

# FINANCING CCS DEPLOYMENT IN DEVELOPING COUNTRIES

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World Bank

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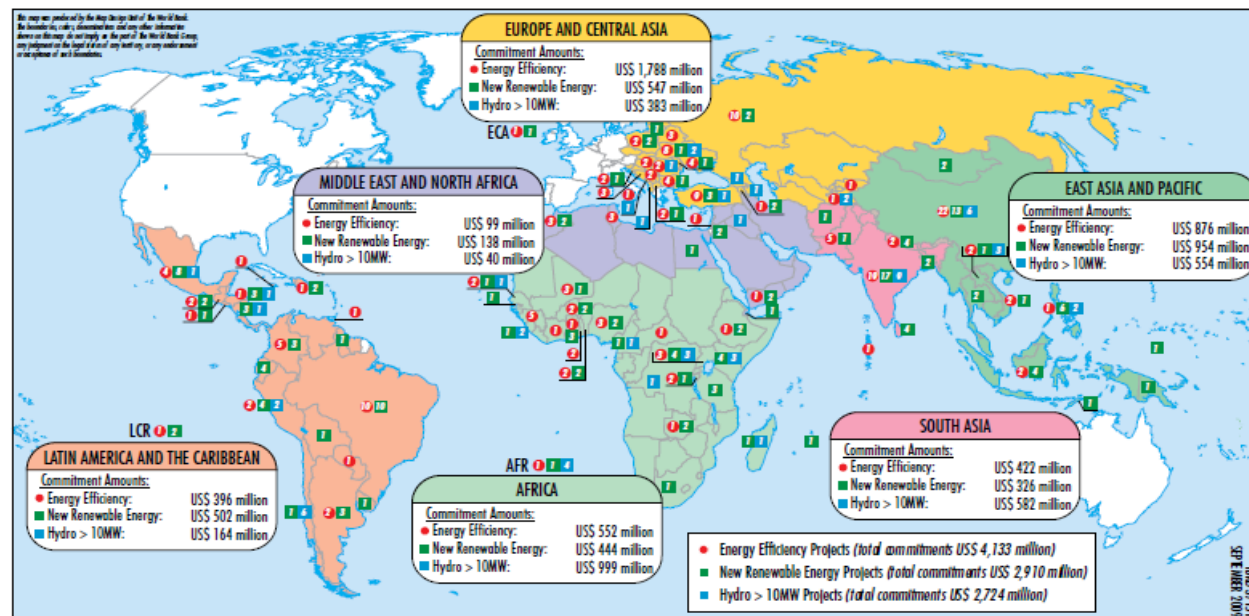
# The World Bank Group (WBG)

- The WBG mandate is to reduce poverty and promote sustainable economic growth
- Role in climate change:
  - Mitigation: assist countries in transition to a low carbon economy
  - Adaptation: assist countries to adapt to unavoidable climate change
- The World Bank Group is composed of:
  - **International Bank for Reconstruction and Development (IBRD) and International Development Agency (IDA) – World Bank** – policy development support, institutional capacity building, government-backed project finance and risk mitigation for new entrants
  - **International Finance Corporation (IFC)** – private sector arm of WBG: Investment support for private sector project developers and manufacturers in development-focused projects
  - **Multilateral Insurance Guarantee Agency (MIGA)** – political, investment and credit guarantees



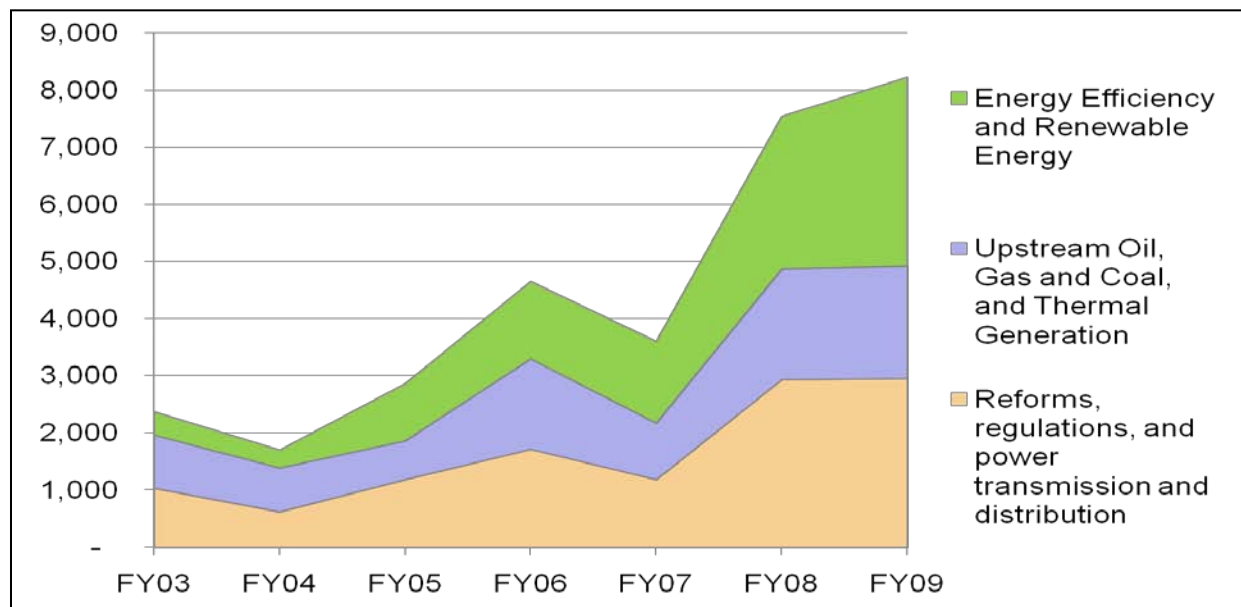
## World Bank Group energy operations

Distribution of  
renewable energy and  
energy efficiency  
projects during Fiscal  
Years 2005-2009

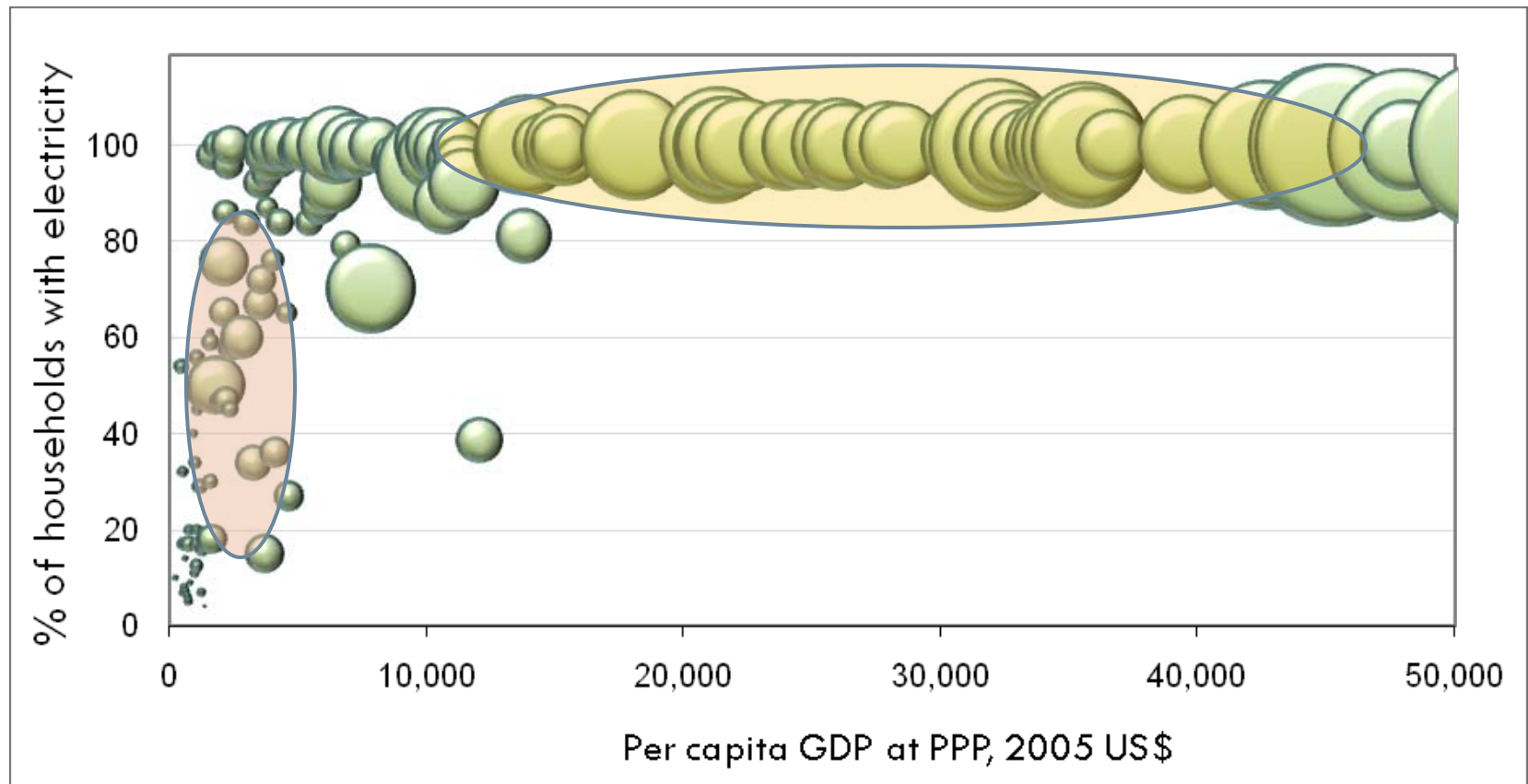


Record high  
investments for  
new renewable  
energy and  
energy efficiency

WBG lends  
US\$3.1 billion  
in Fiscal Year 2009



# Access to electricity, income and CO<sub>2</sub> per capita emissions



# WB Carbon Capture and Storage Trust Fund

## Main objectives of the CCS TF

- Two core elements guiding its work at the international, regional and national levels:
  - ▣ Capacity building and knowledge sharing assistance regarding CCS,
  - ▣ Carbon asset creation services.
- In co-operation with leading international and bilateral initiatives (Global CCS Institute, CLSF, EC programs, IEA Programs and others)

## CCS TF structure and work program

- Total capitalization of the Trust Fund is \$8 million:
  - ▣ Government of Norway – \$6 million,
  - ▣ Global CCS Institute – \$2 million.
- The Work Program consists of the following two components:
  - ▣ Country-level component focusing on country- or project-specific activities, (10 projects) and
  - ▣ Economic and sector work component: regional regulatory, economic and financial instruments analyses.



# Economic and sector work:

## Regional perspective in developing countries

- ❑ Commencement of the study in July 2010;
- ❑ Review of regional regulatory & institutional frameworks:
  - ❑ Assessment of transboundary and multijurisdictional issues,
  - ❑ Cumulative environmental impact assessments.
- ❑ Economic analysis of CCS options in regional energy planning:
  - ❑ CCS as part of low-carbon strategies;
  - ❑ Analysis of capital stock turn-over of the existing power plant infrastructure, timing of investments, and regional infrastructure for CCS deployment.
- ❑ Financing instruments & mechanisms;
- ❑ Case studies:
  - ❑ South African region (South Africa, Botswana, Namibia, Mozambique),
  - ❑ South Eastern Europe (Albania, Bosnia, Kosovo, Montenegro, Serbia).



# Financing instruments and mechanisms

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- Overview of existing instruments;
- Assessment of additional instruments that could be made available to developing countries:
  - ▣ Dedicated bilateral and multilateral funds,
  - ▣ Regulatory instruments,
  - ▣ Green bonds.
- Assessment of existing and prospective climate change financing sources;
- Optimization of funding opportunities by blending conventional and climate change prospective finance instruments:
  - ▣ Development of a bottom-up financial model for CCS based on a case-study.



# Conventional financial instruments for energy sector programs

## Loans

- Sovereign guaranteed LIBOR-based investment loans:
  - Development policy loans;
  - Sector investment (project) loans

## Guarantees

- Partial Risk Guarantee:
  - Conditional; 100 % on principle;
  - Risks covered - devaluation, regulatory risks, contract breach, technology failure;
- Partial Credit Guarantee:
  - Unconditional; reducing the cost of borrowing;
- Combined Guarantees

## IFC Debt and Equity

- Support of private sector investments by market-term financing





# Public Investment example: IBRD Lending and Partial Credit Guarantee

## Botswana

### Morupule B Generation and Transmission Project

Equity

Loans

(to govt-owned BPC, with  
sovereign guarantees)

Risk Guarantees

(Borrower access to  
funding for 20 years)

Owner:  
Botswana  
Power  
Corporation

Commercial  
Lenders

Multilateral  
(IBRD and  
AfDB) loans

Bilateral  
(Chinese  
Sinosure)

IBRD Partial  
Credit  
Guarantee

# Climate mitigation financing sources & instruments

## Global Environmental Facility (GEF)

- Grant financing requested by host governments
- WB is n implementing agency
- Co-financing of policy implementation and pilot & demonstration of new technologies

## Clean Technology Fund (CTF)

- Co-financing of concessional donor loans requested by host governments
- Promote scaled-up financing for demonstration, deployment and transfer of low-carbon technologies
- Risk mitigation for new entrants

## Carbon Finance

- Enhancing viability of investments
  - WB-managed Kyoto Funds
  - Carbon Partnership Facility

## WB CCS Capacity Building Trust Fund

- Capacity building and knowledge sharing assistance regarding CCS
- Carbon asset creation services



# Public Sector Investment Example:

## Egypt Kureimat Integrated Solar Combined Cycle Project



Multi-lateral  
(WBG  
and/or  
GEF)

- Grant: \$49.8m for solar component
- IBRD project preparation, regulatory and policy support

Bilateral

- Japanese Bank for International Cooperation
- Loan or grant

Recipient  
equity  
(Govt of AR  
Egypt)

- Through public utility or special purpose vehicle
- Equity and management

For more details, please visit:

[www.worldbank.org/energy](http://www.worldbank.org/energy)

<http://go.worldbank.org/ERF9QNT660>



# Climate finance sources for CCS

## Assessment of climate finance sources

Requirements & appropriateness of CCS within different climate finance sources for NAMAs:

- Performance-based approaches;
- Dedicated public funding;
- Carbon market off-set mechanisms.

Overview of pre-conditions for creating of fungible liquid carbon assets from CCS:

- Emerging requirements of regional carbon market regimes or other new climate finance instruments

Guidance on CCS carbon asset creation using a modular methodology approach:

- Assisting in creation of high-quality CCS assets;
- Encompassing a variety of potential CCS technologies and applications;
- Based on case studies.



# Creating fungible CCS-related carbon assets

Comparative analysis of present and prospective requirements for CCS-related mitigation activities

- Evolving carbon market mechanisms in current and emerging regional/national carbon markets

Identify potential and limitations for creating fungible CCS-related carbon assets

- Respective approaches to define permanence, MRV issues, liability

Potential for harmonized treatment of CCS-related carbon assets among carbon trading regimes

- Leverage carbon market contribution to CCS deployment



# Thank you

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