

KfW Carbon Fund

„Scope for Carbon Financing of Domestic Biogas Programmes in Asia“
International Workshop on Domestic Biogas

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1. **Introducing KfW**
2. Background: Introduction to CDM & PoA
3. KfW Carbon Fund
4. The Potential of Carbon Finance for Domestic Biogas Programmes

60 years of KfW

Financing with a public mission



- Promotional bank of the Federal Republic of Germany
- Founded in 1948 as Kreditanstalt für Wiederaufbau
- Shareholders: 80% Federal Republic, 20% federal states
- Headquarters: Frankfurt am Main
Branches: Berlin and Bonn
- Representative offices: around 70 offices and representations worldwide
- Balance sheet total at end 2010: EUR 441.8 billion
- Financing volume 2010: EUR 81.4 billion
- Around 4,530 employees (2010)
- Best rating: AAA/Aaa/AAA

A bank with a wide array of functions



KfW Carbon Fund Team

Domestic promotion

We promote Germany

Business Area Mittelstandsbank

Promotion SMEs, business founders, start-ups

Business Area Privatkundenbank

Promotion construction of new housing and modernisation as well as education

Business Area Kommunalbank

Financing municipal infrastructure projects and global loans
Germany/Europe agency business for Federal Government

International business

We ensure internationalisation

Business Area Export and Project Finance

International project and export finance

We promote development

Business Area Promotion of Developing and Transition Countries

Promotion of developing and transition countries

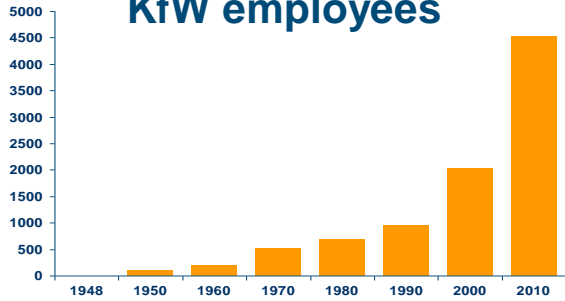
Promotion of environmental and climate protection



Worldwide presence

Over 70 representative offices

KfW employees



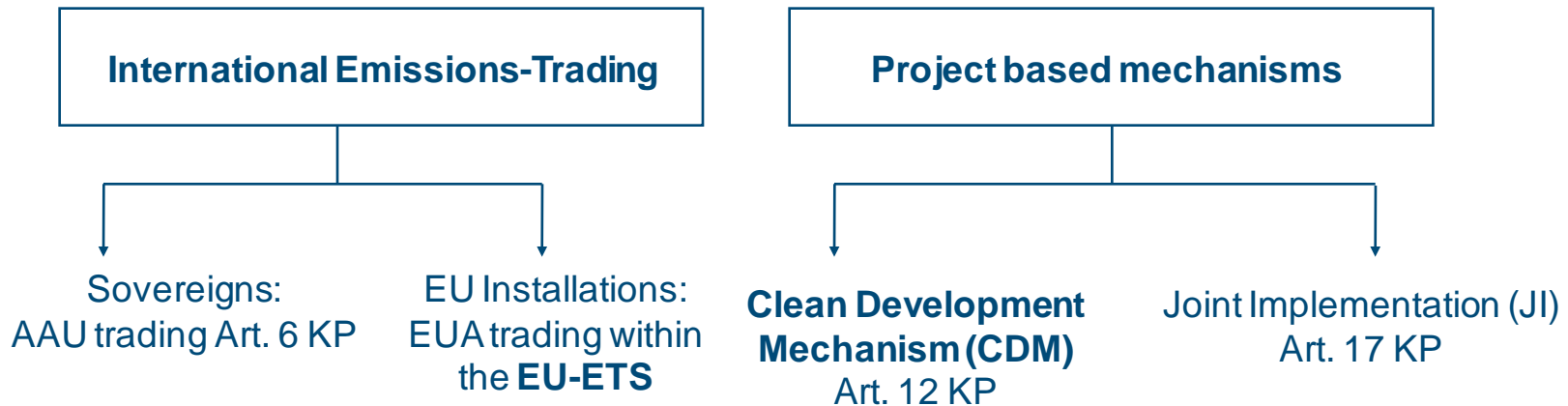
1. Introducing KfW
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1. UNFCCC – big brother defines the playing field



→ Kyoto protocol allows to fulfil part of a country's obligations abroad by using the Flexible Mechanisms of the Kyoto Protocol. The Flexible Kyoto Mechanisms should help member states to achieve their emission reduction commitments as cost-effectively as possible.

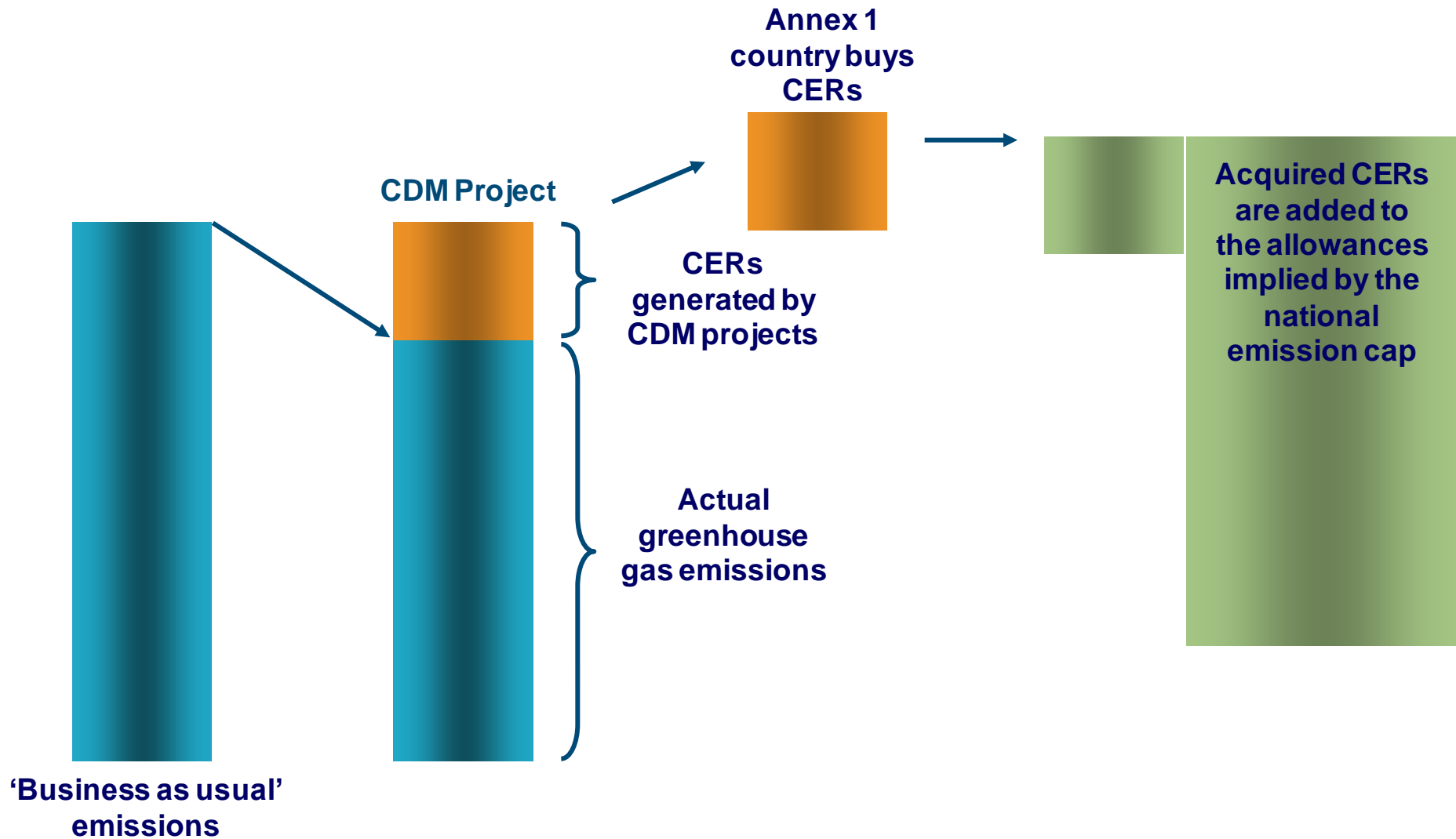


→ **EU-ETS**: The European Union's Cap and trade system
Main instrument to meet the EU's Kyoto commitments

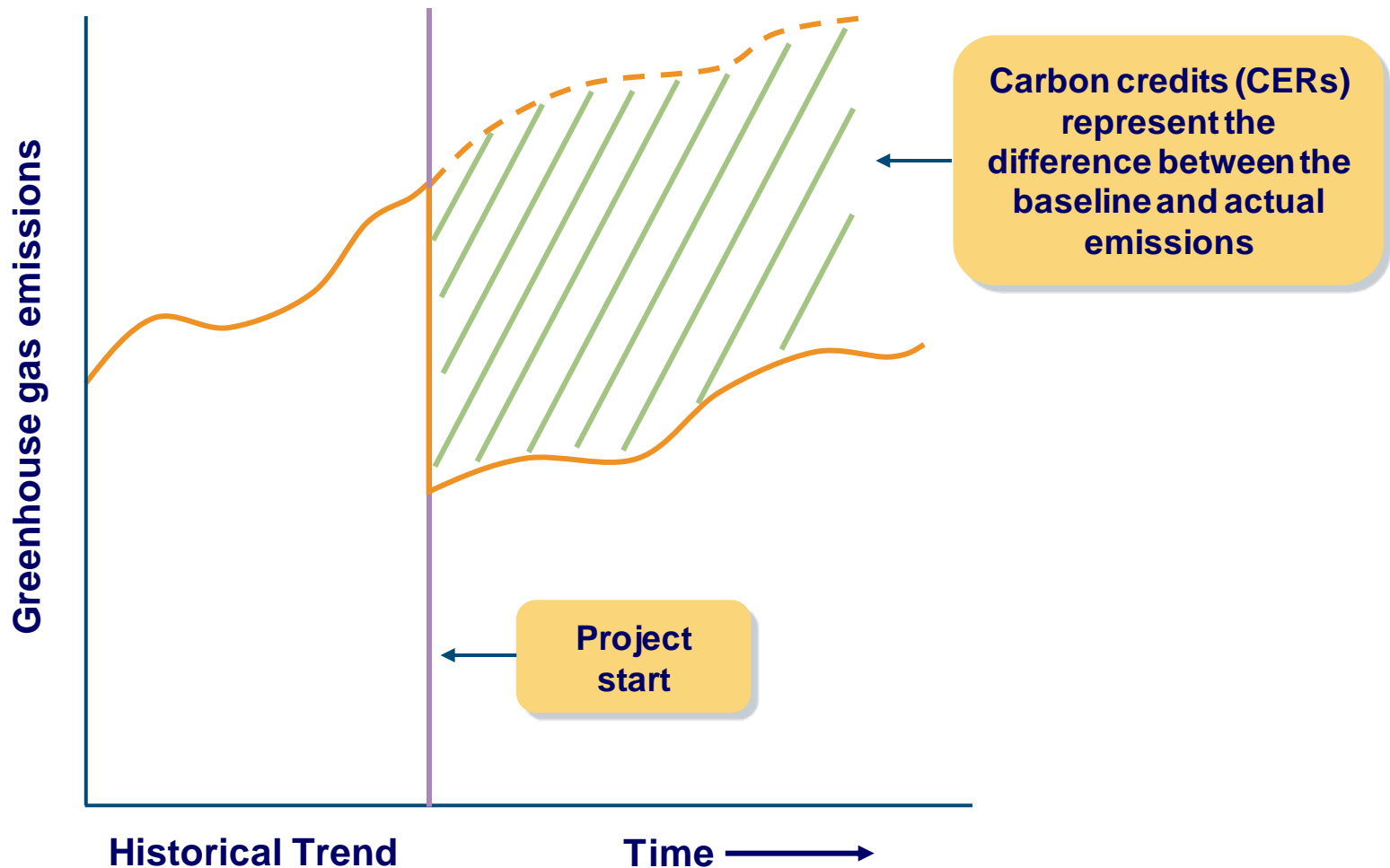
→ Includes ca. 12,000 energy intensive installations in the EU and covers approx. 45% of all greenhouse gas emissions in the EU

→ Allows for international **offset credits** generated within the **CDM** to support compliance

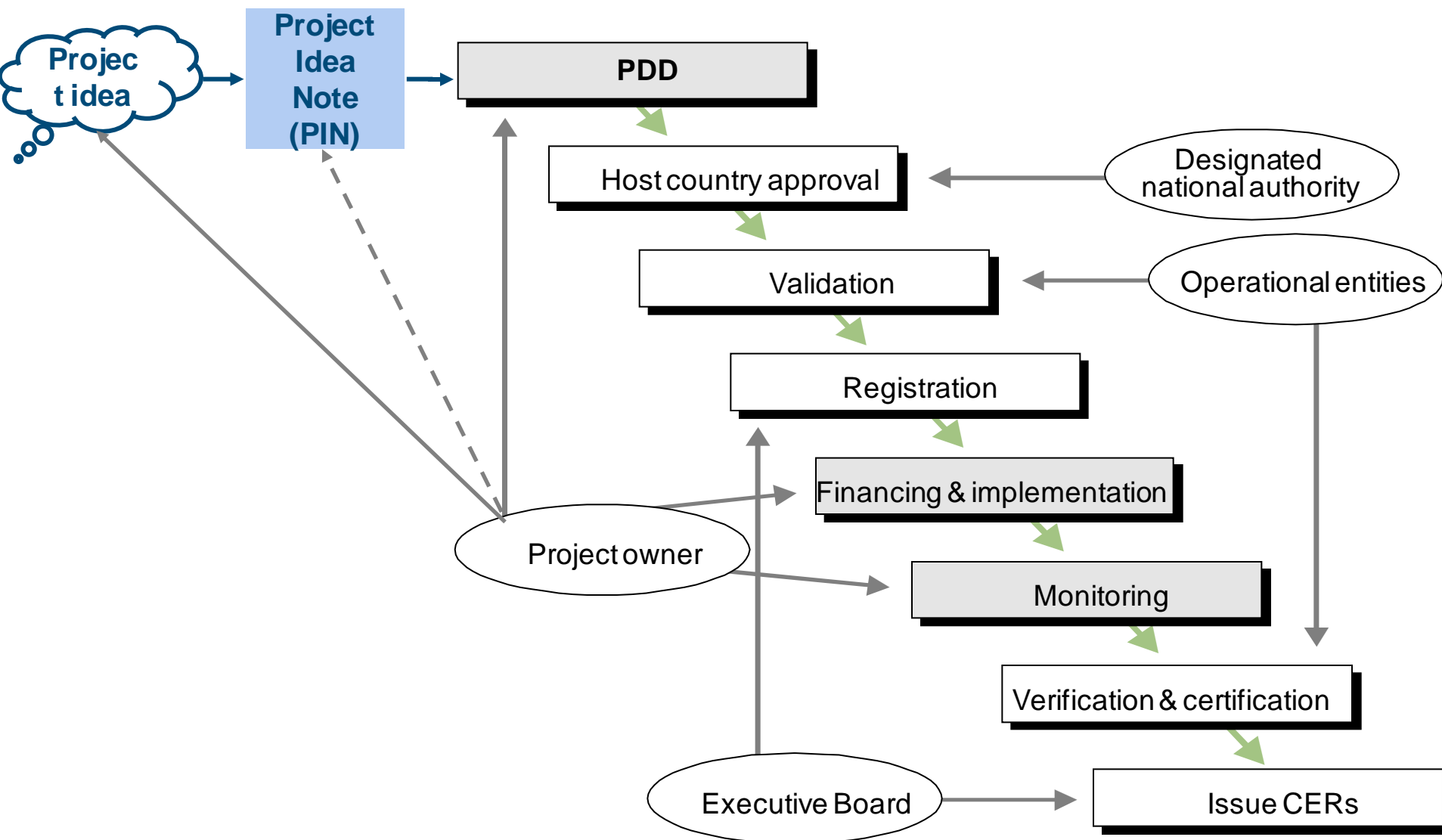
The role of the Clean Development Mechanism (CDM)



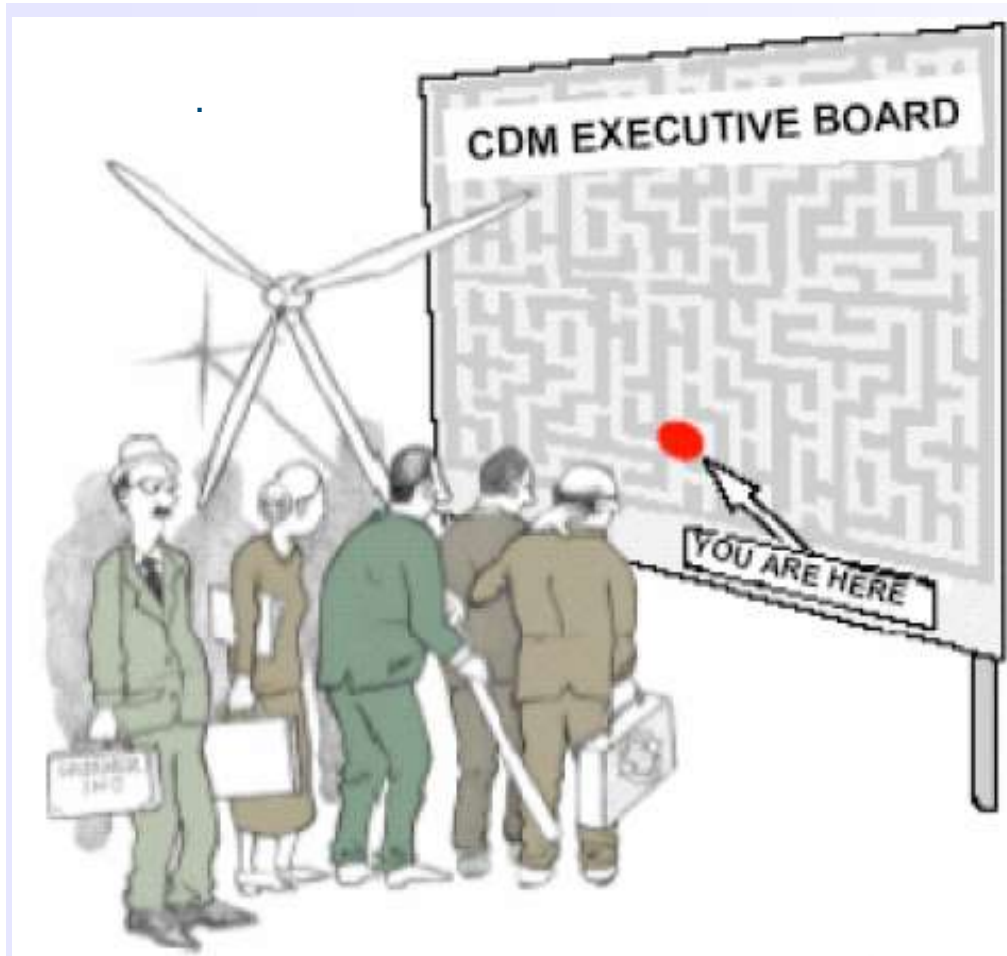
How a CDM project generates carbon credits



CDM Project Cycle



The CDM – not easy, but it works



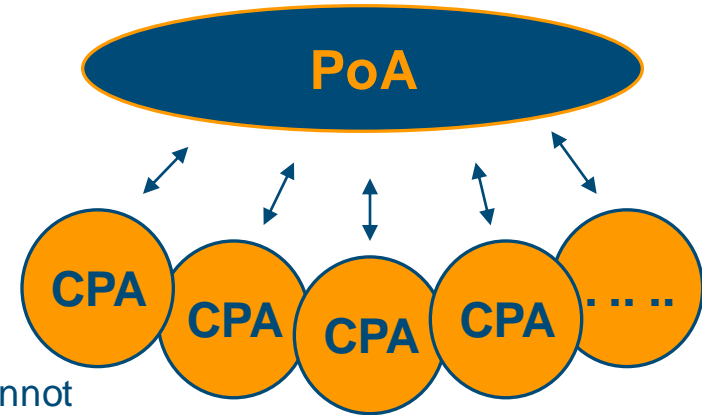
But:

- >3000 projects registered
- >150 methodologies
- >600 million CERs issued
- at least 1,0 billion CERs expected until 2012
- Multi billion EUR carbon market
- ... the CDM is operational

Introduction of Programmatic Approaches: What is a PoA?

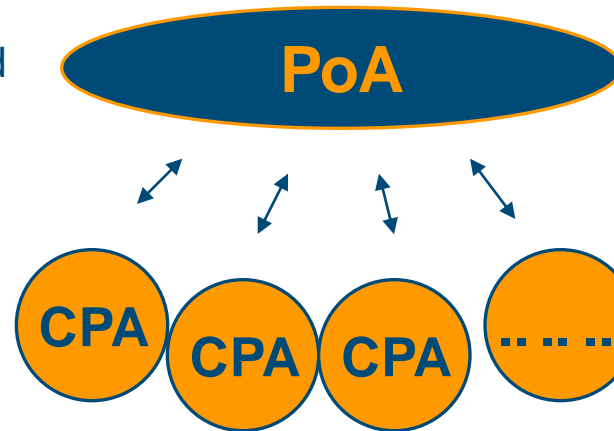
A PoA consists of several project activities:

- PoA was developed to solve the problems of the CDM: High transaction costs, therefore only attractive for larger stand alone project types.
- It covers a large number of small greenhouse gas abatement activities (CDM programme activities – CPA) that individually cannot bear CDM/JI related transaction costs
- Many small/ micro projects can be compiled to one program
 - Every project under one programme uses the same methodology
 - An unlimited number of programme activities can be registered as one programme
 - Every single project activity (CPA) or project bundle can be added to the PoA at any point in time during the lifetime of the PoA through a simple procedure
- Small/micro activities: use of CDM within incentive and policy programs is possible
- CDM revenues can be used for subsidy elements of the financing structure, as cash incentives or to support O+M



Introduction of Programmatic Approaches: Structure

CPA: Set of interrelated measures to reduce GHG emissions within a designated area => particularly suitable for dispersed micro activities like domestic biogas plants



All CPAs end when PoA is terminated.

A PoA Coordinator is responsible for the PoA and communicates with the EB.

All CDM methodologies can be applied.
The SSC threshold is relevant on CPA level.

CPAs must be homogenous

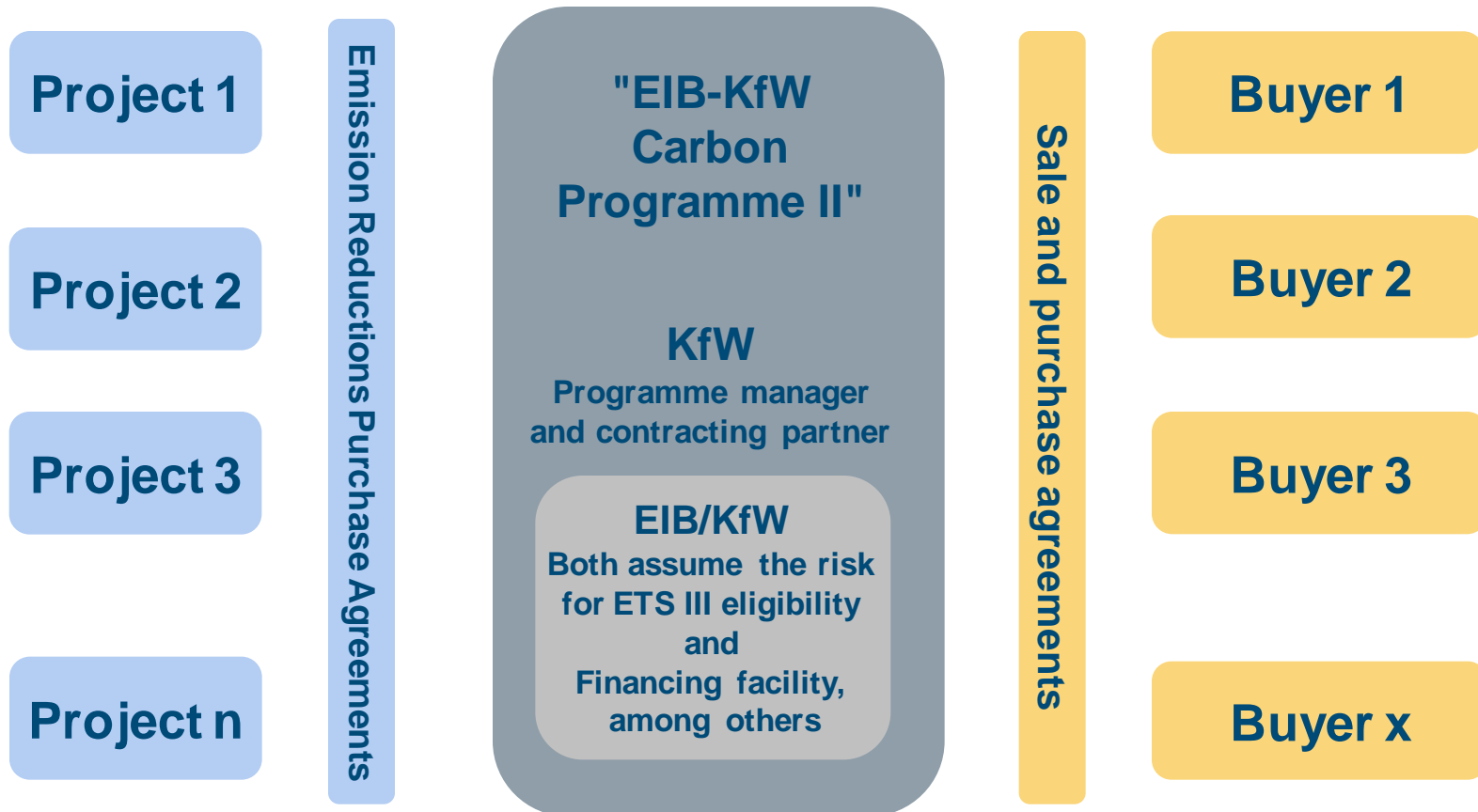
Estimated Costs of PoA Development

Activity	Estimated Costs	Comments
	Preparation Phase	
Development of PoA idea and a PIN.	Between EUR 8,000 and EUR 15,000 plus travel expenses	Without feasibility studies / field visits / baseline surveys etc. Upfront
Development of PoA Design Document and CPA Design Document, including monitoring plan.	Between EUR 30,000 and EUR 80,000,	Costs for subsequent CPA inclusions by DOEs are not included and mainly depend on number and complexity of eligibility criteria of the CPAs.
Implementation concept.	Up to EUR 100,000	Incl. record keeping system for each CPA adaptation of internal procedures, documentation etc.
Registration fee, UNFCCC	Registration costs of a PoA are determined by the first CPA.	Calculation of the amount to be paid and the procedures for payment will follow the existing rules for the payment of a registration fee
	Operational Phase	
Monitoring reports. Installation of monitoring equipment and establishment of a monitoring database.	EUR 30,000 – EUR 100,000	Upfront and yearly expenses depending on the project type and applied methodology
Ongoing verification	Approx. EUR 15,000 – EUR 40,000	Depending on number of CPAs for which monitoring needs to be verified
Issuance fee, UNFCCC.	USD 0.10 for the first 15,000 t CO ₂ e; USD 0.20 for any amount in excess of 15,000 t CO ₂ e in a given calendar year	

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3. **KfW Carbon Fund**
4. The Potential of Carbon Finance for Domestic Biogas Programmes

- KfW Carbon Fund started in 2005 as a pure Purchase Programme for Carbon Credits (JI/CDM)
- KfW concludes purchase contracts for Forward or Issued Carbon Credits with Sellers
 - Payment on delivery, advance payment possible
 - Up to 2012 with option to extend
 - Post Kyoto purchase possible
- KfW acts as a trustee for European Programme Participants: German and European enterprises, who want to make use of JI and CDM for compliance purposes
- **KfW's activities focus on imperfections in the market**
 - Enable / simplify access to the carbon market
 - Quantify and, where appropriate, assume risks of the carbon market
 - Mitigate regulatory risks by creating liquidity and security (e.g. post-Kyoto)
 - Give special support to small development-promoting projects like CDM-PoAs
 - Support the transfer of technologies towards developing countries

EIB-KfW Carbon Programme II Structure



EIB-KfW Carbon Programme II

- Volume EUR 100 million
- Purchase up to 2020
- Focus on PoA and LDCs
- Financing Facility for Preparatory Measures

Sellers



- Long term offtake contracts at market prices
- Flexible Pricing arrangements
- English law offtake contracts following international standards
- AAA-Offtaker with long-term mission
- Advance payments possible
- Support in UNFCCC processes
- Additional support for programmatic approaches (PoA)

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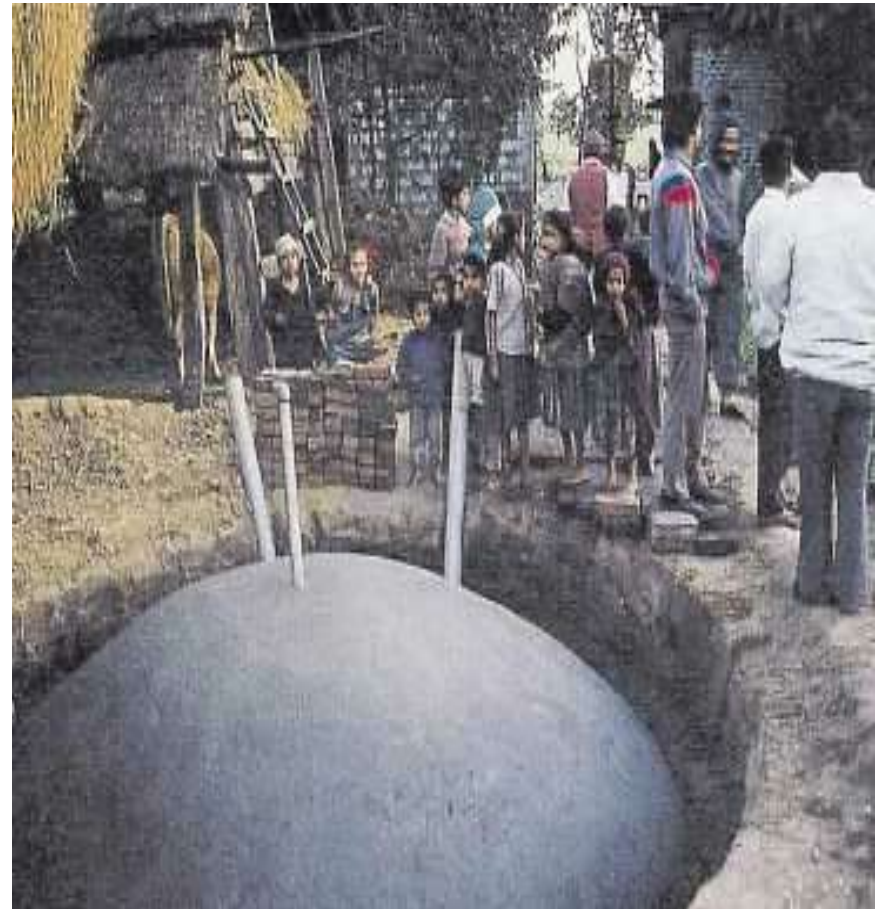
Overview of Biogas PoAs under Validation in Asia

Type: Processing of Animal Waste

Country	Number of PoAs	Scope/ Capacity of the CPA	Description
China	6	Varies from 2 digesters to 30,000 households	Hebei Animal Manure Management System + 5 small scale Household Biogas Digester Programmes in different geographic regions
India	1	Approx. 12000 households	Methane abatement and household biogas utilization programme
Nepal	1	20,000 digesters p.a.	Biogas Support Program - CPA 1: 20,000 digesters
Pakistan	1	18,000 biogas plants	Pakistan Domestic Biogas Programme-(PoA)
Philippines	1	2 lagoons (20,000m3 and 63,000m3)	Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems
Thailand	1	3 Farms	Small Scale Livestock Waste Management Program
Vietnam	1	20,863 households (first CPA)	Vietnam National Biogas Programme

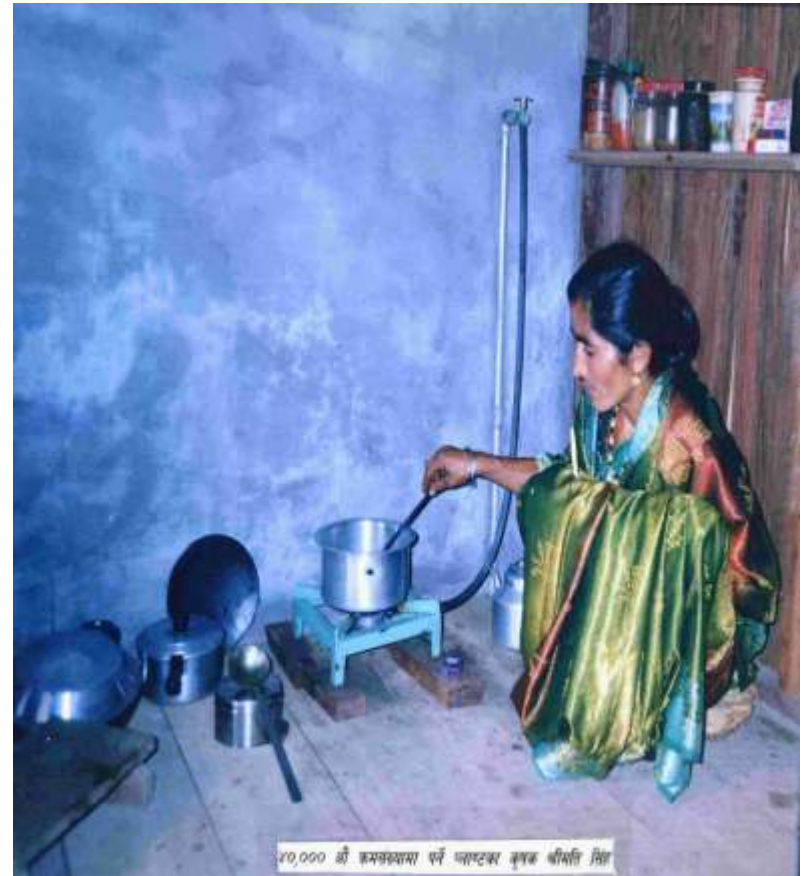
Project Example 1: Biogas Support Programme Nepal

- Started on big scale in 1992, supported by Dutch Development Organization SNV
- Target group are rural households with a minimum of two cows
- Proven, easy to maintain technology, which provides biogas for cooking, lighting & fertilizer
- Fed mainly with animal excrements
- Built by local companies, with 100% local materials
- KfW involved since 1997, about 250,000 plants are built, program continues with about 20.000 plants per year



Project Example 1: Biogas Support Programme Nepal

- Cost: about 250 - 300 EUR per 6 m³ plant; reduced by subsidy from KfW/GoN, as well as by own labor contribution
- Financing at preferential conditions from local banks, which are supported by KfW subsidy funds
- KfW contribution until today: 22 Mio. EUR
- Impact: reduced deforestation, **reduced CO₂ Emissions (2-10 t CO₂ e/a)**; reduced time for collection of fuel wood and dung, reduced in-house pollution, employment of local labor, qualification and know-how transfer



Project Example 1: Biogas Support Programme Nepal

Why CDM Programme?

- When Programme was started Kyoto mechanisms were not yet available, Programme could be only funded with development support
- Development support is fading out, for ongoing Programme the necessary subsidy element shall be raised by CDM → CDM ensures continuation of the programme
- CDM can help to improve maintenance of biogas plants, increase sustainability, provides incentives / funds for long-term operation

What has been done so far?

- PoA Design Documents have been developed
 - Programme Development is pre-financed by KfW Carbon Fund
- PoA is presently under validation
- ERPA for CERs up to 2017 has been signed to ensure long-term income
- Agreement with Programme Coordinator for use of CDM revenues reached:
 - 1.) Payment of CDM related costs
 - 2.) Subsidy for new plants within the Programme
 - 3.) support of maintenance of existing plants

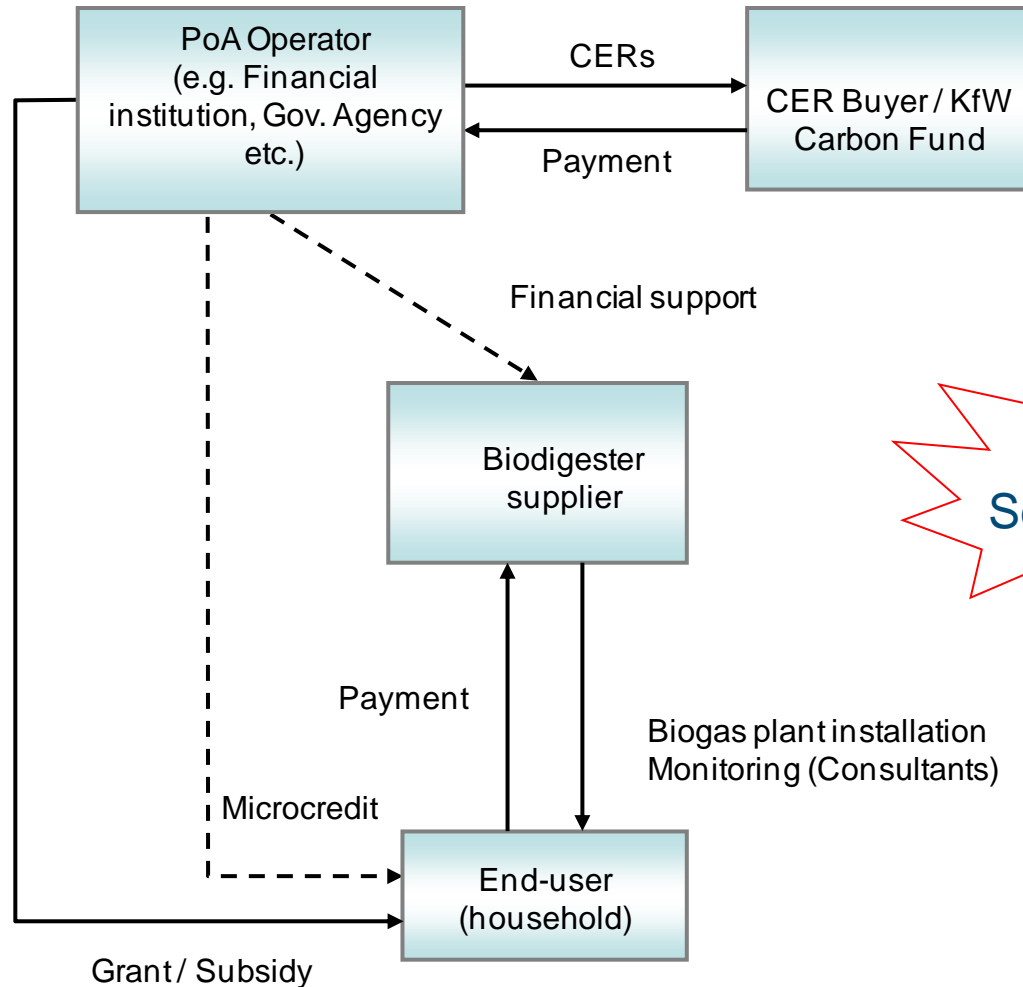
Example 2: Biogas PoA in India

Technology: Animal Waste Treatment

- Biogas digester made from simple masonry
- Minimum 20 kg dung per day (2 cows or 7 pigs)
- Lifetime ~20 years
- Initial cost of 200-300 €
 - Barrier for cash-strapped people in developing countries (60-80% of annual rural family income)
- Very sensitive technology that needs qualified regular maintenance of trained staff over the whole lifetime, at least during the crediting period

Example 2: Biogas PoA in India

Funding Structure of Biogas PoA



**Challenge:
Seed Funding**

Example 2: Biogas PoA in India

Simplified Financial Model without CDM revenues

Annual costs and revenues	Costs (USD)	Revenues (USD)
Digester investment costs (10,000 digesters @ USD 235)	2,350,000	
O&M (based on the average number of digesters installed in the 10 year period)	100,000	
Programme Management Costs	25,000	
Promotion, publicity and training	25,000	
Household contribution (~USD 175 per digester)		1,750,000
Central government subsidy support		550,000
Total	2,500,000	2,300,000
Financial Gap	200,000	

Assumptions:

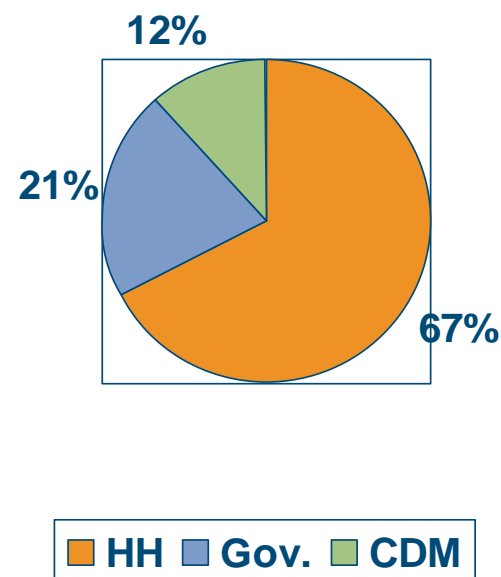
- Number of Digesters: 10,000
- Cost per Digester: USD 235
- Gov. Subsidy per Dig.: USD 55
- Household Contribution: USD 175
- O+M costs p.a. per Dig.: USD 10

Example 2: Biogas PoA in India

Simplified Financial Model including CDM revenues

Annual costs and revenues	Costs (USD)	Revenues (USD)
Digester investment costs	2,350,000	
O&M (based on the average number of digesters installed in the 10 year period)	100,000	
Management Costs	25,000	
Promotion, publicity and training	25,000	
Annual CDM costs	75,000	
Household contribution (~USD 175 per digester)		1,750,000
Central government subsidy support (~USD 55 per digester)		550,000
Annual CDM revenues (based on 10 year average)		300,000
Total	2,575,000	2,600,000
Financial Surplus:	25,000	

Overview of Financing Sources



- The choice of the right methodology is crucial and takes time and effort
 - chosen methodology in Nepal: AMS I.E: Switch from Non-Renewable Biomass for Thermal Applications by the User
- Procedural Framework for CDM PoA is relatively complex and constantly changing
- Sometimes improvements are necessary in the programme approach and systems to meet the CDM requirements
- Realistic, clear and specific monitoring plans and sometimes separate monitoring of the plants in the CDM project are necessary to ensure the issuance of CERs

➤ Advice on:

- Identification of pCDM opportunities;
- Check with CDM requirements;
- First economic assessment.

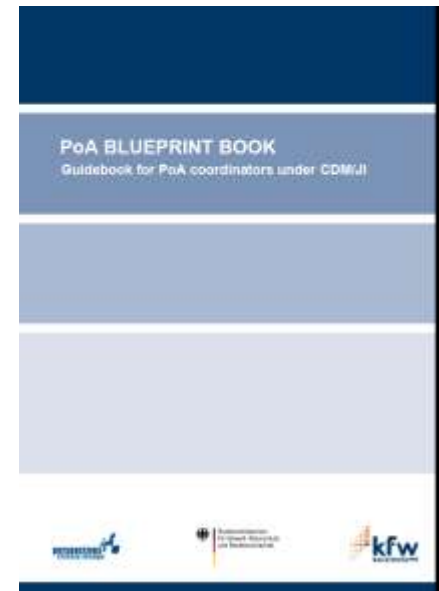
➤ Development of the PINs + PDDs

- Technical support
- Financial support

➤ Advice during decision-making progress

➤ Dissemination of Information, Workshops and Publications “Blueprint book”

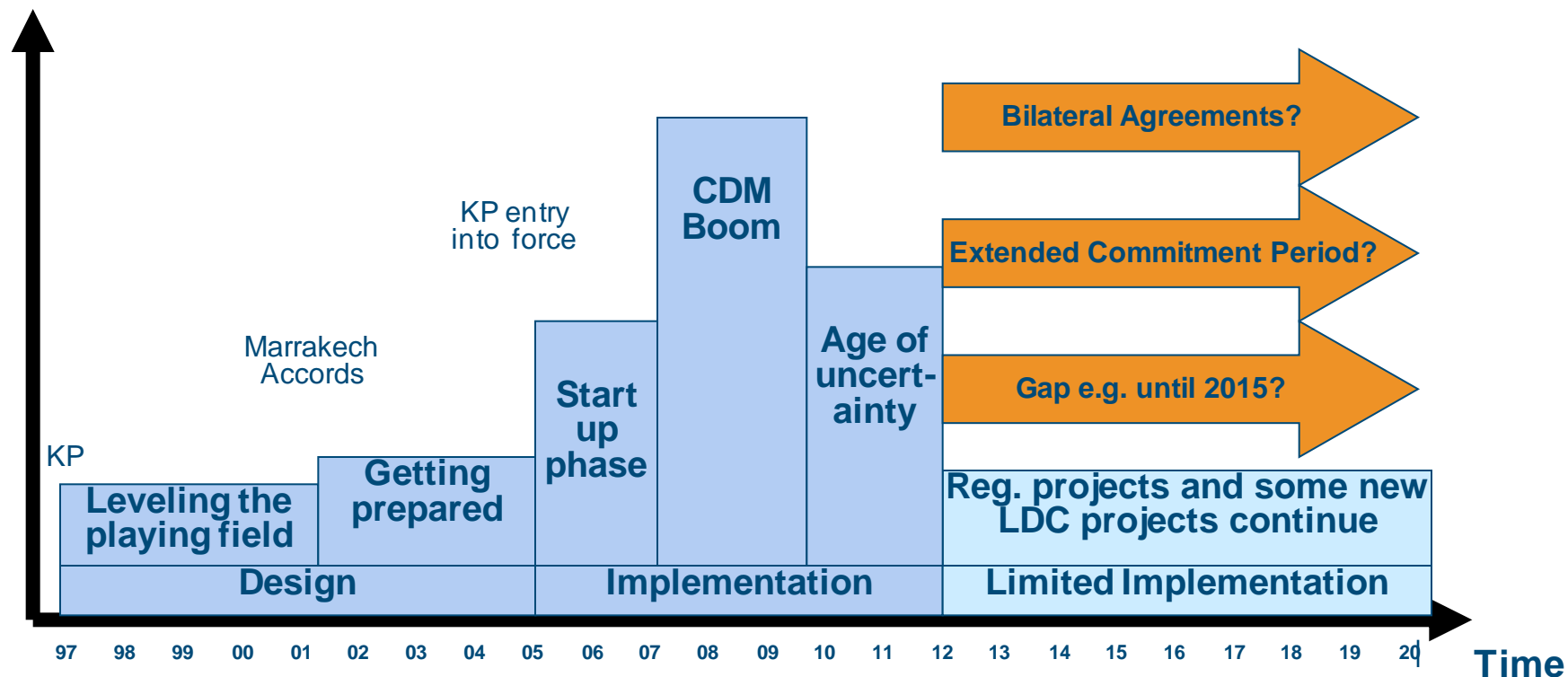
➤ http://www.kfw.de/kfw/en/KfW_Group/Sustainability_and_Climate_Protection/PDF/PoA_BP_08-02-2011_final.pdf



Outlook

CDM phases and views on post 2012 scenarios

Expectations CDM / New Mech.



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