



# Financing the Transition to a Low Carbon and Climate Resilient Society

**Olav Kjørven**

**UN Assistant Secretary General/UNDP Bureau for Development**

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## Charting a course away from dangerous climate change: A shrinking window of opportunity

To keep within 2C threshold CO<sub>2</sub>e concentration should stabilize at **450 ppm**

The UNDP 2007/2008 HDR estimated that the 21st Century carbon budget is set at **1,456 Gt CO<sub>2</sub>**

A sustainable emissions pathway will require the world to cut emissions by at least **50 percent by 2050**

Global GHG emissions, Gt CO<sub>2</sub>e per year

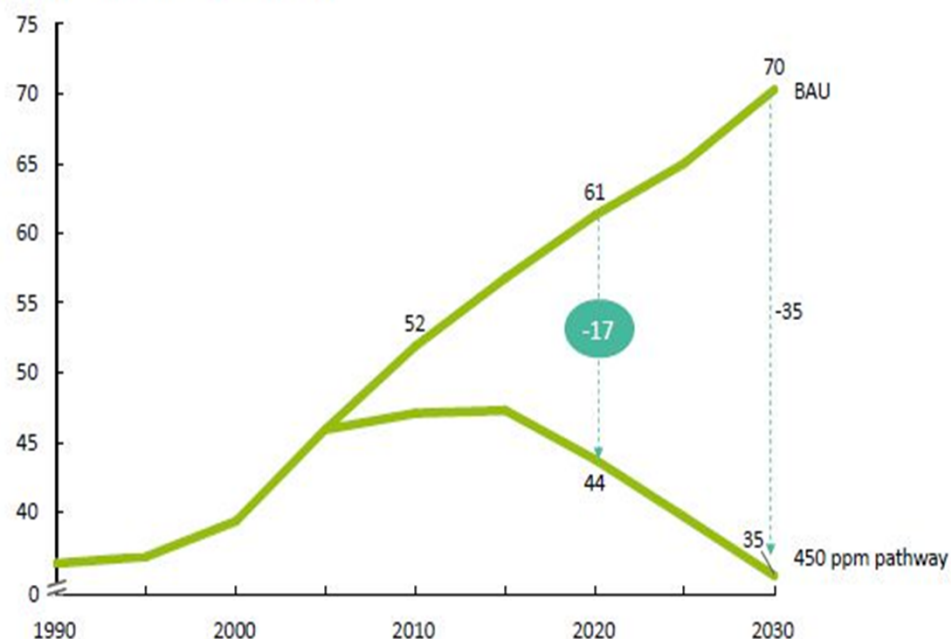
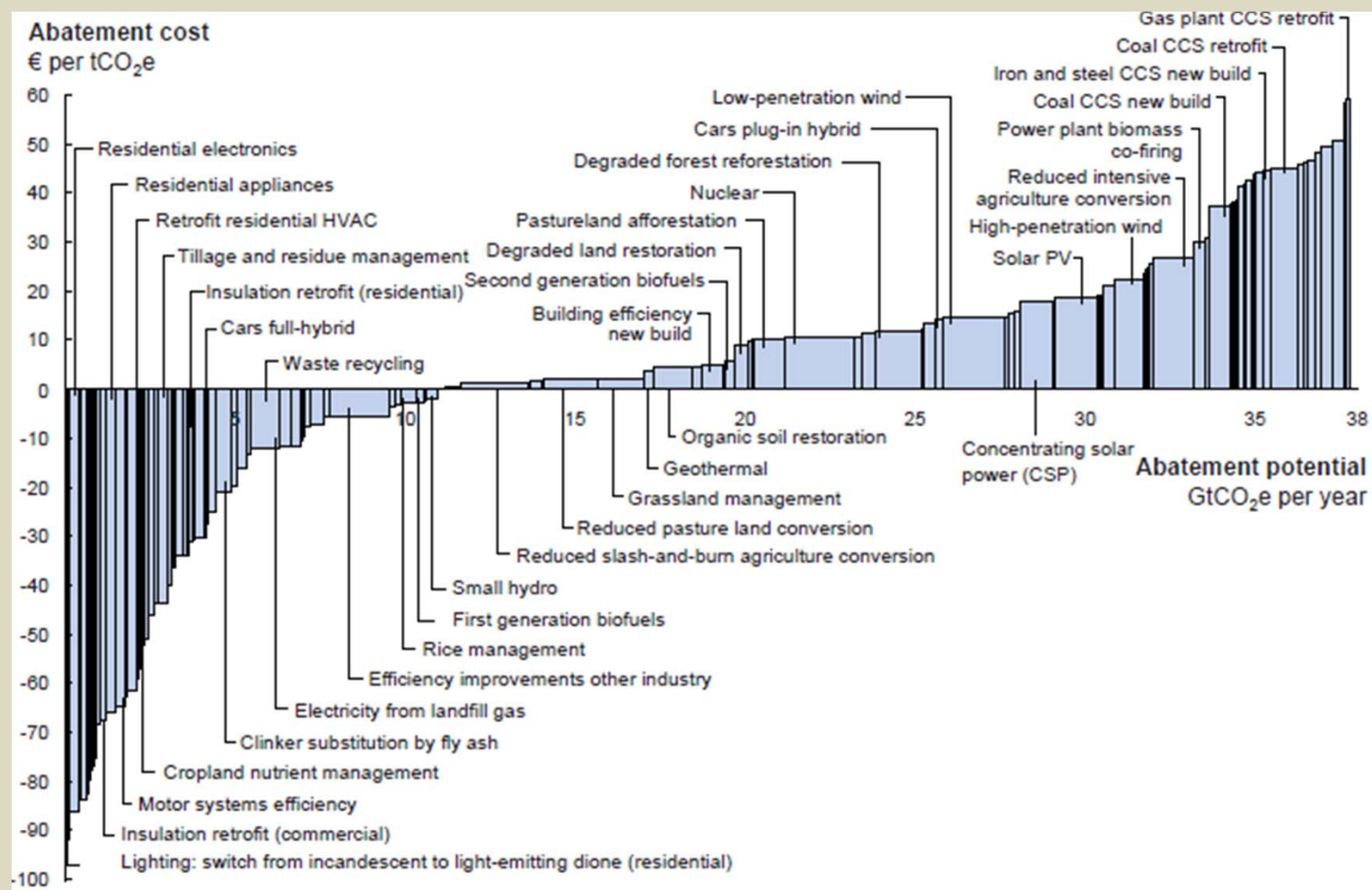


Fig. 3.1. 17 Gt of reductions below the reference pathway in 2020 are required to stay on a 450ppmv pathway. (Source: McKinsey Global GHG Abatement Cost Curve v2.0 (2009); M. G. J. Den Elzen and M. Meinshausen, *Multi-gas emission pathways for meeting the EU 2°C climate target*, 2006; IEA World Economic Outlook 2007; Project Catalyst analysis)



# Global GHG Abatement Cost Curve



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



## Annual Clean Energy Investment Growth 2004 - 2009 (\$bn)

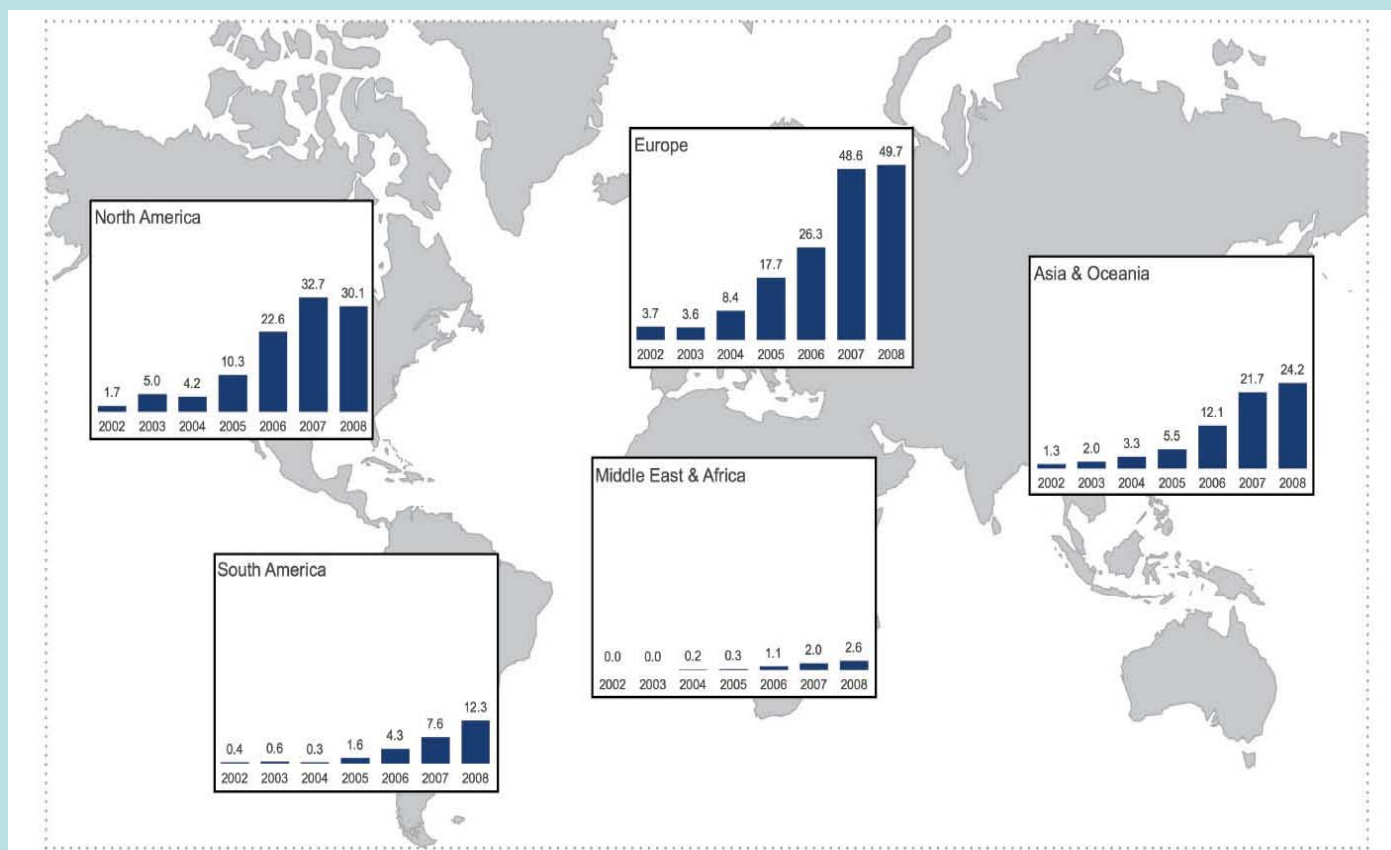


Note: SDC = small distributed capacity. Financial investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.



# Financial New Investment by Region 2002-2008, \$ billions

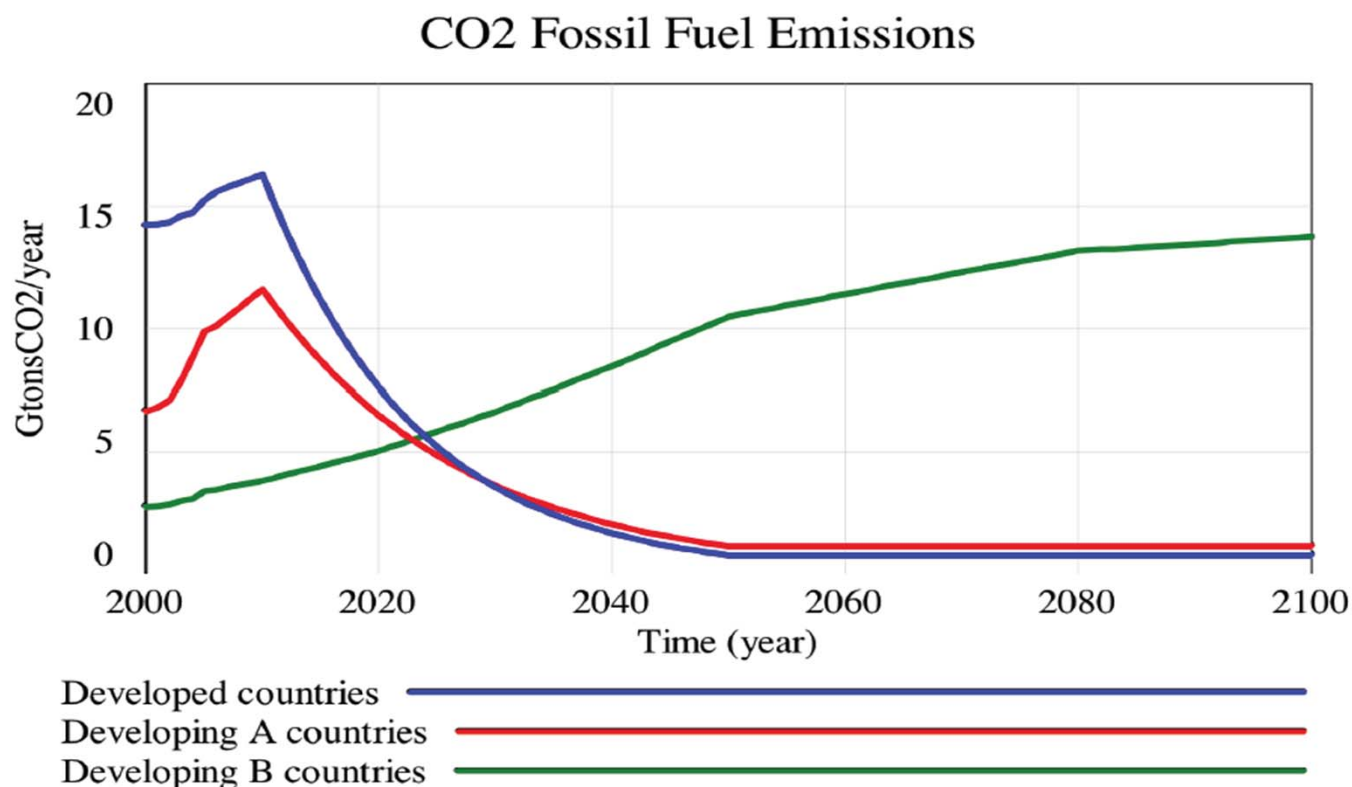
Global Trends in Sustainable Energy Investment 2009



New investment volume adjusts for re-invested equity.  
Total values include estimates for undisclosed deals

Source: New Energy Finance, UNEP SEFI

## « What if » only large and emerging economies can access climate finance?



Scenario: Developed and Developing A start in 2010 to reduce emissions by 95% and 75%, respectively, by 2050, from 1990 levels. Developing B is BAU.



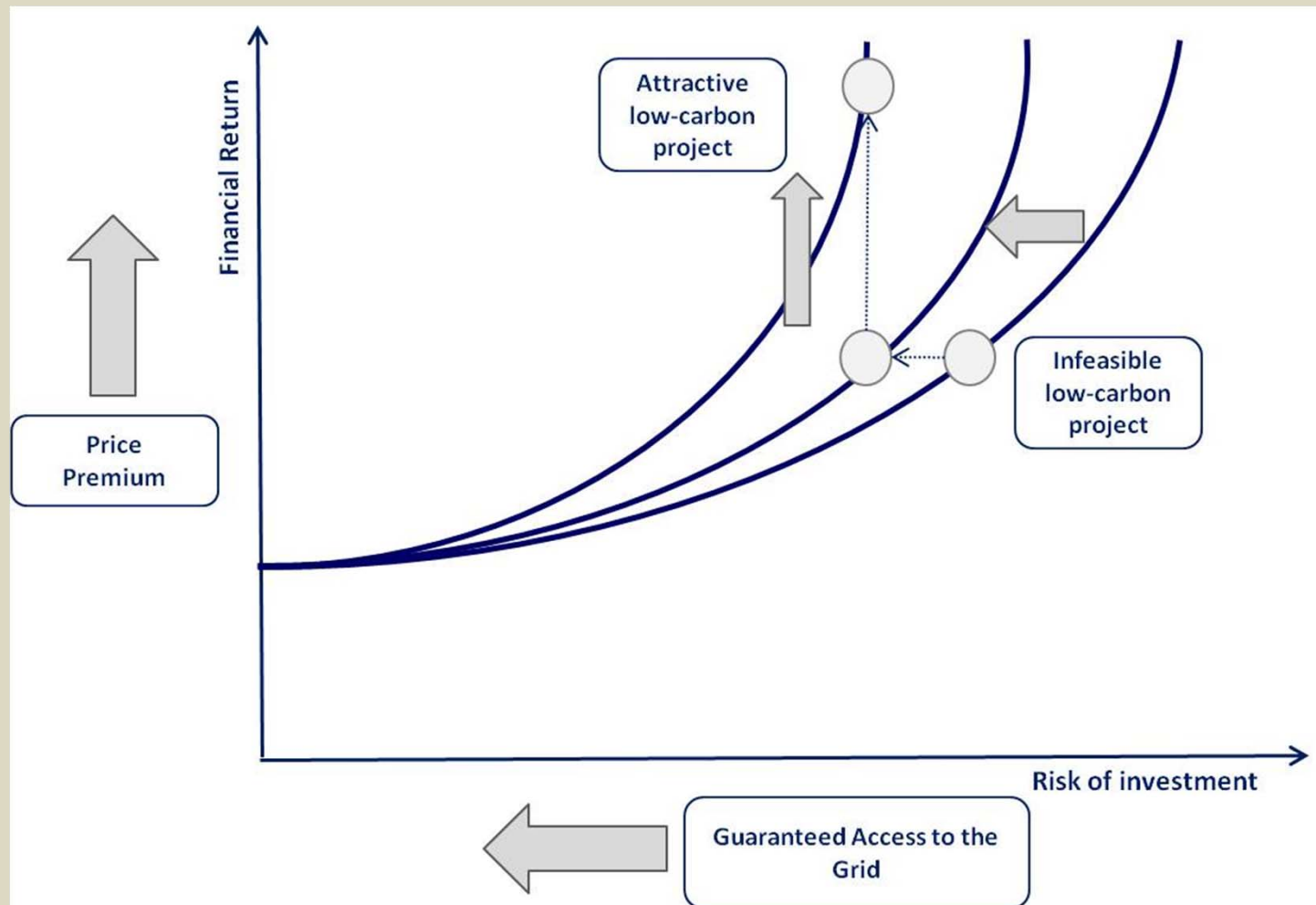


## Engineering Investibility



**Yannick Glemarec**  
**UNDP/GEF Executive Coordinator/Director for Environmental Finance**  
**2010 Advanced Energy Conference**  
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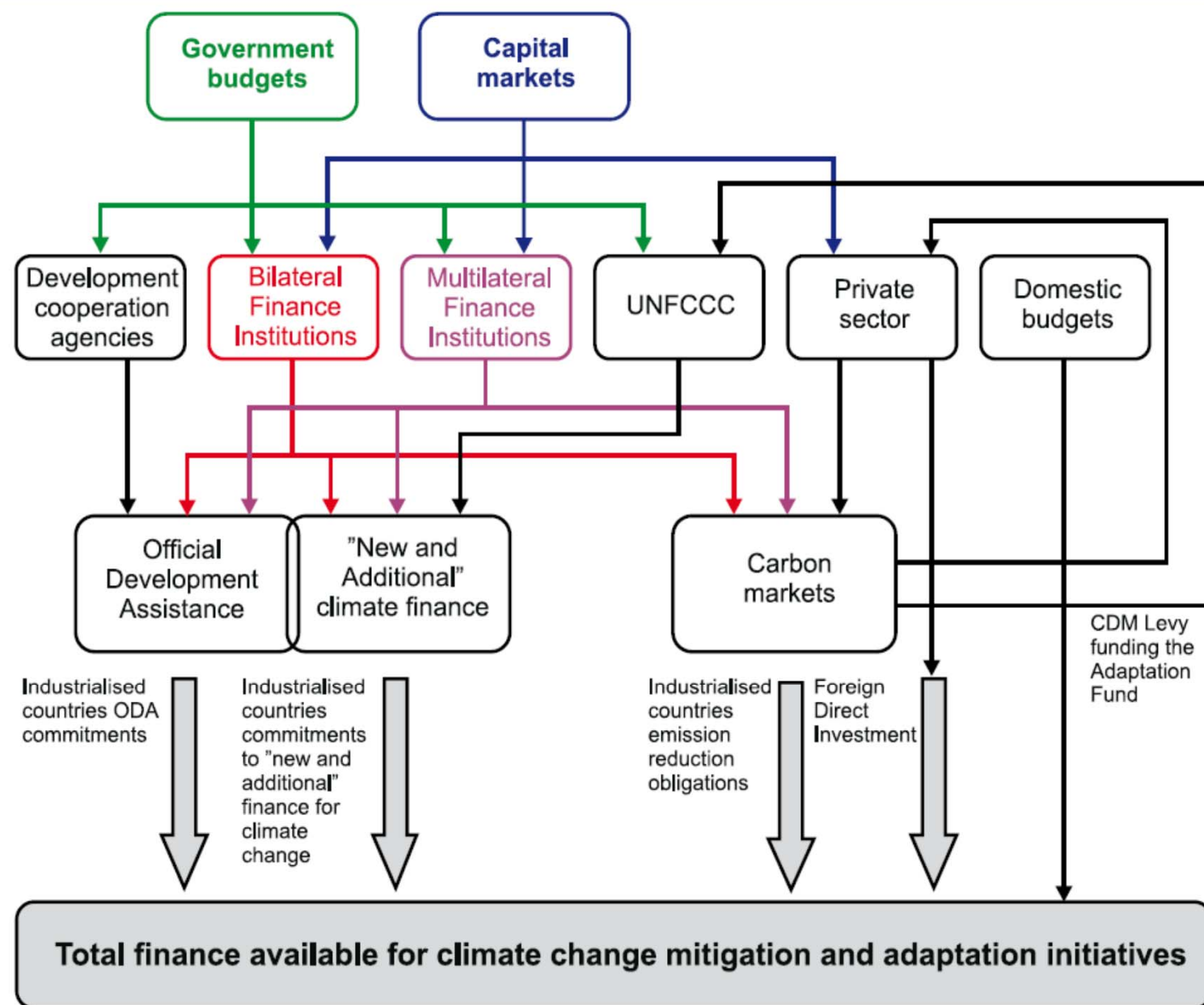
# Policy Instruments to Catalyze Green Investment







# The Global Climate Change Financial Architecture



Source: SEI (2009)



## 5 key steps to prepare a LCLRD Strategy

Develop  
Partnership  
&  
Coordination  
Structure

Prepare Climate  
Change  
Scenarios

- Climate scenarios
- Vulnerability scenarios
- GHG emissions scenarios

Identify  
Mitigation &  
Adaptation  
Options

- Identify priority M&A options through a multi-stakeholder consultative process

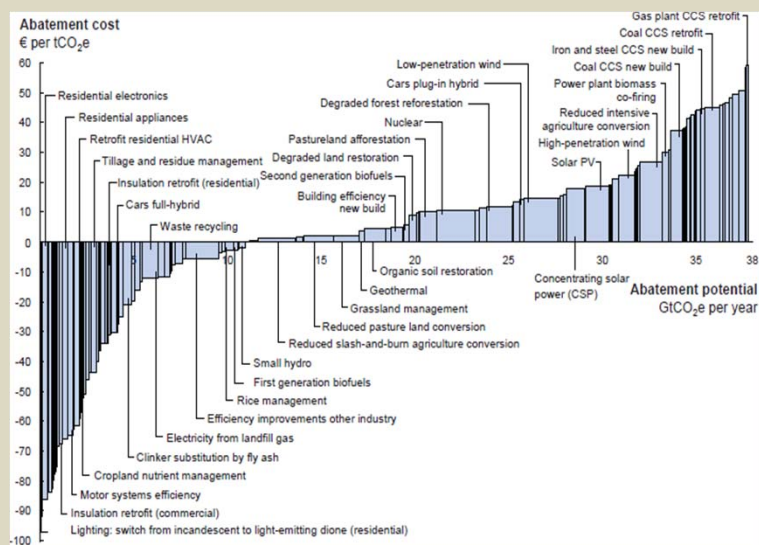
Assess Priority  
Climate  
Financing Needs

- Undertake cost-benefit analysis of priority options
- Identify Financial flow requirements
- Identify policy & financing options

Prepare  
comprehensive  
Low Carbon &  
Climate Change  
Resilient  
Roadmap



# 4-step process for selecting the appropriate combination of policy and financial instruments



## II. DEFINE BARRIERS

- Market barriers
- Institutional barriers
- Social barriers
- Technical barriers
- Etc.

## III. SELECT APPROPRIATE MIX AND SEQUENCE OF SUPPORT POLICIES

- Capacity development and -information based instruments
- Regulations
- Tax-based mechanisms
- Early market-based development mechanisms
- Debt and equity –based mechanisms
- Market-based mechanisms

## IV. SELECT FUNDING OPTIONS

	INTERNATIONAL	NATIONAL & SUB-NATIONAL
Public Funds		
Innovative finance		
Private Funds		



## Illustrative Technology Road Map for Wind Power

		2010-2015	2015-2025	2025-2050
<b>PUBLIC AUTHORITIES</b> (National, regional or local depending on the Institutional setup) and <b>REGULATORS</b>	<b>Control &amp; Regulatory Instruments</b>	<ul style="list-style-type: none"> <li>- Review permitting &amp; licensing procedures to offer simple, clear, predictable rules for wind projects</li> <li>- Review grid connection and usage rules (with grid operators)</li> </ul>	<ul style="list-style-type: none"> <li>- Adopt targets for share of wind energy in electricity</li> <li>- Set mandatory Feed-in tariffs or quotas (RPS....)</li> <li>- Adopt environmental integration regulations to increase acceptance without hindering the development of wind energy</li> <li>- Control new grid connection operators to develop the grid in anticipation of future wind development</li> </ul>	<ul style="list-style-type: none"> <li>- Increase national/regional targets</li> <li>- Decrease tariffs as wind energy becomes more competitive</li> <li>- Update regulations as technology and impacts evolve</li> <li>- Monitor grid development</li> </ul>
	<b>Financial Incentives &amp; Market Instruments</b>	<ul style="list-style-type: none"> <li>- Support demonstration programmes</li> <li>- Create a favorable environment for CDM projects</li> </ul>	<ul style="list-style-type: none"> <li>- Offer tax credits, subsidies, soft loans where necessary</li> <li>- Promote CDM projects</li> </ul>	<ul style="list-style-type: none"> <li>- Stimulate the availability of financing matching the characteristics of wind energy projects</li> <li>- Stimulate regulated and voluntary carbon markets</li> </ul>
	<b>Information &amp; Training</b>	<ul style="list-style-type: none"> <li>- Conduct wind resource assessments</li> <li>- Organise information campaigns on wind energy</li> </ul>	<ul style="list-style-type: none"> <li>- Make wind resource assessments available to developers</li> <li>- Create standards and labels for turbines and set up testing facilities</li> <li>- Develop technical training programmes</li> </ul>	<ul style="list-style-type: none"> <li>- Expand and update information</li> <li>- Enforce standards and promote labels</li> <li>- Make disclosure of the carbon content of electricity mandatory</li> </ul>
<b>DEVELOPERS</b>			<ul style="list-style-type: none"> <li>- Avoid environmentally and socially sensitive areas and adopt "good neighbour" practices</li> </ul>	<ul style="list-style-type: none"> <li>- Adopt best technologies to minimise impacts</li> </ul>
<b>INVESTORS / FINANCIAL INSTITUTIONS</b>		<ul style="list-style-type: none"> <li>- Train staff on wind energy</li> </ul>	<ul style="list-style-type: none"> <li>- Develop financial products adapted to the specificities of wind energy (long-term pay-back, small projects)</li> </ul>	
<b>UTILITIES AND GRID OPERATORS</b>		<ul style="list-style-type: none"> <li>- Train staff on wind energy</li> <li>- Review grid connection and usage rules (with regulators)</li> </ul>	<ul style="list-style-type: none"> <li>- Launch commercial offers promoting wind energy</li> <li>- Adopt internal wind energy generation/ purchase objectives</li> <li>- Develop standard power purchase contracts</li> <li>- Ensure fair and transparent access to and use of the grid</li> <li>- Include future wind developments for grid planning</li> <li>- Develop new technologies on smart flexible grids, electricity storage and management of intermittent sources</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain "green" offers and adjust them to customer requirements</li> <li>- Tighten objectives</li> <li>- Incentivise staff on wind results</li> <li>- Offer fair &amp; simple power purchase contracts</li> <li>- Ensure fair and transparent access to and use of the grid</li> <li>- Continue to develop the grid to connect new wind farms</li> <li>- Integrate in the grid new technologies allowing easier management of intermittent generation sources</li> </ul>
<b>CONTRACTORS</b>		<ul style="list-style-type: none"> <li>- Train on installation and maintenance of wind farms</li> </ul>		<ul style="list-style-type: none"> <li>- Update training on new technologies</li> </ul>
<b>SUPPLIERS &amp; MANUFACTURERS</b>		<ul style="list-style-type: none"> <li>- Train installers</li> </ul>	<ul style="list-style-type: none"> <li>- Pursue research to decrease costs and environmental impacts and improve the management of intermittency</li> <li>- Provide technical support to installers</li> </ul>	<ul style="list-style-type: none"> <li>- Promote new technologies and make them available in as many countries as possible</li> <li>- Provide technical support to installers</li> </ul>

Source: Virginie Schwarz, 2009