

The background of the slide features several traditional Balinese tiered stupas, known as Meru, silhouetted against a clear blue sky. The stupas are arranged in a line, with the tallest one in the center. The overall color palette is a gradient of blue, from a darker shade at the bottom to a lighter shade at the top.

CARBON MARKETS
for
DEVELOPMENT

Bali Breakfast
October 2008



Carbon Markets for Development

Bali Breakfast/Development Committee Series



October 12, 2008
Washington, DC

Robert B. Zoellick
President
The World Bank Group

Key messages

- 1. Greenhouse gas (GHG) emissions must be reduced.**
- 2. Technologies are available now that enable substantial reductions at acceptable marginal abatement costs.**
- 3. A variety of policies can lead to reductions of GHG emissions; carbon markets are needed to implement cap-and-trade and can interconnect policy measures.**
- 4. A deep, liquid and global carbon market has the potential to deliver significant benefits to all participants, including for development.**
- 5. But countries will need to take decisions to establish long-term price signals and gain the full benefits of carbon markets.**

Today's discussion



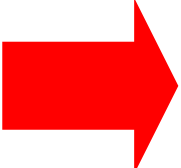
Why are carbon markets important?

How do carbon markets work?

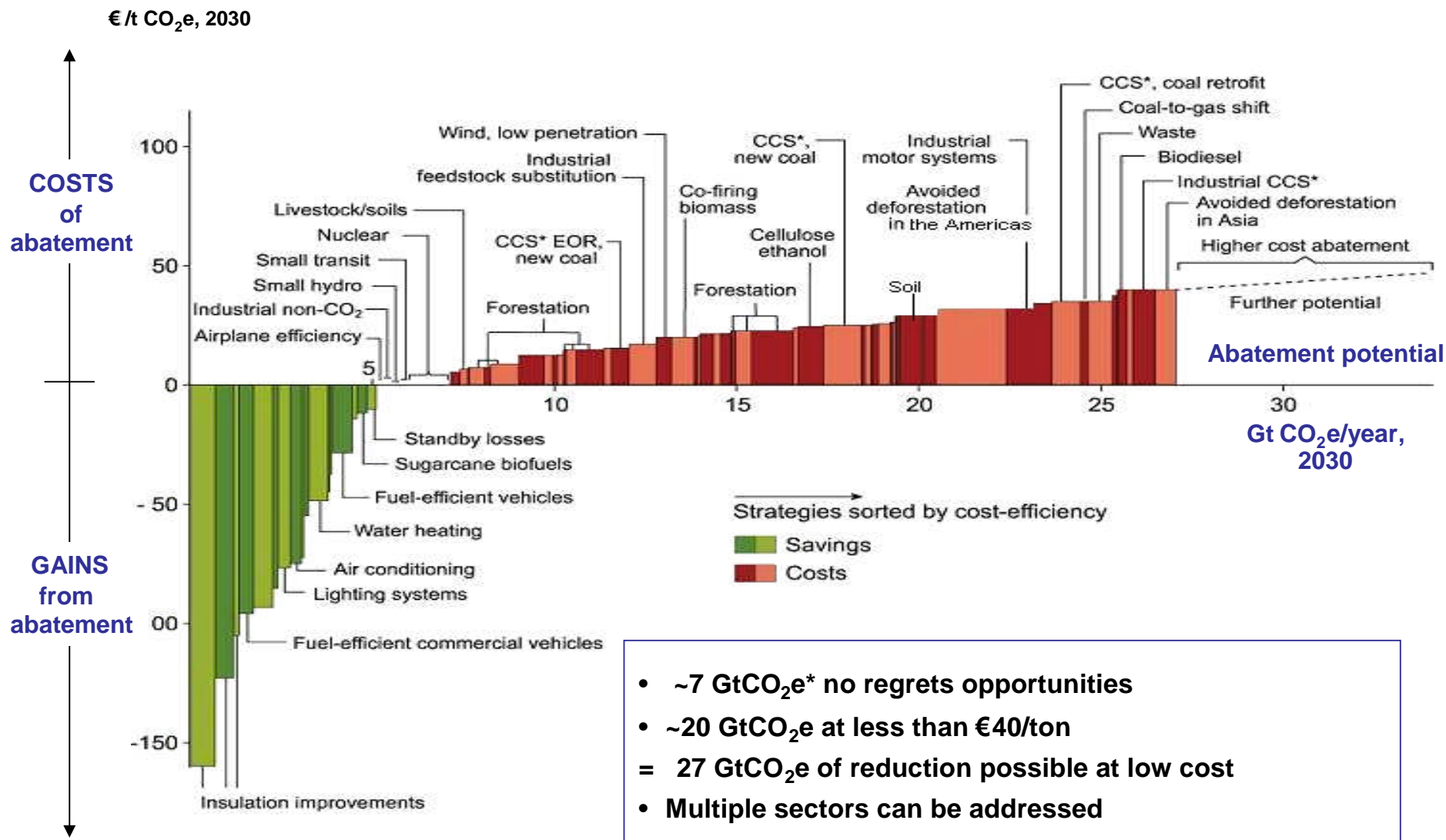
How could we scale up carbon markets?

What decisions will countries need to make?

Policy measures for mitigation of GHG emissions

	Instrument	Advantages	Limitations
Price-based	Cap-and-trade	<ul style="list-style-type: none"> • Allows market to set price of carbon • Catalyzes lowest-cost abatement • Engages private sector • Markets can be linked 	<ul style="list-style-type: none"> • Price signals can be volatile and short-term • International leakage a problem • Transaction costs can be high
	Carbon tax	<ul style="list-style-type: none"> • Creates clear price signal • Mobilizes public sector resources • Can offset with tax reduction 	<ul style="list-style-type: none"> • No uniform application across borders • Cannot be certain of quantity of emission reductions • Politically unattractive
Other policies and measures	Standards and regulations	<ul style="list-style-type: none"> • Can be targeted at specific behaviors • Implement and monitor directly 	<ul style="list-style-type: none"> • May be less efficient and more costly than market mechanisms
	Subsidies for clean technologies	<ul style="list-style-type: none"> • Can effectively catalyze investment into targeted sectors • Relatively simple to implement and monitor 	<ul style="list-style-type: none"> • May be less efficient and more costly than market mechanisms
	R&D	<ul style="list-style-type: none"> • Can accelerate development of new technologies • Helps overcome market failure (under-investment in public goods) 	<ul style="list-style-type: none"> • May be less efficient and more costly than market mechanisms
 Carbon markets		<ul style="list-style-type: none"> • Needed to implement cap-and-trade with development benefits • Can complement other measures 	

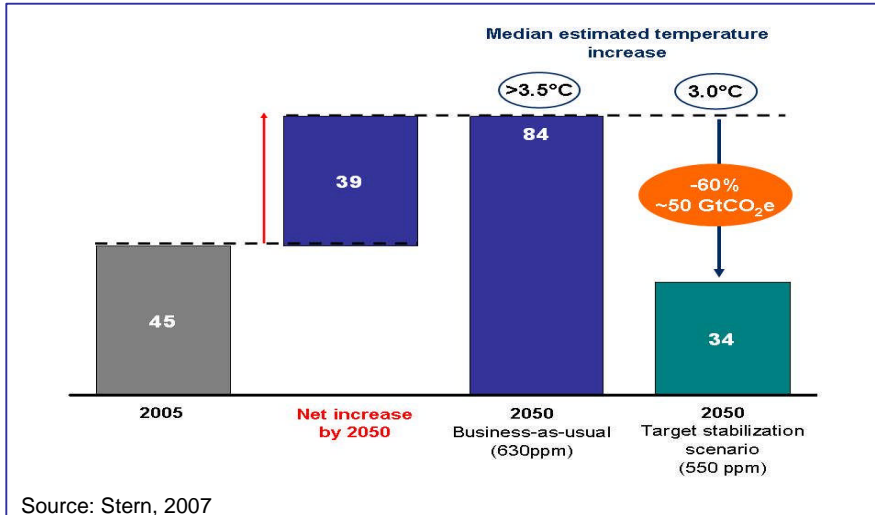
Substantial economic potential for the mitigation of global GHG emissions



*GtCO₂e= Billion tons of CO₂-equivalent

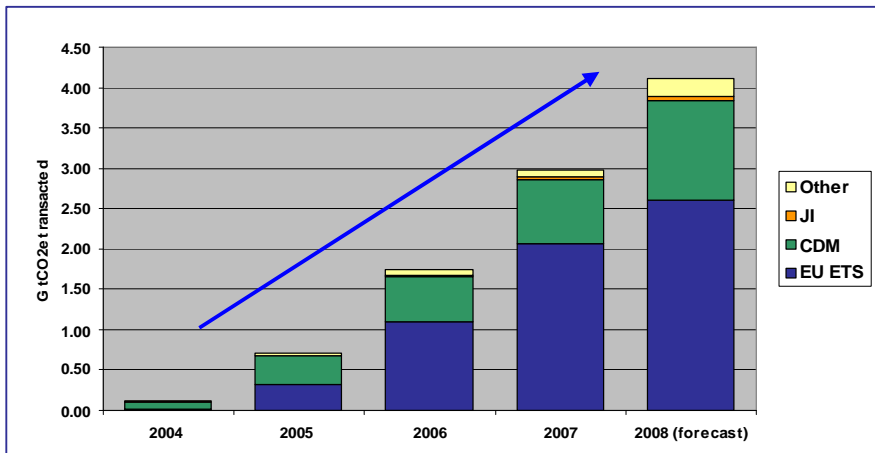
Reductions of 50 GtCO₂e/year needed by 2050: Current trading is very small (only 4 GtCO₂e* expected in 2008)

1. Effort required to stabilize emissions by 2050 (GtCO₂e)



- Dramatic reductions of GHG emissions required. Unless addressed, emissions and temperature will rise to unacceptably high levels.
- Stabilization at 550 ppm CO₂e by 2050 needs emissions to go down 60% from business-as-usual.
- Mitigation efforts over the next two to three decades will be critical.

2. Volume of carbon transacted (GtCO₂e)



- 50 GtCO₂e per year needed by 2050.
- Current carbon trading is 4 GtCO₂e but actual physical volume of reduction **barely half of that amount** as the market includes large trade in permits (essentially quotas repeatedly changing hands).
- Enormous gap between effort needed and current volumes.

Carbon markets deliver global and development benefits

Global benefits

- **Global**
Benefits for industrialized and developing countries
- **Deep**
A broad range of low-cost abatement opportunities
- **Liquid**
Active trading and secondary markets

1. **Lower compliance costs** for Industrial countries
2. **Incentives for low-carbon growth** for developing countries
3. **Global price signals**

Development benefits

- Leverages capital
 - Carbon financing (payments for streams of emission reductions) has a strong multiplier effect on underlying investment in a wide range of sectors;
 - On average, \$1 of carbon finance leverages **\$3.80 of underlying investment**;
 - This is strongest for clean energy sector: \$1 of carbon finance leverages **\$9 of underlying investment in renewables**.
- Improves project IRR
- Enables technology transfer (micro hydro, solar, efficient domestic appliances, CFL bulbs, bio-digesters, water pumps, etc.)

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How do carbon markets work?

What is traded?

Units = tons of carbon dioxide (or equivalent) allocated as part of an emission cap or “reduced” by a project or program activity. These units are labeled based on the market segment in which they are traded : AAUs, CERs, ERUs, EUAs, VERs, etc.

What is the underlying principle?

Cost-effectiveness: a ton of CO₂ emitted anywhere in the world has exactly the same impact on climate change and should therefore be reduced/mitigated where the cost of doing so is lowest.

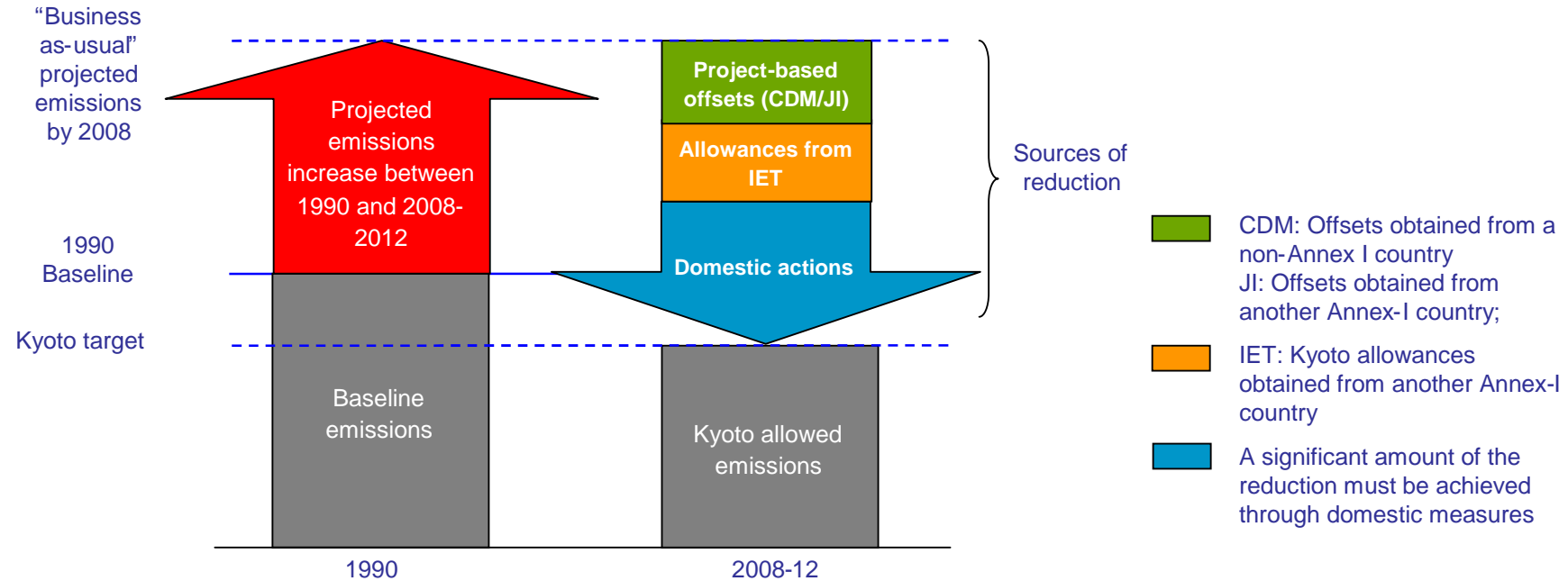
What are the benefits of the carbon market?

- Lowers compliance costs in countries with obligations to reduce emissions;
- Catalyzes financial and technology flows to developing countries to facilitate low-carbon growth;
- Creates a global and long-term price signal to lower carbon intensity.

Why should this be of interest to Finance Ministers?

- Significant new investments and financial flows for sustainable development;
- Application of new technologies and financial instruments to reduce emissions at lower costs; and
- Re-engineering of globalized economic activity into a lower carbon trajectory, better tuned to cope with future resource and environmental constraints.

Carbon markets are driven by policy decisions



Beyond domestic actions to reduce emissions (internal caps, standards), a country can use trading to purchase reductions in another country to achieve compliance with its Kyoto obligations.

Examples of trading options include:

- Buying emissions allowances (AAUs) from other Annex-I countries which are below their Kyoto cap (International Emissions Trading – IET)
- Purchasing reductions (CERs/ERUs) from projects
 - In developing countries (Clean Development Mechanism – CDM)
 - In economies in transition (Joint Implementation – JI)

Carbon markets surpassed US\$100 billion by the end of 2007...

Allowance markets
(US\$ million)

EU Emissions Trading Scheme
50,100 in 2007 alone
(more than double from
previous year)

New South Wales
Certificates
220



Project-based transactions
(US\$ million)

CDM
7,400 (30%
over 2006)



JI
500

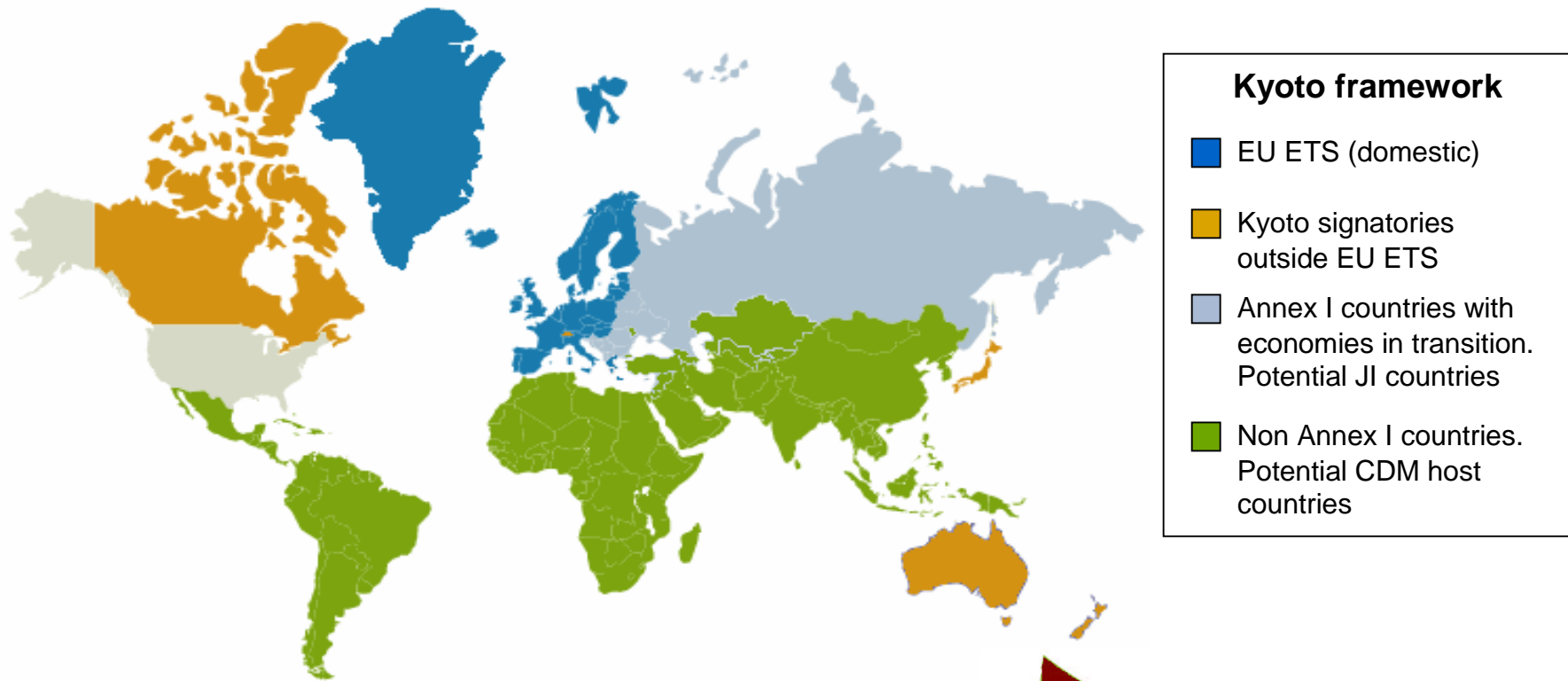
**Secondary
CDM**
± 5,500

Voluntary market in 2007 – niche segments (US\$ million)

Chicago Climate Exchange ●
70

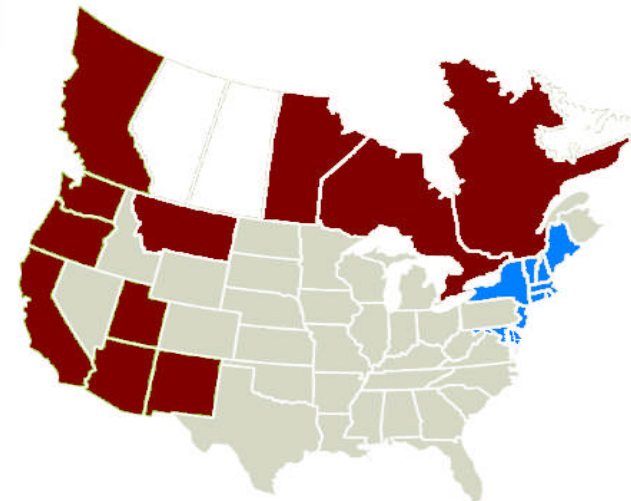
Voluntary & retail ●
270

...but the markets are fragmented.



Non-Kyoto initiatives

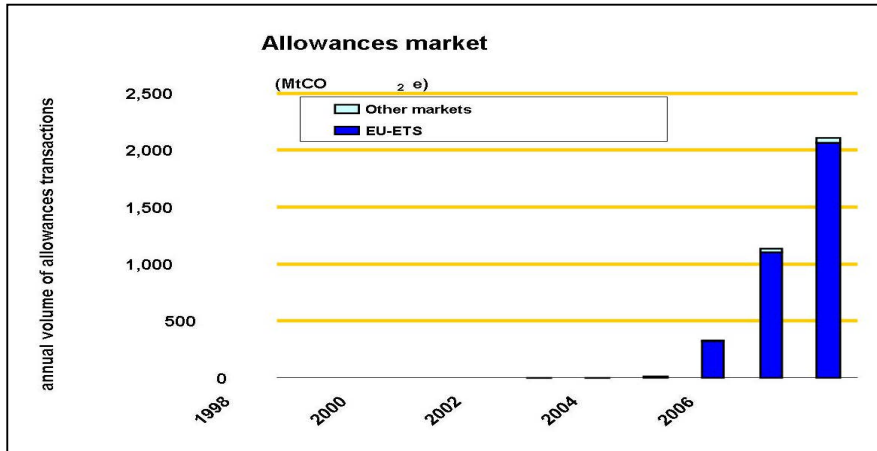
- Regional Greenhouse Gas Initiative (RGGI):** States in the Northeastern United States have also passed carbon regulations for stationary sources
- Western Regional Climate Initiative:** California is a leading participant in a regional initiative to reduce its emissions, along with several Canadian Provinces.



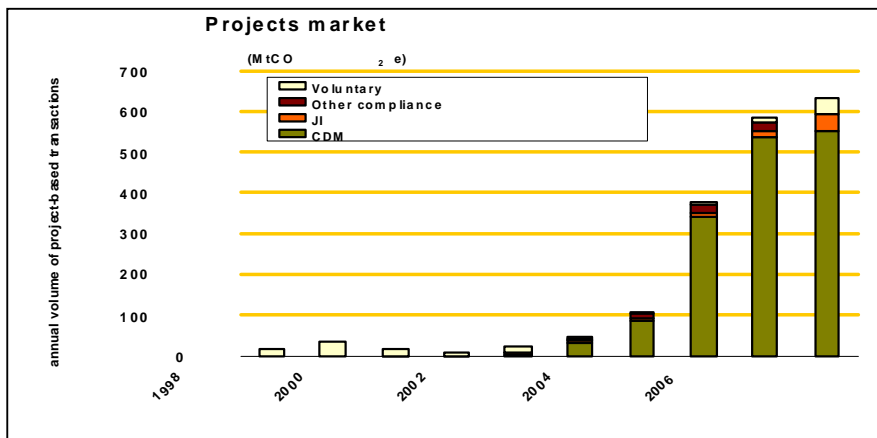
Rapid growth, fairly liquid market...

A rapidly growing market

EU ETS: Allowances market



CDM/JI: Projects market

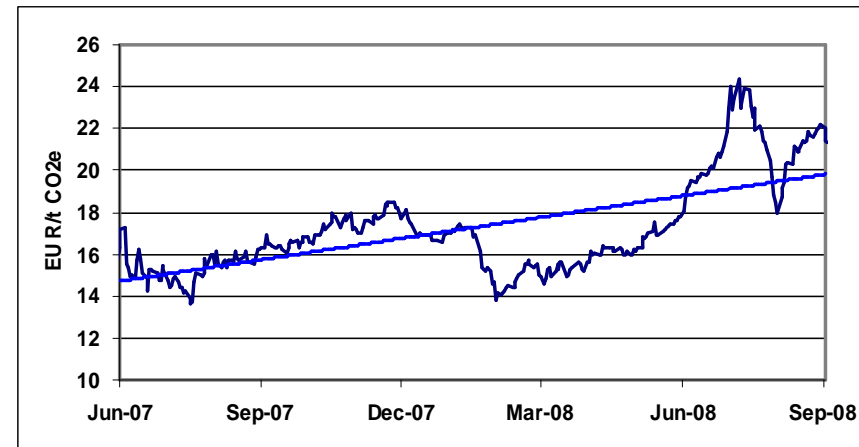


Steadily rising prices

ETS: EUA 2008 – forward contract prices

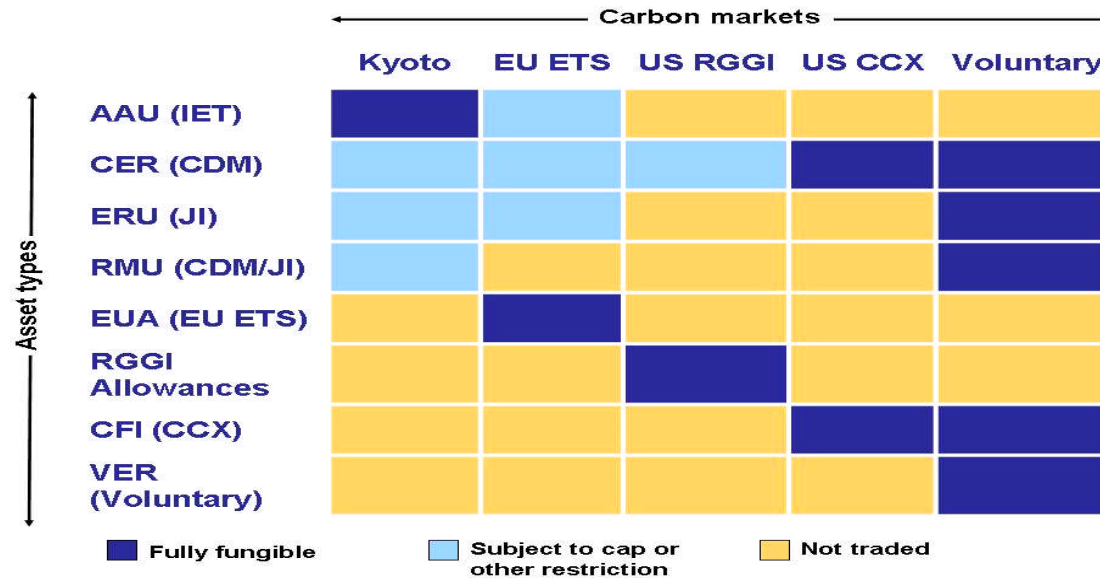


CDM: Secondary CERs – 2008-2012

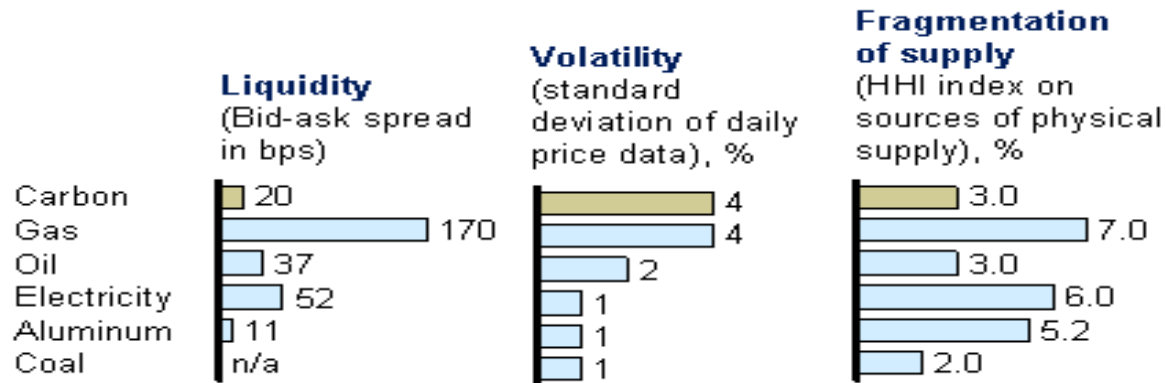


...but need to consolidate.

8 carbon assets trading in at least 5 markets



Markets fairly liquid, but remain fragmented and volatile



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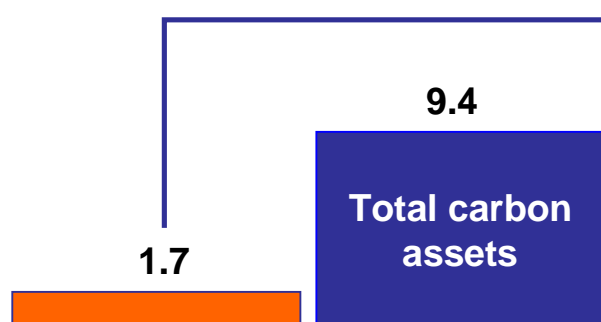
Untapped potential: how big can carbon markets become?

Offsets (such as credits from developing countries) could possibly expand 8 times in 30 years

2020 scenario (GtCO₂e*)

Analysts' estimates of growth of carbon market

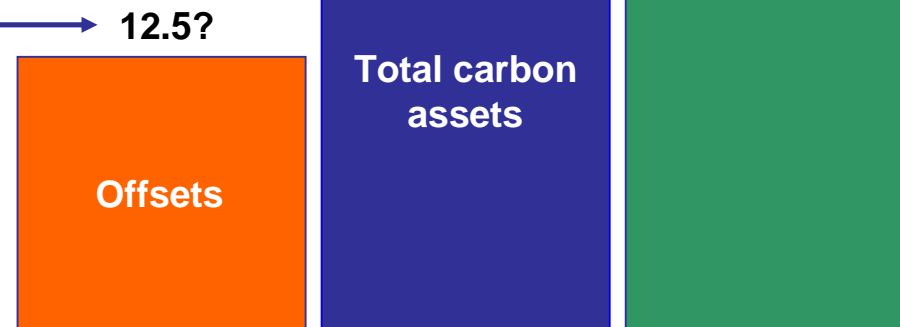
- Share of offsets: 1.7 billion tons per year
- Total allowance market: 9.4 billion tons per year



2050 scenario (GtCO₂e)

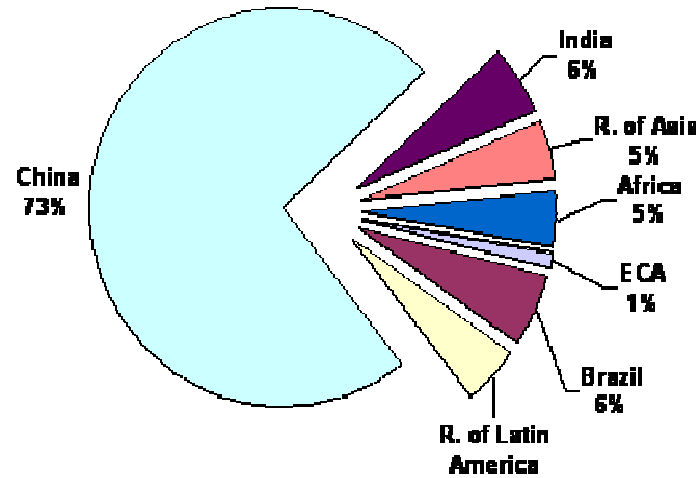
Actions required to stabilize emissions at 550 ppm: reduce by 50 billion tons per year.

Difficult to quantify, but 25% could be offset markets.



Tremendous untapped potential in developing countries

1. Location of CDM projects (percentage of volume, 2007)

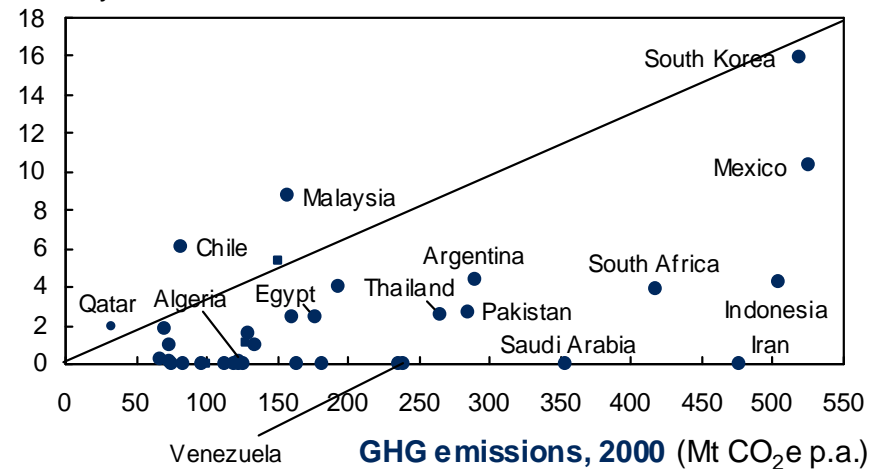


Source: WB State and Trends of the Carbon Market 2008

2. Many countries are under-penetrated even relative to their emissions

CDM activity by country, mid-2007

Mt CO₂e/year

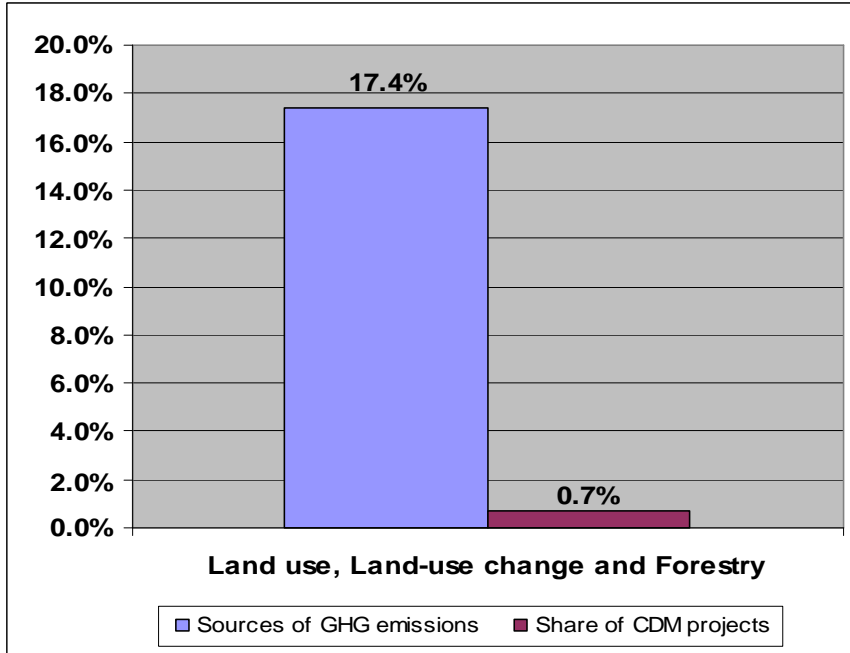


Source: McKinsey

- **Uneven regional focus**; China, India and Brazil = 85% of CDM market share;
- **Africa still emerging**, some successes in 2007;
- **Smaller projects** and aggregation opportunities **bypassed**;
- Reductions from **reforestation and avoided deforestation** largely absent.
- Many countries with high emissions have relatively low presence in carbon markets.

Many opportunities to scale up and extend reach

Forestry is barely visible in CDM

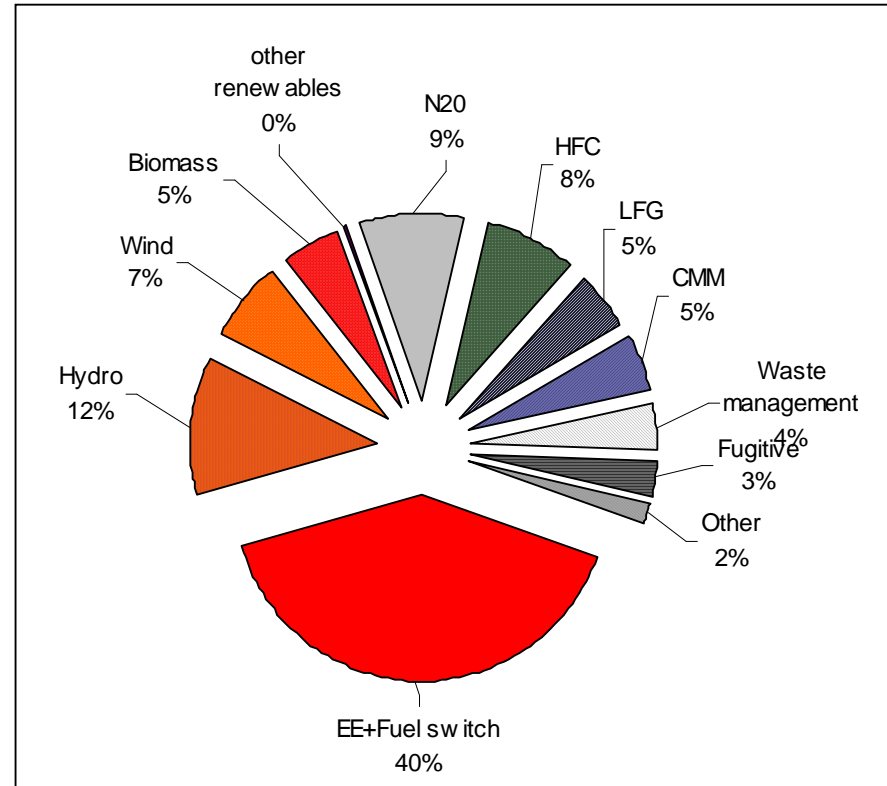


Tapping new sectors

For the first time, agreement reached at Bali to move forward on Reduced Emissions from Deforestation and Degradation (REDD), providing opportunity for countries with tropical forests to join the carbon markets.

Required now: build capacity to measure and verify emissions associated with forests and bring these assets to market as soon as international regulatory framework is in place.

64% of 2007 contracts for clean energy



Building on success to scale up

Programmatic approaches will enable scaling up/extending to interventions in key development sectors (energy, appliances, waste management, transport, and newer technologies). Approaches compatible with financing provided by domestic FIs need special attention.

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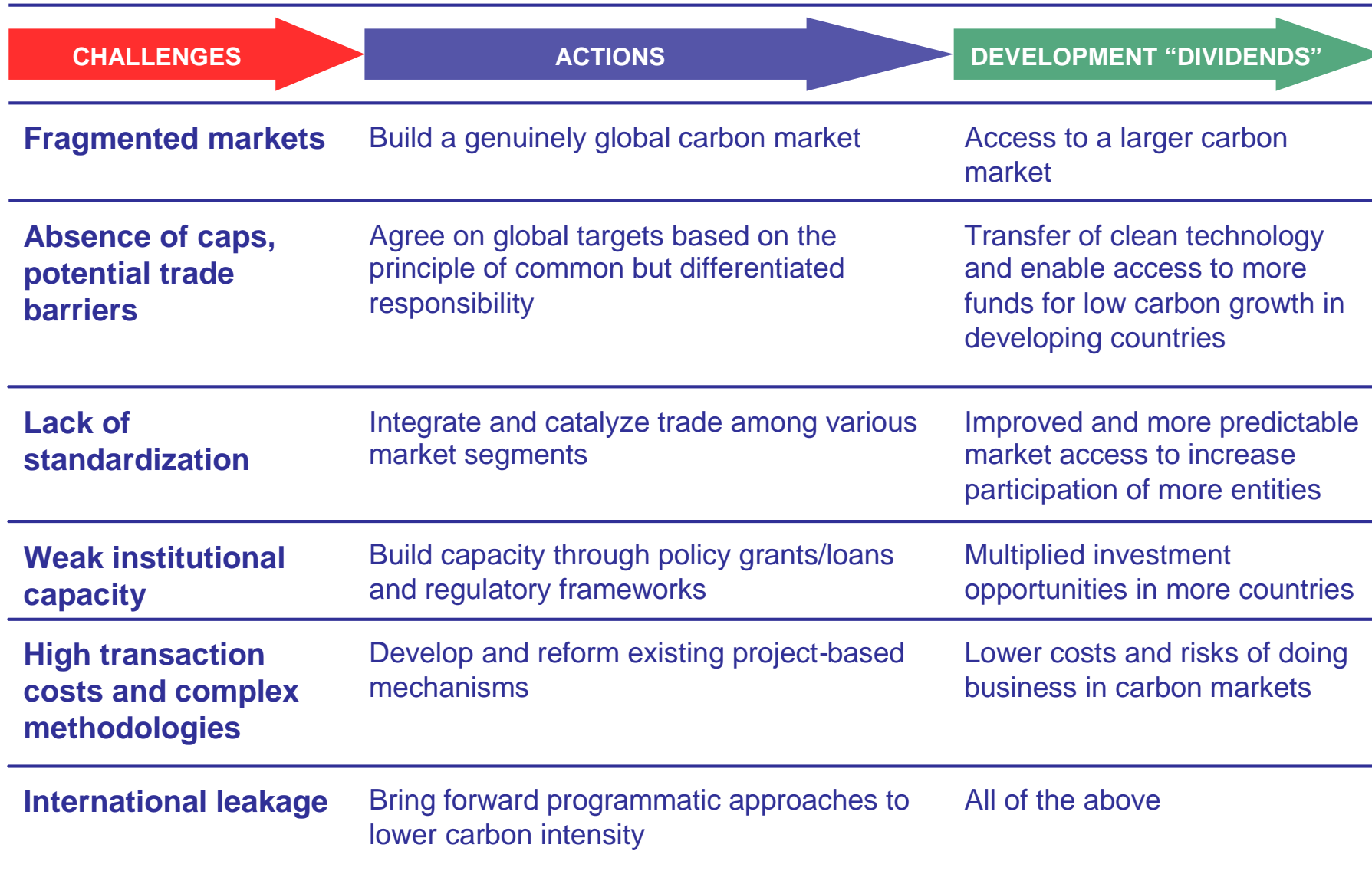
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Challenges and opportunities



One future, two scenarios

- The risks from climate change are recognized, and the future is a **carbon-constrained world**.
- Despite exponential growth through 2008, there is currently **great uncertainty** regarding expansion of future demand.
- **International negotiations will determine** the shape and effectiveness of the carbon market, and its connection to development.

No international agreement beyond 2012

- **Fragmented markets** with domestic/regional policies in place: no level playing field with risk of increased **trade barriers** and **international leakage**;
- **Continued price volatility**: no fungibility of assets, no common, long-term price signal → **unclear investment horizon** for the private sector;
- **Limited benefits** of carbon trading with **untapped potential** in both developed and developing world.

International agreement beyond 2012

- **Market convergence and integration**: reduced risk of leaks and perverse incentives;
- **Fungibility of assets and revelation of a long-term price of carbon**, providing the necessary signals for **scaled up investments in clean technologies** and for a **firm engagement on the path of low-carbon growth**;
- **Vast benefits** of carbon trading for both developed and developing world.

Decisions needed

To provide long-term carbon price signals and certainty to the private sector

Define a global goal for 2050 supported by intermediate targets, to be agreed by the UNFCCC process.

To facilitate access to new carbon markets and sources of capital and lower costs of abatement

Build a truly global carbon market by linking regional carbon schemes and markets to each other through increased access, converging prices and harmonized products.

To accelerate low-carbon growth in developing countries

Reform the existing market-based mechanisms and explore new policy instruments – reduced transaction costs, streamlined processes, simplified methodologies.

To scale up and deepen access to carbon markets and finance

Facilitate the transfer of low-carbon technologies and establish sector-based programs to enable larger scale investments in cleaner development.