



Carbon Market Opportunities and Challenges: The World Bank Perspective

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Outline of presentation

- Part I: Introduction to the carbon market
- Part II: Challenges and opportunities
- Part III: The Indonesian Market

Summary of the climate change challenge



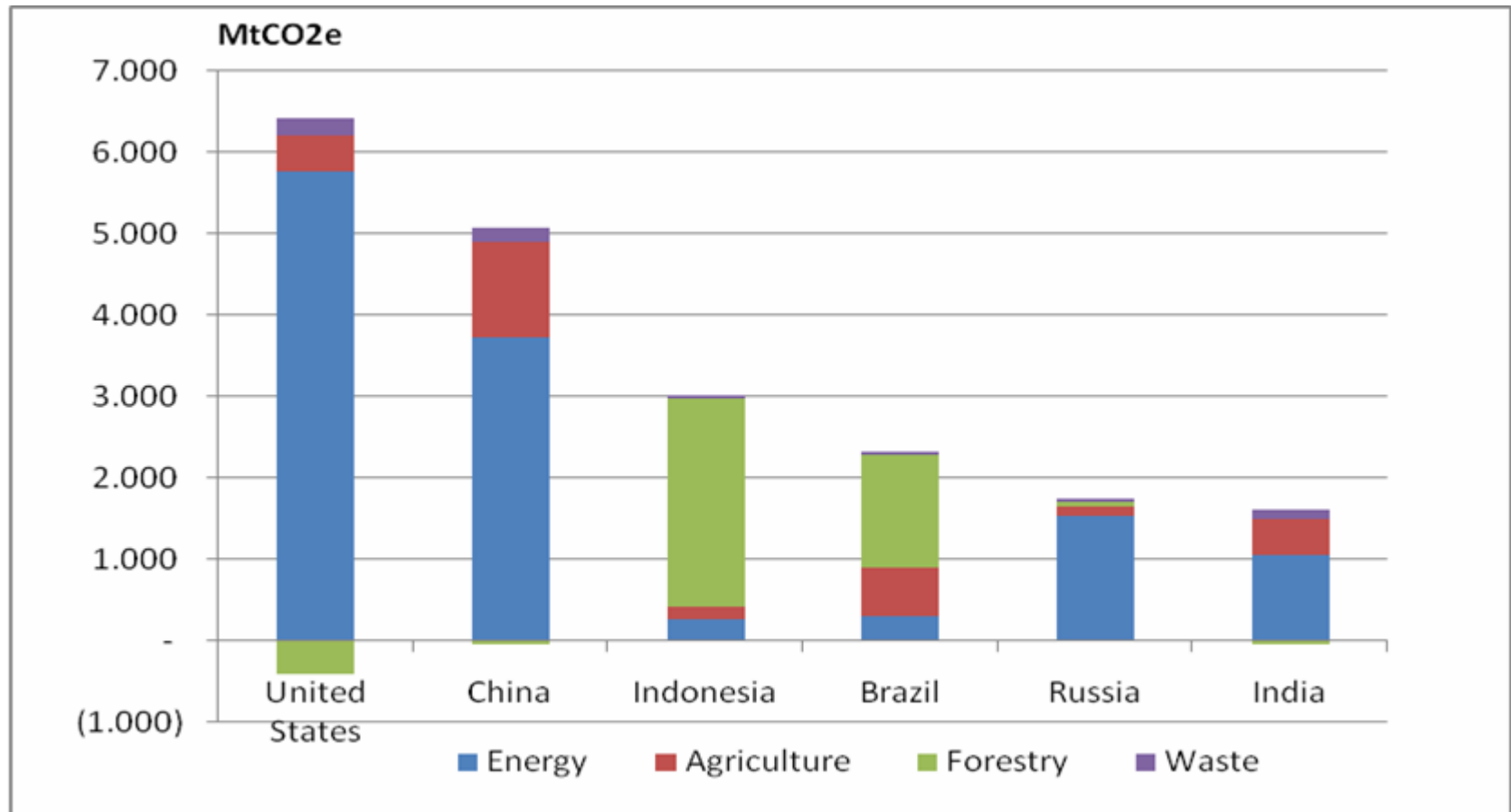
- **“Climate Change is a serious global threat and demands urgent global response”**
- **Without action the impact on global GDP will be from 5% to up to 20% if the risk factors are widened**
- **If we act over the next 10-20 years, and keep temperature increase below 2 degrees C, the cost to global GDP is likely to be on the order of 1%**

Stern Report findings



Part I: Introduction to the carbon market

Green house gas emissions in global context



Source: PT P.E.A.C.E., 2007 compiled from IEA's 2005 annual statistics, US EPA 2006, and Houghton 2003.
If EU included, Indonesia stands 4th.



What are the key messages ?

- De-carbonise global economic growth and development over the next 10-20 years
- Developed countries will need to reduce the carbon intensity of their economies – many have set targets
- Developing countries will need to adopt low carbon paths to economic growth and development



Mechanism to reduce emissions

Kyoto Protocol adopted in COP 3 UNFCCC, 1997

Protocol defined quantified GHG emission reduction emission targets for Annex I Parties

Countries have different target for 5 year (2008-2012)- First commitment period



Segment of the Carbon Market:

- Kyoto Protocol market- Non Kyoto
- Compliance - Non Compliance
- Mandatory - Voluntary market

3 Flexible mechanisms under Kyoto Protocol:

- ***CDM- under Art 12 of KP – CER***
- Joint Implementation (JI)- Art 6 - ERU
- Emission Trading (ET) – Art 17 - AAU



Brief History of the Carbon Market

Regulation	Market
1992 United Nations Climate Change Convention UNFCCC	Very limited voluntary pilot projects
1997 Kyoto Protocol	World Bank promotes a global carbon fund Voluntary, risk-hedging activity increases but small volumes Mostly within OECD
2001 Kyoto project mechanism guidelines	WB Prototype Carbon Fund operational Limited other market; US share declines with withdrawal from Kyoto
2005 Kyoto Protocol and EU Emission Trading Scheme <i>enter into force</i>	Kyoto-based market takes off EU market rapidly becomes the largest market New voluntary and regional markets emerging

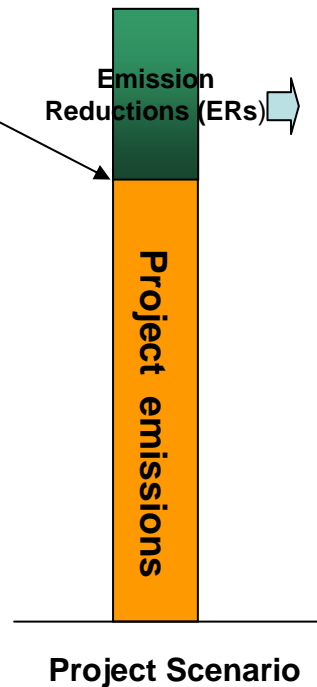


Markets can only thrive with good, long term regulation

How does the carbon trade work/Clean Development Mechanism ?

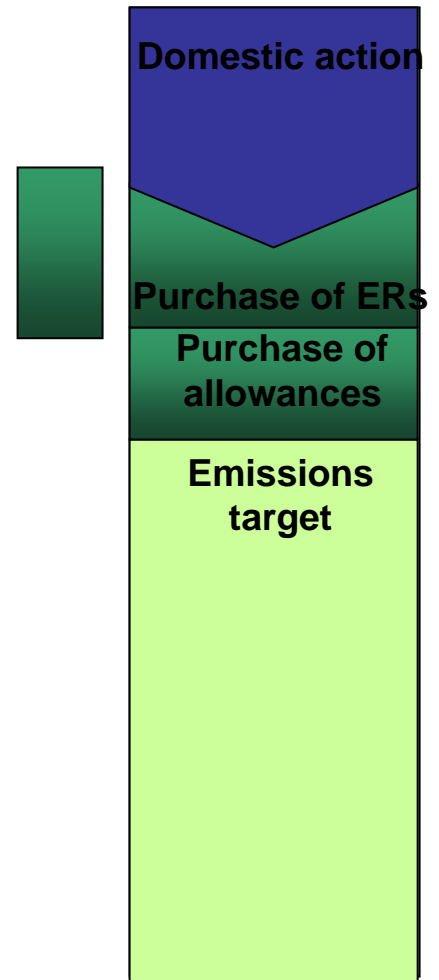


Developing country
with no CO2
emissions cap

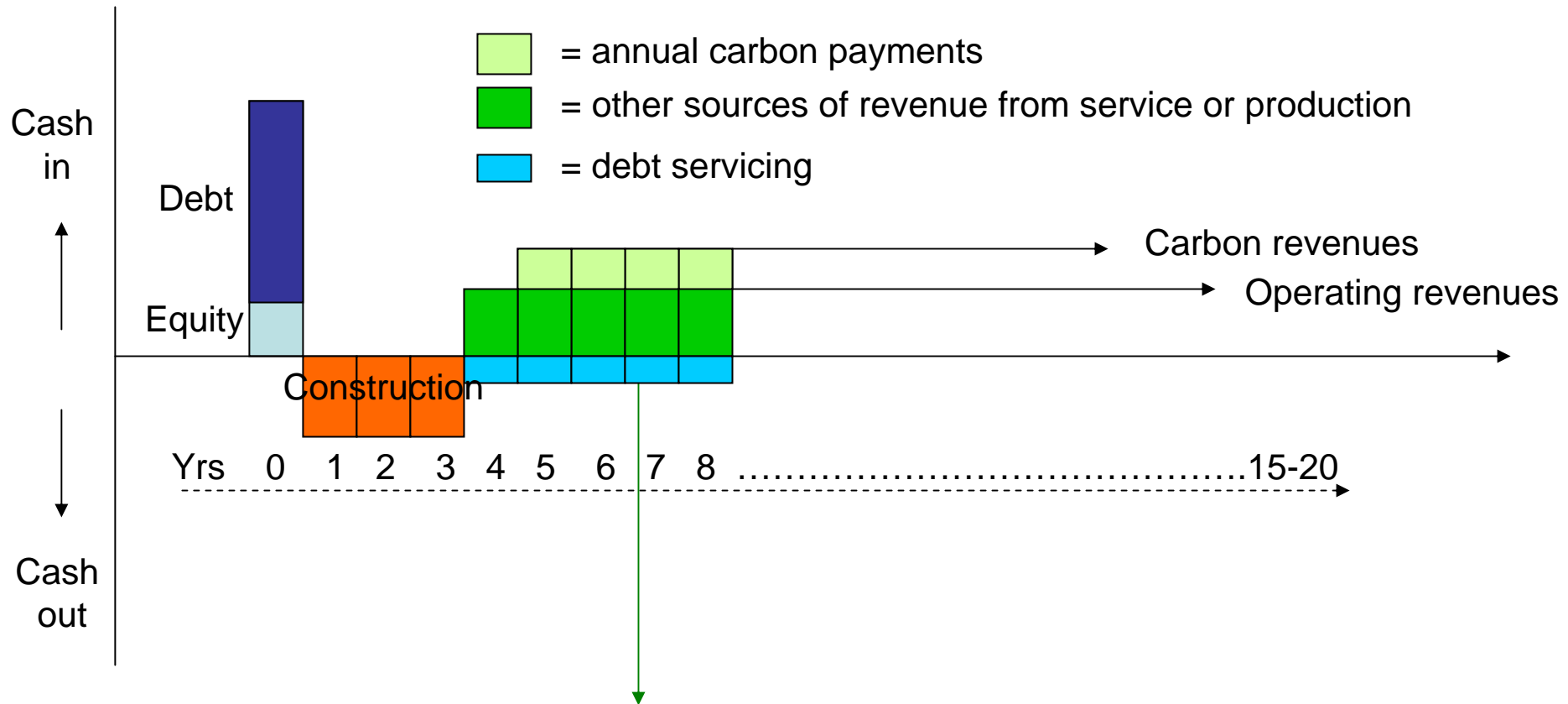


Developing country sells the emission reduction from the project to industrialized country

Industrialized country
with an emissions cap



Carbon finance: payments to a project for reducing emissions of CO₂e



Emission reductions created only after project is implemented and operational.

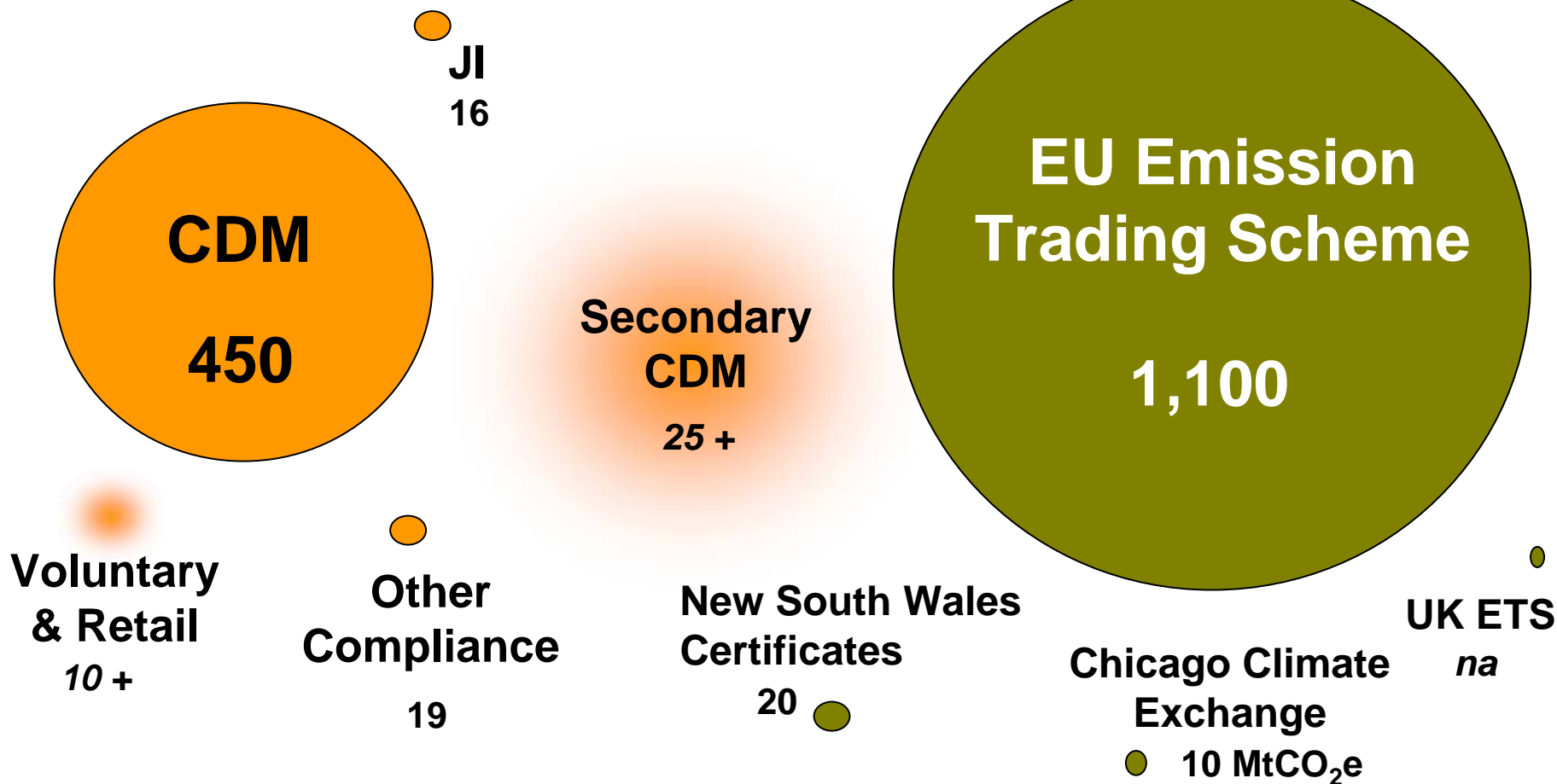
Overall emission volumes transacted in 2006



(in MtCO₂e)

Project-Based Transactions

Allowance Markets



Demand



Market Area	Carbon Credit Shortage (in tons CO ₂) - (2008-12)
Japan	800,000,000
Canada	1,350,000,000
Europe	1,600,000,000
Total Short	3,750,000,000

However, fungibility of CERs will be limited by EU-LD, expressed in % of EU allowances, and differentiated in each EU country

Member State	Proposed cap (in Million)	Allowed cap (in Million)
Germany	482	453.1
Greece	75.5	69.1
Ireland	22.6	21.15
Latvia	7.7	3.3
Lithuania	16.6	8.8
Luxembourg	3.95	2.7
Malta	2.96	2.1
Slovakia	41.3	30.9
Sweden	25.2	22.8
UK	246.2	246.2

Source: Natsource, 2006 & ACX

Source: EU

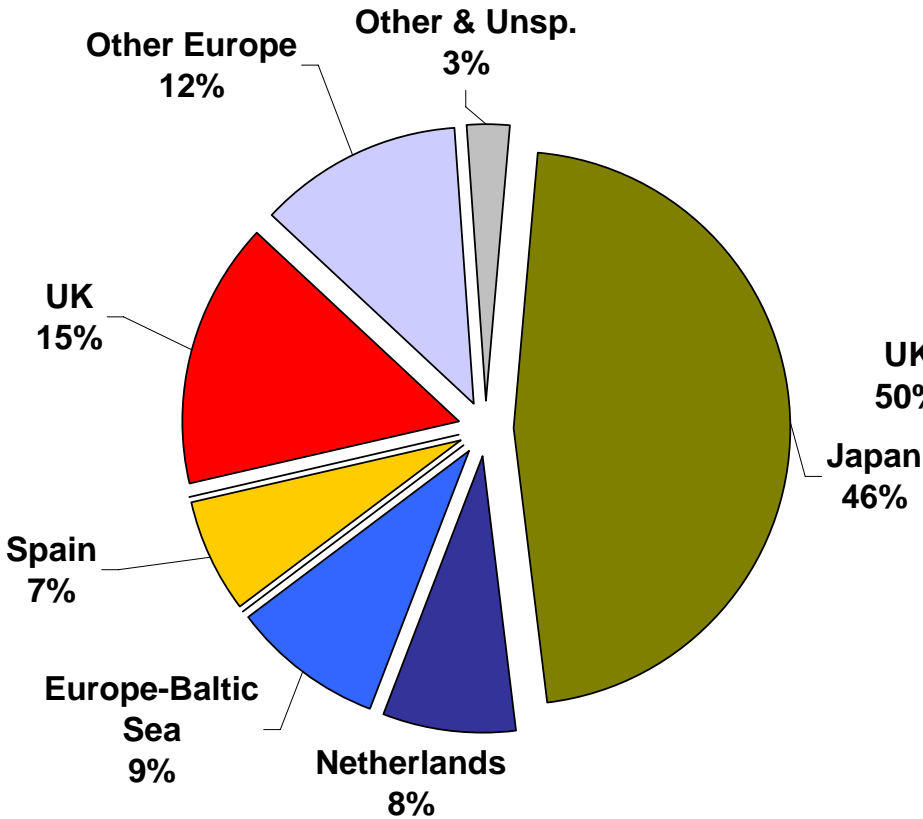
Comparison of proposed vs. approved caps for 2008 to 2012



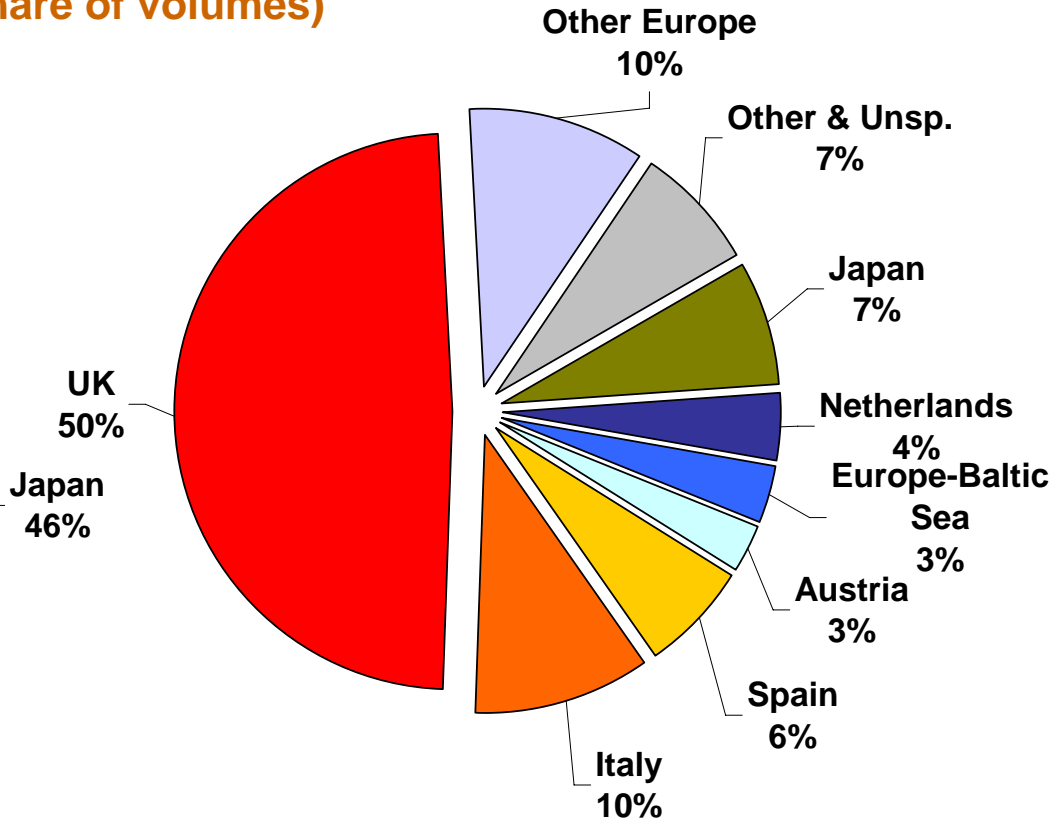
CDM&JI Buyers

EU Private Sector 75% of demand

(share of volumes)



Jan. 2005 to Dec. 2005

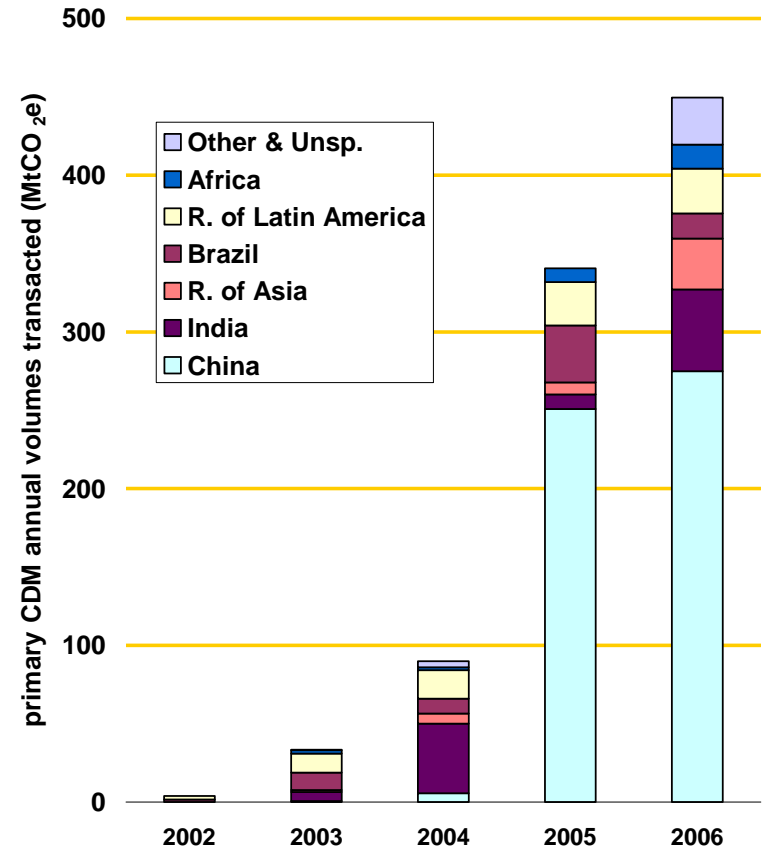
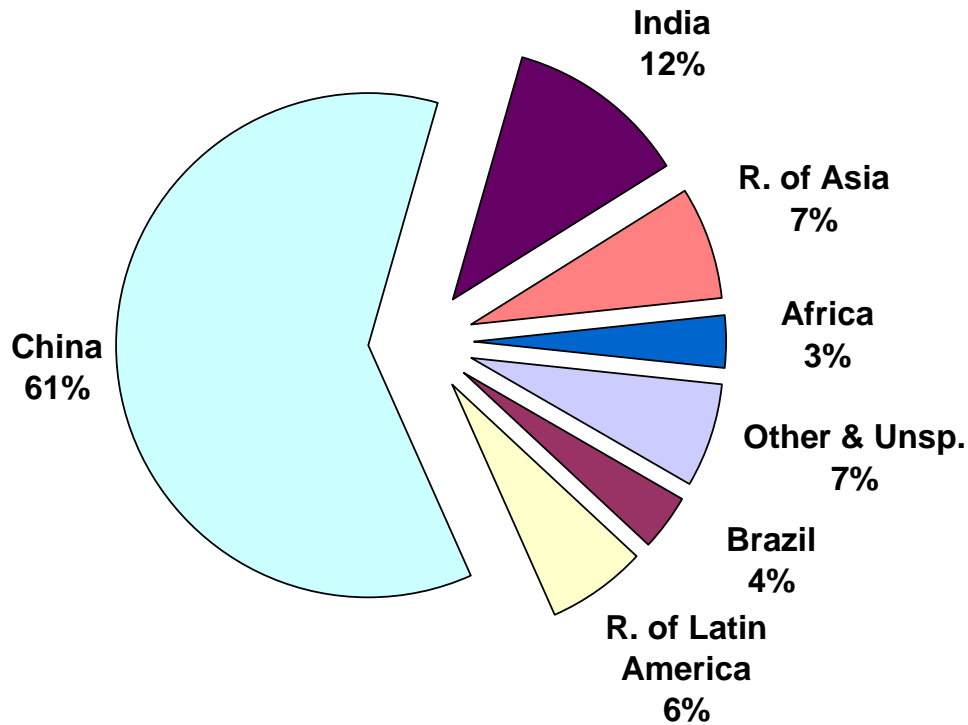


Jan. 2006 to Dec. 2006

CDM Sellers: China dominant



(share of volumes)



Jan. 2006 to Dec. 2006

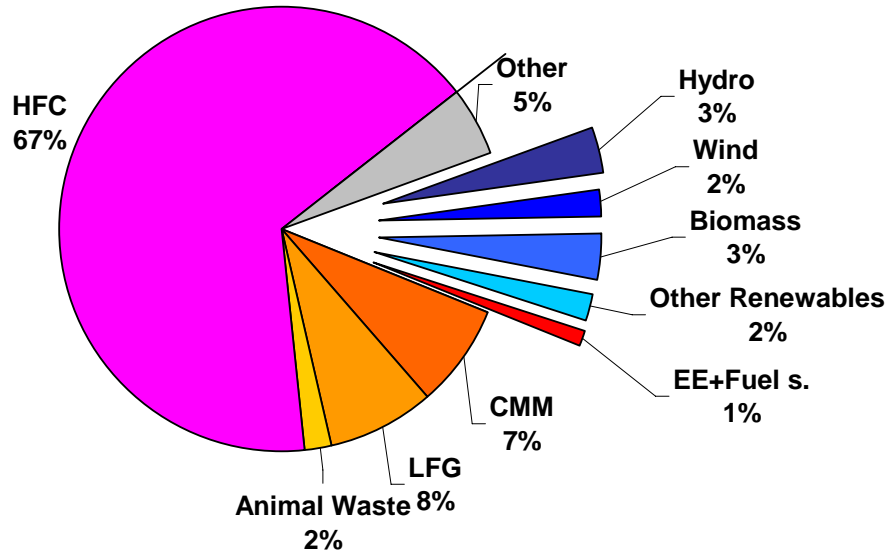


CDM Asset classes

Share of Clean Energy Rises

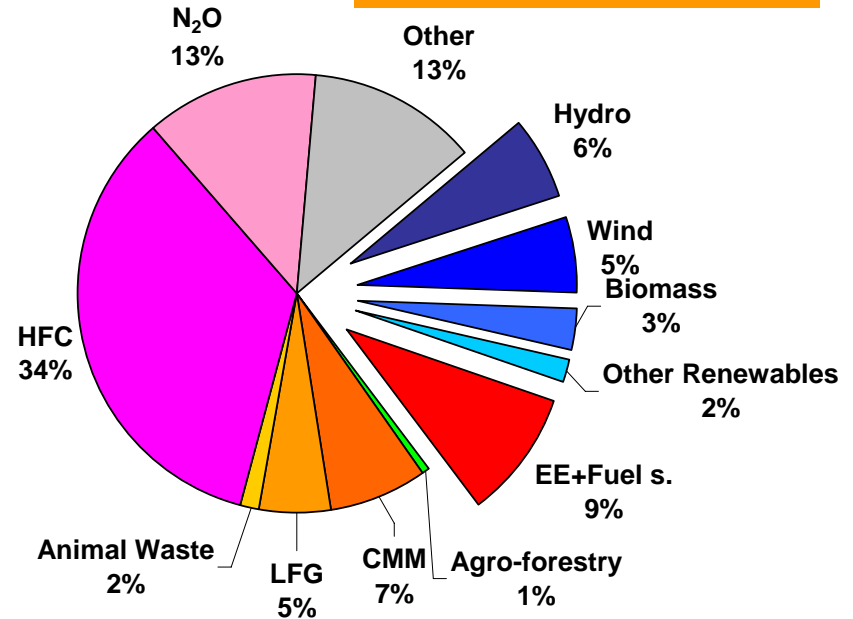
(share of volumes)

Clean energy: 11%



Jan. 2005 to Dec. 2005

Clean energy: 25%

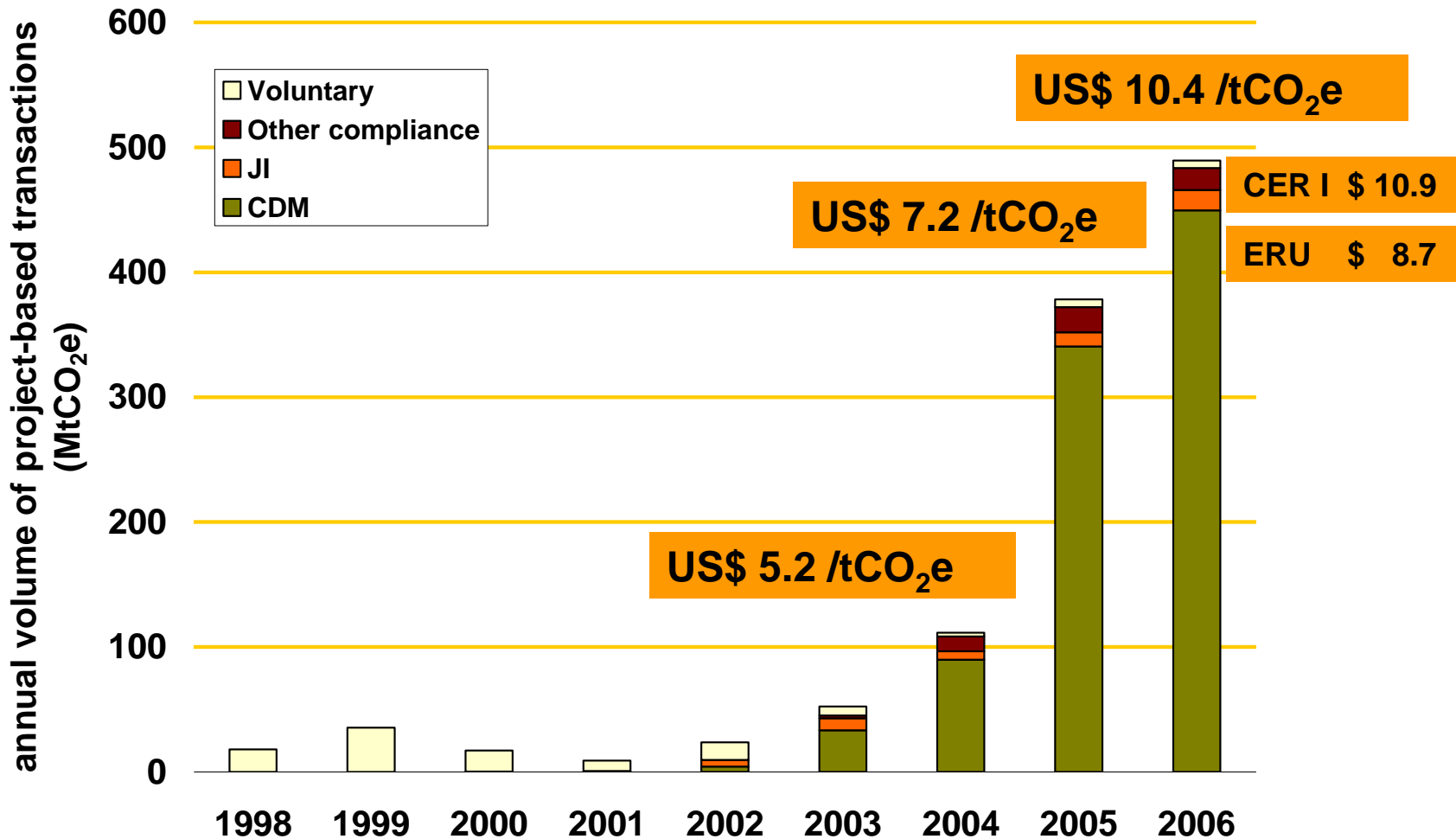


Jan. 2006 to Dec. 2006



Project-based Credits:

Volumes and prices up





Other carbon market

- European Union Emissions Trading
- Australia- the new South Wales Greenhouse Gas Abatement Schemed
- US State Initiatives
 - CCX (Chicago Climate Exchange)
 - RGGI – Regional Greenhouse Gas Initiative
 - CCAR – California Climate Action Registry



Part II: Key challenges and opportunities in the carbon market



Regulatory uncertainty: what sort of market will exist after 2012 ?

- Kyoto Protocol targets expire in 2012 and needs to be renegotiated – no significant market currently exists for carbon credits after 2012 (World Bank is establishing a new carbon facility)
- China, India and a few other developing economies are emerging as major CO₂ emitters, though low per capita emitters – discussions around what this means for a new global framework to curb CO₂



Carbon market demonstrates some characteristics of other markets

- The carbon market is stronger in the strongest of the developing economies and weakest in the weaker economies – Africa largely left out
- Even in the stronger developing markets innovative financing is crucial to switch to cleaner technologies (price of carbon and conventional fuels still too low)
- Banks increasingly apply the same risk assessments to CDM projects as to any other sectors/project when looking to provide loan finance
- In some instances it is possible to monetize the value of an emission reduction purchase agreement by receiving up to 20% upfront payment or through borrowing against the expected ERPA revenue stream (Often need to provide a Bank Letter of Guarantee for this)

Some unique issues



- Price setting: The market is likely to move to more transparent and certain price setting as the carbon market matures: possibly auctions and or carbon exchanges
- Some countries are unclear about treatment of tax on carbon revenues
- Public sector uncertainty often exists about extent to which public sector policies need to be applied to sell emission reductions

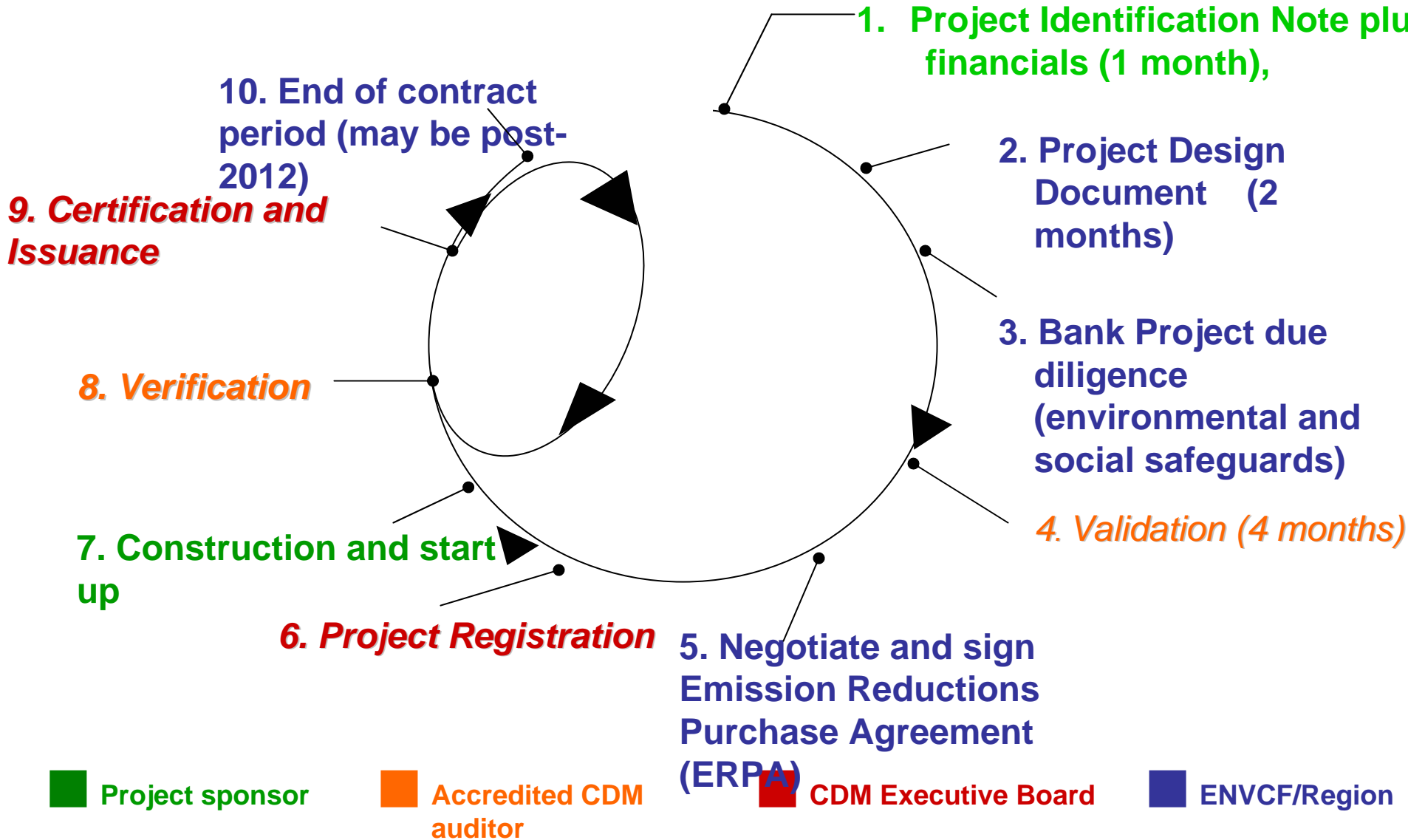
Some sectors need to be brought into the carbon market



- Transport in all forms, is largely absent
- Energy efficient buildings
- Energy efficiency through appliance labelling programs
- Avoided deforestation (Indonesia, Brazil) – to be negotiated during COP 13 in Bali
- Public sector: Largely dormant in India. In China it is the lead driver



Bureaucracy: CDM project cycle





Creating the carbon asset: Procedure/risks

- Usually find that at the initial project planning stage, emission reductions are over estimated by 20% - 80%
- Methodology risk: Developing a new methodology takes 1-3 years and cost \$30,000 plus – and may not finally get approved
- Preparing a Project Design Document: Takes 1- 5 months and costs \$10,000 - \$60,000 depending on location and complexity and social and environmental studies
- Validation: Takes 3-9 months and costs \$15,000 – \$30,000 depending on size and complexity of the project



Creating the carbon asset: Procedure/risks

- Host country approval: Usually takes 2 - 4 months depending on the effectiveness of the DNA
- Project registration: Takes 2 - 6 months. Cost depends on volume of the emissions
- Verifying the emission reductions and having them certified: Takes 2-4 months each time this is done – often annual
- In summary, there is a need to further simplify procedures whilst ensuring that ineligible carbon credits are not claimed
- Shortage of skilled professional to do the work – many claim they can do it !

Carbon projects face normal project risks



The risks to be assessed:

- Soundness/track record of the project entity
- Project financing risks – financial institutions increasingly assess carbon projects as they would any other
- Construction risks – eg hydro plants may hit geological problems
- Technology risk – new untested technologies may fail or not get market support
- Landfill gas projects often over-estimate emissions by 10 - 70%
- Post construction risks: Natural disasters: Cyclones, Tsunamis and drought which may reduce hydro flows and hence emission reductions

How do risks ultimately impact the market ?



- Ultimately the price which is reached between a buyer and a seller of emission reductions should be a reflection of the perceived riskiness of the carbon asset **but**
- Because the carbon market is new we see sellers failing to understand differences between the various types of carbon asset often resulting in unreasonable price expectations
- Some sellers are holding onto issued Certified Emission Reductions in expectation of higher price close to 2012
- New sellers sometimes unfortunately sell emission reductions significantly below market value



What about adaptation?

- World Bank financing via
 - Mainstreaming adaptation in projects
 - Development policy lending for climate change
 - Transformation Fund
- Other support mechanisms
 - Private sector capital (domestic and international)
 - Government financing
 - Adaptation Fund
 - Bilateral and multi-donor initiatives



In conclusion

- The carbon market is potentially an important instrument for mitigating climate change
- However, post Kyoto 2012 agreement as well as US developments are crucial for success



III. The Indonesian Market

- Key Issues for Indonesia
- Examples of Carbon Marketable Projects

Key Points About Carbon Market for Indonesia



- Investment in carbon emission reduction can contribute to Indonesia's efforts to global plans to reduce GHG.
- Carbon market investments help to earn revenues that can be used to offset negative impacts of climate change and protect the vulnerable
- Private sector plays a key role in developing carbon markets.
- Carbon market development relates to overall investment climate
- Need to pay attention to regulatory incentives and price signals

How can Indonesia better participate in global carbon markets?



Mitigate uncertainty about domestic investment climate

- Need long term structures, incentives and certainty, not rapid variation
- Investors need clear long-term signals
- Carbon credits or tradable permits are financial products that should be managed by financial markets.
- Similar to long term asset management
- Provide clear financial and investment regulations

Example: Reducing GHG from Gas Flaring

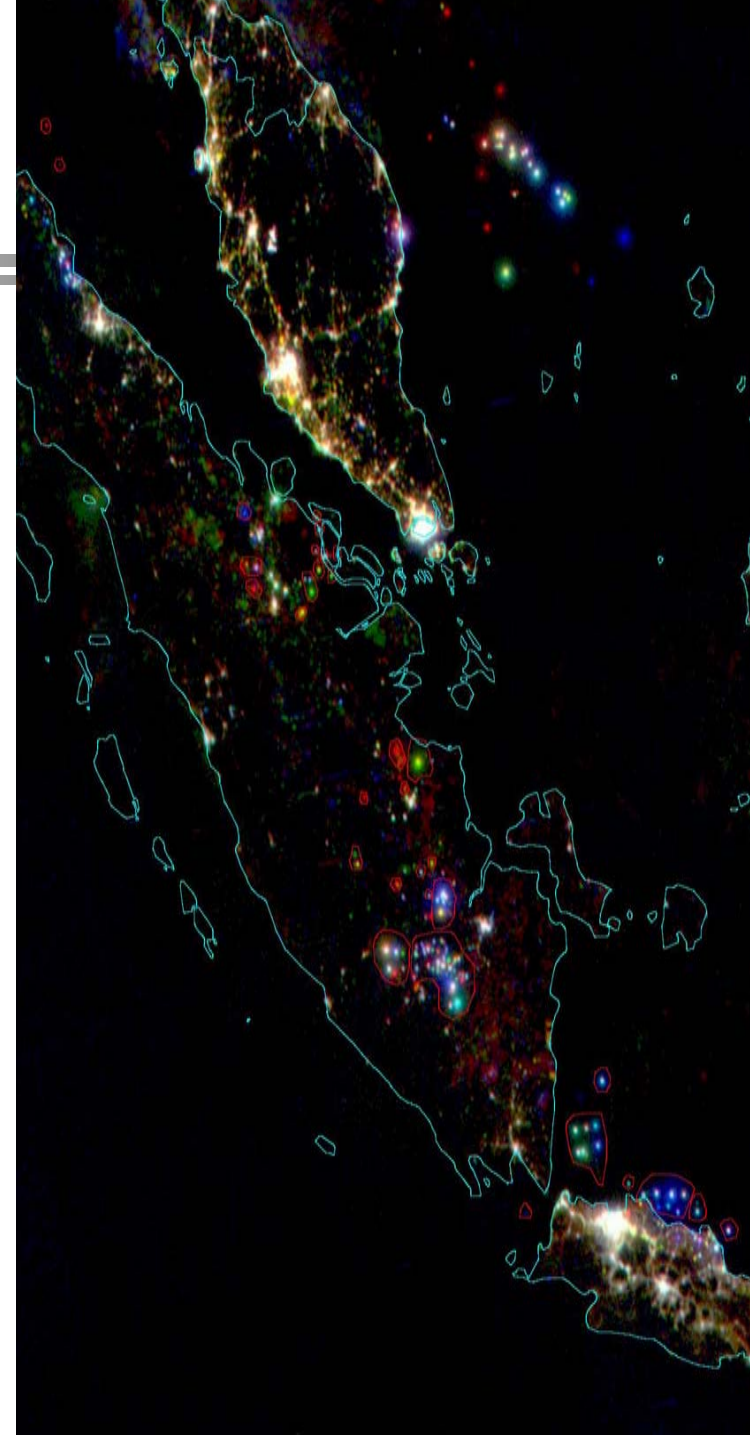
Context

Indonesia flared 3 bcm in 2005 or 8 mln tonnes CO₂eq

- Highest potential for gas utilization in Java-Bali (close to end users)
- Flaring wastes resources, damages environment, adds to climate change

Carbon Finance (CDM) for Gas Flaring

- Currently 2 flaring reduction projects under validation (out of 22 iMay 07)
- 480K tCO₂/yr expected from a potential of 8000 tCO₂/year
- Existing projects extract LPGs and take dry gas to market



Example: Geothermal for Electric Generating Capacity

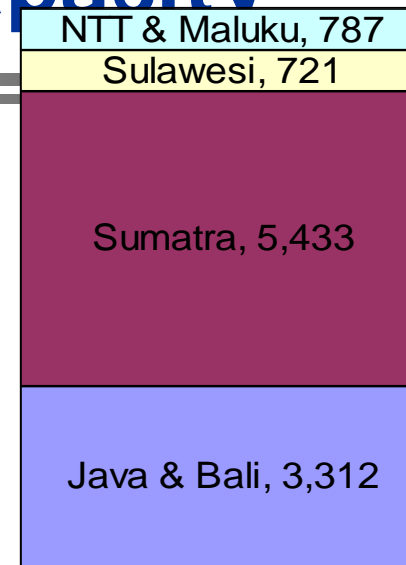


Energy Security: Indonesia has over 40% of world's potential

Price Stability: Natural hedge in energy portfolio against volatile fossil fuel prices

Environmentally Friendly: Renewable resource with very low emissions

BUT, Pricing and incentives are inadequate to develop many geothermal fields



Detailed Surveys Already Identified > 10,000 Mwe Geothermal Gen. Capacity

- Low cost fields are presently competitive against benchmark coal costs
- More costly geothermal fields may be economically justified given the environmental & climate benefits
- Geothermal projects can gain carbon credits: Lahendong, Sulawesi

Example: Transport Sector



Transport sector growing rapidly

- Opportunity for Indonesia to “leap frog” to new technologies
 - Side Benefit: reducing local pollution

“Win-win” options are available:

- Increase fuel efficiency requirements of new vehicles
- Phase out or retrofitting older vehicles (e.g., 2-stroke engines)
- Differential tax incentives for clean vs. “dirty” vehicles
- Institute vehicle inspection and monitoring after sales
 - Promote use and Import of cleaner diesel fuel
- Carbon emissions reductions on city-scale are eligible for credits (e.g., Manila Bus System)



Example: REDD

- REDD = Reduced Emissions from Deforestation and Degradation
- Policies & investments to lower emissions from deforestation, forest fires, peatland degradation
- Potential market = \$400 million - \$2 billion/year
- DepHut/Indonesia Forest Climate Alliance proposal to be launched tomorrow at COP13
- Forest Carbon Partnership Facility to be launched on Dec. 11 at COP13



Terima kasih,

Thank you !

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