



Using Carbon Finance to Fund Energy-Efficiency Projects

John O'Brien

Regional Technical Advisor,
Climate Change Mitigation

John.obrien@undp.org

**International Energy-Efficiency Forum
Astana 28-30 September 2010**

Presentation Structure

1. Global Climate Change
2. The Kyoto Protocol and Carbon Trading
3. Different Mechanisms to encourage Energy-Efficiency
4. Carbon Trading to Fund Energy-Efficiency Projects
5. Role of UNDP in Carbon Finance

1. Global Climate Change

- Why EE is so important
- Historical variations in temperature
- IPCC

Why is energy-efficiency so important?

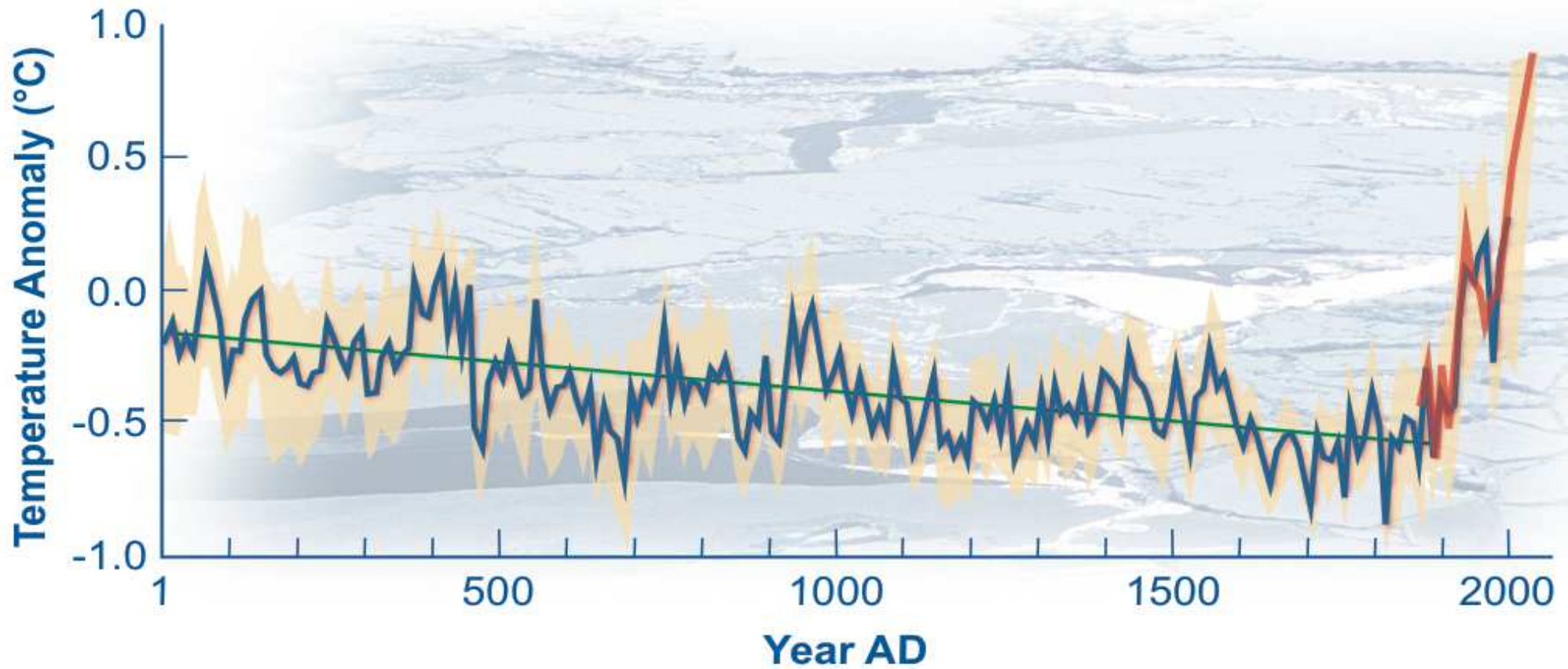
Win-Win opportunities

- Good for business
- Good for the environment

World governments should exploit energy efficiency as their energy resource of first choice because it is the least expensive and most readily scalable option to support sustainable economic growth, enhance national security, and reduce further damage to the climate system.

Doubling the rate of energy efficiency improvement would:

- ✓ Allow the world to hold CO₂ concentrations below 550 ppm
- ✓ Avoid \$3.0 trillion worth of new generation
- ✓ Save consumers \$500 billion per year by 2030
- ✓ Eliminate the same amount of energy supplied by 2,000 coal power plants
- ✓ Return the globe to 2004 energy consumption levels
- ✓ Drive business productivity improvements and new employment opportunities



Arctic air temperature change
reconstructed (blue), observed (red)

About the IPCC



IPCC

**Intergovernmental Panel On
Climate Change**

Scientific Body established by UNEP and WMO to evaluate the risk of climate change caused by human activity. IPCC established in 1988 and is based in Geneva.

Second Assessment Report (1995)

✓ The balance of evidence suggests a discerning human influence on climate change which is expected to continue in future

Fourth Assessment Report (2007)

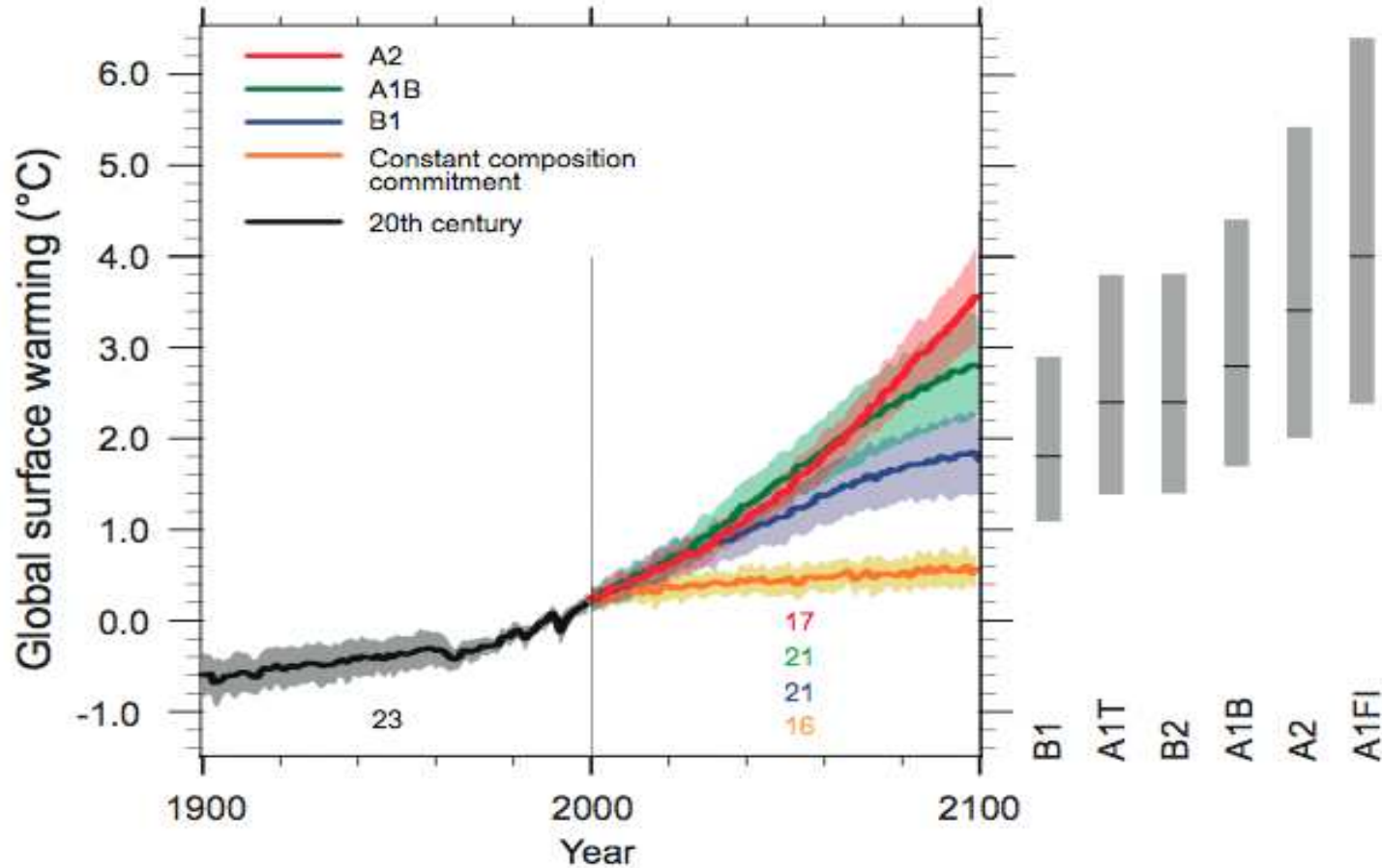
- ✓ Warming of the climate is unequivocal
- ✓ Most of the increases in temperature are Anthropogenic (i.e – caused by humans)
- ✓ Probability that it is naturally caused (< 5%)
- ✓ World temperature increases 1.1 – 6.4% is predicted in the 21st century
- ✓ Sea level rise of 18 to 59 cm predicted
- ✓ 66% probability more storms, droughts, cyclones

Fifth Assessment Report

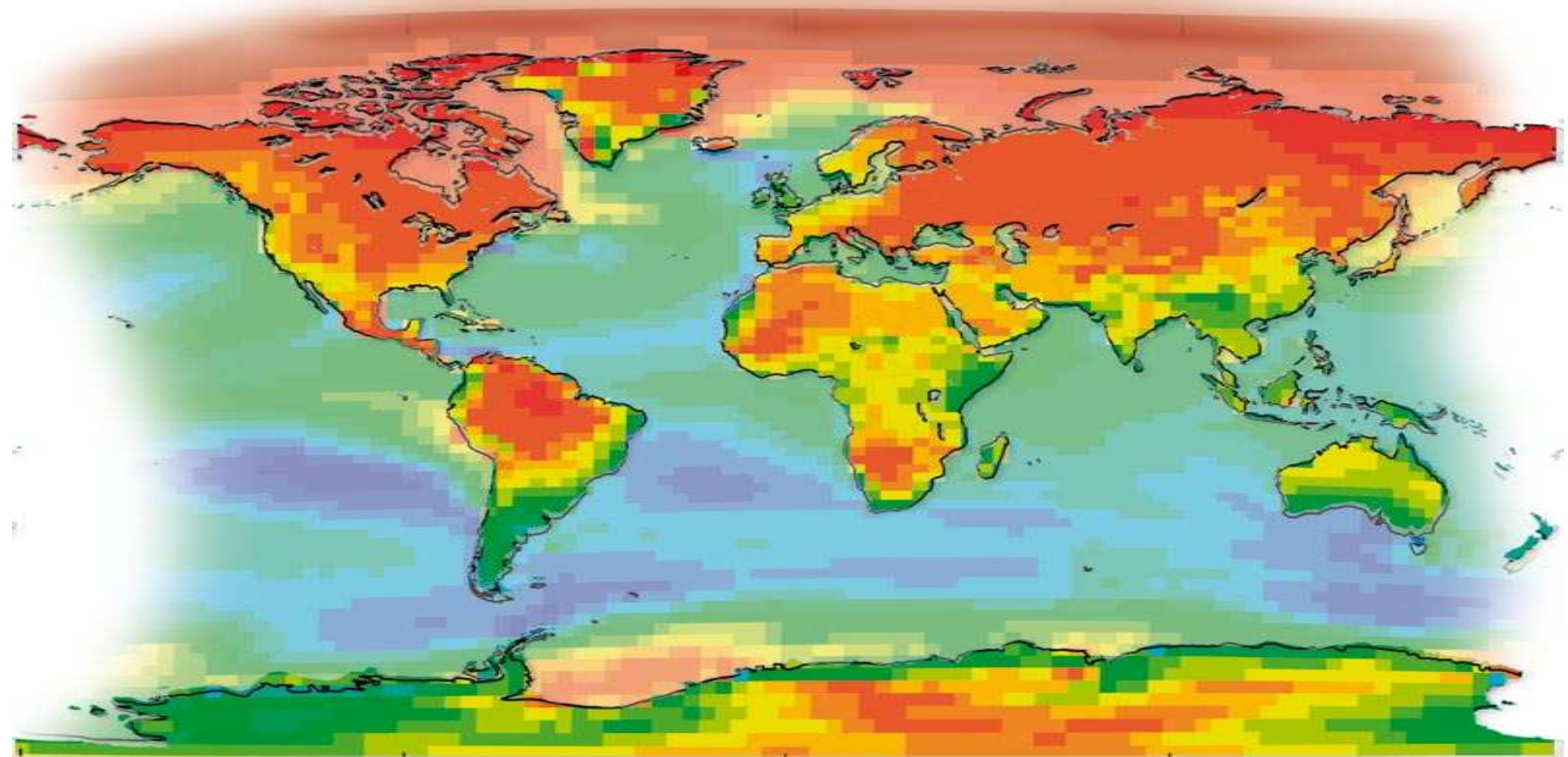
- ✓ Scheduled for 2014



Projected Changes in global surface temperature for the 21st Century - (2 degrees celcius is acceptable)



Projected change in global surface temperature for the 21st Century [Source: Alley *et al.*, 2007]



REGIONAL TEMPERATURE INCREASE (°C)
IN A 4°C WORLD, RELATIVE TO 1890

1 2 3 4 5 6 7 8 10 12 14 16

2. The Kyoto Protocol and Carbon Trading

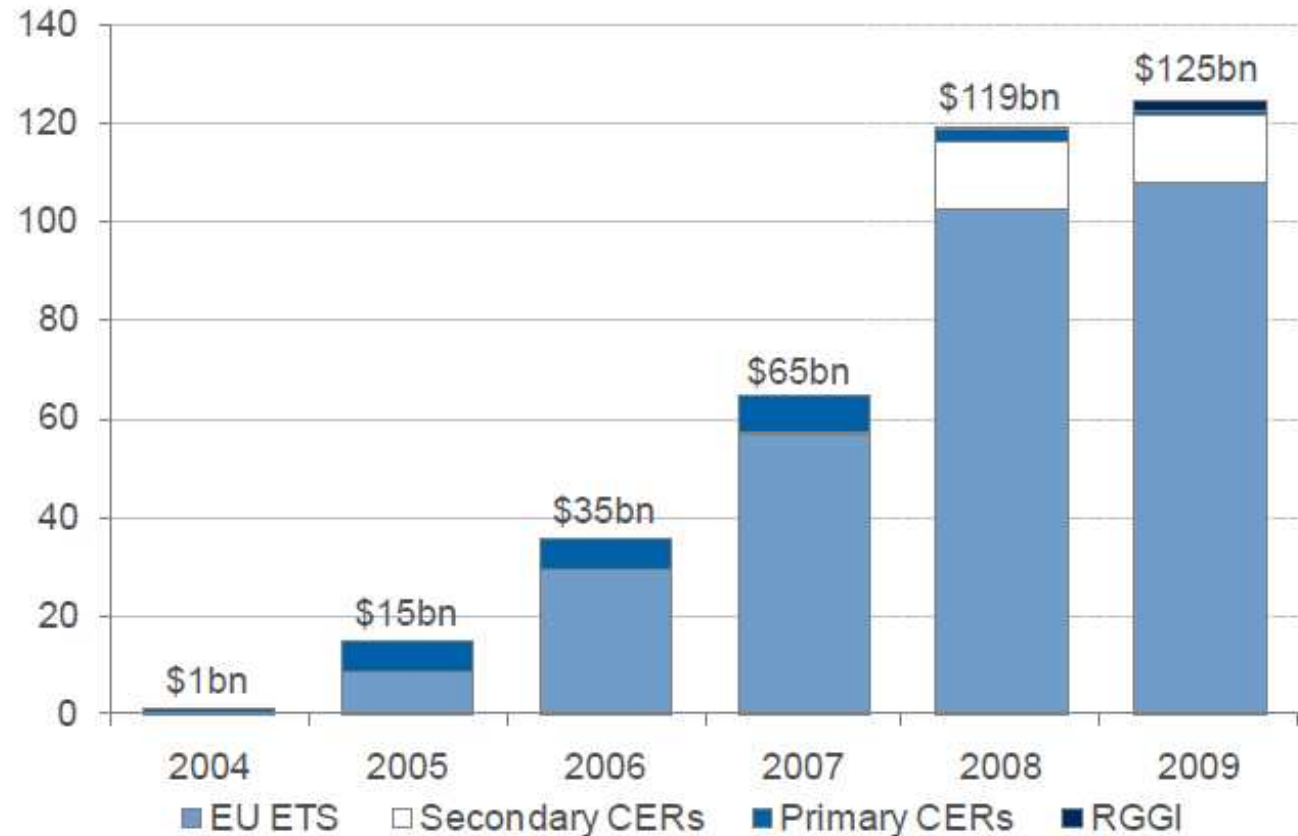
- History
- Growth in Carbon Trading
- Flexibility Mechanisms of KP

The Kyoto Protocol and Carbon Trading

What	When	Target	Target Met
United Nations Framework Convention on Climate Change (UNFCCC)	1992	Stabilize at 1990 levels by the year 2000	No
Kyoto Protocol	1997	5.2% below 1990 levels by 2008-12	Unlikely
Copenhagen Accord	2009	New Legal Framework Required by 2012	Lots of work remains to be undertaken

The Carbon Market has continued to grow in size and dwarves ODA...

Global carbon market size 2004–09 (\$bn)



Source: Trading figures taken from ECX, Bluenext, EEX, Reuters, CCX, LEBA

The Kyoto Protocol defined three different mechanisms for Carbon trading ...

Clean Development Mechanism (CDM) – creates Certified Emission Reductions (CERs)

Joint Implementation (JI) – creates Emission Reduction Units (ERUs)

International Emissions Trading (IET) – creates Assigned Amount Units (AAUs)

3. Different Mechanisms to Encourage Energy-Efficiency

- Different means for raising revenues
- Why EE is so important
- CDM and energy-efficiency

Different means for raising revenues and raising capital ...

Raising Revenue	Raising Capital
<p>Fiscal: carbon taxes, road taxes, vehicle excise taxes, registration fees, non-compliance fees.</p>	<p>Debt: Loans-IFIs, national development and commercial banks; securities-municipal green bonds, cat bonds, weather derivatives.</p>
<p>State transfers: shared tax resources with central government</p>	<p>Equity: from private sector, IFIs or central government</p>
<p>Grants: from central government, ODS, philanthropy</p>	<p>Market: CDM, JI or domestic carbon markets, voluntary markets</p>
<p>Innovative: auctioning of emission allowances, lottery.</p>	<p>Innovative: Lease purchase agreements, debt for efficiency swaps</p>

Standards, Mandates and Information

Standards	Emission	Tailpipe emission standards
		Sulphur content of fuel emissions to be checked
	Product	Appliance/equipment standards for energy efficiency
		Building energy codes with energy standards
		Product standards for RE technology
		Ethanol content in gasoline
Process	Best available emission technology, process standards	
Renewable Portfolio Standards	Set volume targets, generating compliance certificates	
Voluntary Green Power Options	Mandatory green power to be offered by utilities as an opt out from RFS or complementing it-user has the option of choosing energy mix. Rates have to be published (link to labelling)	
Labelling & Certification	Labelling	Greenhouse gas labelling of new vehicles
	Disclosure Certification	Mandatory GHG reporting of certain companies and/or sectors. Certification scheme for green ethanol
Prohibitions & Restrictions		<ul style="list-style-type: none"> • Ban on inefficient light bulbs; • High Occupancy Vehicle lanes extended to hybrid and electric vehicles • Phase out coal-fired power plants
		Ban of import of high emitting vehicles
		Phase out of installation of electric hot water systems in existing homes

Standards, Mandates and Information (Continuation)

Facilitated approval procedures	Statewide cap for permit fees for active solar energy devices issued by counties and municipalities for solar PV systems and solar WH systems
	Prohibiting unreasonable public and private restrictions on the installation of wind energy systems on single-family residential properties
	Model As-of Right Zoning Ordinance or Bylaw: allowing use of wind energy facilities, model ordinance for wind energy systems or guidance
	Standards for Municipal Small Wind Regulations to prevent municipalities from adopting regulations that place unreasonable limits or hinder the performance of small wind energy systems. New Forest Code fostering conservation
	Zero deforestation policy from 2010 (mandatory offsetting of new trees planted for every tree removed)
	Land use zoning: avoid significant new development in areas that cannot be adequately protected (planning, permitting, development and building) from flooding, wildfire and erosion due to climate change)
	Relocation and modernisation of abattoir and relocation of animal waste plant and conversion of waste to methane for electricity generation

Standards, Mandates and Information (Continuation)

Green procurement

All government procurement according to environmental criteria

State owned buildings EE standards

Purchase of green electricity for all government buildings

Fuel efficient car fleet

Resilience requirements in public buildings, infrastructure and electricity grid

Sustainable agricultural practices programme: technical and financial assistance to farmers to reduce emissions

Advisory services to individuals and small businesses on energy efficiency and alternative energies

DSM

Smart meters

Time of day metering of domestic and business clients to be set by DERC

Time differential tariffs

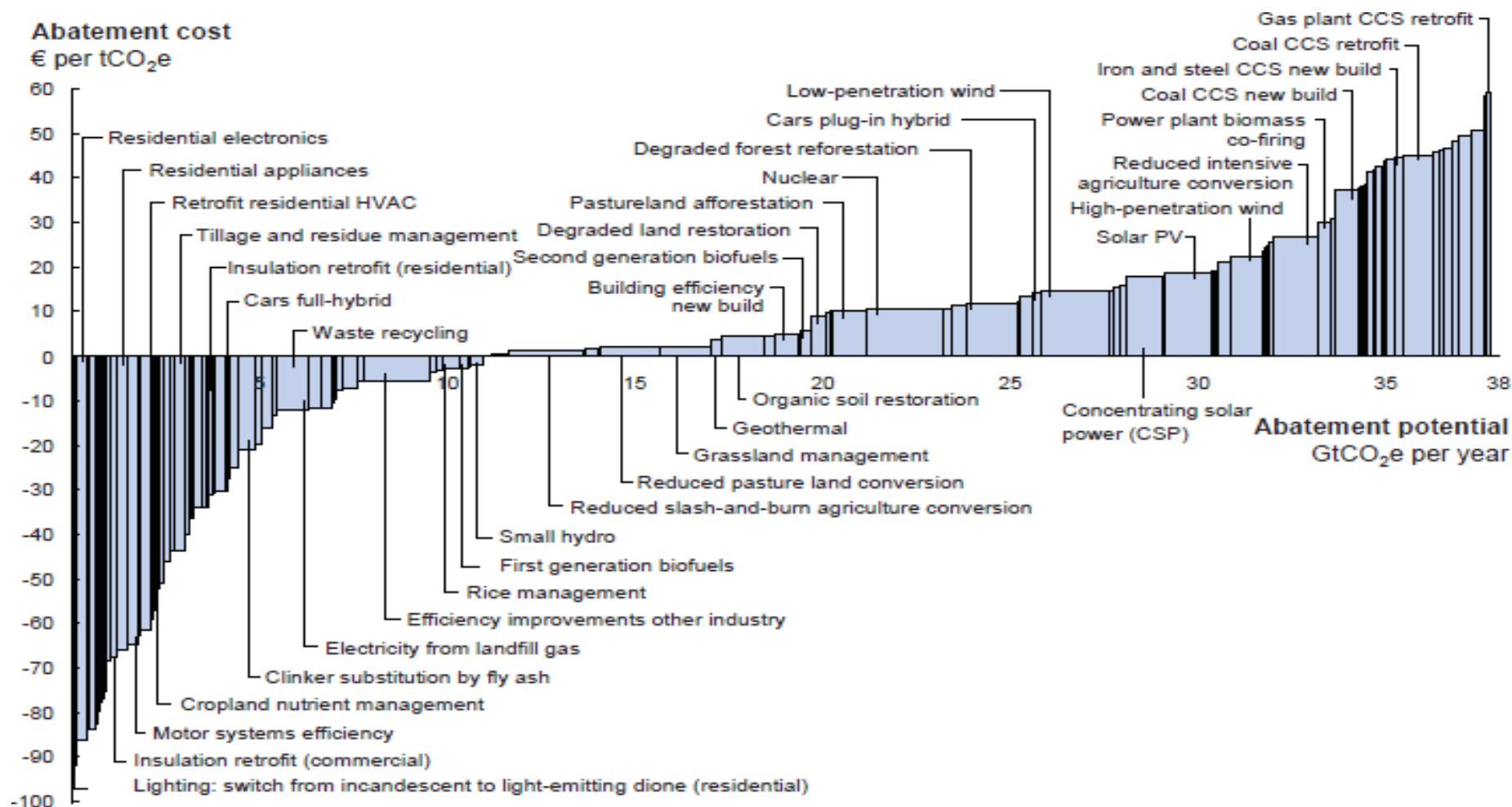
Small business energy audits

Audits

Home audits and then possibility to retrofit

Energy audits of large buildings

GHG Abatement Cost curve shows EE one of the best options



Source: Global GHG Abatement Cost Curve v2, McKinsey (2009)

Despite the high potential carbon trading has not really taken off for Energy-Efficiency projects due to a number of barriers...

Barrier	Barrier Explained ...
Awareness Barriers	Lack of awareness of the benefits of EE.
Policy Barriers	Lack of government policies to promote EE measures
Regulatory Barriers	Lack of legislation and regulations to promote EE measures
Enforcement Barriers	Lack of enforcement of EE legislation
Opportunity Cost Barriers	Senior Management in Companies focus on increasing profits. Energy often treated as a fixed cost.
Financial Barriers	Inability to easily finance EE projects

4. Carbon Trading and Energy-Efficiency Projects

- History of CDM
- Why EE projects are underrepresented in the CDM

CDM: Any Low-hanging Fruit Left?

GHG	Project Sector
HFC₂₃	HFC₂₂ Production
N₂O	Nitric & Adipic Acid Production
CH₄	Landfills, Coal-mines, Gas Networks, Biogas
SF₆	Magnesium Production
CO₂	Renewable Energy Forestry Energy-efficiency

These CDM Projects have quick pay-back periods:
Normally 3 years or less

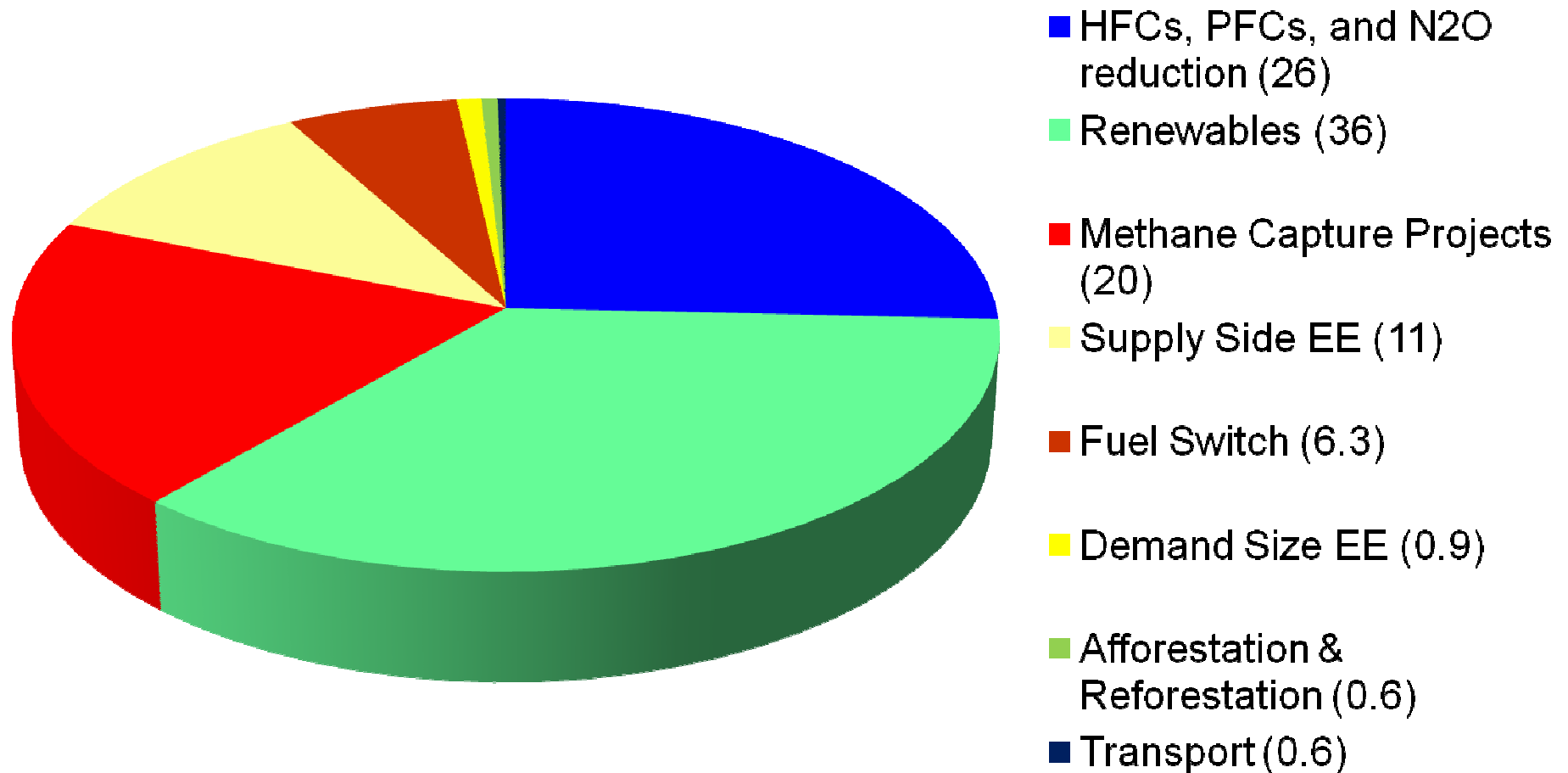
Carbon pays for 50% to 100% of project cost!
Typically high IRR

Typically longer payback periods:
5 years and greater

Larger upfront capital requirements

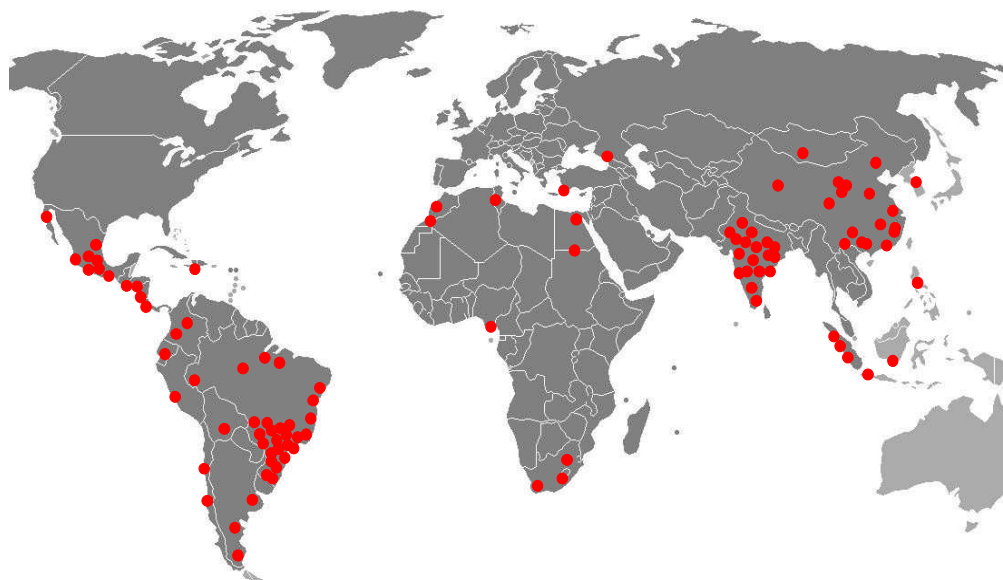
Despite high potential carbon finance for EE has not taken off ...

CDM Projects by Type (% of Total CERs) – Sept 2010



The need to strengthen the capacity of developing countries to access new sources of Finance – China dominates CDM market!

Location of CDM Projects



Ex: Geographical imbalance in the CDM

- 4 countries (China, India, Brazil and South Korea) account for 70% of CDM projects and 80% of CERs through to 2012
- 50% of all issued CERs are from 50 projects (over 2000 projects registered to date)
- Sub-Saharan Africa accounts for 2% of registered projects and 5% of CERs through to 2012
- However, the WB estimates a technical potential of 3,200 in Africa, that could provide 170 GW of additional power-generation capacity, more than twice the region's current installed capacity

Reasons for Under Representation of EE projects in Carbon Market ? – Programmatic CDM the future?

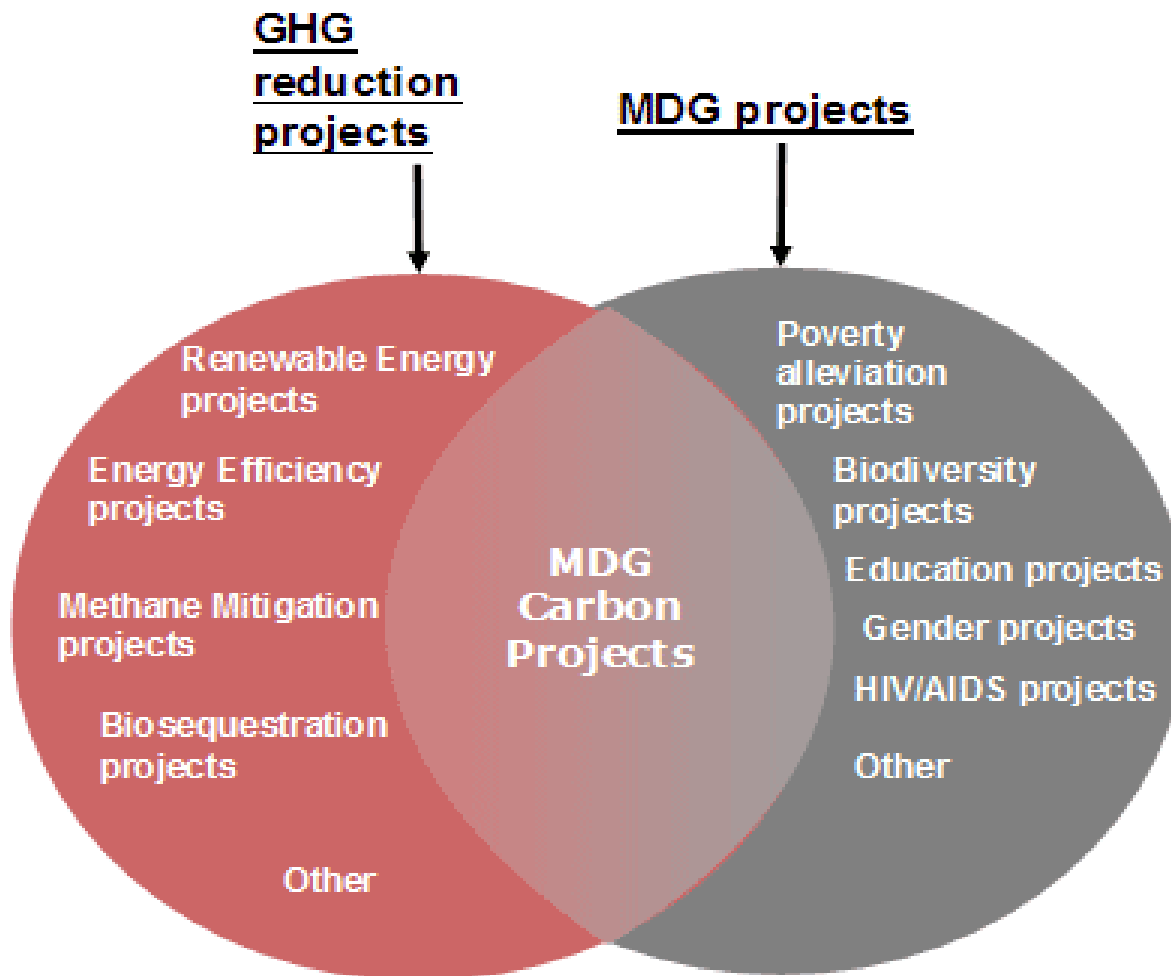
- Small project size vs high transaction costs (PDD, validation, approval, verification)
- Higher transaction costs for very small projects (Small Scale Methodologies)
- Additional methodological issues (discretionary retrofit, planned replacement, new installations)
- Validating Emissions ex-Ante;
- Issues with ‘additionality’ for high IRR projects

5. Role of UNDP and Carbon Finance

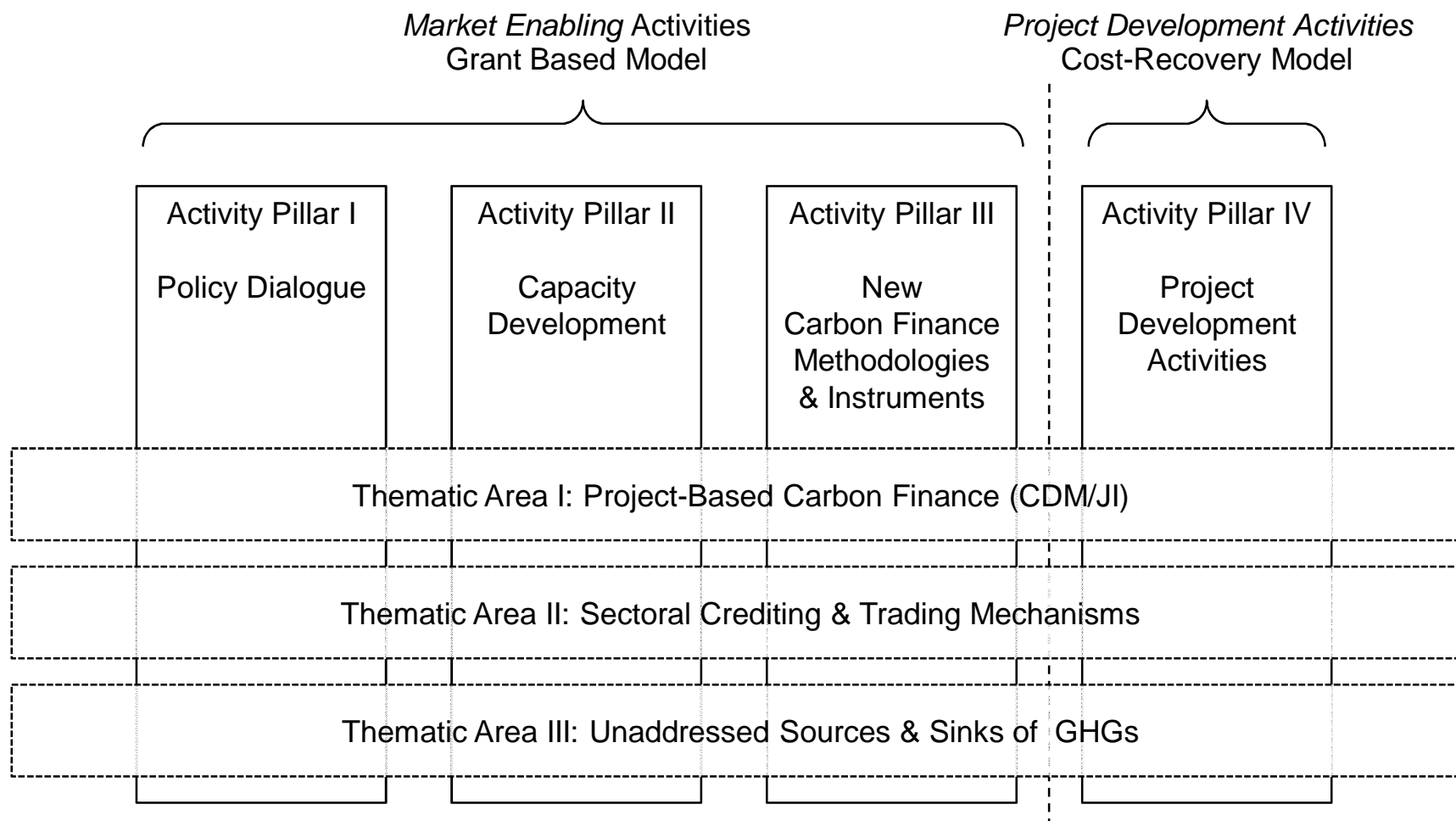
- MDG Carbon Facility
- Concluding Thoughts about Future of Carbon Market

MDG Carbon Facility – what does it mean?

www.mdgcarbonfacility.org



MDG Carbon Facility





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Dec 7 - Dec 18, 2009

Project

National Sustainable Electrification and Renewable Energy Program, Nicaragua

Oct 1, 2009

List of Acronyms

Related

- Climate Change
- The World Bank | UNDP
- Adaptation
- The World Bank | UNDP
- Mitigation
- The World Bank | UNDP
- Carbon Finance
- The World Bank | UNDP
- UNFCCC

OVERVIEW

This platform aims at providing comprehensive guidance on financial options available for climate action in developing countries. Here you can find information on where to access the wide range of funds available from multilateral and bilateral institution, as well as public and private sources. Learn more on how these funds are governed and whether your project is eligible. Users are invited to be a resource to share their experiences with investment projects and offer feedback and comments on ongoing projects.

FUNDING SOURCES



Find funds that are available for both adaptation and mitigation projects that reduce impacts of climate change. See whether your project is eligible, what the governance structure for these funds is, and how to access them.

ON THE GROUND



Learn about projects from across the world and a range of sectors that have accessed these funds successfully. They have used a mix of these instruments innovatively and are now a source of inspiration for those waiting to hit the ground.

KNOWLEDGE CENTRE



Expand your financial literacy with our glossary of finance and climate change terms, analyze your project using our compilation of business tools from around the Web, and peruse a host of guides and funding documents to ensure your project's success from planning to implementation.

What about the future of the carbon market post-2012?

- Uncertainty of Regime post-2012 (no agreement) = higher risk profile for CDM and JI at the current time;
- Carbon Market likely to get smaller next few years;
- Growth of Regional Carbon Markets (USA, Japan, maybe Australia, NZ);
- Global fungible carbon market is some ways away – regional markets with some fungibility is more likely;
- Need for scale and depth in the carbon market – “Programmatic CDM is the future” (Cristiana Figueres);
- Developed countries must show leadership in particular the United States (4% of world’s population – 25% of world’s GHG emissions);



Thank You!!!!

John O'Brien
Regional Technical Advisor
Climate Change Mitigation
Bratislava Regional Centre (BRC)
United Nations Development Programme
Email: john.obrien@undp.org
Tel: +421 917 415 017

