
Increasing the Profitability of Industrial Projects by Generating and Selling of Greenhouse Gas Emission Reductions

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Contents

- Who is Factor Consulting + Management?
- Kyoto Protocol: What is the Clean Development Mechanism (CDM)?
- Is the Carbon Market real?
- How to proceed?

Who is Factor Consulting + Management?

Factor Consulting + Management

- Private advisory firm established in 1999, based in Switzerland
- Main working fields:
 - sustainable energy use
 - climate change mitigation
- Background of team members:
 - engineering
 - natural science
 - economy
- Clients include:
 - Industry and services sector companies
 - Governments (local and national)
 - International organisations (World Bank, UNEP, ADB, ...)

Services of Factor

Carbon Asset Development

Project developers and owners

- CDM / JI project development, implementation and advisory
- Financing solutions for CDM and JI projects
- Carbon market solutions and emissions sales support

GHG Management Advisory

Industry and service sector

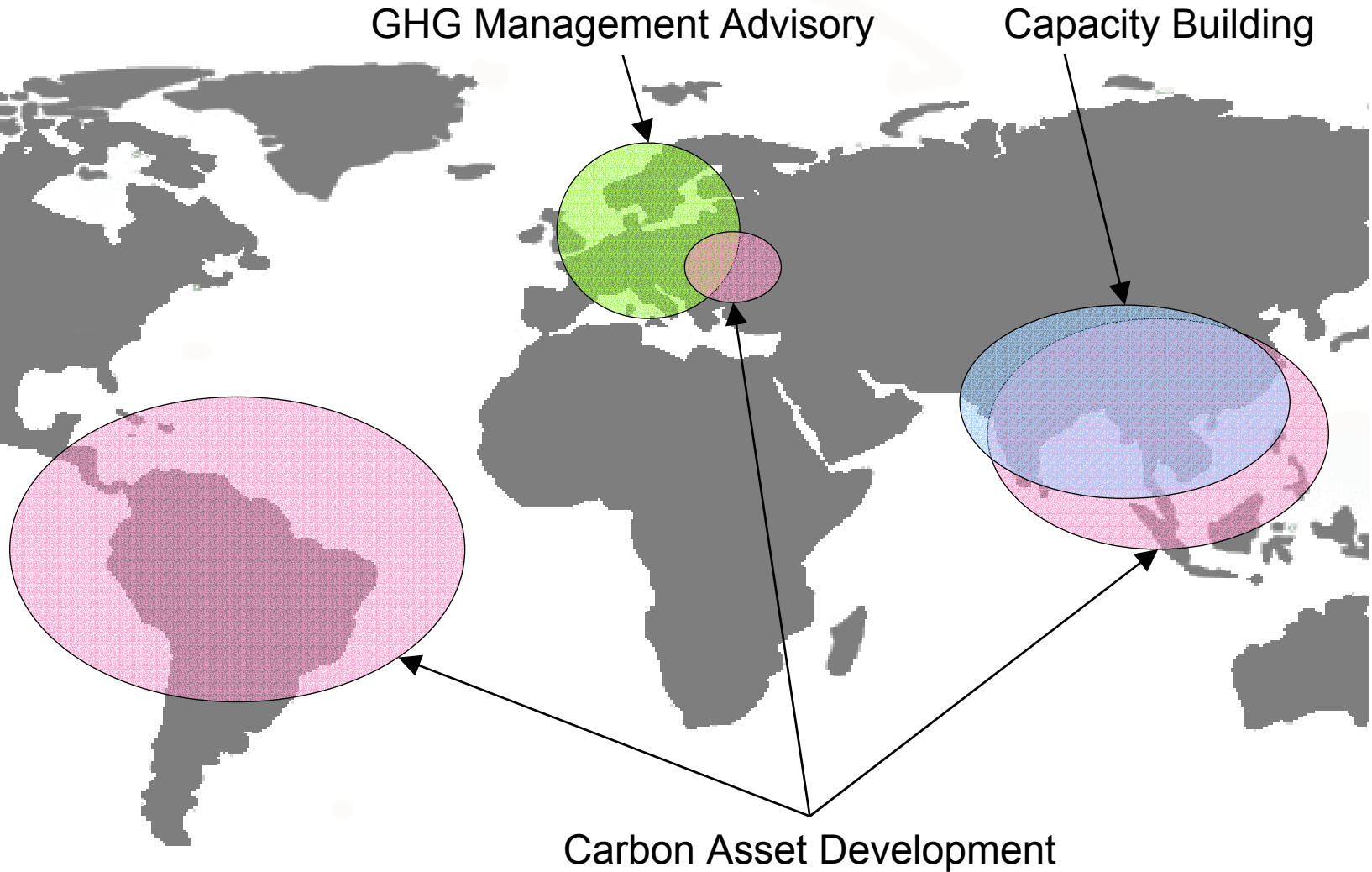
- Strategic advisory on compliance with international and national policies
- Advisory on emissions trading
- Tool development and long term GHG management support

Capacity Building

Governmental entities and industry associations

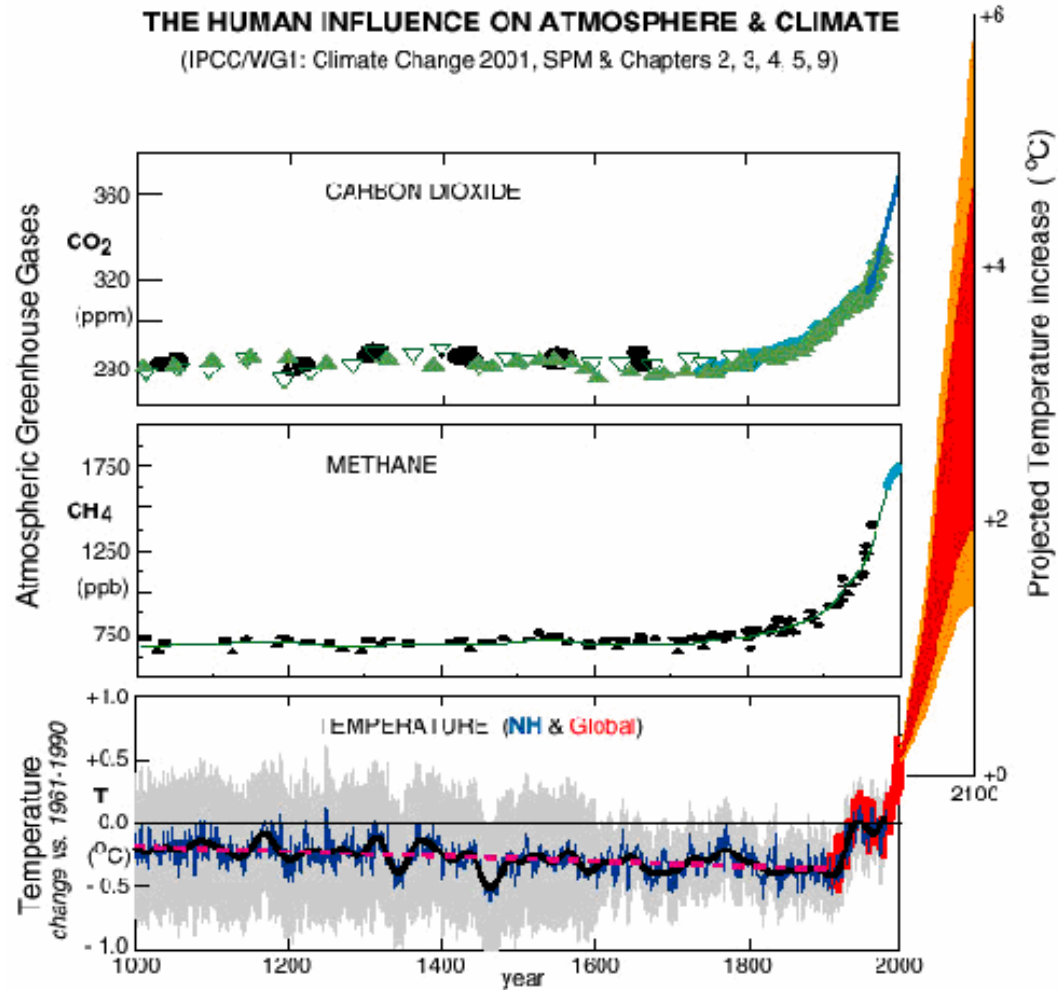
- Capacity development and institutional support related to the Kyoto Protocol

Geographic focus regions



Kyoto Protocol: What is the Clean Development Mechanism (CDM)?

Human Influence on Climate Change



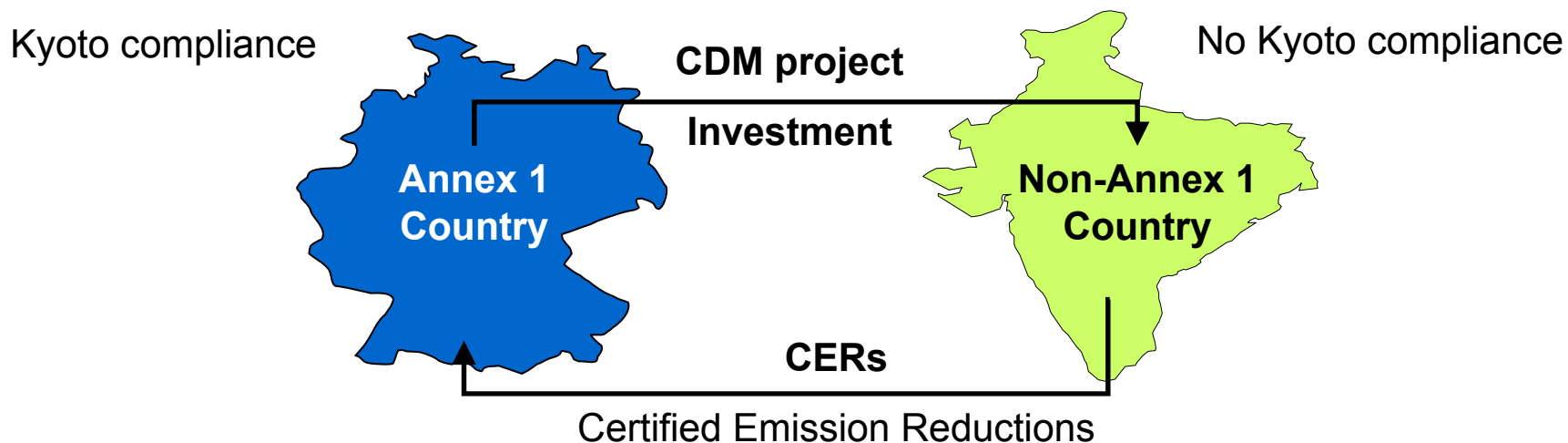
Kyoto Protocol

- Signed in 1997
- Entry into force on 16 February 2005
- Commits Annex I countries to reducing their greenhouse gas emissions by, on average, 5% below 1990 levels in 2008-12
 - Individual, quantified emission targets for each industrialized country
 - Six greenhouse gases covered: CO₂, CH₄, N₂O, HFC, PFC, SF₆
- Ratified by >130 countries, covering >55% of emissions of Annex I countries
 - Major non-participants: USA and Australia
- “Flexibility mechanisms” for financing emission reductions abroad:
 - Clean Development Mechanism (CDM)
 - Joint Implementation (JI)
 - International Emissions Trading

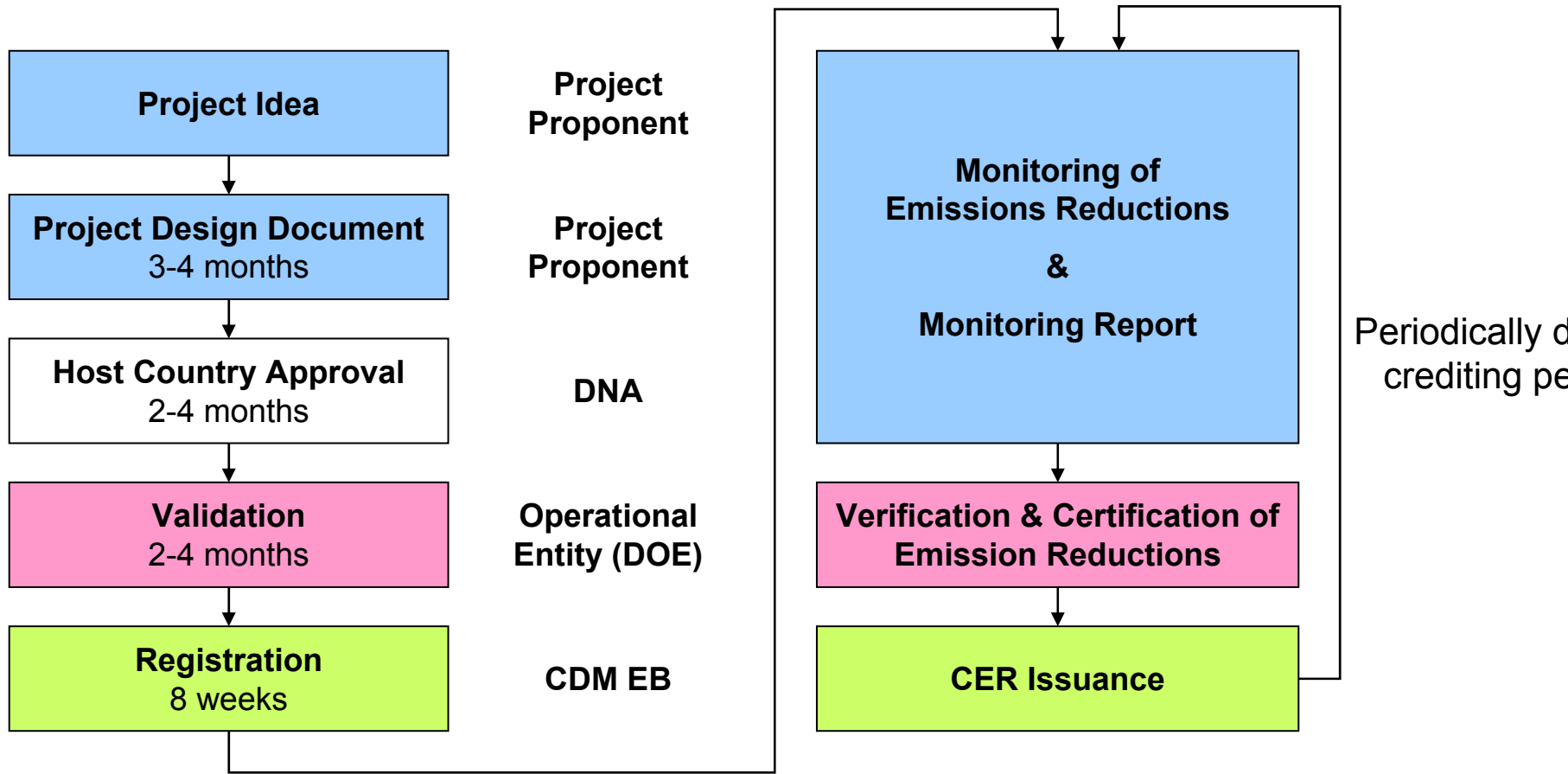
Why CDM and how does it work?

■ Twin objectives of CDM :

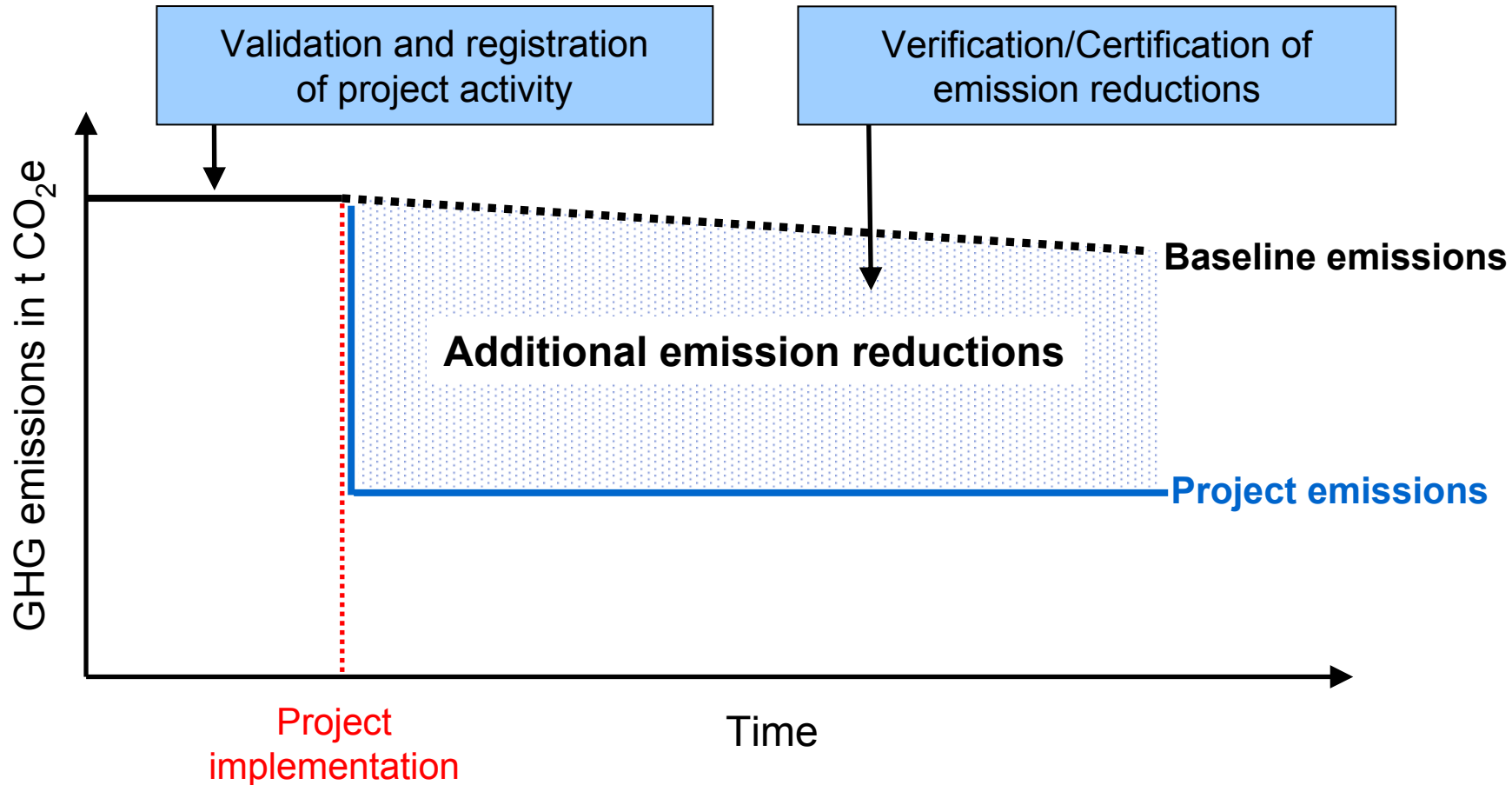
- Help Annex I countries meeting their GHG emissions reduction objectives in a cost-effective way
- Contribute to sustainable development of the host country (economical, technical, social and environmental)



CDM Project Cycle



Emission reductions and additionality

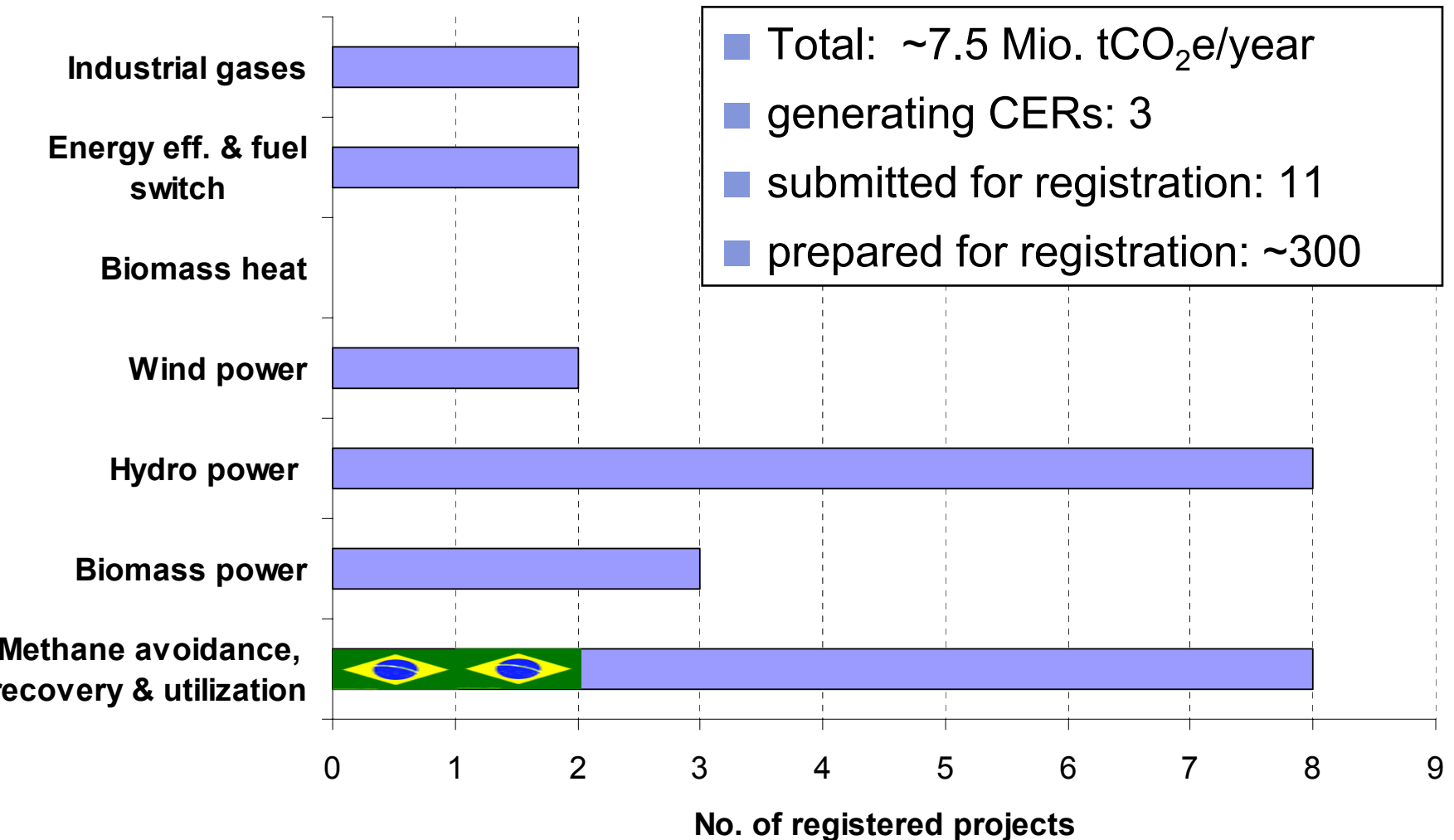


$$\text{Emission reductions} = \text{Baseline emissions} - \text{Project emissions}$$

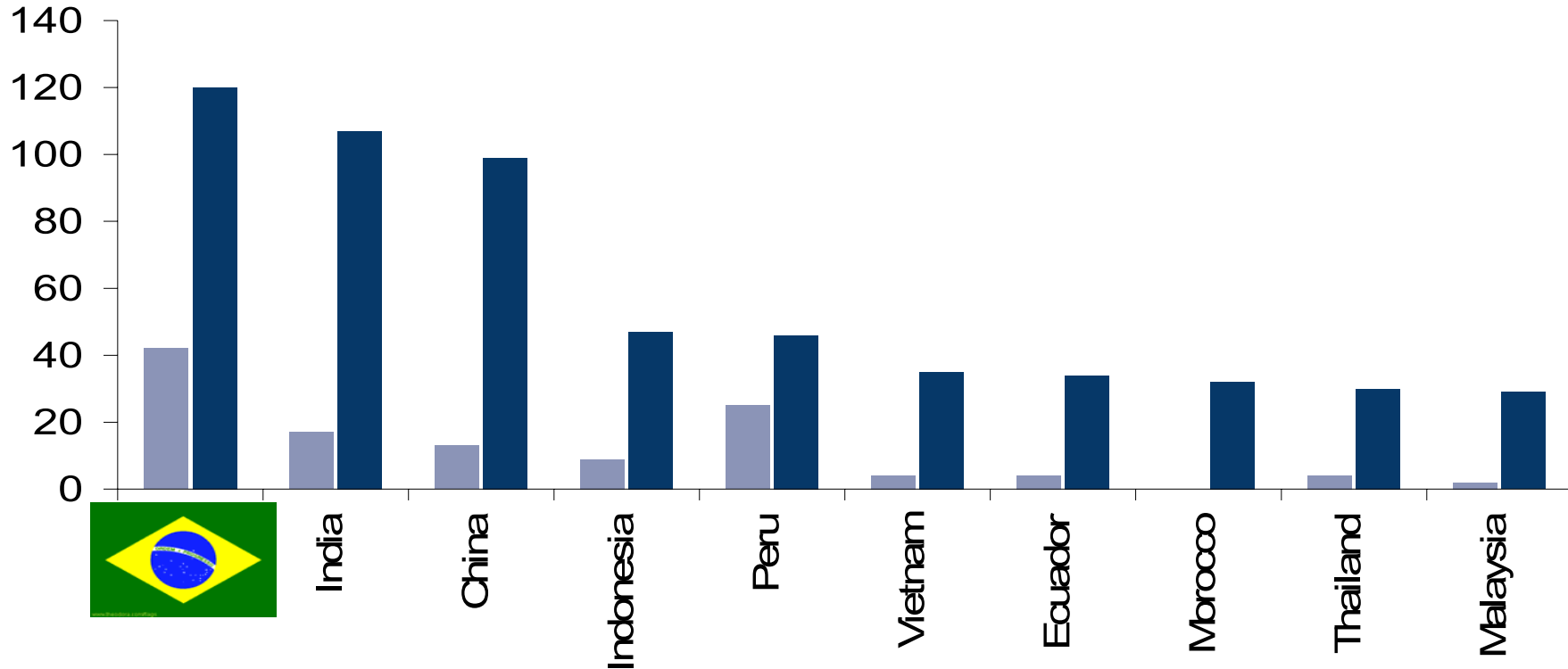
Transaction Costs

- Transaction costs mainly include
 - Costs towards consultants for developing CDM project (PDD, Brokerage)
 - Costs towards validation of the CDM project
 - Costs towards registration of the CDM project with EB
 - Costs towards monitoring of emission reductions
 - Costs towards verification/certification of CERs
- Apart from the above, CDM EB deducts 2% of the CER revenues to Adaptation Fund.
- Transaction costs vary between 5% to 20% of the total revenues depending on the type and size of the project.

25 registered CDM projects (as per 01 Oct 2005)



Number of proposed CDM projects



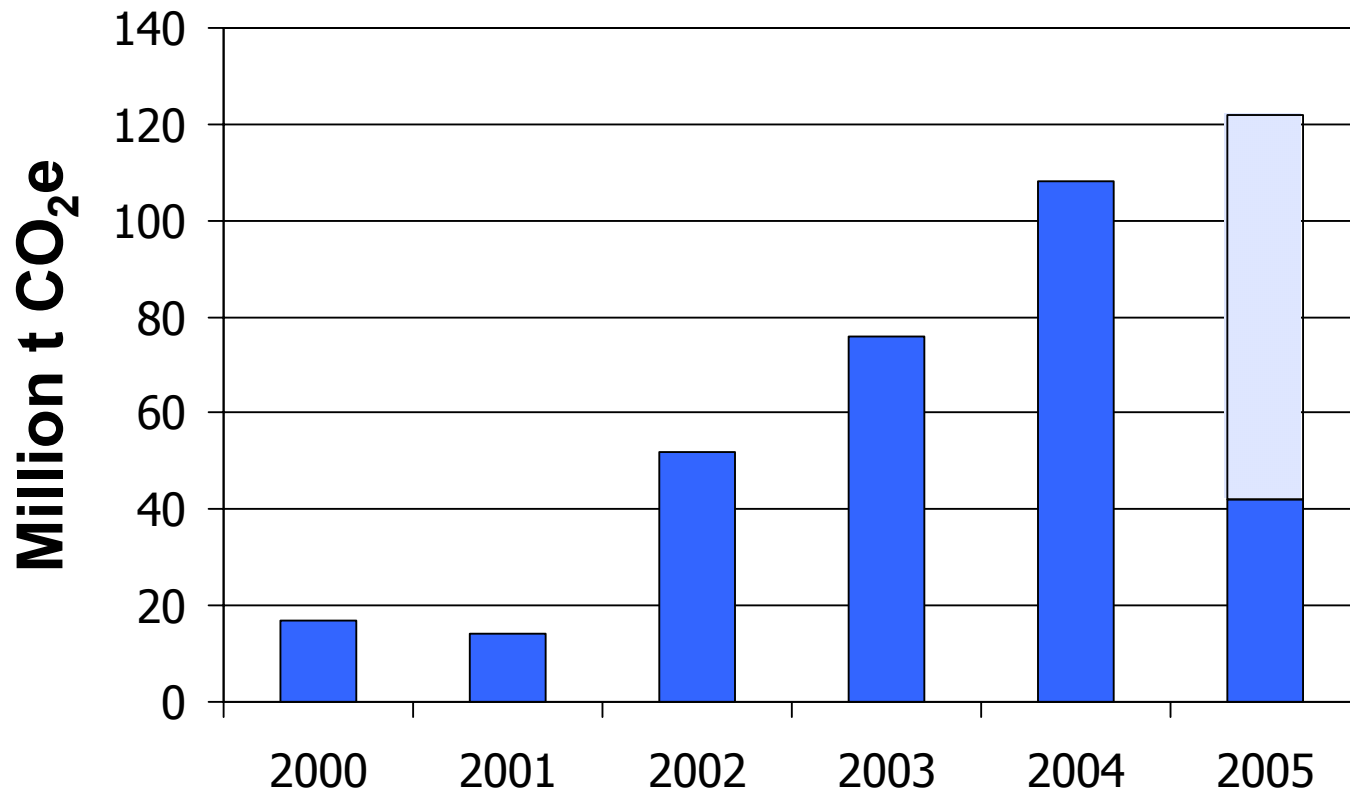
Source: Point Carbon's Transaction Database

■ Before 2004

Is the Carbon Market real?

An emerging market

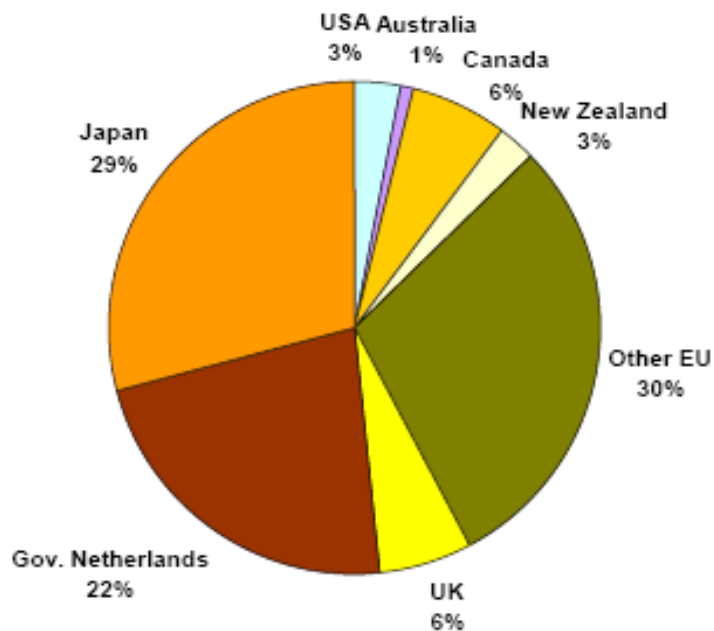
Annual volumes of project-based emissions reductions (million tonnes of CO₂) traded are growing rapidly.



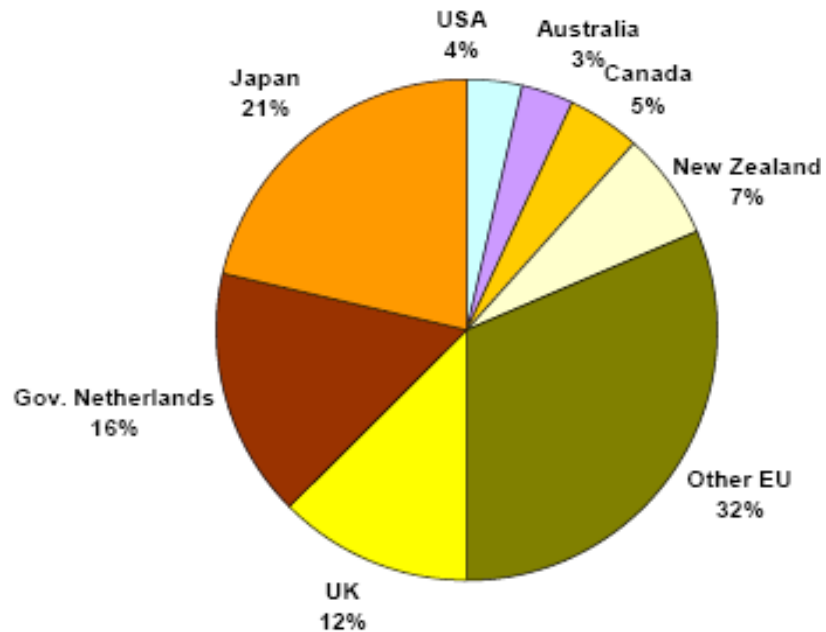
Source: State of the Carbon Market 2005, The World Bank, Washington, DC USA

Who is buying?

The EU and Japan are the biggest buyers.



Jan. 2003 – Dec. 2004

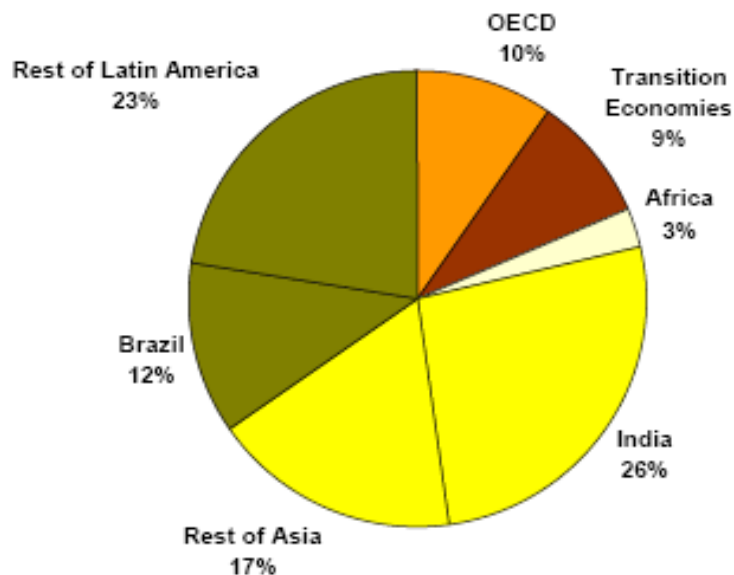


Jan. 2004 – April 2005

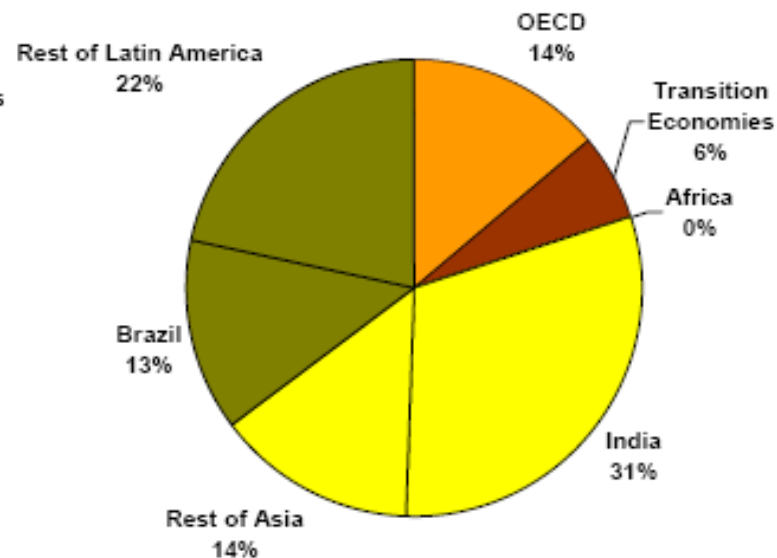
Source: State of the Carbon Market 2005, The World Bank, Washington, DC USA

Who is selling?

Brazil and India are the major sources of supply.



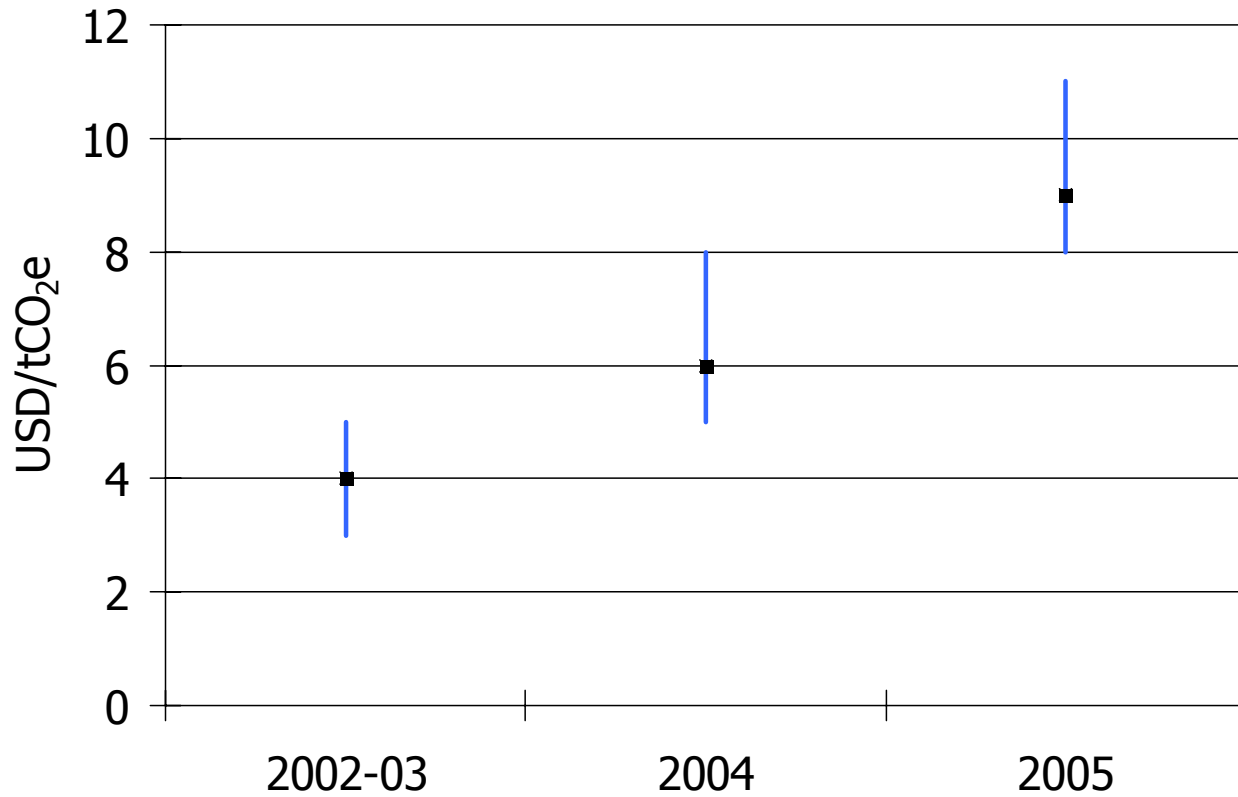
Jan. 2003 – Dec. 2004



Jan. 2004 – April 2005

What are prices for CER?

Prices are increasing....



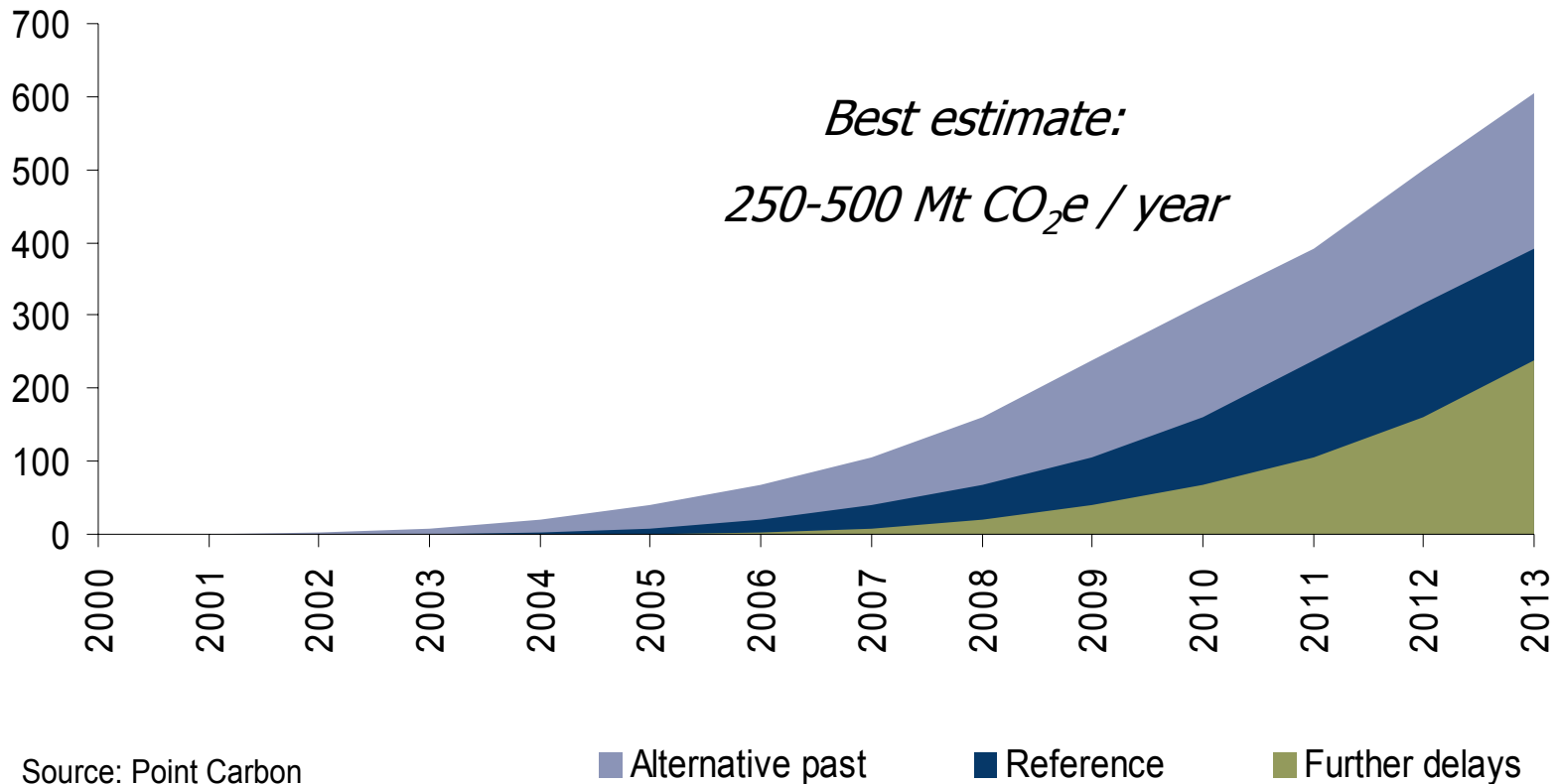
Source: State of the Carbon Market 2005, The World Bank, Washington, DC USA

What determines CER prices?

- Likelihood the seller will deliver **verifiable** emission reductions on schedule
- **Creditworthiness** and experience of the project developer
- **Technological viability** of the project
- **Liabilities** the seller is willing to take on project failure, non-delivery and willful default / gross negligence
- Likelihood of **host country approval**
- **Environmental and social** compliance + additional benefits

Which direction is this market headed?

Projected future demand for emissions reductions



How to proceed?

Potential to reduce emissions

- Systematic analysis of the activities of industrial plants:
 - GHG emissions inventory with focus on non-CO₂-gases (e.g. CH₄, N₂O)
 - Deliberation of the feasible reduction potential
- Assessment of the reduction potential
 - CDM-relevant criteria
 - Project-inherent criteria
 - Economic viability
- In parallel: selection of one first pilot project, to gain CDM-experience

Projects categories for CDM

- **Renewable energy production**: electricity or heat for grid or user supply, hydro, wind, biomass, ...)
- **Energy efficiency projects**: industrial waste heat recovery, electricity transmission & distribution networks, transport sector projects
- **Fossil fuel switch**: e.g. switch from coal fired energy production to combined cycle gas engines
- **Industrial processes***: capture and destruction of industrial gases (HFC, N₂O)
- **Bio-methane avoidance***: capture and utilisation in landfills and manure management
- **Methane avoidance***: capture and utilisation in coal, oil and gas production

* Fugitive gases ⇒ most viable project category

Project profile 1

Country:

Technology:

Output:

Offtaker:

Resource:

IRR:

IRR incl. CER:

Brazil

Fossil-to-biomass fuel switch

20 MW steam production

Pulp and paper manufacturer

Wood waste

3%

26%

Project profile 2

Country:

Technology:

Output:

Offtaker:

Resource:

Investment:

IRR:

IRR incl. CER:

Argentina

Cogeneration based on sugar cane

40 MW power production

Sugar plant; regional utility

Biogas

USD 40 Million

15%

19%

Conclusions

- Many opportunities to participate
- Prices for emissions reductions are increasing
- Brazilian companies are extremely well-placed to participate:
 - a favourable investment climate
 - the institutional apparatus is in place
 - experience in project finance
- BUT: Selling of CERs is secured until 2012, only!
- 1 month of delay (100'000 tCO₂/y @ 9 USD) : ~170'000 Reais

Muito obrigado !

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