



Carbon Finance at the World Bank: The World Bank's Role and Activities in the Carbon Market

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Presentation Overview



- Why is the World Bank involved in the carbon market?
- World Bank objectives in the carbon market
- World Bank carbon funds



Why is the World Bank involved in the Global Carbon Market

Why is the World Bank in the Carbon Market?






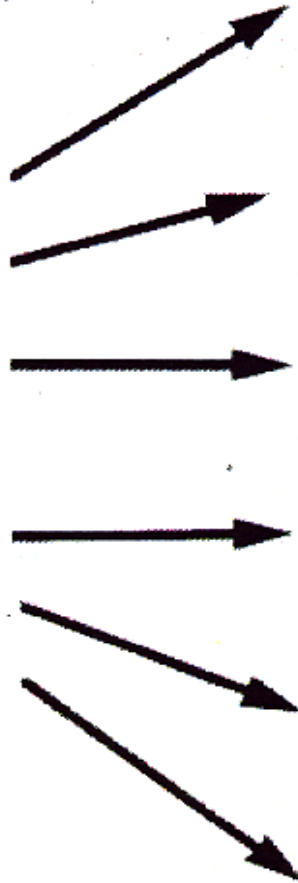
- IPCC conclusions on global climate change:
 - **Impact of climate change on development**
- Efficiency of market-based instruments to reduce GHG emissions:
 - **Opportunity for client countries to benefit from global carbon market**



Why is climate change a problem?

Climate Changes

-  **Temperature**
-  **Precipitation**
-  **Sea Level Rise**



Health Impacts
Weather-related Mortality
Infectious Diseases
Air Quality-Respiratory Illnesses



Agriculture Impacts
Crop Yields
Irrigation Demands



Forest Impacts
Forest composition
Geographic range of forests
Forest health and productivity



Water Resource Impacts
Water supply
Water quality
Competition for water



Impacts on Coastal Areas
Erosion of beaches
Inundation of coastal lands
Additional costs to protect coastal communities



Species and Natural Areas
Loss of habitat and species



World Bank Objectives in the Carbon Market

World Bank Carbon Finance Approach (1)



Ensure that carbon finance contributes to sustainable development, beyond its contribution to global environmental efforts

- Supporting developing countries in enabling them to receive the maximum capital transfers for sustainable development from carbon finance
- Ensuring all carbon projects promoted by the Bank have additional sustainable development benefits beyond the reduction of carbon emissions by applying the Bank's environmental and social safeguards and adding sustainable development value

World Bank Carbon Finance Approach (2)



Assist in building, sustaining and expanding the market for GHG emission reductions

- Develop new markets and sectors for carbon finance
- Supporting the regulatory framework – developing new tools, collaboration with the regulator
- Expanding the capacity of other financial and development institutions through cooperation with other development banks
- Participating with the private sector in international associations and providing opportunities for purchases by the private sector
- Increasing market liquidity by creating projects with large volumes with a portion available to the private sector

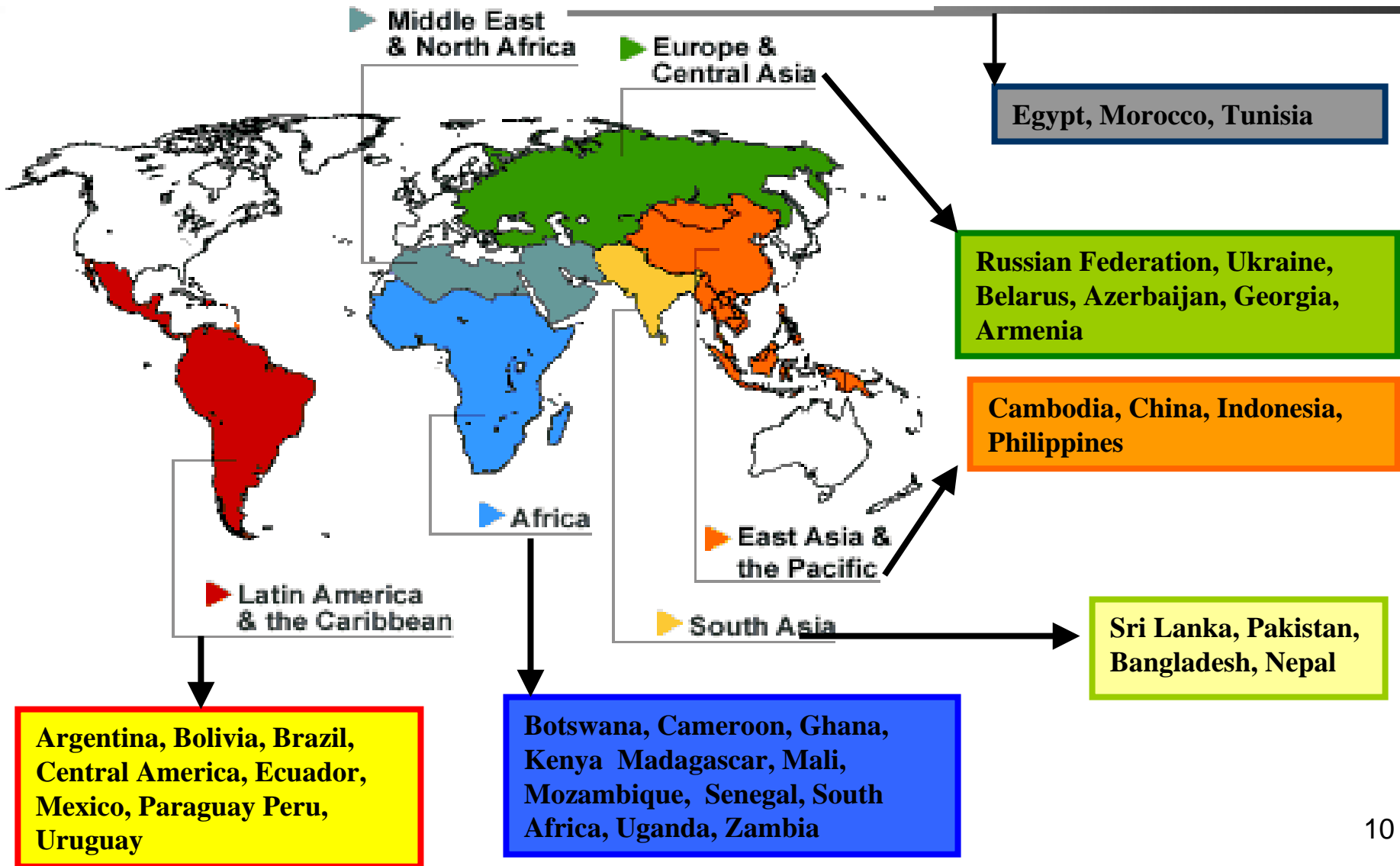
World Bank Carbon Finance Approach (3)



Strengthen the capacity of developing countries to benefit from the market for GHG emission reductions

- \$10 million+ Bank-administered trust fund for capacity building and technical assistance established in FY05
- Assists interested developing countries and economies in transition to develop and implement CDM projects
- 3 to 5 year program to develop sound structures, where local institutions gain the capacity to prepare and review projects for approval
- + Climate change PHRD Grants from Japan (project-specific)

CF-Assist Countries





World Bank Policy in Carbon Finance

- Pay market price adjusted for risk
- Purchase VERs and CERs
- Always contribute beyond the purchase of the CDM emission reduction while building capacity of clients through support and training
- Give full information – transparency and integrity
- Bring the full instruments of the World Bank Group to support clients



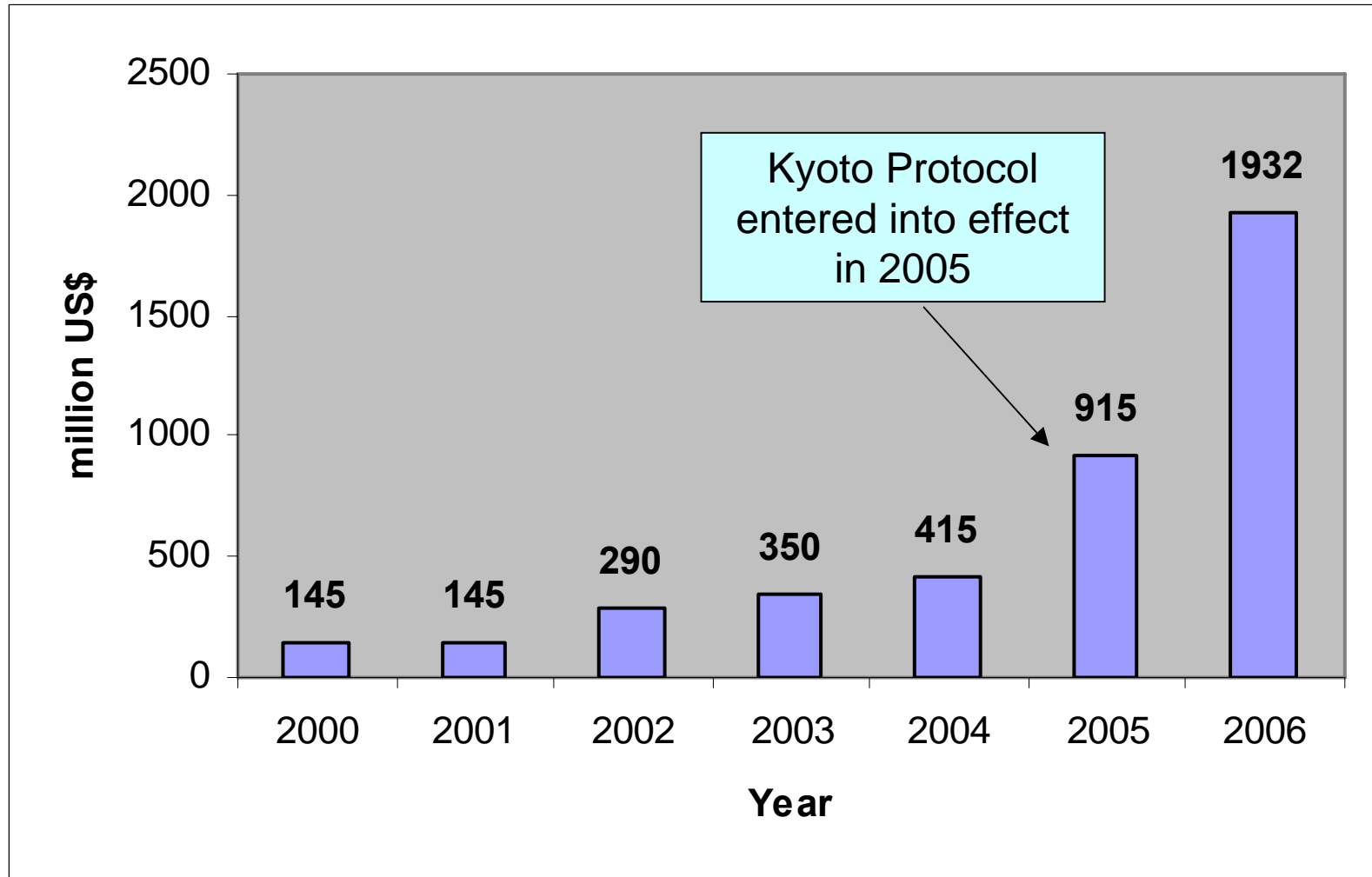
Beyond carbon finance transactions

- Learning by doing
- Major methodology developer
- Help develop carbon market infrastructure (e.g., CarbonExpo) and support regulatory system (e.g., inputs to CDM Executive Board)
- Assist Bank client countries in maximizing their benefits from carbon finance (CF-Assist)
- Publishes annual analysis of the global carbon market (“State and Trends of the Carbon Market 2006”) free-of-charge
- Carbon Finance Helpdesk



World Bank Carbon Funds

Growth of carbon funds under management by the World Bank



World Bank carbon funds & facilities



Total funds pledged = US\$ 1.92 billion (13 governments, 62 companies)



Prototype Carbon Fund. \$180 million. Multi-shareholder. Multi-purpose.



Netherlands Clean Development Mechanism Facility. \$268.3 million.
Netherlands Ministry of Environment. CDM energy, infrastructure and industry projects.



Community Development Carbon Fund. \$128.6 million. Multi-shareholder.
Small-scale CDM energy projects.



BioCarbon Fund. \$53.8 million. Multi-shareholder. CDM and JI land use and forestry projects.



Italian Carbon Fund. \$155.6 million. Multi-shareholder (from Italy only).
Multipurpose.



Netherlands European Carbon Facility. \$56.6 million. Netherlands Ministry of Economic affairs. JI projects. IFC manages similar fund.



Spanish Carbon Fund. \$282.4 million. Multi-shareholder (from Spain only).
Multipurpose.

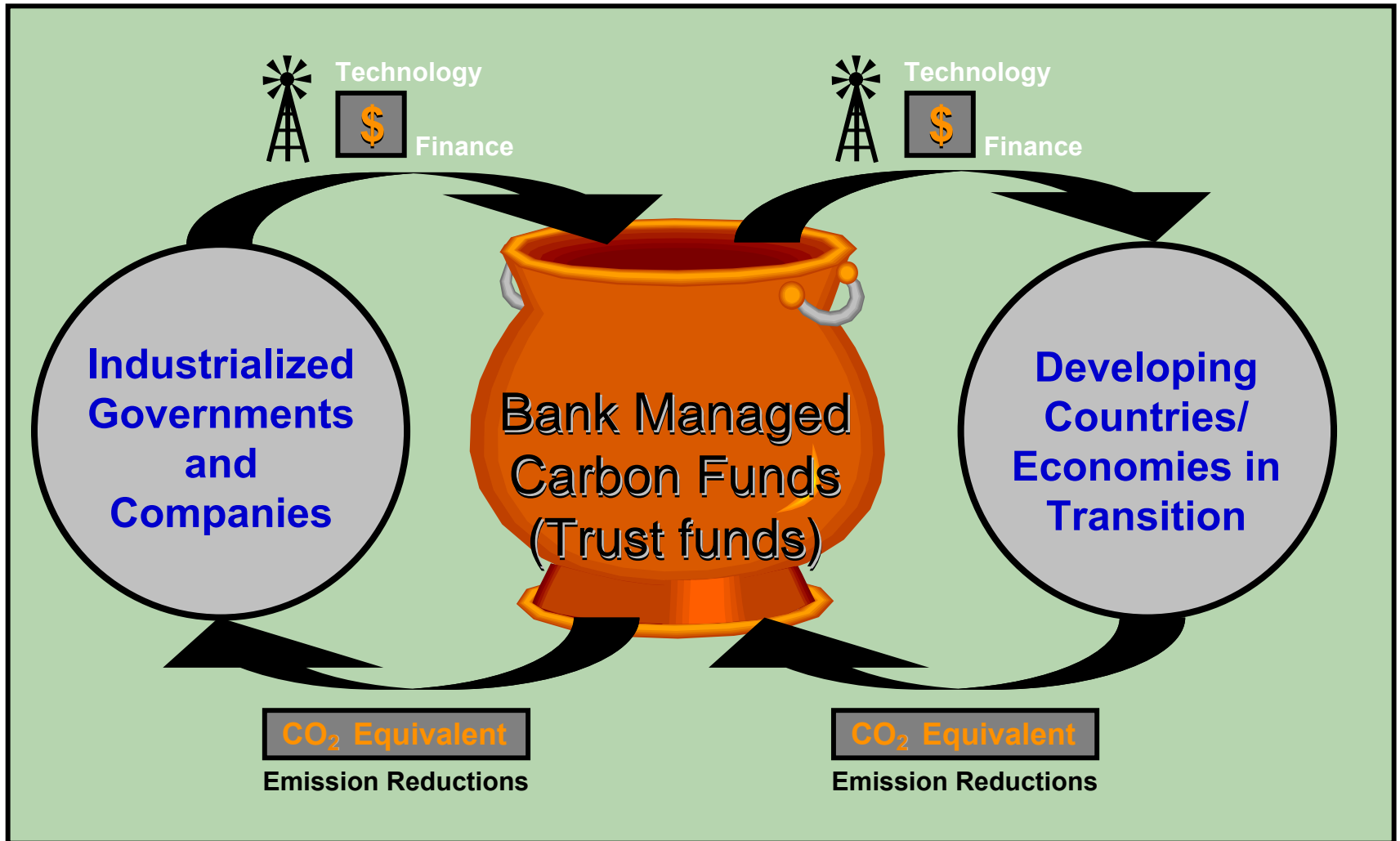


Danish Carbon Fund. \$69.4 million. Multi-shareholder (from Denmark only).
Multipurpose.



Umbrella Carbon Facility. \$737.6 million. 2 HFC-23 projects in China.

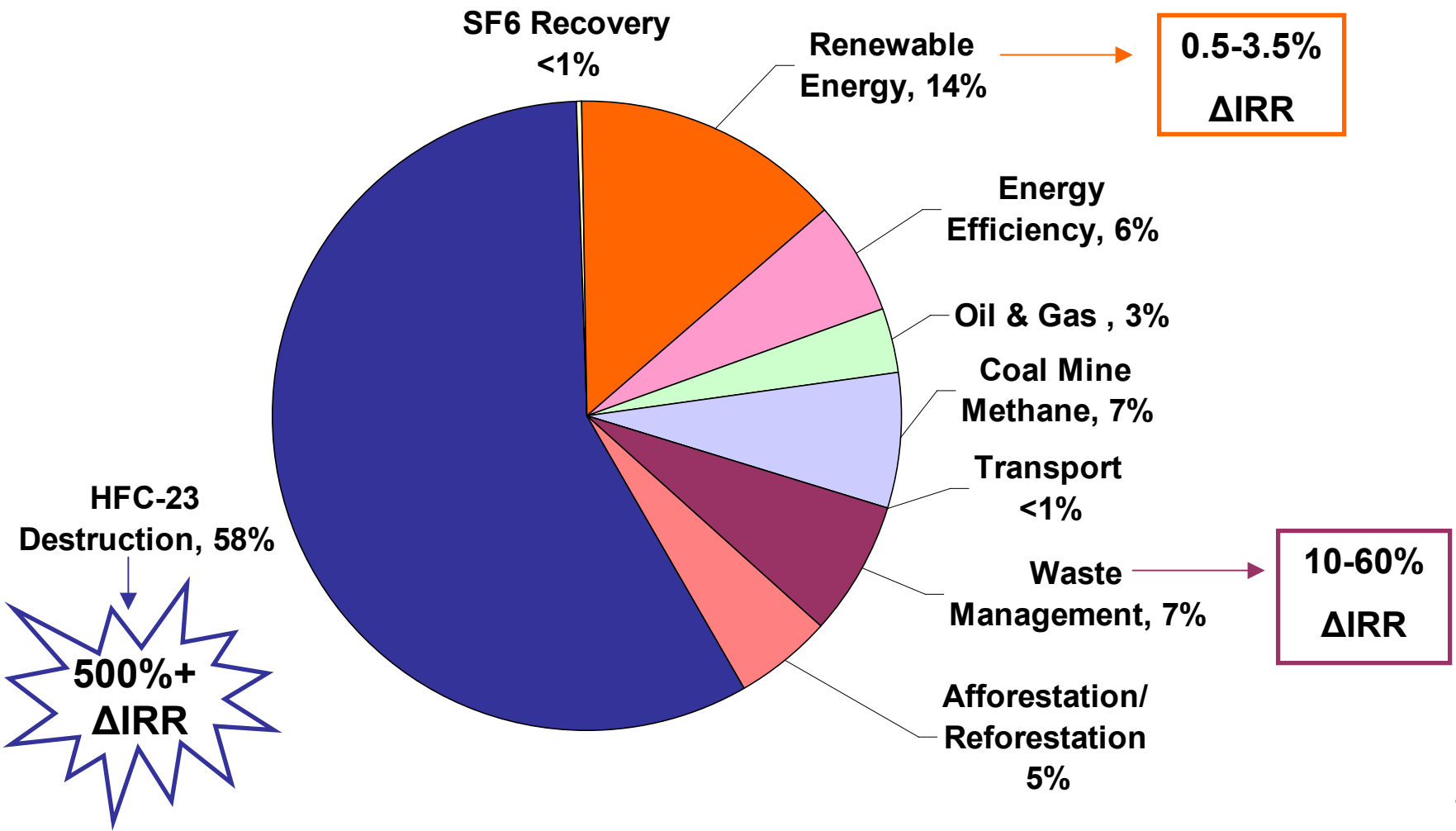
How carbon funds work





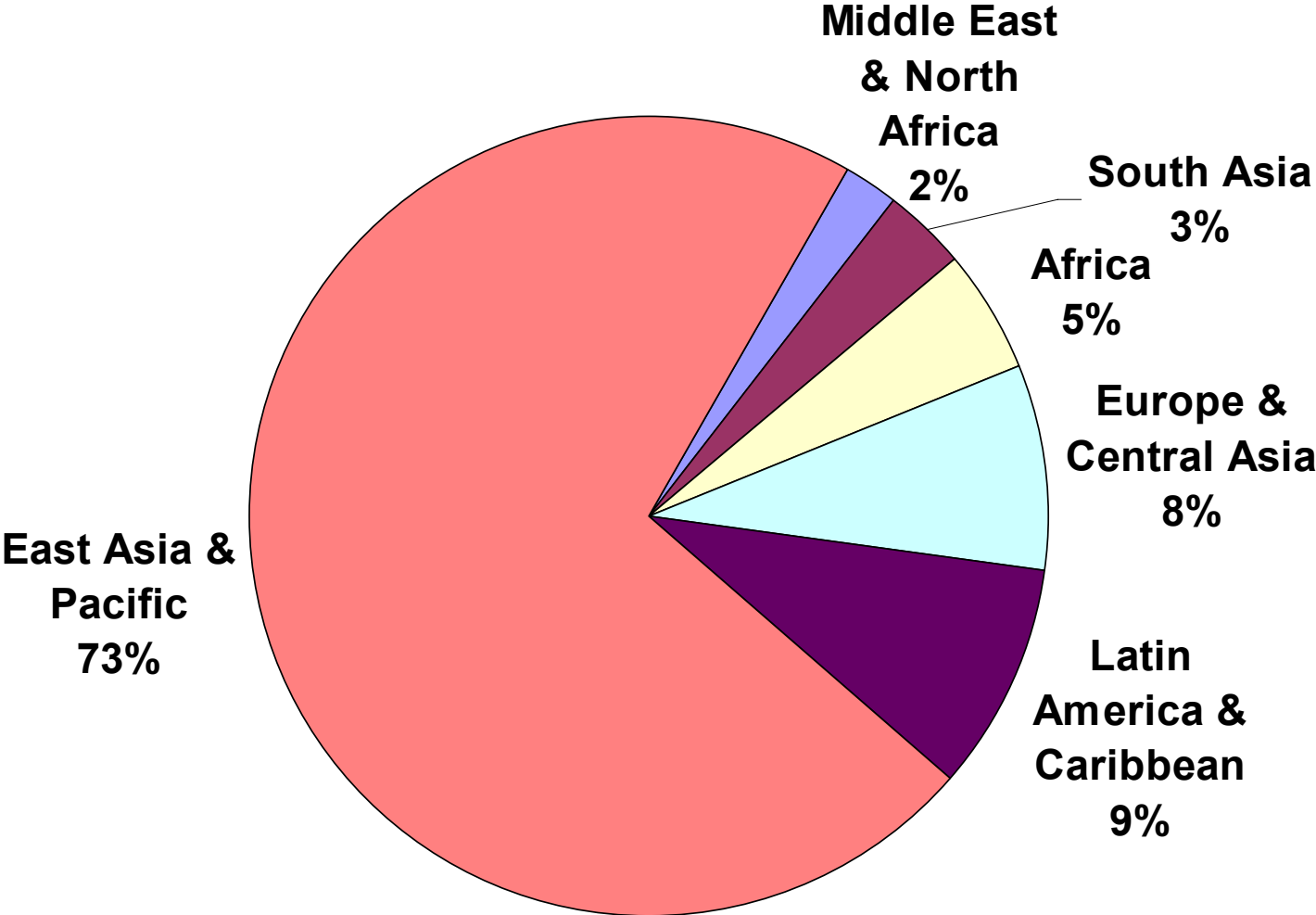
Technological distribution of CF portfolio

Based on volume of emission reductions



Regional distribution of CF portfolio

Based on volume of emission reductions





Carbon finance project activity risks

Project risks.

- financing,
- obtaining licenses,
- construction,
- operation
- etc..

Carbon asset risks.

- methodology approval,
- additionality,
- host country approval,
- clearances by independent 3rd party validator and verifier,
- registration by CDM Executive Board



Nigeria: Solving Problems

- Nigeria's development is constrained by chronic power shortages despite large federal subsidies for PHCN, the state-owned integrated power holding company
- There is chronic under-investment in new generation, the transmission system has frequent breakdowns and problems such as lack of metering, technical and non-technical losses plague the distribution business
- Operation to focus on improving the business model of electricity distribution in "clusters" as a first step to reform
- Project includes investment in HVDS and transformers and designed with carbon payment as performance-based incentive payment to achievement of **reduction of technical losses** from distribution in clusters
- Carbon payments create a revenue stream to reward newly autonomous Distribution Business Units as the utility unbundles and helps demonstrate a sustainable business model for distribution
- **FOCUSING ON NARROW "PENETRATION RATES" MISSES INNOVATION**



Nigeria: Scaling “Clusters”

- The Nigeria Power Team is implementing an operation in Nigeria to address the sector’s problems, including in distribution, generation and transmission
- **A better business model for distribution** in clusters can demonstrate that it is possible to collect revenues from industrial, commercial and residential customers.

The operation will expand the number of Clusters to additional areas. Nigeria is considering how best to encourage viable distribution clusters to attract private developers to generate electricity for the clusters.

- **To the extent that new generation is more carbon-efficient than the baseline, generators may also tap carbon finance as part of their business plans.**

Carbon payments are used to encourage new generation

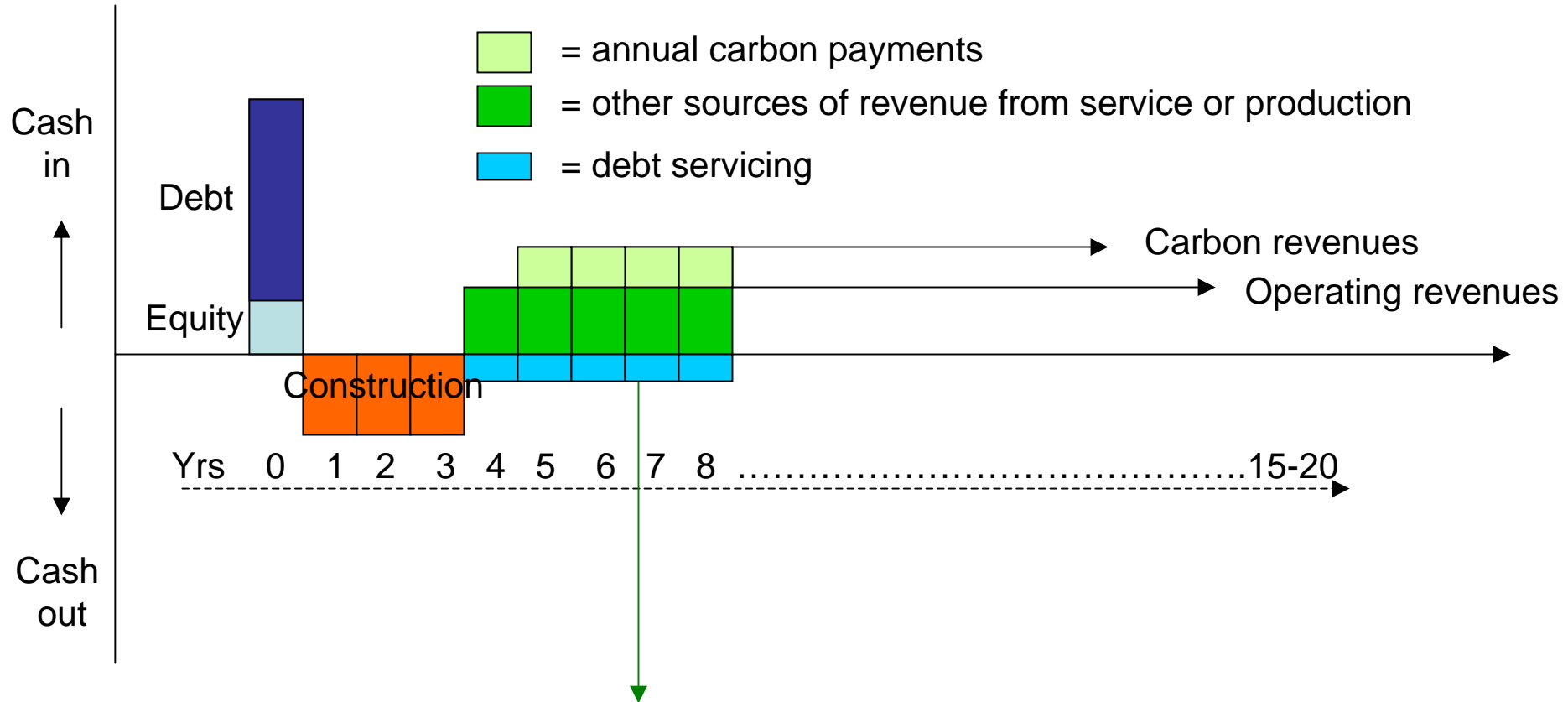


Nigeria: Transmission

- The World Bank operation will also help Nigeria invest in upgrading its unreliable transmission system which is prone to frequent breakdowns.
- Investments to include upgrading of network to reduce transmission losses translate into **avoided capacity and creates emission reductions**
- Lack of on-going transmission O&M results in, among other things, leakage of **SF6** into the atmosphere. SF6 is used extensively in circuit breakers, gas-insulated substations and switchgear.
- Bank operation is designed to have an O&M component where the Bank advises client on designing professional service contracts for private entities to manage transmission operations and maintenance.
- **Management contracts to include incentives for improved SF6 management and performance-based carbon payments to encourage on-going better management and help improve system reliability.**

Carbon payments encourage O&M to increase system reliability

Carbon finance: payments for a stream of emission reductions



Emission reductions created only after project is implemented and operational.

Contracts, CF payments, financing



Contracts and Payments:

- Long term forward contracts -- Emission Reductions Purchase Agreement -- between the WB and the owner of the CERs /VERs
- Fixed unit price over life of contract
- Payment upon delivery
- CER payments in hard currency (Euros, US dollars)

Underlying Financing:

- WB does not usually invest in the underlying project
- WB / IFC may lend to government / private-owned companies developing CDM projects



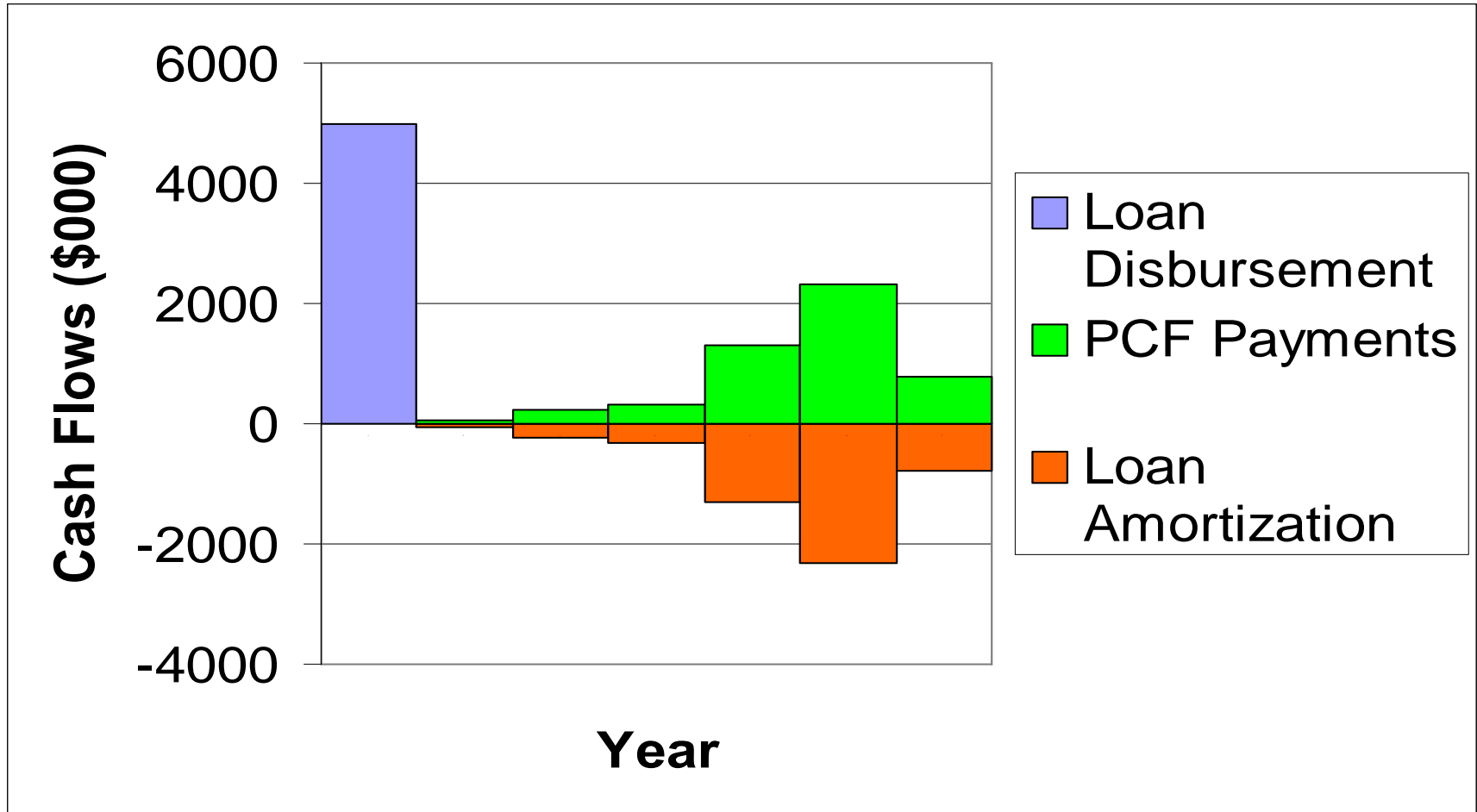
Comfort for Investors

Sale of Credits to WB Fund governed by an Emission Reduction Purchase Agreement (ERPA)

- Agreement with public or private entity or financial intermediary for payment for credits delivered
- Similar to an off-take agreement with annual hard-currency payment for delivery of carbon credits, i.e. performance-based payment)
- Carbon buyer is an investment-grade entity (WB Fund backed by its Participants)
- Carbon revenues can add value to the project:
 - Carbon revenue can improve project cash flows
 - Annual payment can be used as incentive for on-going performance e.g. O&M; service concession
 - Payment can be structured into escrow to:
 - » Eliminate FX risk for investors
 - » Match amortization payments to leverage additional debt
 - » Improve borrowing terms for sponsors
 - » Reduce need for sovereign guarantees



Carbon Asset as Security



ER payments are used to amortize commercial loan. 26



Challenges going forward

- 10 years experience
- The Bank has been a pioneer in the carbon market
- International climate change community expects the World Bank to take leadership role in post-2012 discussions
- Prepare for a future climate change regime (post-2012)?
- Need to develop a standard for voluntary emission reductions for project-based assets?



Thank you for your attention

More information available at:
www.carbonfinance.org