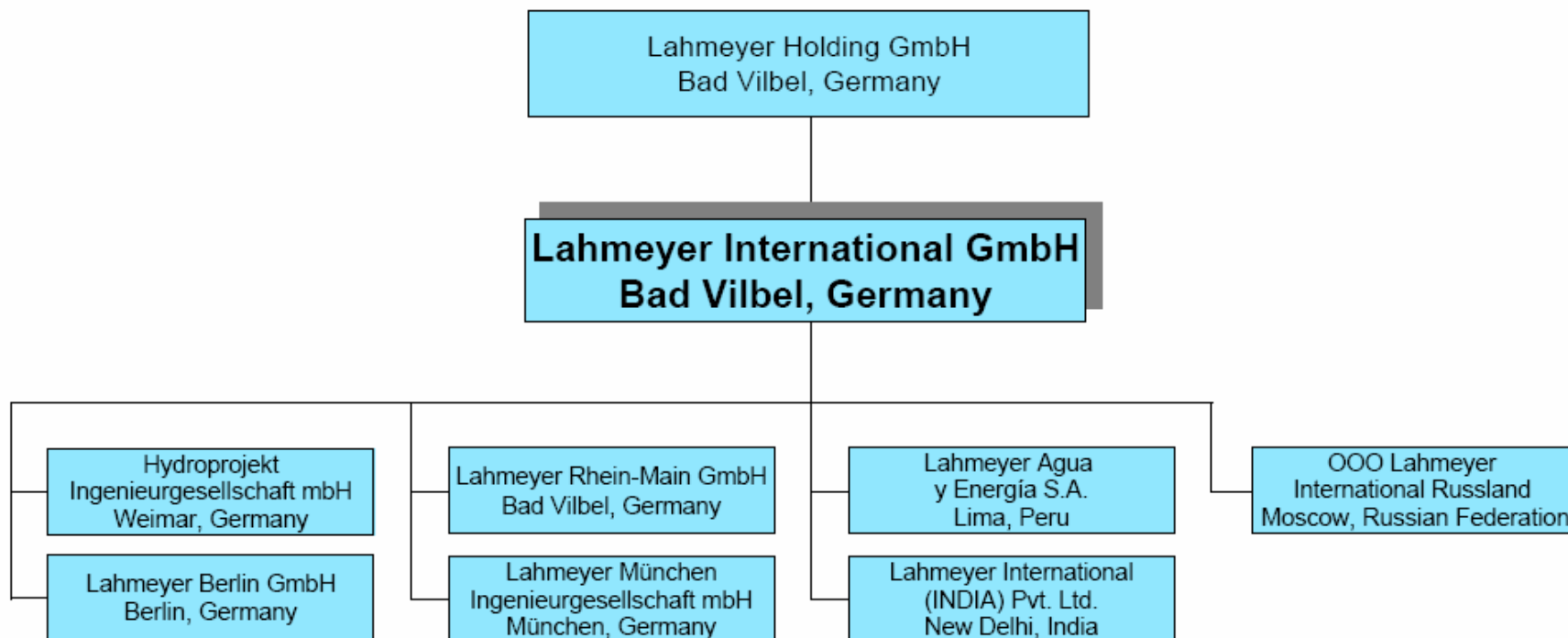
CDM INSTITUTIONAL SETUP

CDM PROJECT INSIDES

CDM IN AFRICA

CONCLUSIONS

LAHMEYER INTERNATIONAL



Scope of Services

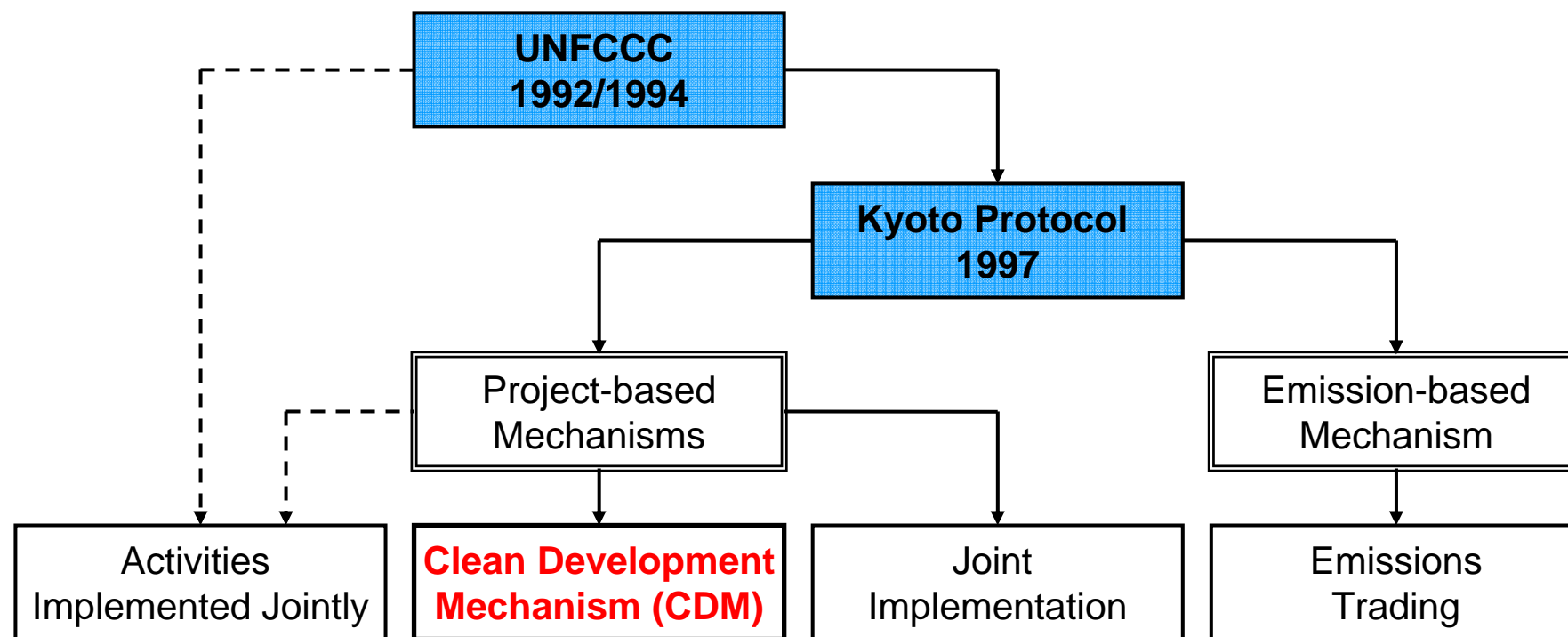


Experiences in 165 Countries



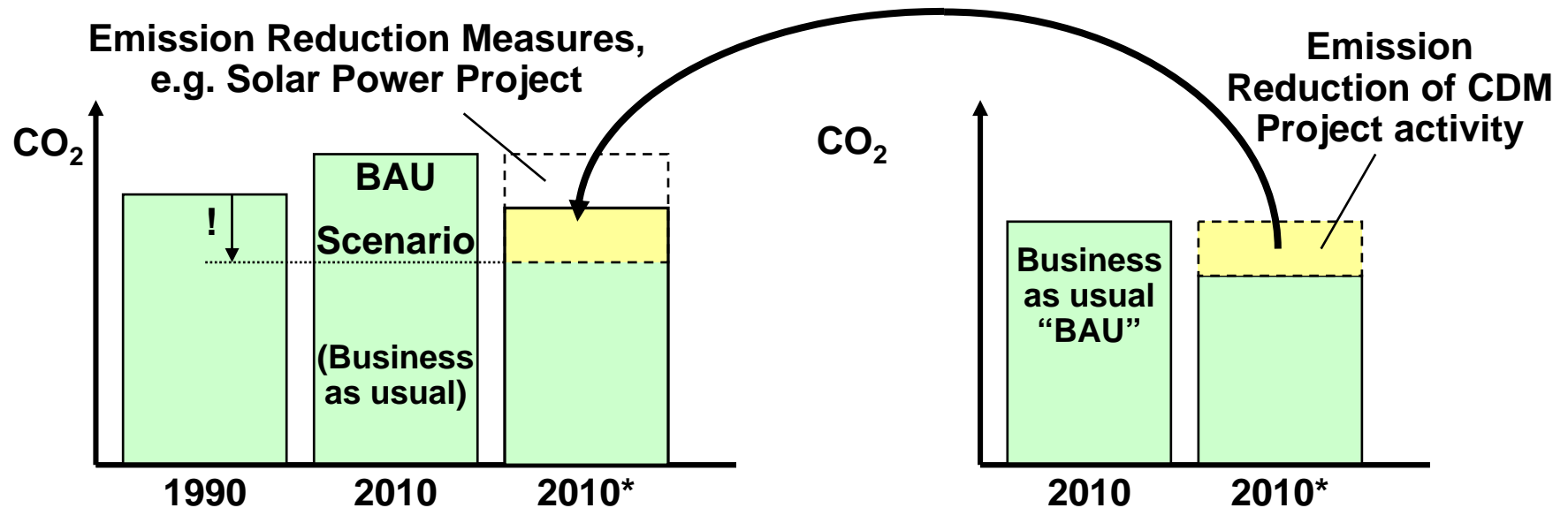
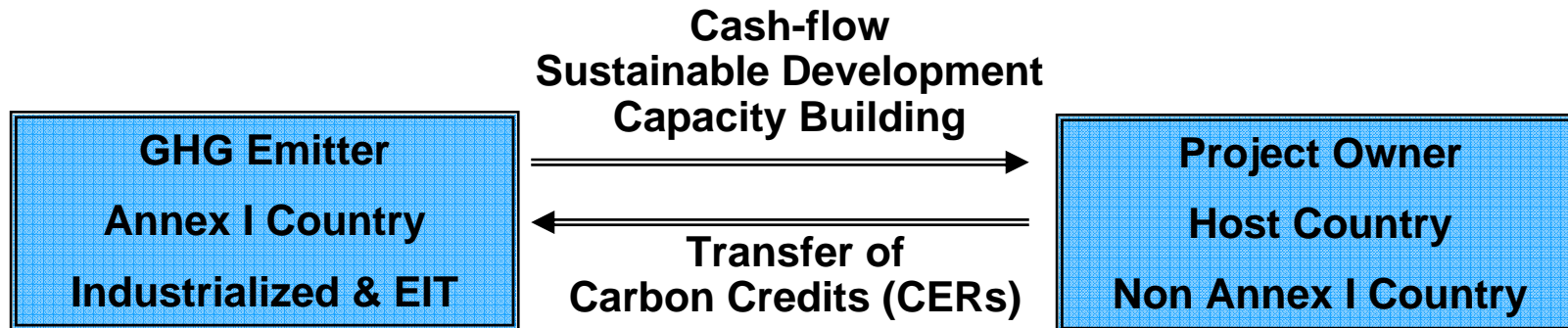
CDM PRINCIPLES

Flexible Mechanisms under the Kyoto Protocol



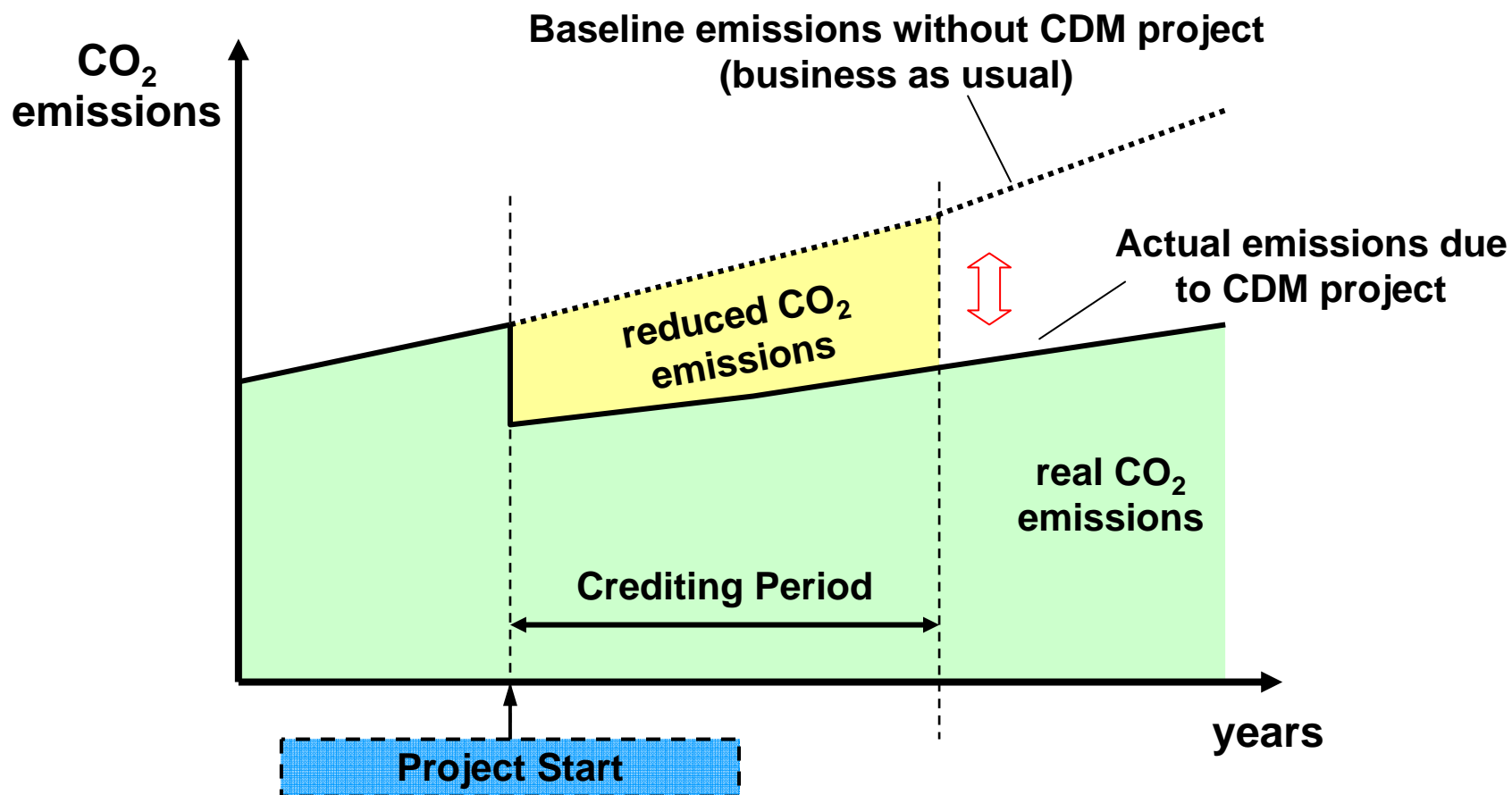
CDM PRINCIPLES

CDM Mechanism under the Kyoto Protocol



CDM PRINCIPLES

Quantification of Emission Reductions



CDM PRINCIPLES

Purposes of CDM

3 goals

- To help mitigate climate change
- To assist Annex I countries attain their emission reduction commitments
- To assist developing countries in achieving sustainable development

3 overall criteria

- Projects must be voluntary
- Projects must be able to show long-term climate change mitigation benefits
- Projects must contribute to emissions reductions above-and-beyond business-as-usual (so called "additionality")

CDM INSTITUTIONAL SETUP

Executive Board:

All CDM-related issues are supervised by the CDM Executive Board (EB) as highest body

- Supported by Panels and
- Roster of Experts

Methodology Panel:

The panel develops recommendations for

- Project Design Documents (PDD), indicative baseline and monitoring methodologies for small-scale CDM
- Approves new baseline methodologies
- Develops consolidated methodologies

Accreditation Panel:

Works on the Accreditation of Designated Operational Entities (DOE) who serve as Validator and/or Verifier

CDM INSTITUTIONAL SETUP

Designated National Authority (DNA)

- Project coordination and communication
- Formulation of national CDM policy and guidelines
- Ensure contribution to local sustainability goals
- Assessment of proposed CDM projects
- Monitoring the implementation of CDM projects

CDM INSTITUTIONAL SETUP

Designated Operational Entities (DOE)

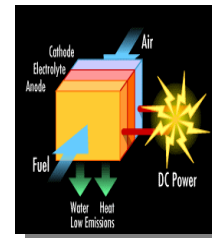
Operational entities

- must first become designated by the Executive Board
- are domestic or international legal entities
- are responsible for CDM reporting and mediating in order to:
 - validate CDM project activities
 - verify and certify emission reductions
 - maintain a public list of CDM projects
 - submit an annual report to Executive Board
 - make information about CDM projects publicly available

CDM PROJECT INSIDES

Project Types & “Carrier Technologies”

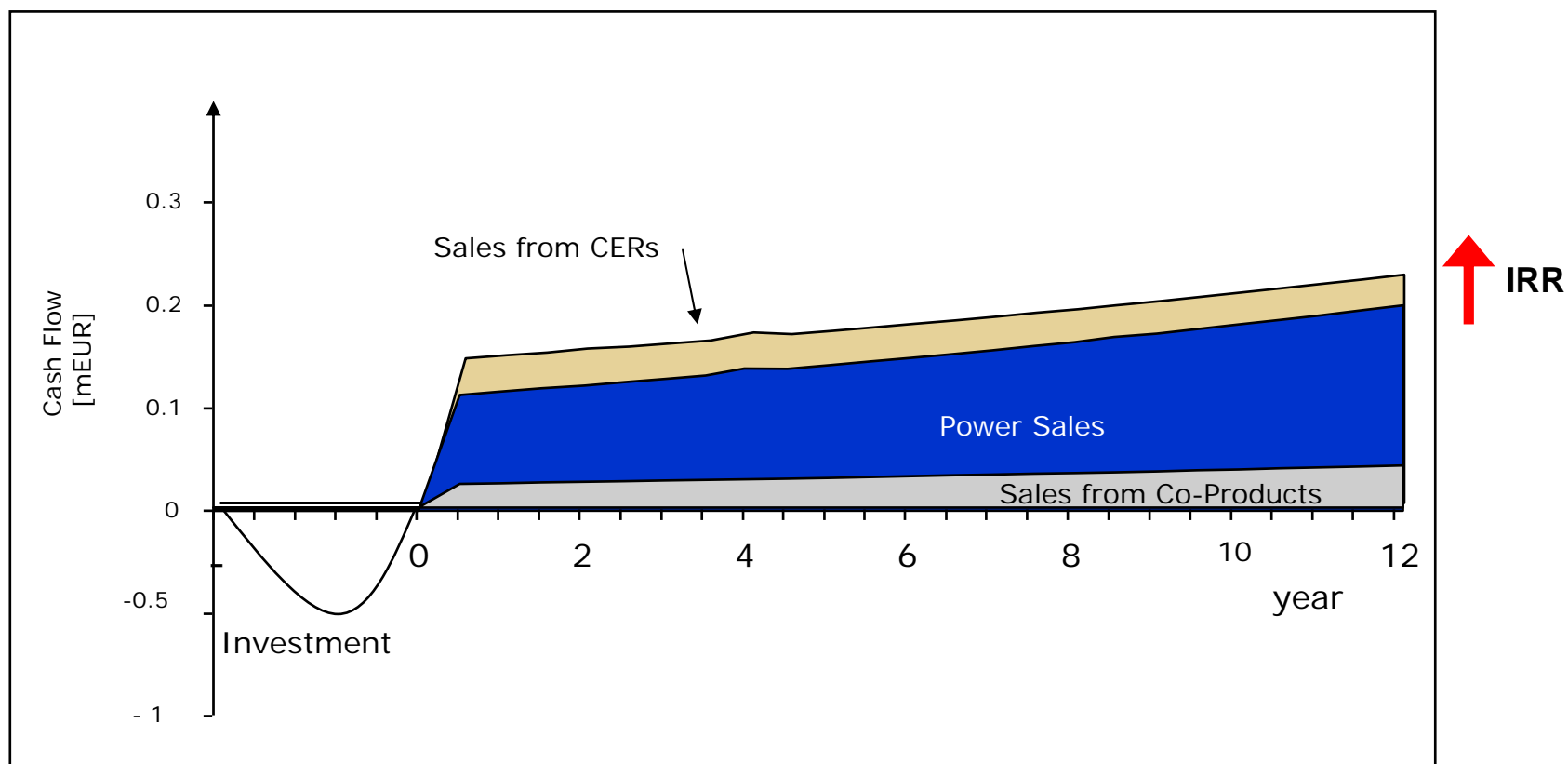
- Renewable Energies
- Landfill
- Fuel Switch
- HFC & N₂O Reduction
- Supply-Side Energy Efficiency
- Afforestation & Reforestation
- Demand-side Energy Efficiency



CDM PROJECT INSIDES

Additional Cash Flow from CER - Sales

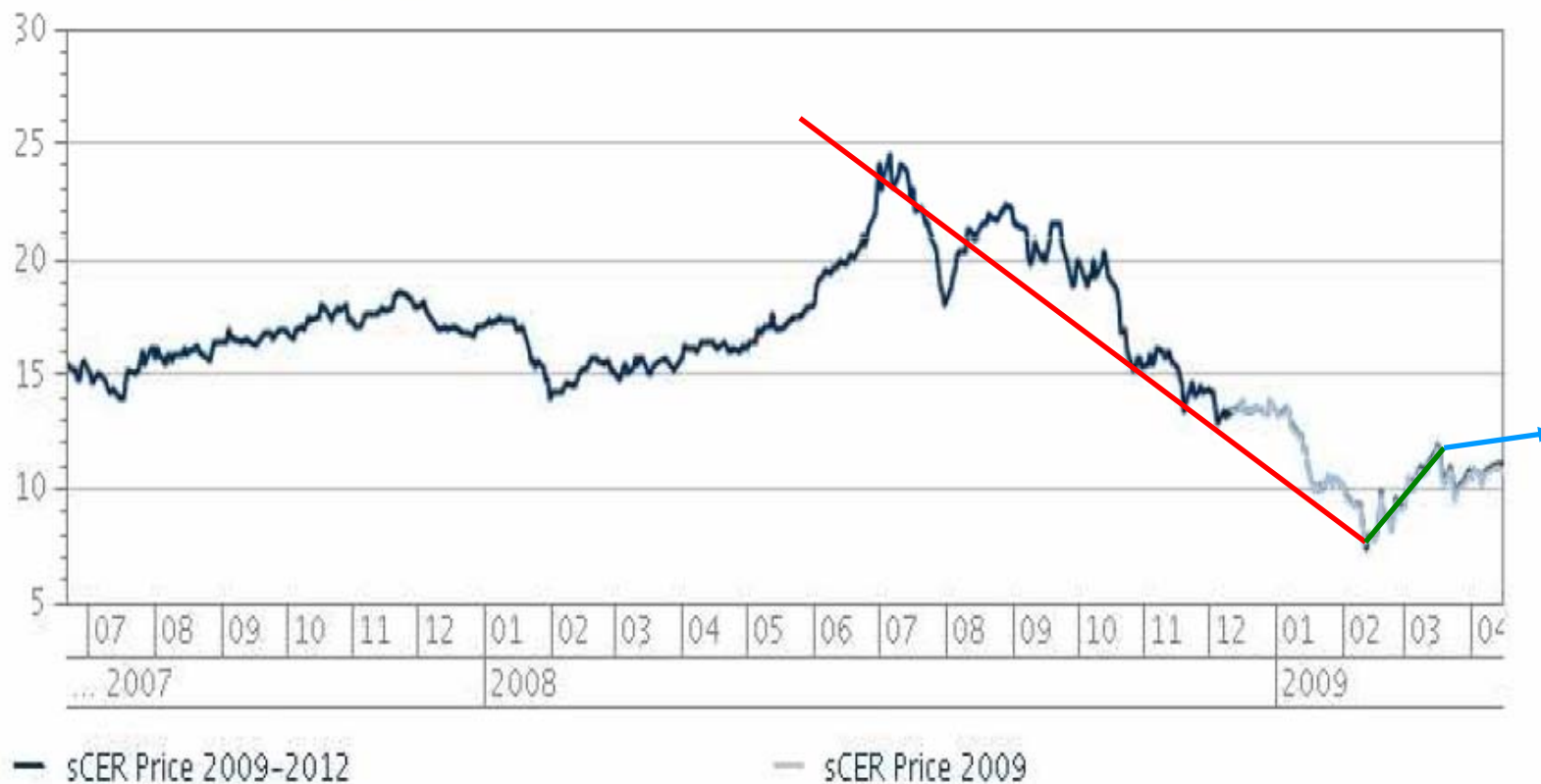
- Sales from CERs may help to achieve financial feasibility



CDM PROJECT INSIDES

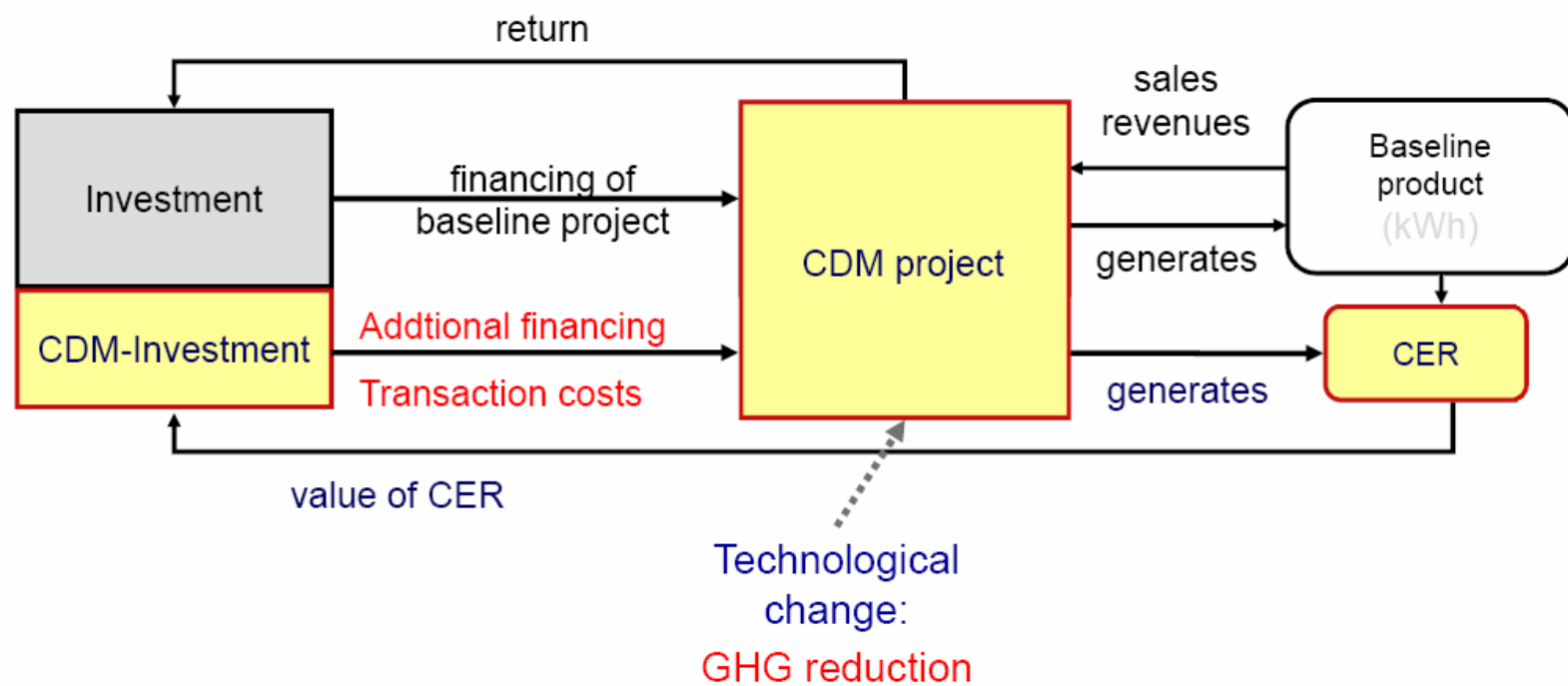
CER Price Development

Point Carbon Secondary CER OTC assessment



CDM PROJECT INSIDES

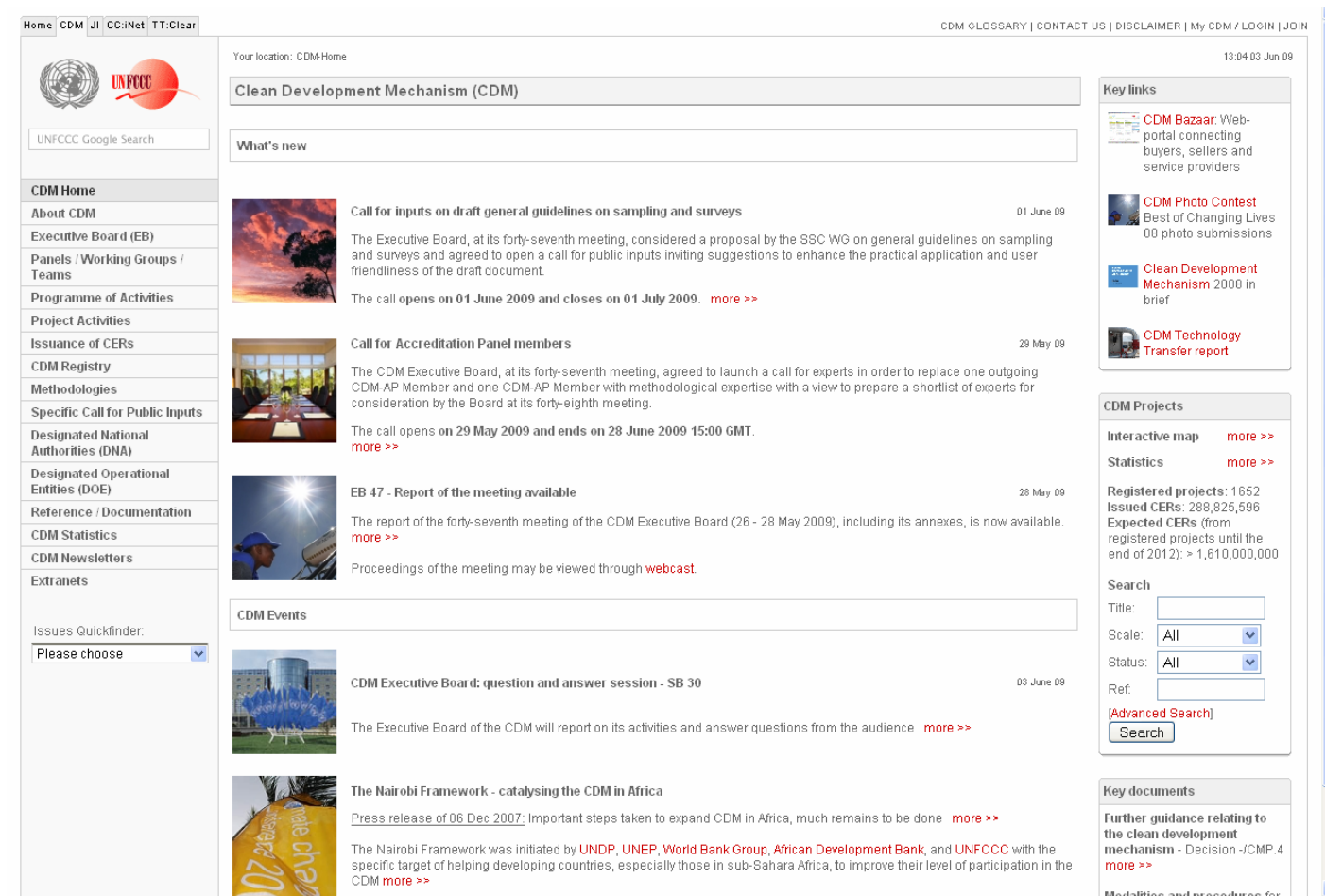
CDM Cash Flow - Example



Add. financing + Transaction costs < Value of CER

CDM PROJECT INSIDES

UNFCCC Clean Development Mechanism Website



The screenshot shows the UNFCCC website interface. At the top, there are navigation links: Home, CDM, JI, CC:Net, TT:Clear, CDM GLOSSARY, CONTACT US, DISCLAIMER, My CDM, LOGIN, JOIN. The main content area is titled 'Clean Development Mechanism (CDM)' and features a 'What's new' section with three articles:

- Call for inputs on draft general guidelines on sampling and surveys** (01 June 09): The Executive Board, at its forty-seventh meeting, considered a proposal by the SSC WG on general guidelines on sampling and surveys and agreed to open a call for public inputs inviting suggestions to enhance the practical application and user friendliness of the draft document. The call opens on 01 June 2009 and closes on 01 July 2009. [more >>](#)
- Call for Accreditation Panel members** (29 May 09): The CDM Executive Board, at its forty-seventh meeting, agreed to launch a call for experts in order to replace one outgoing CDM-AP Member and one CDM-AP Member with methodological expertise with a view to prepare a shortlist of experts for consideration by the Board at its forty-eighth meeting. The call opens on 29 May 2009 and ends on 28 June 2009 15:00 GMT. [more >>](#)
- EB 47 - Report of the meeting available** (28 May 09): The report of the forty-seventh meeting of the CDM Executive Board (26 - 28 May 2009), including its annexes, is now available. Proceedings of the meeting may be viewed through [webcast](#). [more >>](#)

Below this is the 'CDM Events' section with two items:

- CDM Executive Board: question and answer session - SB 30** (03 June 09): The Executive Board of the CDM will report on its activities and answer questions from the audience. [more >>](#)
- The Nairobi Framework - catalysing the CDM in Africa**: Press release of 06 Dec 2007; Important steps taken to expand CDM in Africa, much remains to be done. [more >>](#)

The right sidebar contains 'Key links' (CDM Bazaar, CDM Photo Contest, Clean Development Mechanism 2008 in brief, CDM Technology Transfer report), 'CDM Projects' (Interactive map, Statistics, Registered projects: 1652, Issued CERs: 288,825,596, Expected CERs: 1,610,000,000), a 'Search' box, and 'Key documents' (Further guidance relating to the clean development mechanism - Decision -/CMP.4, Modalities and procedures for).

<http://unfccc.int>

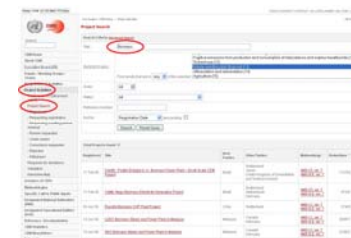
CDM PROJECT INSIDES

Selection of Baseline and Monitoring Methodology

Objective Ex ante determination of the emission reductions which are attributable to the envisaged CDM project activity, e.g. solar power project

Content

- Definition of relevant project boundaries
- Description of the most likely emission scenarios with and without the envisaged project
- Comparison of both scenarios



ACM0002 „Consolidated baseline methodology for grid-connected electricity generation from renewable sources“ in its most recent version is applicable for all solar power projects !

In General:

- Applicability of Baseline Methodologies is described in the particular introduction
- It is recommended to utilize the search tool on the UNFCCC web site in order to identify the appropriate Baseline and Monitoring Methodology for each project type

CDM PROJECT INSIDES

Approved Baseline and Monitoring Methodology Search Tool

Home CDM JI CC:Net TT:Clear
CDM GLOSSARY | CONTACT US | DISCLAIMER | My CDM / LOGIN | JOIN

UNFCCC Google Search

- CDM Home
- About CDM
- Executive Board (EB)
- Panels / Working Groups / Teams
- Programme of Activities
- Project Activities
- Issuance of CERs
- CDM Registry
- Methodologies**
 - Methodologies for CDM project activities
 - Approved Baseline and Monitoring Methodologies
 - Methodology Progress Table
 - Requests for revision of approved methodologies
 - Requests for clarifications approved methodologies
 - Requests for clarifications of tools
 - Afforestation / Reforestation Methodologies
 - Small Scale CDM Methodologies
 - Small Scale Afforestation/ Reforestation CDM Methodologies
- Specific Call for Public Inputs
- Designated National Authorities (DNA)
- Designated Operational Entities (DOE)
- Reference / Documentation
- CDM Statistics

Your location: CDM-Home > Methodologies > Methodologies for CDM project activities 15:10 03 Jun 09

Approved Baseline and Monitoring Methodologies

Search Criteria [\[Help\]](#)

Show: Large Scale Small Scale Consolidated Methodologies

Number: (e.g. AM0013)

Title:

Sectoral Scopes: Find results that are in of the selected:

- Energy industries (renewable - / non-renewable sources) (1)
- Energy distribution (2)
- Energy demand (3)
- Manufacturing industries (4)

Methodological Tools

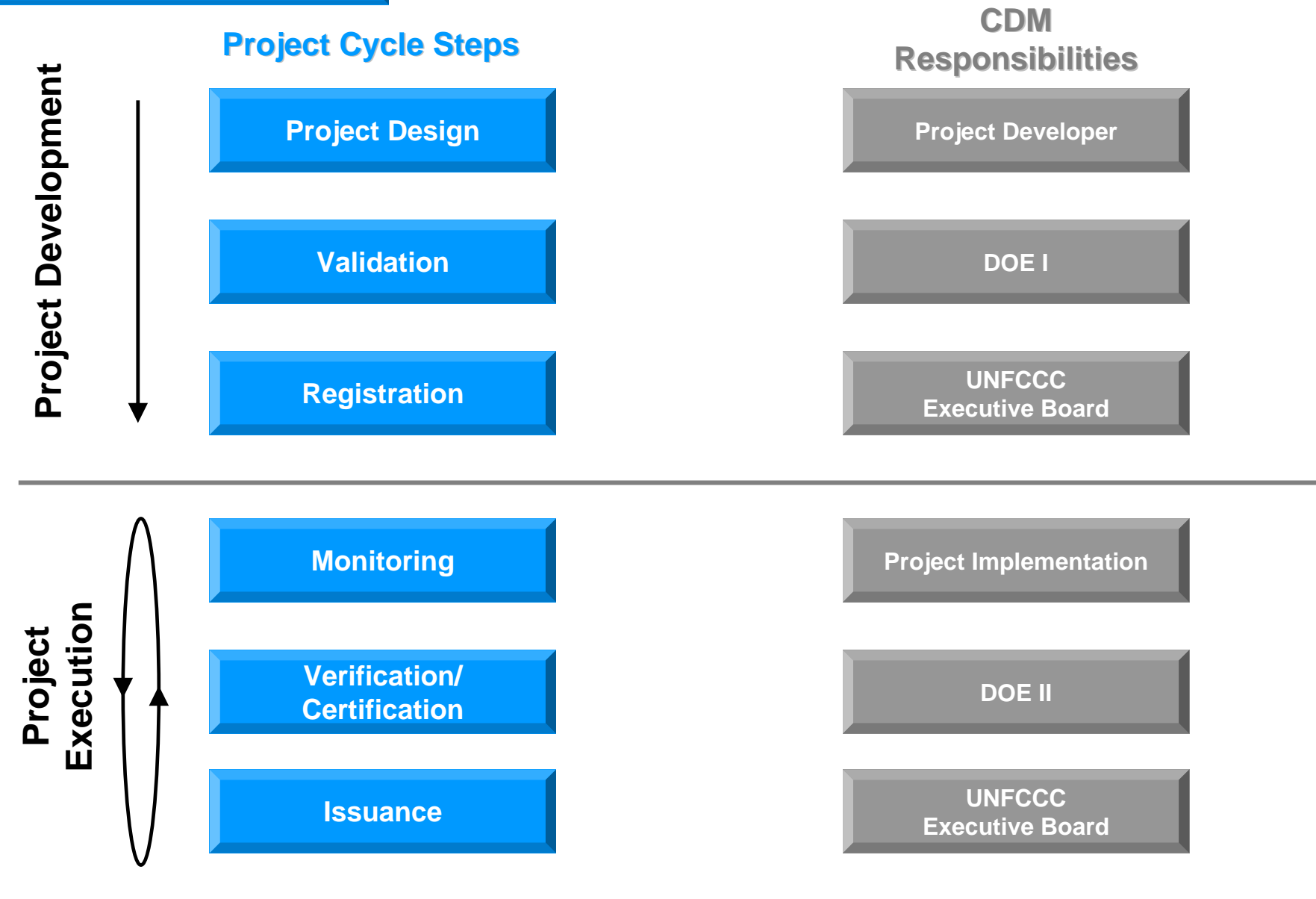
Tool to the demonstration and assessment of additionality (318 KB)	view history
Combined tool to identify the baseline scenario and demonstrate additionality (341 KB)	view history
Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site (370 KB)	view history
Tool to calculate baseline, project and/or leakage emissions from electricity consumption (537 KB)	view history
Tool to determine project emissions from flaring gases containing methane (499 KB)	view history
Tool to calculate the emission factor for an electricity system (578 KB)	view history
Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (260 KB)	view history

Total Methodologies found: 124

Approved Large Scale Methodologies (65)

Meth. Number	Methodology Title (including baseline and monitoring methodologies)	Sectoral Scope	Approval History
AM0001	Incineration of HFC 23 Waste Streams --- Version 5.2 (301 KB) ♦ Full view and history	11	NM0007-rev

CDM PROJECT INSIDES



CDM IN AFRICA

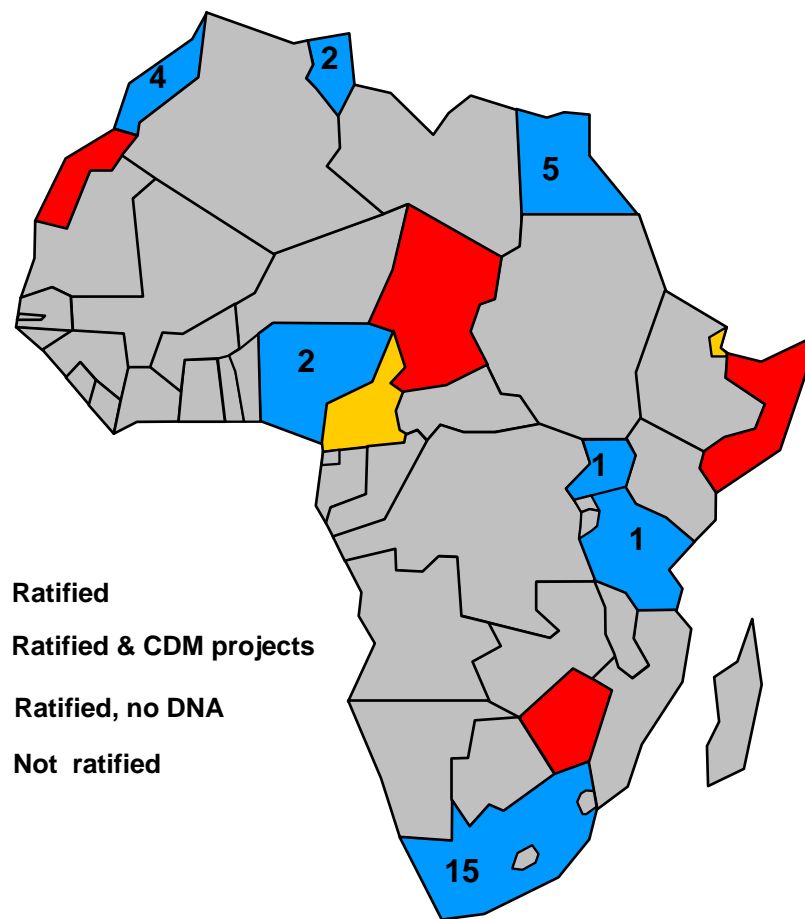
CDM Project Allocation

Registered projects by region. Total 1652



<http://cdm.unfccc.int> (c) 02.06.2009 14:53

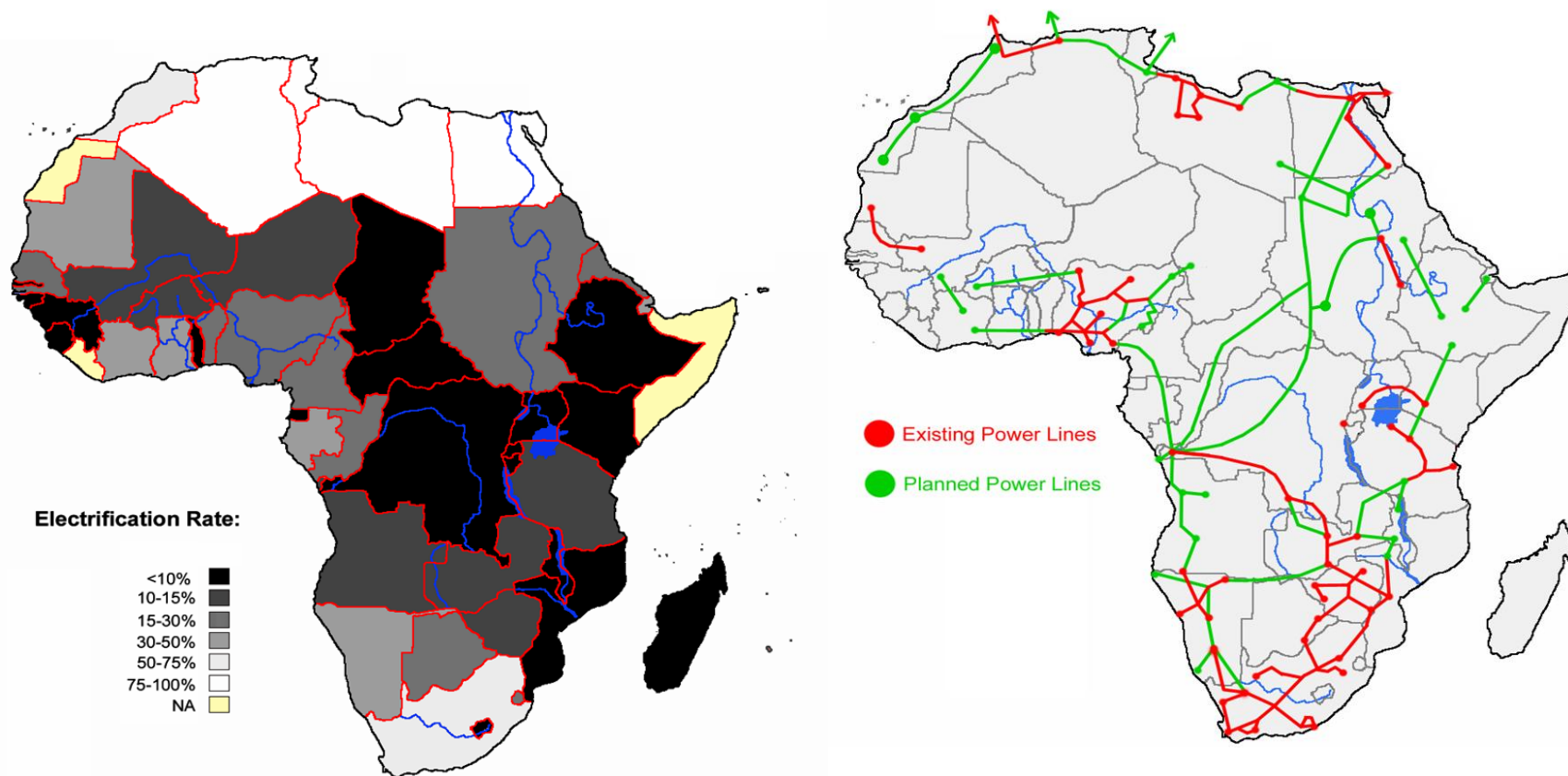
Region	Number of Projects
Africa	30
Asia and the Pacific	1193
Other	9
Latin America and the Caribbean	420



➔ **CDM Projects in Africa only account for 1.82% at present !**

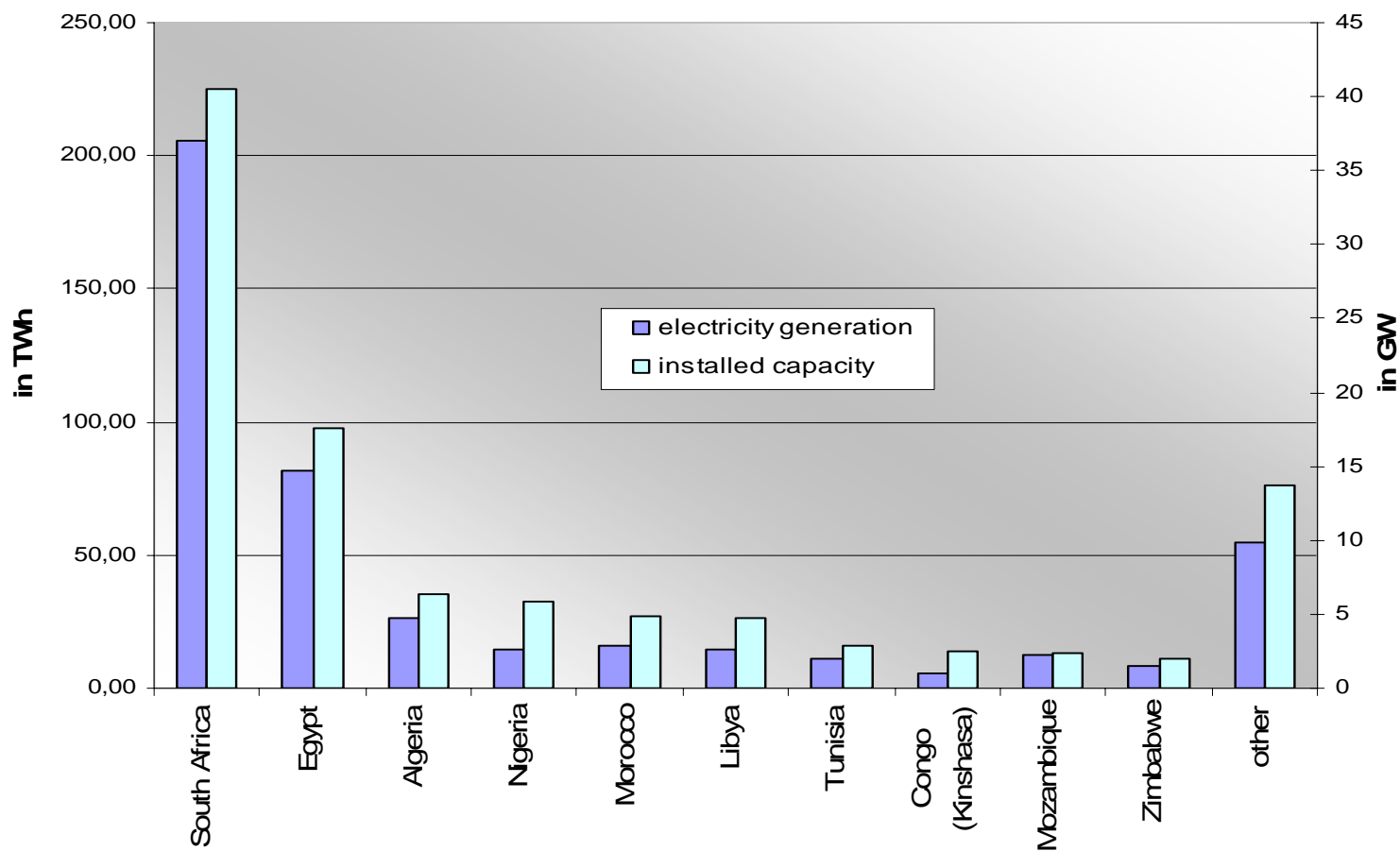
CDM IN AFRICA

Power Grid and Electrification



CDM IN AFRICA

Power Generation and Installed Capacities



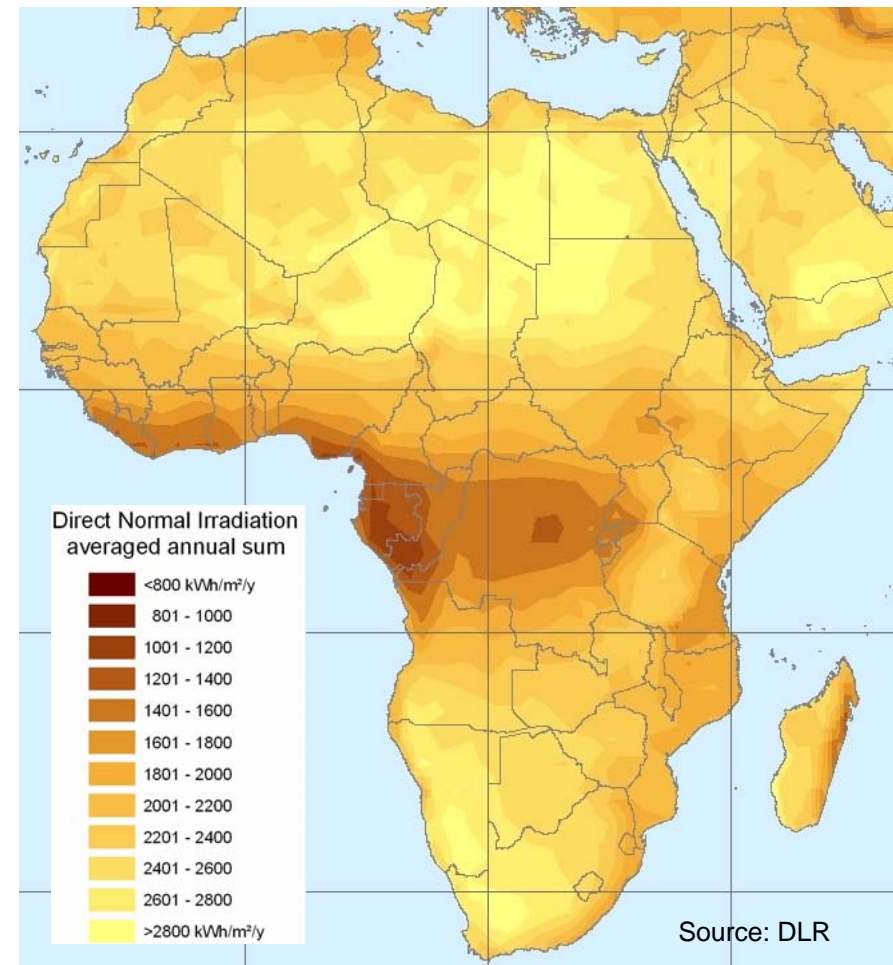
CDM IN AFRICA**Comparison of Power Tariffs***

Utility	Country	Domestic (kWh)	Commercial (kWh)	Industrial (kWh)
BPC	Botswana	6.2	6.1	4.2
CEB	Mauritius	1.2	18.9	7.2
EDM	Mozambique	1.1	1.4	5.3
ENE	Angola	3.7	3.9	2.2
ESCOM	Malawi	3.6	6.3	3.9
ESKOM	South Africa	6.1	6.0	2.2
KPLC	Kenya	9.4	11.4	8.3
LEC	Lesotho	6.9	9.6	4.3
NamPower	Nambia	10.8	10.2	7.0
SEB	Swaziland	6.9	8.4	5.0
TANESCO	Tanzania	7.5	8.2	6.3
UMEME	Uganda	23	22.6	10.9
ZESA	Zimbabwe	0.7	0.5	0.3
ZESCO	Zambia	2.5	3.7	2.6
Reg. Average	SADELEC	6.4	8.4	5.0

CDM IN AFRICA

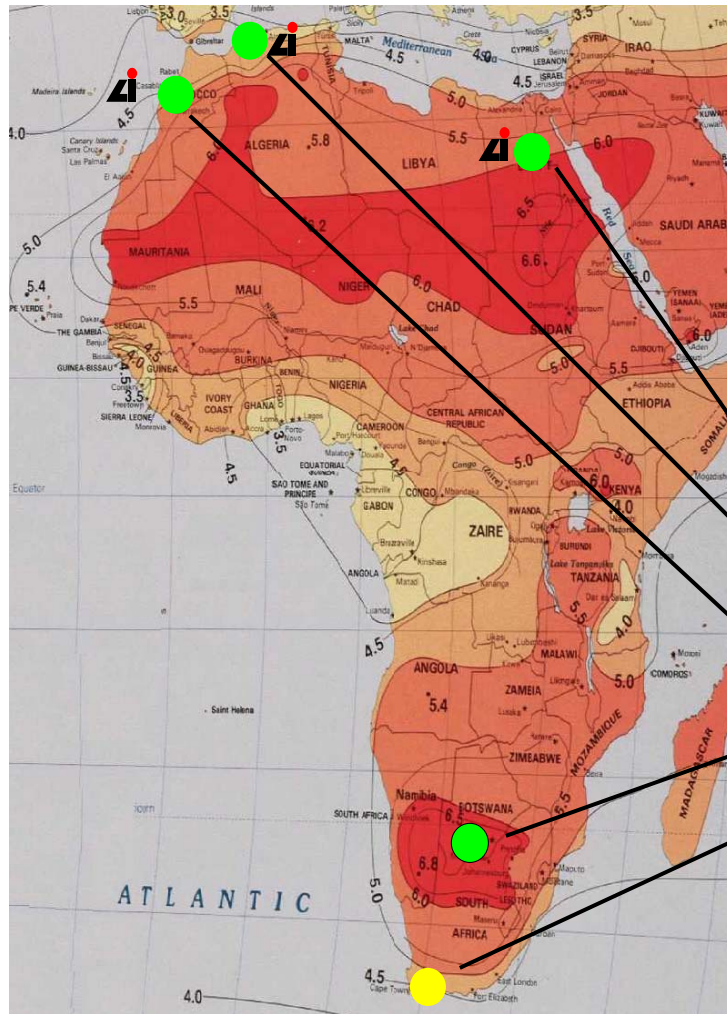
Solar Potential Africa – Direct Normal Irradiation

- Suitable Regions DNI >1800 kWh/m²/a
- Outstanding conditions in the North, Namibia and South Africa
- Large source-drain distances
- CSP applications require grid access
- Investments in grid extension demanded
- ISCC is and alternative
- Off grid PV solutions for rural electrification



CDM IN AFRICA

Concentrating Solar Power Projects in Africa



- Under Development
- Planning

Kurayamat, Egypt 30/150/MW ISCC

Hassi, Algeria 30/150 MW ISCC

Beni Matar, Morocco 30/150/ MW ISCC

Morupule, Botswana

ESCOM, South Africa

SUMMARY & CONCLUSIONS

Options and Limits Summary

Options

- High solar potential → DNI and GNI
- Efficient use of biomass
- Rehabilitation of retired power plants → efficiency increase
- Improvement of transmission and distribution systems
- Technical Potential:*

 - 44 countries
 - 3200 project options
 - 740 million tonnes of CO2 equivalent



Limits

- Low power prices hinder investments
- Minimum project volumes required
- Commitment to carrier – technologies
- Lack of institutional support
- Straight forward & transparent guidelines
- Less developed infrastructure hinders project development

* According to World Bank Study “Low-Carbon Energy Projects for Development in Sub-Saharan Africa”

SUMMARY & CONCLUSIONS

Conclusions

- Capacity Building & Development
 - Institutional, personnel and technological
- DNA Support
 - Awareness raising and general application procedure
- Support of Project Carriers
 - technologies → project types
- Use of New project finance options
 - Micro credit solutions
- Bundling of small-scale projects
 - Program of Activities (PoA) e.g. off-grid PV



Thank you for your attention !

Contact

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BACKUP**Backup: Registered CDM Project List Africa**

No.	Host Country	Project Name	Registered	Methodology	Annual Emiss
1	Egypt	Catalytic N ₂ O destruction project in Nitric Acid Plant	10/7/2006	AM0028	1,065,881
2	Egypt	Onyx Alexandria Landfill Gas Capture and Flaring Project	12/15/2006	ACM0001	370,903
3	Egypt	Egyptian Brick Factory GHG Reduction Project		ACM0009	455,270
4	Egypt	Zafarana Wind Power Plant Project	6/22/2007	ACM0002	248,609
5	Egypt	Waste gas-based cogeneration project	7/26/2008	AM0032	109,514
6	Morocco	Tetouan Wind Farm Project	9/23/2005	AMS-I.D.	28,651
7	Morocco	Essaouira Wind Power Project	10/29/2005	ACM0002	156,026
8	Morocco	PV Kits to Light Up Rural Households	4/28/2006	AMS-I.A.	38,636
9	Morocco	OULJA Landfill gas recovery and flaring	11/6/2007	AMS-III.G.	32,481
10	Nigeria	Recovery of associated gas at oil-gas processing plant	11/9/2006	AM0009	1,496,934
11	Nigeria	Pan Ocean Gas Utilization Project	2/1/2009	AM0009	2,626,735
12	South Africa	Kuyasa low cost urban housing energy upgrade project	8/27/2005	AMS-I.C.	6,580
13	South Africa	Lawley Fuel Switch Project	3/6/2006	AM0008	19,159
14	South Africa	Rossllyn Brewery Fuel Switching Project	9/29/2006	AM0008	100,941
15	South Africa	PetroSA Biogas to Energy	9/30/2006	AMS-I.D.	29,933
16	South Africa	Durban Landfill Gas to Electricity Project	12/15/2006	AM0010	68,833
17	South Africa	Tugela Mill Fuel Switching Project	2/12/2007	AMS-I.C.	55,912
18	South Africa	EnviroServ Chloorkop Landfill Gas Recovery Project	4/27/2007	AM0011	188,390
19	South Africa	Omnia Fertilizer Limited Nitrous Oxide Reduction Project	5/3/2007	AM0028	473,338
20	South Africa	Mondi Richard Bay Biomass Project	5/20/2007	AM0036	184,633
21	South Africa	Sasol Nitrous Oxide Abatement Project	5/25/2007	AM0034	960,332
22	South Africa	Transalloy Manganese Alloy Smelter Energy Efficiency Project	10/19/2007	ACM0002	55,044
23	South Africa	Project for catalytic reduction of N ₂ O	11/5/2007	AM0034	116,779
24	South Africa	N ₂ O abatement project	2/8/2008	AM0034	265,460
25	South Africa	Kanhym Farm manure to energy project	7/18/2008	AMS-I.D.	32,660
26	South Africa	Durban Landfill Gas Bisasar Road	3/26/2009	AM0010	342,705
27	Tanzania	Landfill gas recovery and electricity generation	6/2/2007	ACM0001	202,271
28	Tunisia	Djebel Chekir Landfill Gas Recovery and Flaring	10/6/2006	ACM0001	369,664
29	Tunisia	Landfill gas recovery and flaring - Bundle	11/23/2006	ACM0001	317,909
30	Uganda	West Nile Electrification Project	2/10/2007	AMS-I.D.	36,210