

Capacity Building for Development and Implementation of Carbon Finance Projects in Pakistan



Workshop on Carbon Credit Opportunities in Power Sector of Pakistan



22nd August, 2009
Lahore Chamber of Commerce, Lahore

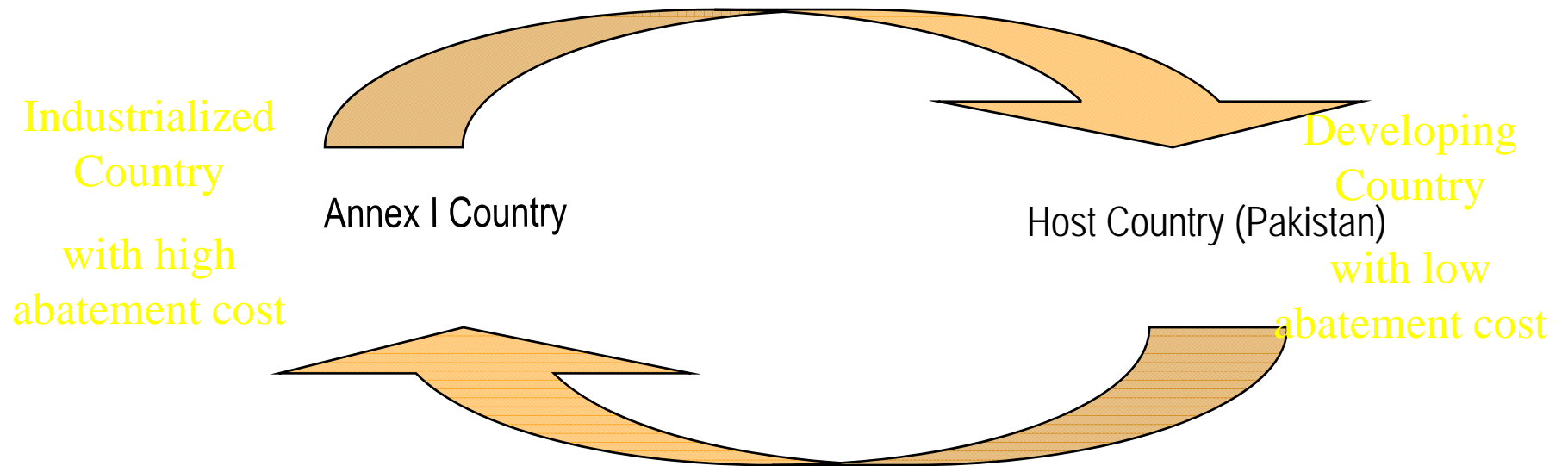
Clean Development Mechanism

- Dual objectives
 - lower the overall cost of reducing GHG emissions
 - while also supporting sustainable development initiatives within developing countries.
- Establish the baseline and demonstrate **additionality**.

What does the CDM aim to achieve?

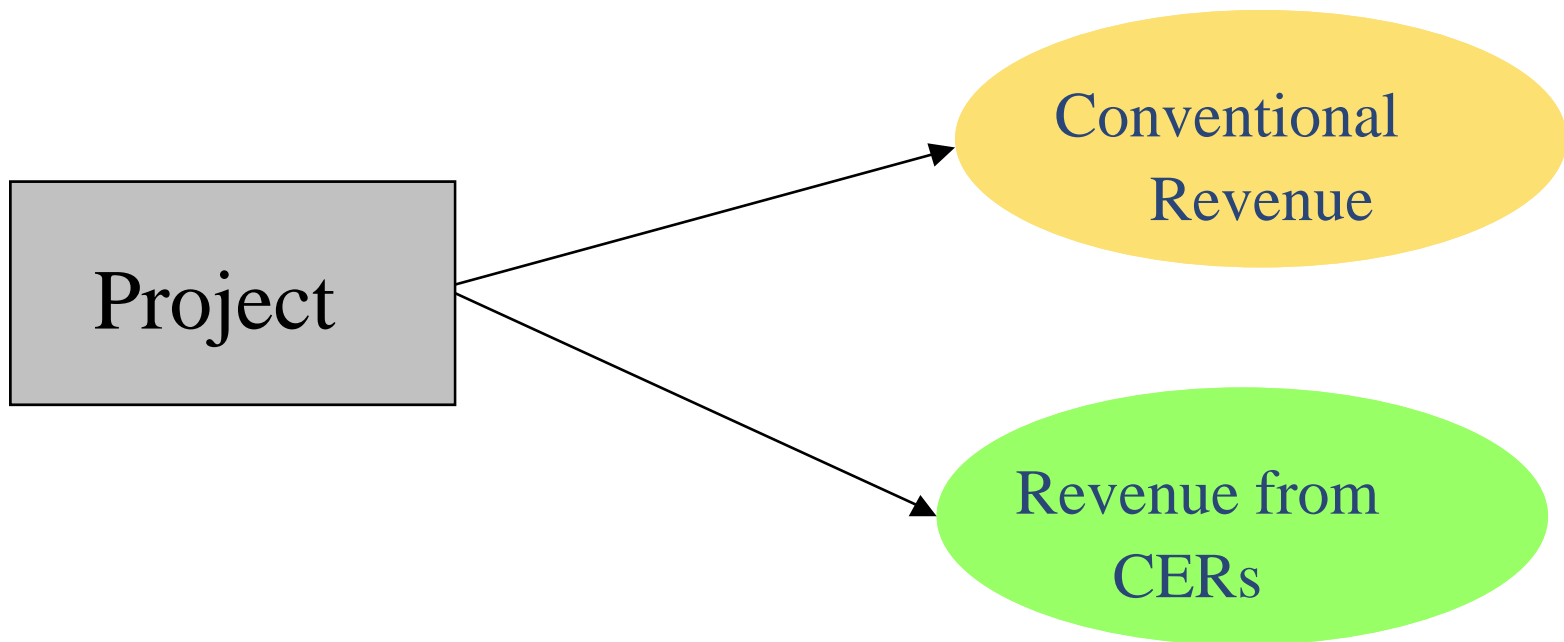
A transfer of finances and contribution to sustainable development in the Host Country

Flow of Finances

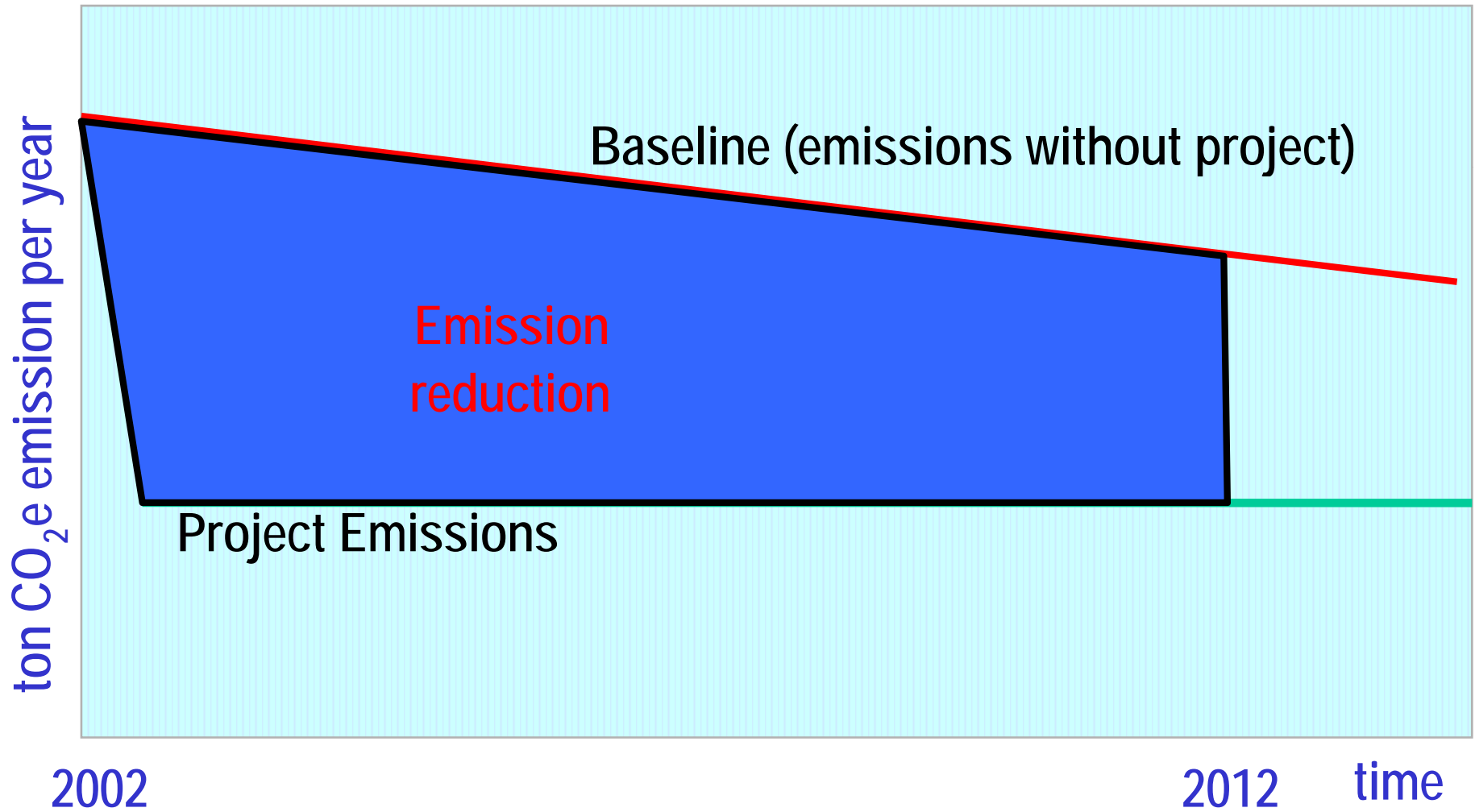


Flow of Credits

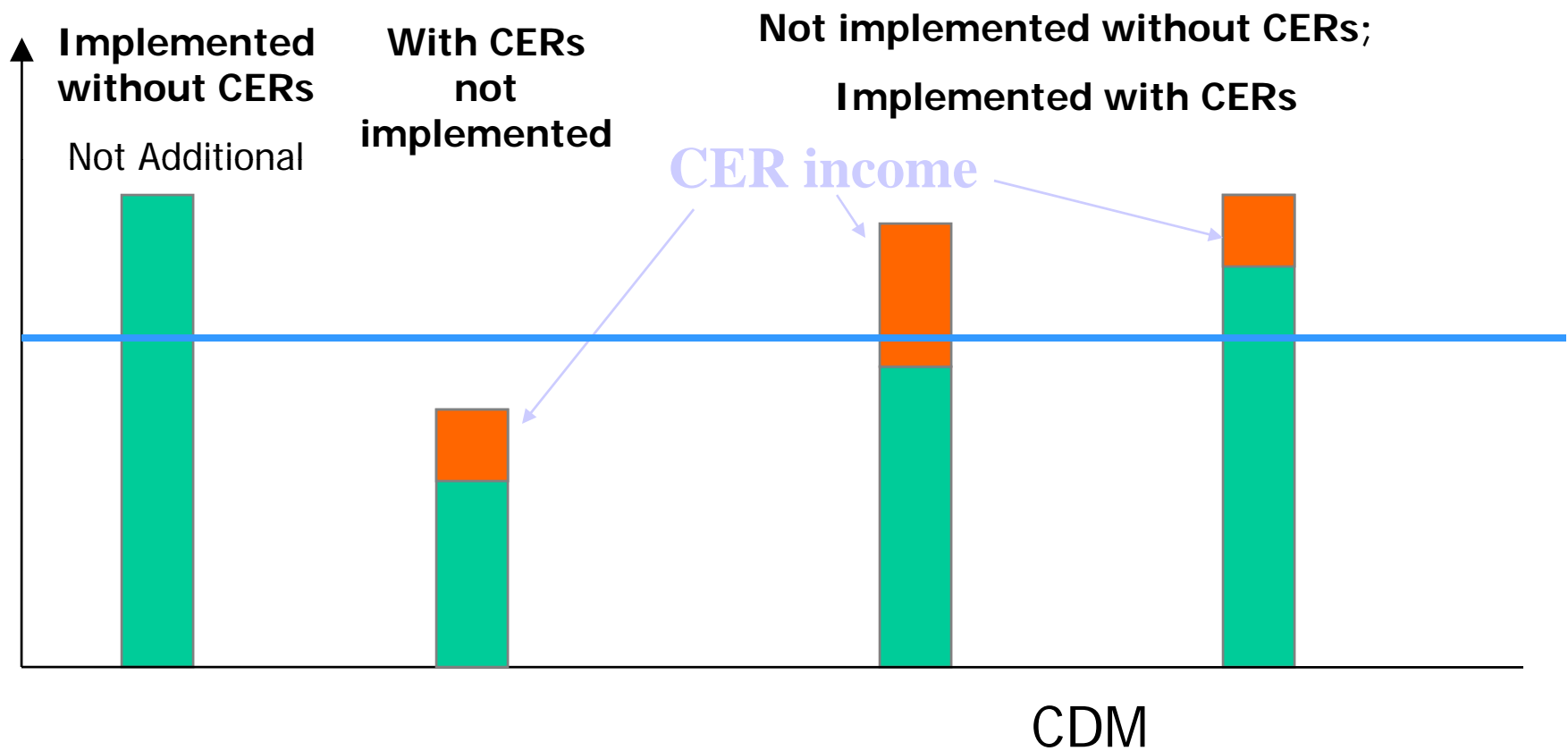
What does it mean for projects?



Baseline



Additional Value From 'Clean' Projects



Power Sector

1. Grid Connected Large Hydro

- 182 sites for a total potential of 25 GW identified in NWFP, AJK and NA by PPIB
- 157 TWh capacity per year
- **Baseline Emissions:** 56 Mtons of CO₂
- **Abatement Potential:** 56 Mtons of CO₂/yr
- **Barrier Analysis**
 - Policy barrier: WAPDA, the power purchaser, has not offered commercially viable tariff
 - Investment barrier: scarcity of capital and high capital cost due to high country risk

2. Wind Energy

- Baseline Emissions: 49 million tons of CO₂
- Abatement Potential: 12 million tons of CO₂ per year
- Barrier Analysis:
 - Absence of bankable wind data sources
 - Absence of basic infrastructure (roads etc.)
 - Current upfront feed-in tariff offered by NEPRA is considered to be too low
 - Lack of access to project financing from local banks

3. Reduction in Transmission and Distribution Losses

- Total electricity production (2006-7) was 98,384 GWh.
- Electricity T&D losses average 25% for WAPDA and 37% for KESC, giving a weighted average of 26% for the country.
- **Baseline Emissions:** 49.2 million tons of CO₂ per year
- **Abatement Potential:** 4 million tons of CO₂ per year
- **Investment Barrier:**
 - Very old T&D infrastructure
 - Need for significant capital infusion to improve the infrastructure

4. Domestic Energy Efficiency

- In 2006-7 total electricity consumption: 72,712 GWh
- Total home consumption: 33,335 GWh
- Baseline Emissions: 20 million tons of CO₂
- Abatement Potential: 3.6 million tons of CO₂ per year
- Barrier Analysis:
 - Availability of high efficiency appliances in the market is rather limited due to:
 - Lack of energy efficiency standards and labelling requirements
 - Low level of consumer awareness on cost effectiveness of alternatives

5. Bagasse Co-generation

- 76 sugar mills in the country with reportedly 760 MW (on an average 10 MW per factory) of cogeneration capacity, 6 months out of a year
- **Baseline emissions** (assuming grid baseline of 0.5 kg CO₂/kwh): 1.66 Mtons of CO₂ /yr
- **Abatement potential:** 1.66 Mtons of CO₂ /yr
- **Policy Barrier**
 - Lack of clear policy about purchase of power by utility companies from co-generators.
 - No clear feed-in tariff for power generated from sugar cogeneration

6. Combined Cycle Power Generation

- Expected electricity production by CCPP technology in 2010: 23,431 GWh
- **Baseline Emission** from natural gas:
 - 11.7 million tCO₂ 2010 onwards
- Projected emissions from CCPP:
 - 7.7 million tCO₂ 2010 onwards
- **Abatement Potential**
 - Year 2010 onwards: 4 million tCO₂/yr
- **Investment Barrier:** low IRR, poor financial health of companies
- **Technology Barrier:** severe lack of experts

7. Municipal Energy Efficiency

- In 2006-7 municipal sector consumed 4,760 GWh
- **Baseline emissions:** 2.4 MTons of CO₂/yr
- **Abatement potential:** 0.476 MTons of CO₂/yr
- **Barriers:**
 - Lack of awareness among government decision makers and architect community
 - Lack of laws for enforcing construction of energy efficient buildings
 - Government has severe cash shortage
 - Lack of political will

8. Grid Connected Micro/Mini/Small Hydro

- 644 sites of less than 50 MW identified in NWFP, NA, AJK and Punjab with a total potential of 1,767 MW
- Total yearly generation: 11 TWh
- **Baseline emissions** (using grid baseline of 0.5 kg CO₂/kwh): 5.6 Mtons of CO₂
- **Abatement potential:** 5.6 Mtons of CO₂ per year
- **Barrier Analysis**
 - No up front feed-in tariff announced by NEPRA for small projects so developers are not keen to carry out any feasibility studies

9. Off Grid Micro/Mini Hydro

- 3 clusters of 15 MW each are expected to go up
- **Baseline emissions** based on 45 MW diesel generation: 276 ktons CO₂ per year
- **Abatement potential:** 276 ktons CO₂ per year
- **Investment barrier:** total requirement of over US \$54 million; currently no grant is available from international donors
- **Technology barrier:** need for more efficient turbines and electronic load controllers

10. Solar Home Systems & Water Pumps

- Over 7,000 unelectrified villages in Sindh and Balochistan, and 400 in FATA using kerosene oil for home lighting
- 2000 solar pumps needed
- **Annual Baseline Emissions**
 - From use of diesel water pumping = 3,125 tons of CO₂
 - From use of kerosene oil for home lighting = 47,302 tons of CO₂
 - Combined = 50,427 tons of CO₂
- **Abatement potential** 50,427 tons of CO₂ per annum
- **Investment barrier** very high cost of solar systems

Summary: RE Abatement Potential

Units: Million tonnes/yr

CDM Capacity Building Project

**Implemented by Ministry of
Environment**

World Bank funded

Consultants: Winrock International

CDM Capacity Building Project Objectives

- Increase Pakistan's contribution to climate change mitigation through a robust pipeline of high quality carbon finance projects,
- Build capacity within Pakistan to continue to add to this pipeline with good quality CDM projects.

**Project Pipeline Development
is the most effective way to invigorate
carbon finance activities in Pakistan**

Main Activities

- Task 1:
 1. Project Opportunity Analysis,
 2. Outreach activities (development of training and marketing materials),
 3. Training on design of PDD (baseline and monitoring methodology, additionality, social benefits, risk mitigation).

Main Activities - Project Pipeline

- Task 2:
 - Identify Project Opportunities
 - Preparation of 20 Project Idea Notes/ Carbon Finance Document (PINs/CFD) to submit to World Bank Carbon Funds,
- Task 3: Preparation of 4 Project Design Documents (PDD) for accepted PINs

Time Frame

- Project Duration: 18 months
 - August 1, 2008 to February 28, 2009 – Task 1
 - March 1, 2009 to January 31, 2010 – Tasks 2 and 3

Training Activities

- Training of preparation of Project Idea Notes (PINS). Two sessions with 25 to 30 participants each.
- Training on preparation of Project Design Documents for wind, hydro and solar energy. One session with 30 - 50 participants.
- Training of preparation of Project Design Document for boiler efficiency, waste heat recovery and gas flaring. One session with 50 - 70 participants.
- Training on preparation of Project Design Documents for production of biogas and ethanol production and composting. One session 30 - 50 participants.
- Training of Project Design Document of afforestation and agriculture methods. One session with 30 - 50 participants.

**Winrock Team is dedicated to supporting
Ministry of Environment and CDM cell
to make Pakistan an active player in the
carbon finance market and derive
sustainable development benefits for the
country.**

Thank you for your kind
attention