



# The Clean Development Mechanisms (CDM)

**What is it?**

**And how can it be used to promote  
climate protection and sustainable  
development?**

World Bank Institute Distance Learning Course: "Climate Change: An African Perspective", 24 September 2002.

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# What to achieve today?

- Know about the CDM
- Understand CDM project opportunities and resources
- Study a CDM project example

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# Knowledge about the CDM

# The Kyoto Protocol & CDM

- 39 OECD/ EITs (Annex I) agreed to reduce their GHGs by 5.2 % below 1990 levels in 1<sup>st</sup> commitment period 2008 - 2012
- How to work together with Developing Countries to cost-effectively implement the Protocol?
- Creation of the CDM to allow trading of Certified Emission Reductions
- Value of global trade: estimated at US\$ 3-10 billion/yr

# Objectives of the CDM

- To assist developed countries in meeting their targets cost-effectively
  - Through the trade of certified emission reductions (CERs)
- To promote sustainable development in Developing Countries
  - Through projects that have global and local environmental and social benefits
- No commitments for DCs
  - Through accepting energy usage and emissions in the absence of the CDM

# What is the idea of the CDM?

- *Reduce* GHG emissions in one country to permit an *equivalent* quantity of GHG emissions in another country, without changing the global emission balance.
- Emission Reductions must:
  - Create *real, measurable*, and *long-term* benefits related to the mitigation of climate change.
  - Be *additional* to any that would occur in the *absence* of the certified project activity.

# What is Additionality?

- “Additionality” is the key eligibility criterion for CDM projects.
  - You must do something that you wouldn’t have done without the CDM
- Interpreted as “environmental additionality”:

**Emission Reductions**

**=**

**hypothetical baseline emissions**

**– effective (project) emissions**

# How do we think about additionality?

CO2 Emissions

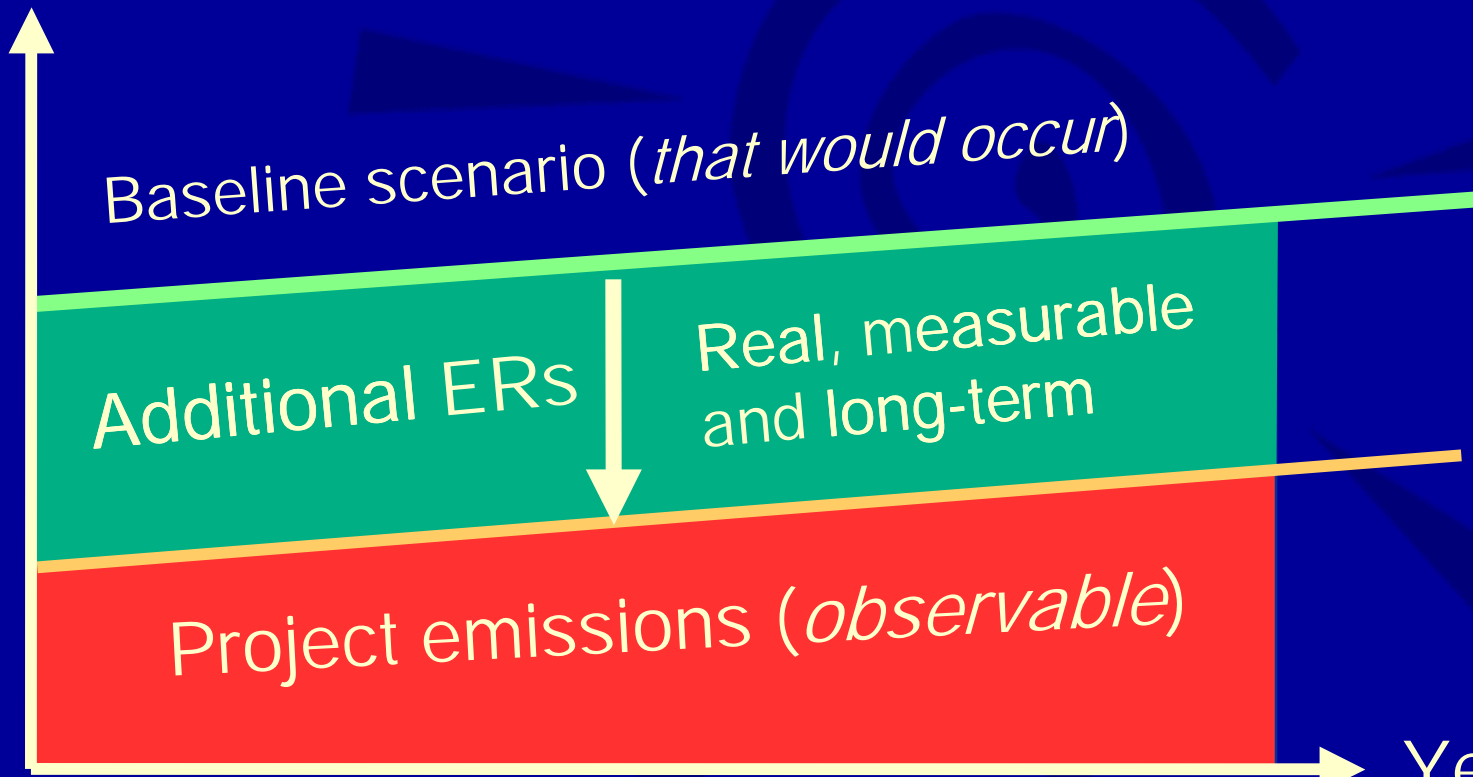
Baseline scenario (*that would occur*)

Additional ERs

Real, measurable  
and long-term

Project emissions (*observable*)

Years





# How do we think about baselines?

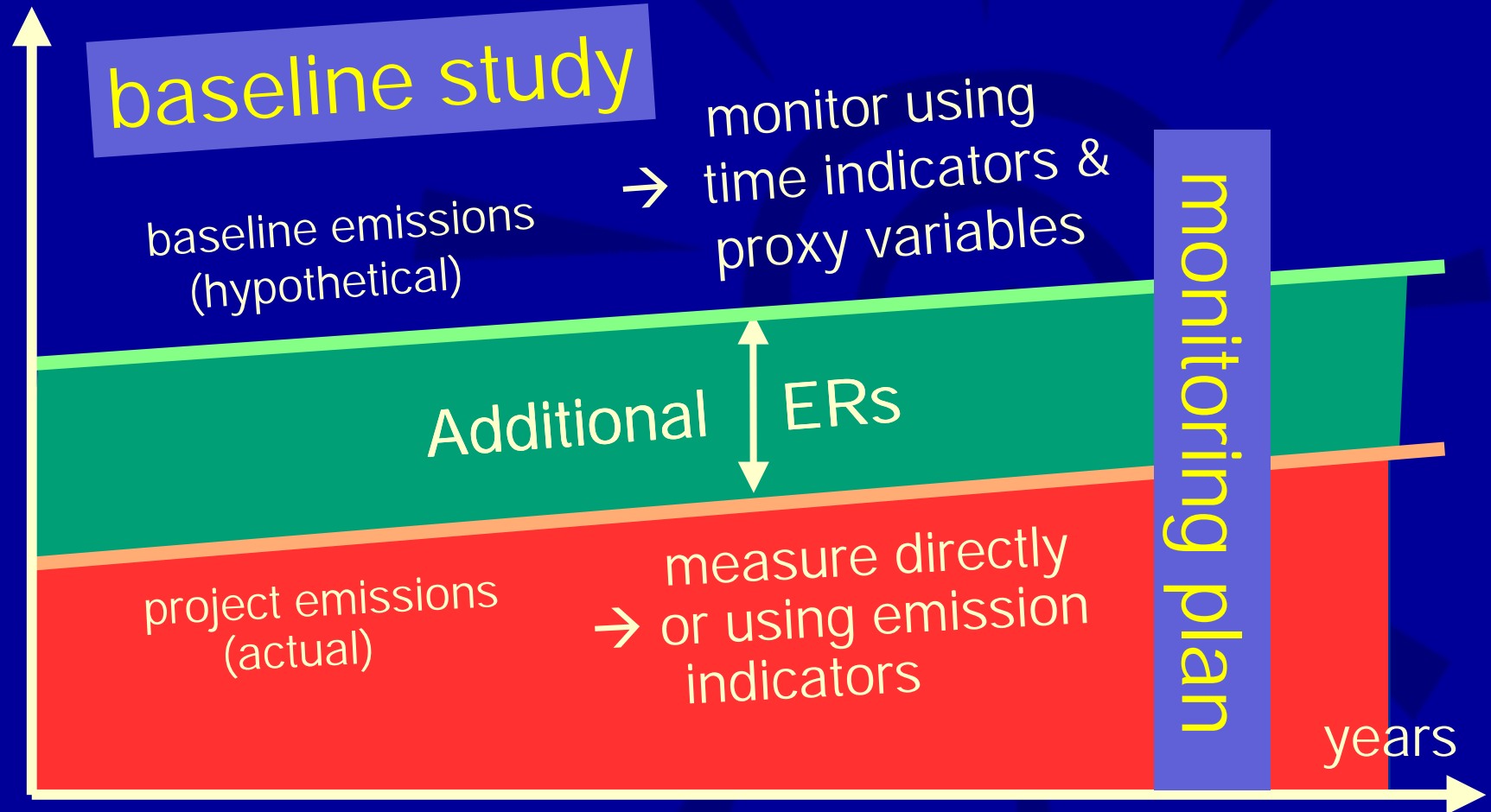
- A baseline is
  - a methodologically derived scenario
  - that describes
    - the most likely course of action and development over time, i.e.
    - the situation that would most likely have prevail without the CDM,
    - not simply business-as-usual,
  - and which allows to assess the emissions that would have occurred in this scenario.

# Some Baseline Methods

- **Project-by-project methods**
  - Investment / financial analysis
  - Scenario analysis / barriers
  - Control groups
  - Expert opinion
- **Standard-oriented methods**
  - Sectoral baselines, emission factors, benchmarks,
  - default and multi-project baselines, ...
- **Simplified methods for small projects**

# How to measure ERs?

CO2 emissions



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# **Understanding CDM Project Opportunities and Resources**

# What are the criteria for CDM projects?

- Sustainable development
  - Host country criteria
  - Environmental Impact Assessment
  - Stakeholder consultations
- Emission reductions
  - Environmental additionality
- Project viability
  - Technologically proven
  - Financially sound
- Host country approval
- Project validation and registration

# CDM project documentation

- Project Idea Note, Project Concept Note
- Project Design Document (incl. Baseline Study, Monitoring Plan, ER Projection)
- Validation Report and Opinion
- Emission Reduction Purchase Agreement (ERPA)
- Letters of Endorsement, Approval, Intent etc.

# Who can help you to develop a CDM project?

- World Bank Carbon Finance Unit
- Dutch CERUPT program
- Development NGOs and consultants
- UN Organizations (UNDP, UNEP, UNIDO)
- Bilateral development organizations
- Foreign companies

# Why is the World Bank involved?

James D. Wolfensohn, 1997:

*“Continued global warming is in nobody’s interest, but the simple facts of the matter are that **developing countries will suffer the most damage**, and their poor will be at an even greater disadvantage. ... ..*



*... I see the Bank’s role in climate change as providing every opportunity to developing countries to benefit from the **huge investment OECD must make in reducing climate change**”*



# World Bank Carbon Finance Instruments

- **Prototype Carbon Fund**
  - US\$180 million for carbon purchases from a variety of projects and countries
- **Netherlands Clean Development Facility**
  - US\$30 million annually in CDM projects for 2002-2005
- **Community Development Carbon Fund**
  - US\$100 million for 1<sup>st</sup> CDCF
  - For small-scale projects in developing countries only
  - Carbon plus sustainable development co-benefits
  - Higher quality and price range
- **Bio-Carbon Fund**
  - Develop and pilot business models for land-use and forestry projects

# What can the CDM do for you?

- Attract foreign investment to countries engaged in the trading CERs
- Increase the profitability of cleaner more efficient technology in energy, industry, and transport sectors
- Clean up waste management operations
- Improve land-use strategies and practice
- Contribute to sustainable development of the host country

# Impact of Carbon Finance on Project Financing (\$3/tCO<sub>2</sub>)

Project (not equity) IRR

Technology	$\Delta$ IRR
Energy Efficiency - District Heating	~2.0
Wind	1.0 -1.3
Hydro	0.8-2.6
Bagasse	0.4 – 3.6
Gas Flare Reduction	2 – 4
Biomass with methane kick	2 - 7
Municipal Solid Waste with methane kick	> 5.0

*Note: data are preliminary*

# Studying a CDM Project Example

## Uganda: West Nile Electrification Project

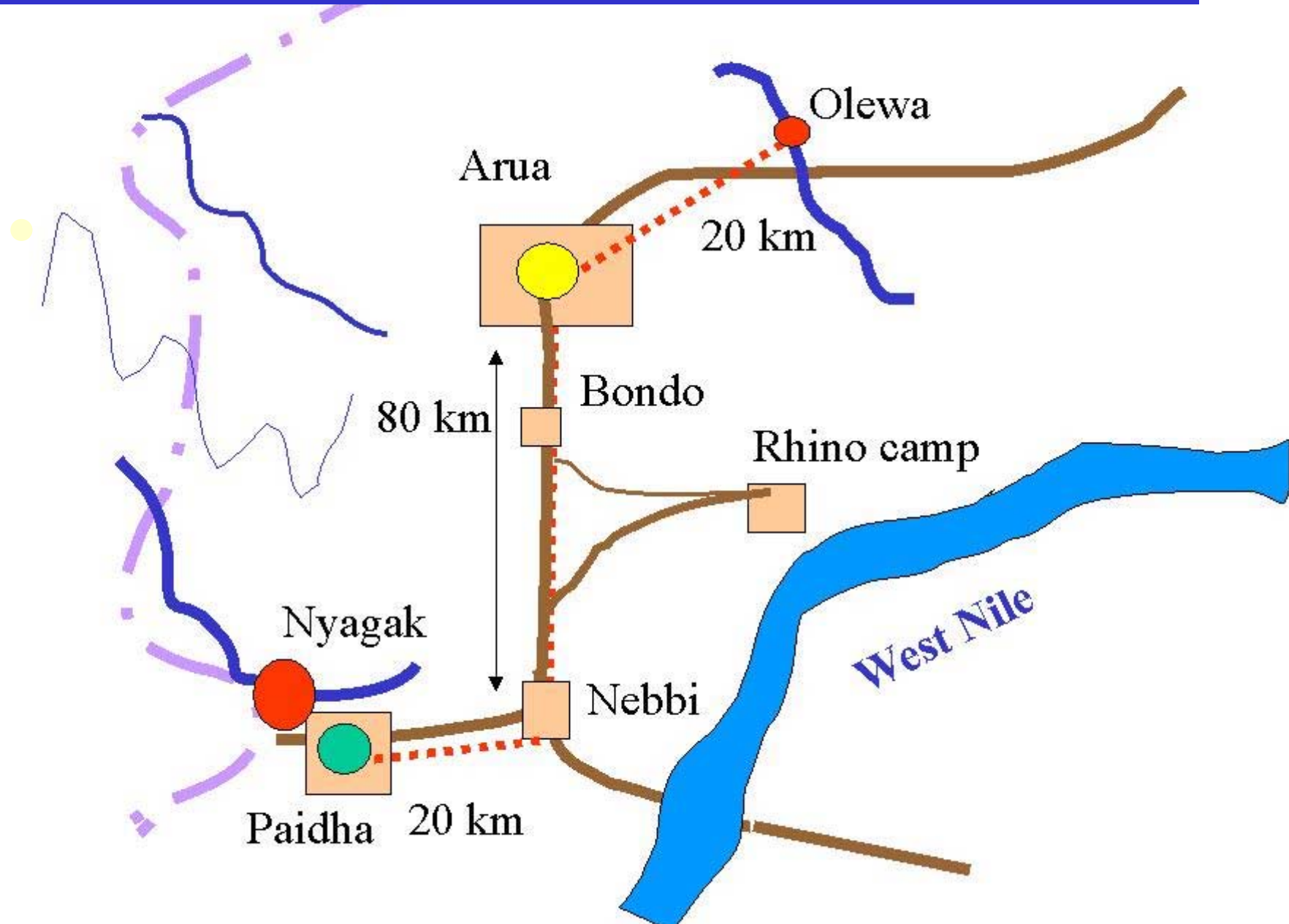


# Energy for Rural Transformation

## Objectives

- Reduce rural poverty
  - Non-farm income generation and job creation
- Improve rural quality of life
  - Facilitate health and education services
- Develop renewable energy
  - Use local resources the development of which protects the global environment

# The West Nile Electrification Project



# The Business as Usual Situation

- Isolated region – not connected to the national power grid
- Recent fast economic growth
- Inefficient local power supply
  - 4 hours of diesel-generated power
  - Less than 1,000 connections
  - Over 200 individual diesel generator sets & engines
- Security issues

# West Nile Electrification Project

Technology:

Run-of-river  
hydropower

Cost:

~ \$20 mil.

Products:

reliable power,  
ERs

**Outcomes:**

Investment risk  
decreases,  
power rates  
decrease

**PCF Project**

PCF adds  
\$3.5 mil.  
to project  
revenues

**Outcomes:**

Poverty  
decreases,  
Environmental  
Sustainability  
increases

inefficient old  
diesel, private  
gensets

**Baseline scenario**

up to 1\$/kWh,  
unmet demand

unreliable high-  
cost power for few  
consumers



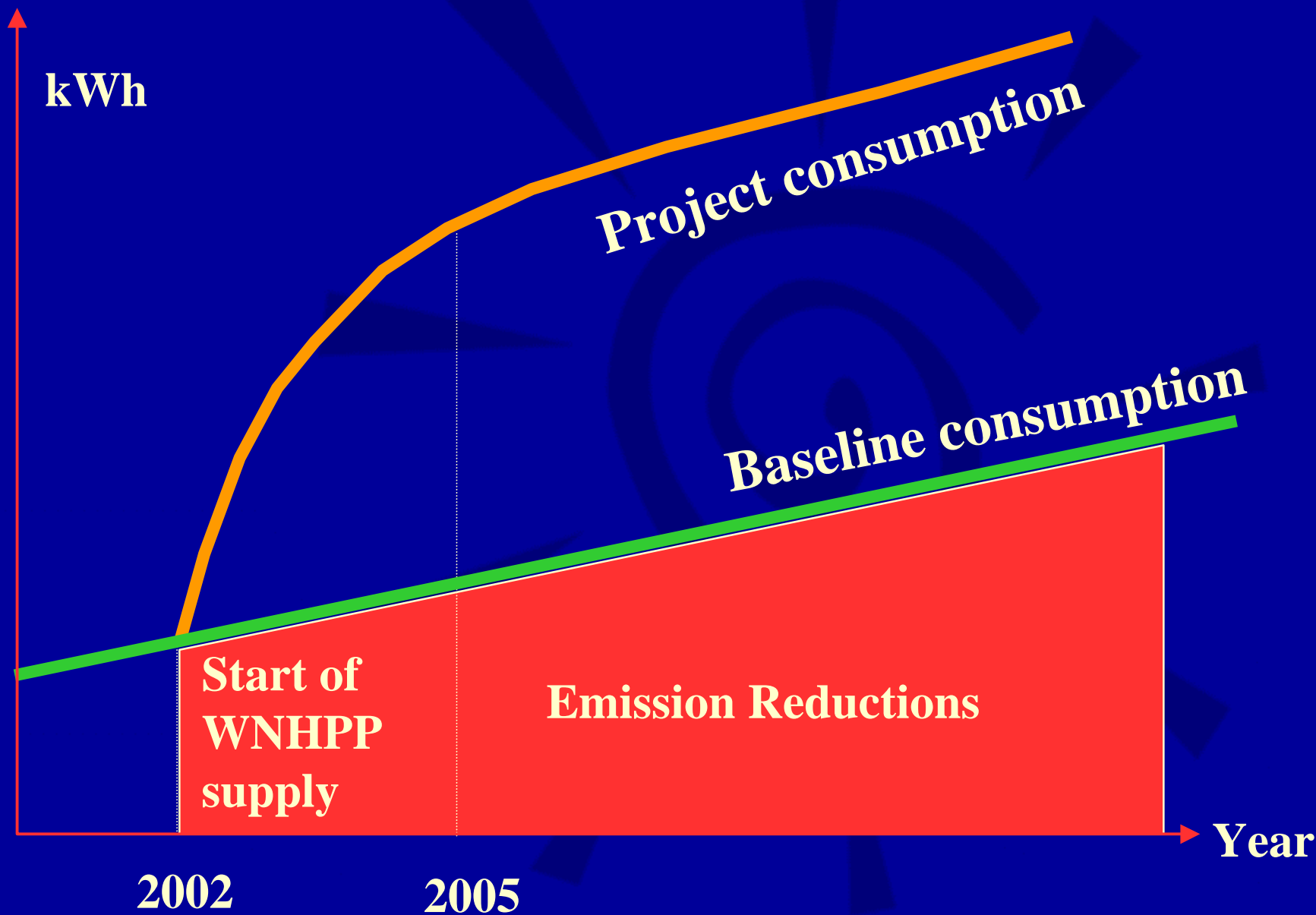
# Main Challenges

- Our first CDM project in Africa.
- Develop CDM methodology in line with international discussions.
- Develop common understanding between PCF and Government.
- Coordinate PCF components with “underlying” project.
- Manage and structure risks – investment risks, baseline risks, CDM policy risks, PCF portfolio risks.

# Project Baseline

- Baseline method: Risk-based scenario / barrier analysis
- Baseline / project alternatives:
  - Interconnection with main grid → unlikely in near future due to risks and security issues
  - Local hydropower development → only possible with major government / donor intervention due to risks and affordability
  - Business as usual → no barrier, although expensive for households → the baseline scenario

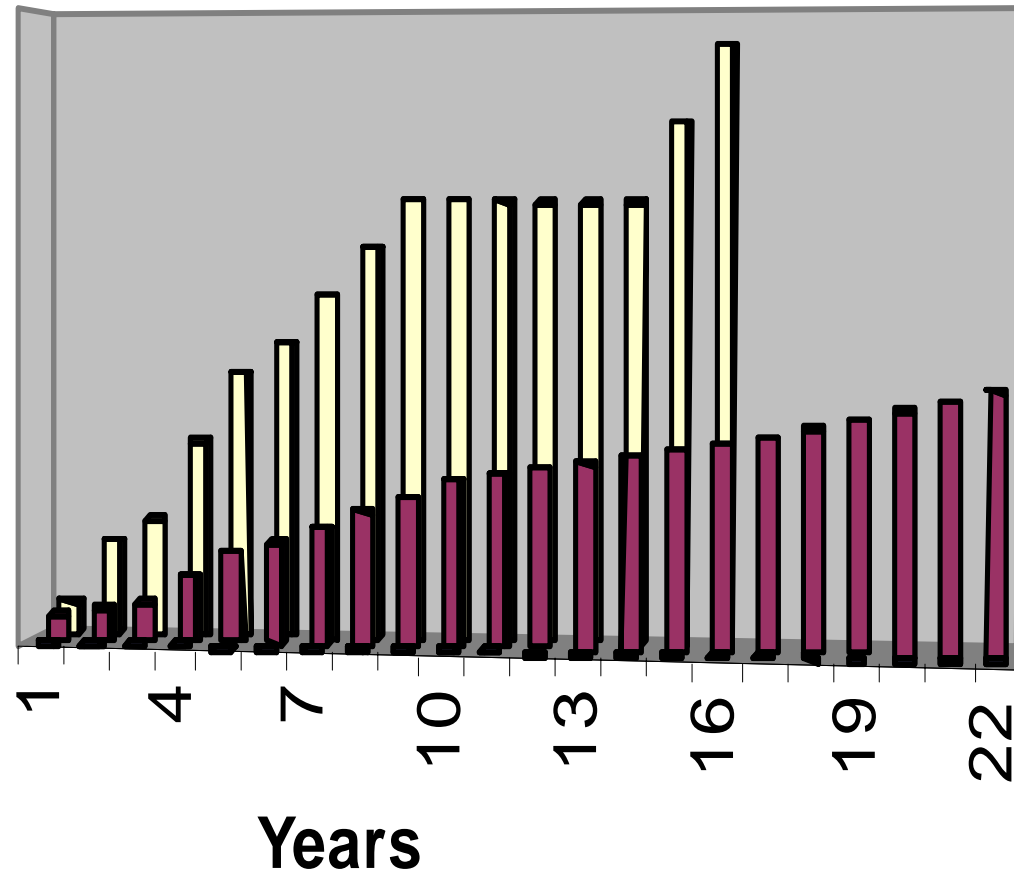
# Power Consumption Growth



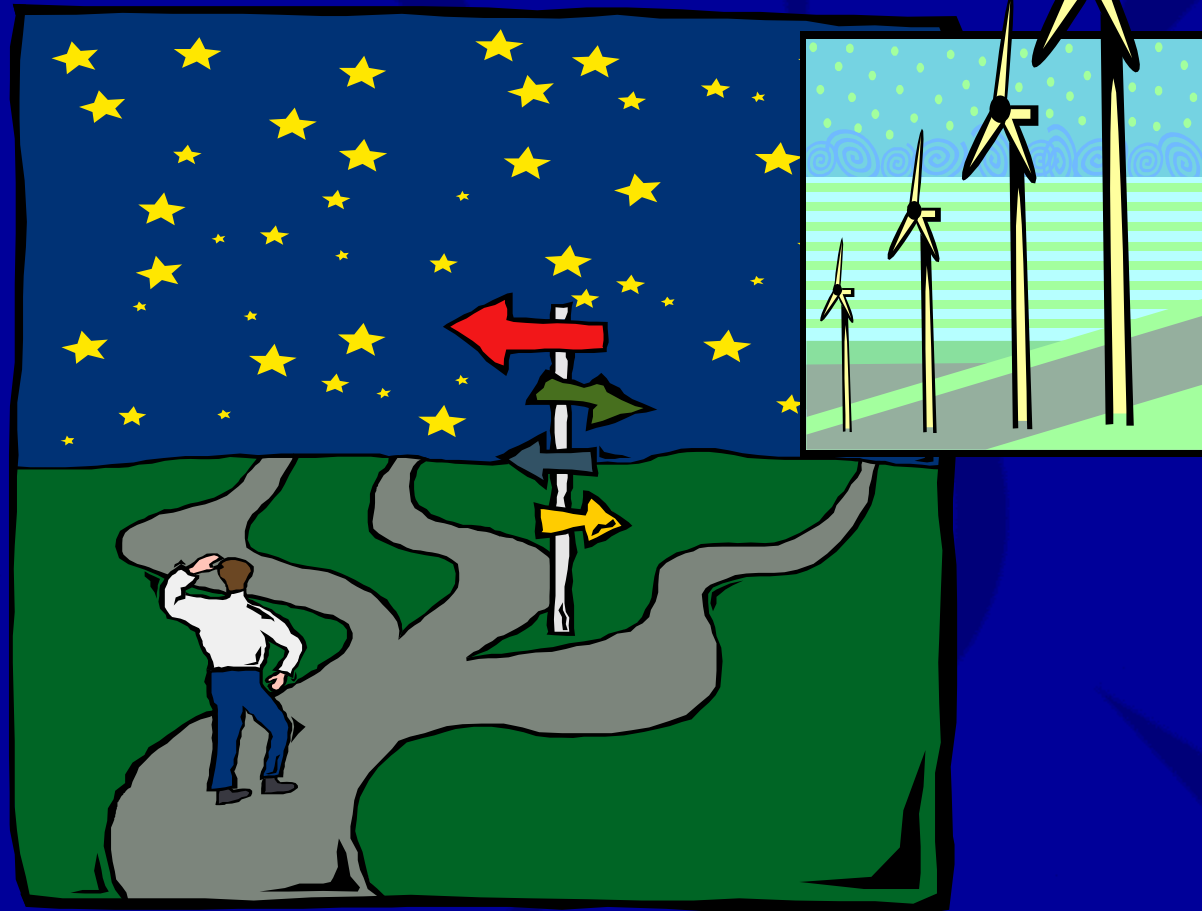
# Key ERPA obligations

- **PCF agrees to:**
  - purchase 1.3 million t CO<sub>2</sub> for US\$3.9 million through 15 years (calculation price: US\$3).
  - make annual payments to Project Entity (total US\$ 3.5 million, net of costs) after verification and receipt of certificate
  - partially insure Project Entity through fixed delivery and payment schedule.
- **Project Entity agrees to:**
  - carry out project, implement monitoring plan
  - give PCF exclusive rights to verify
  - share additional ERs with PCF

# Delivery and Payment Schedule



Looking for more information?



<http://www.PrototypeCarbonFund.org>