

Renewable Energy Technology Deployment in Developing Countries



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IPCC Special Report on Technology Transfer - definitions



- “Technology Transfer” - a broad set of processes covering the flows of know-how, experience and equipment.
- Encompasses *diffusion of technologies and technology cooperation across and within countries*
- Comprising the processes of learning to understand, utilize and replicate the technology, including the *capacity to choose it and adapt it to local conditions* and integrate it with indigenous technologies

SRTT conclusions

- Successful, sustainable technology transfer requires a multi-faceted enabling environment, including:
 - macroeconomic conditions
 - the involvement of social organizations
 - *national institutions for technology innovation*
 - *human and institutional capacities for selecting and managing technologies*
 - national legal institutions that reduce risk and protect intellectual property rights
 - codes and standards
 - *research and technology development*
 - the means for addressing equity issues and respecting existing property rights.

Different Support for Different Technologies

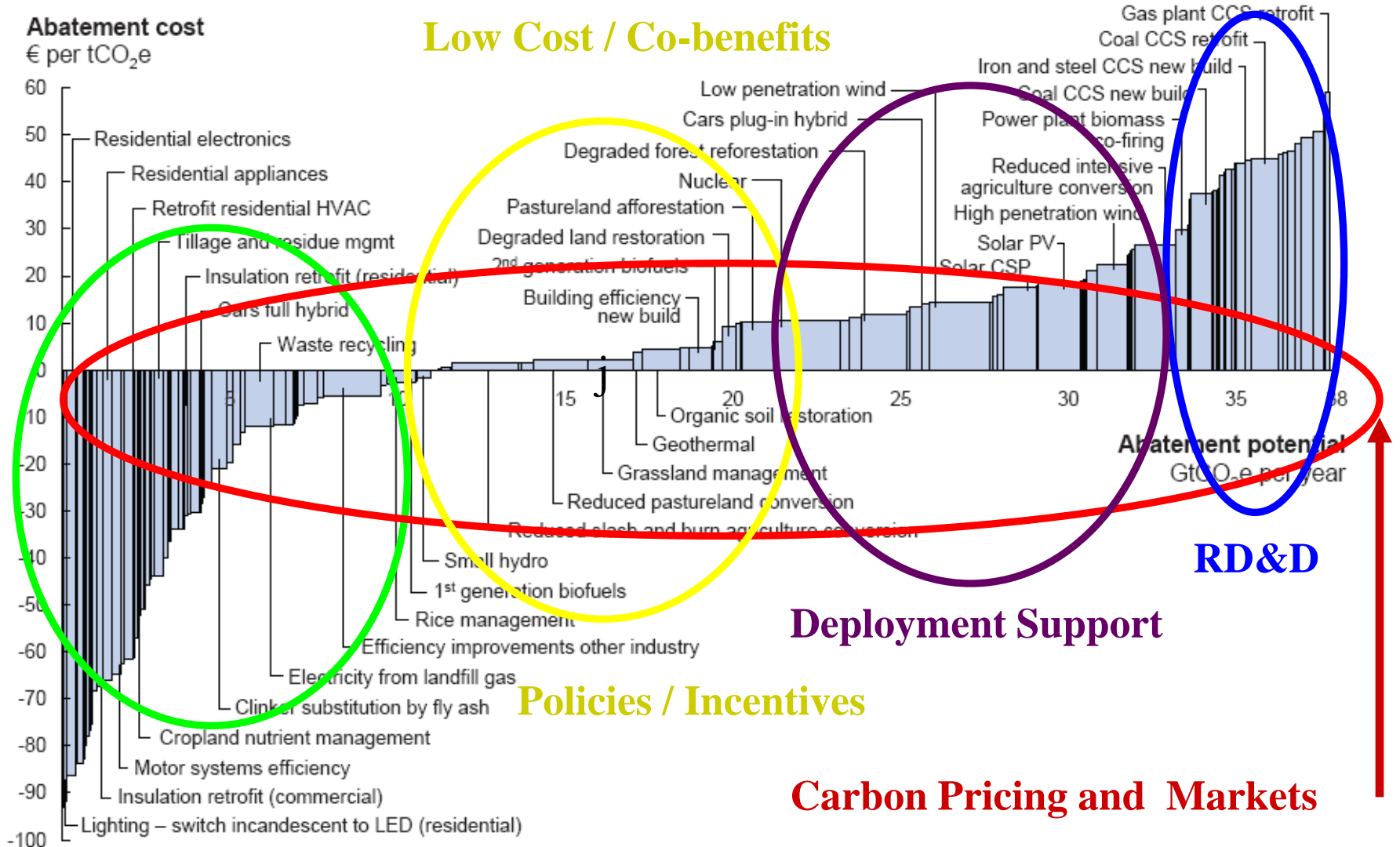


No Regrets Options

Significant Cost

High Cost

Low Cost / Co-benefits



Policies / Barriers

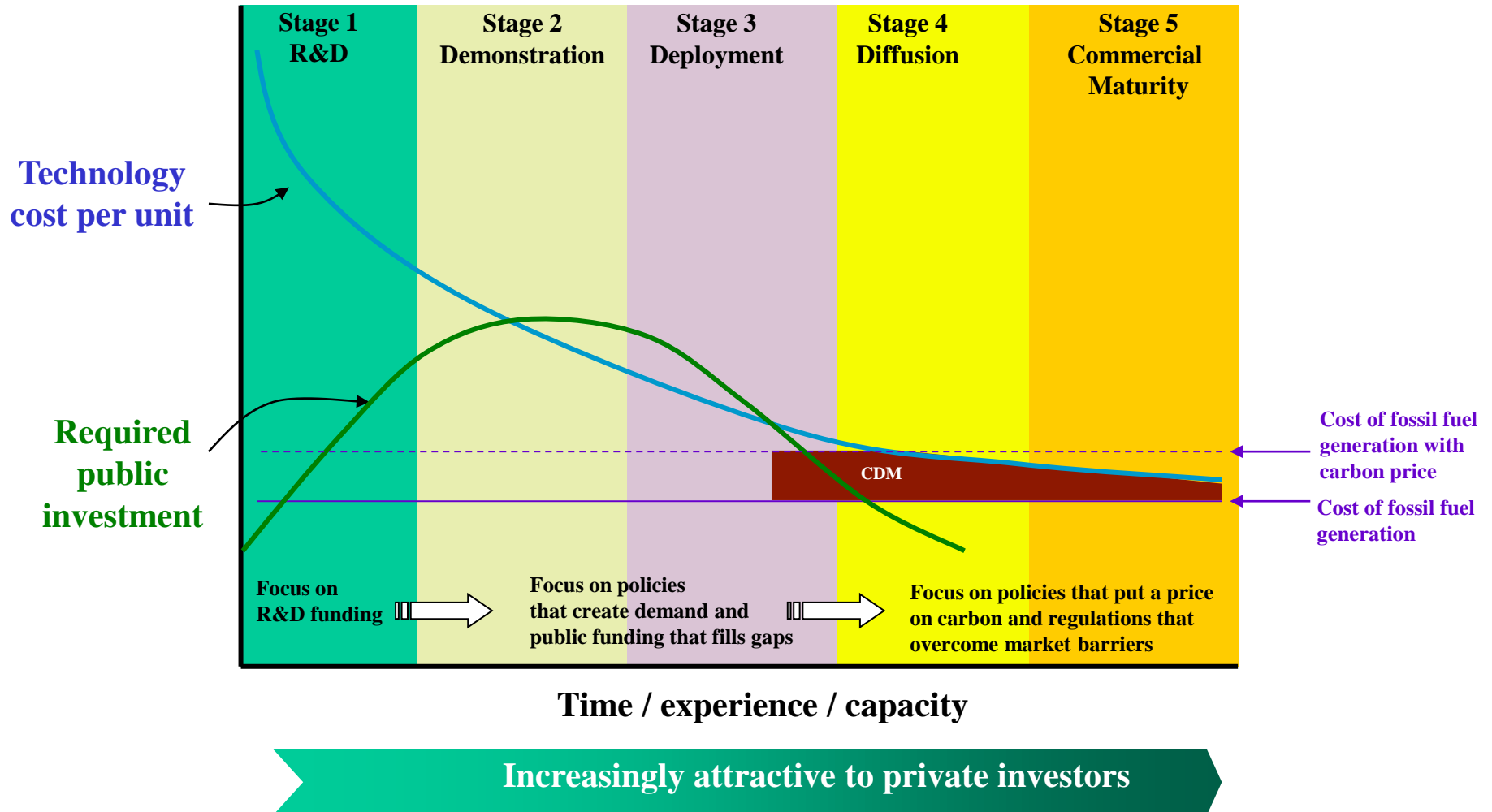
Deployment Support

Carbon Pricing and Markets

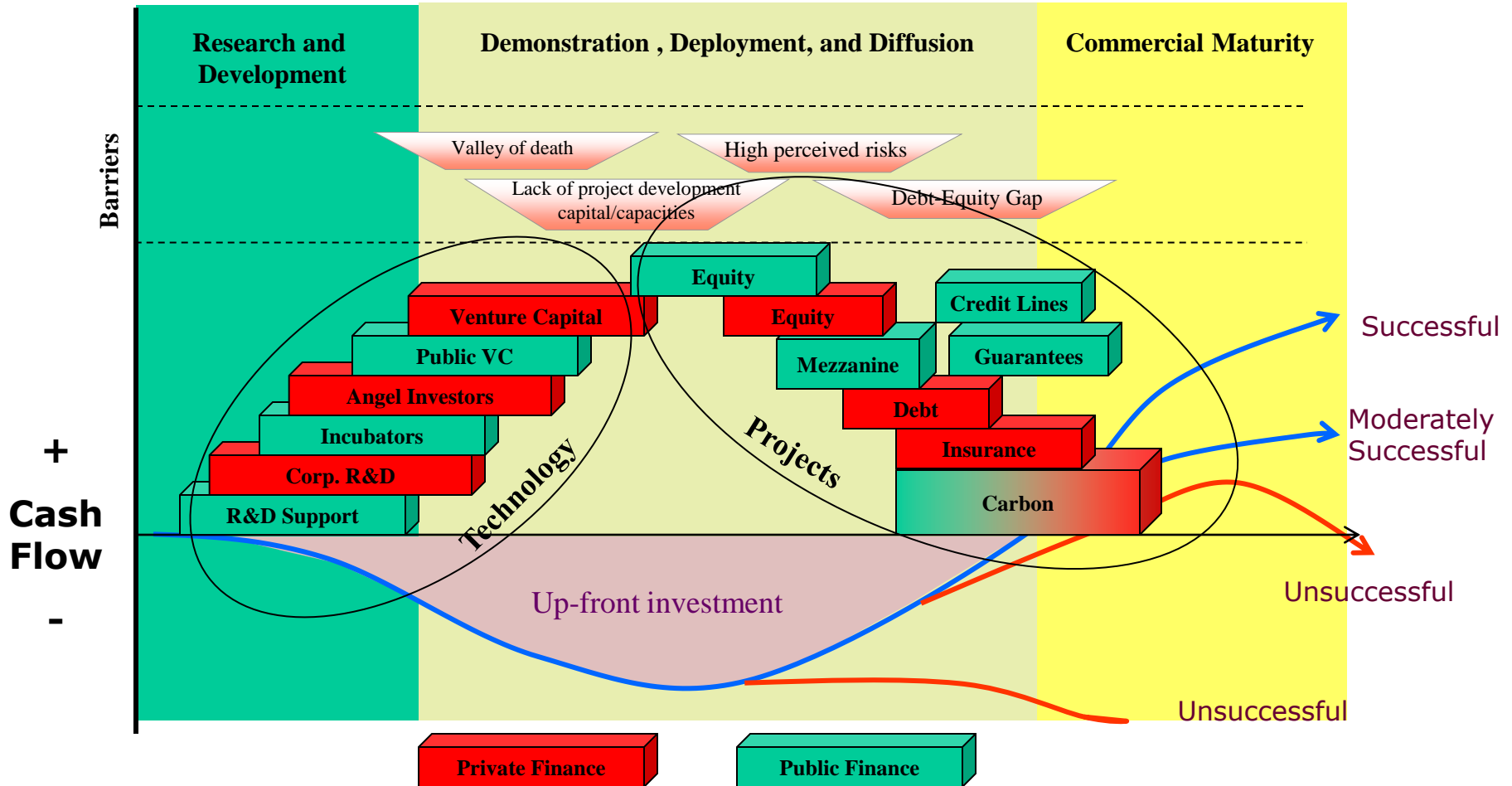
Policies / Incentives

RD&D

The Funding Gap along the Finance Continuum

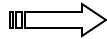


Filling Gaps in the Finance Continuum

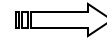


Evolving Role of Government

Focus on R&D funding

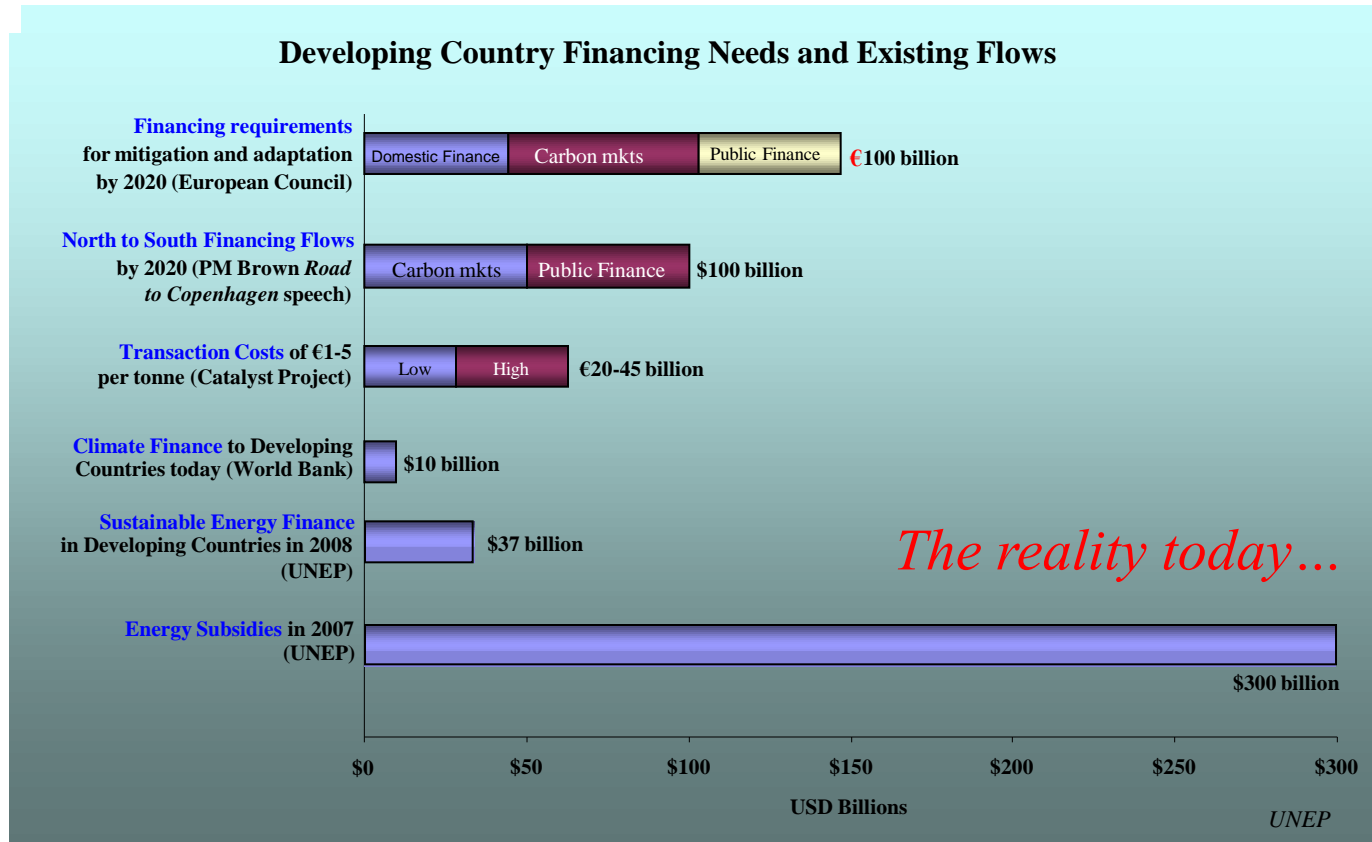


Focus on policies that create demand and public funding that fills gaps



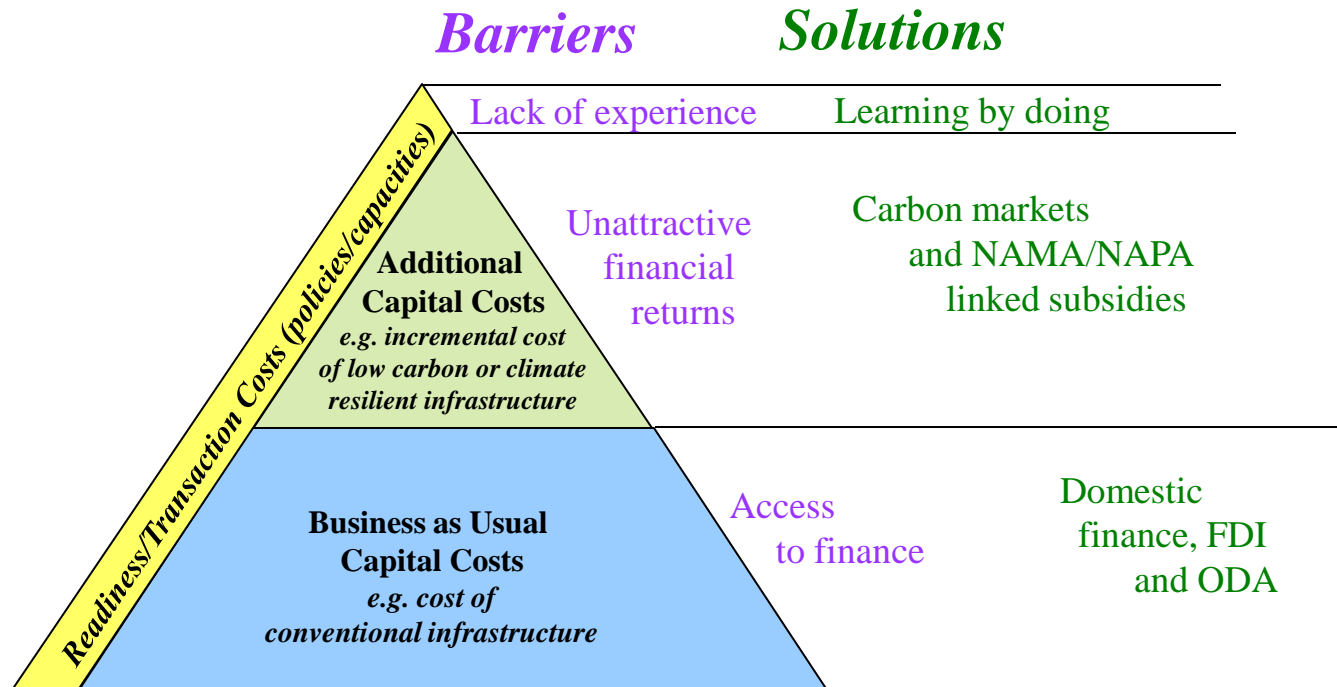
Focus on policies that put a price on carbon and regulations that overcome market barriers

The Financial Challenge



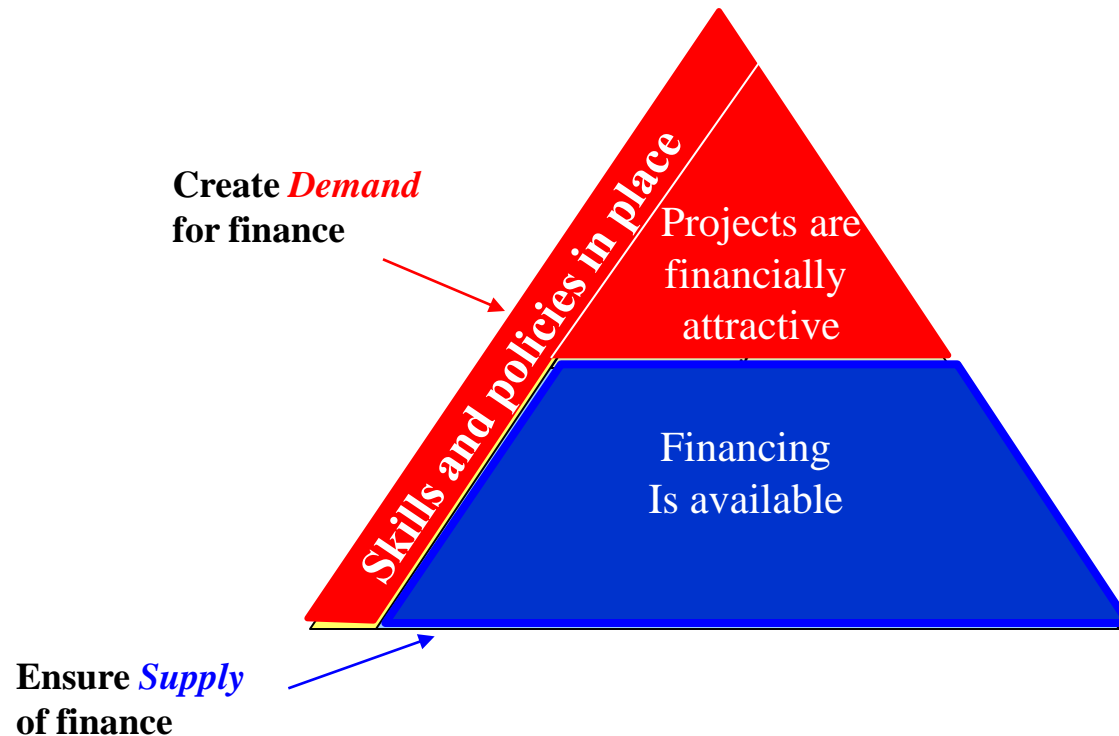
Message : The costs are large but can be managed.

What Needs to be Financed



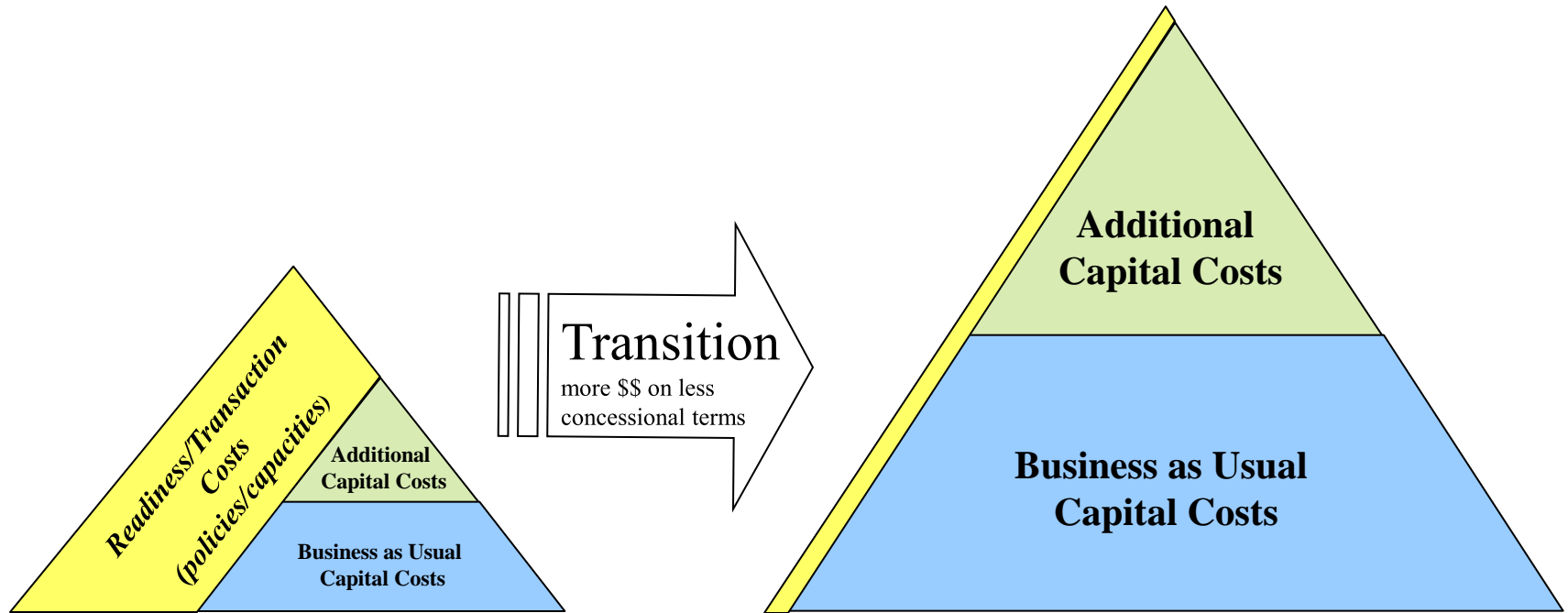
Message : Most emphasis to date has been on ensuring access to finance. This is not enough.

Rebalancing Supply and Demand



Message: There is a need to create both the Demand for and Supply of financing.

Phasing the Support



Phase 1 – Creating Readiness

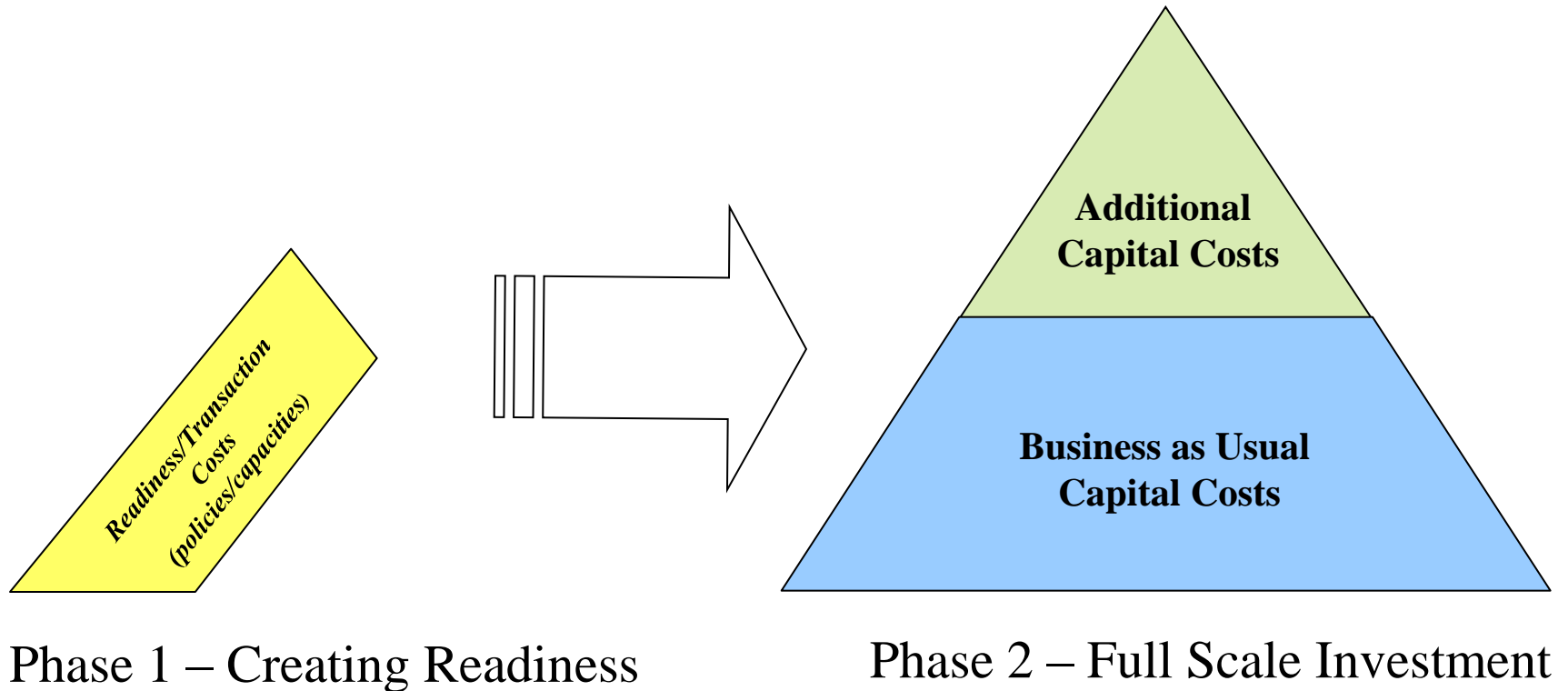
- building capacities and
- mobilizing early investments

Phase 2 – Full Scale Investment

- maintaining human/institutional capacities
- paying for additional costs through carbon/NAMAs/NAPAs
- maintaining access to finance

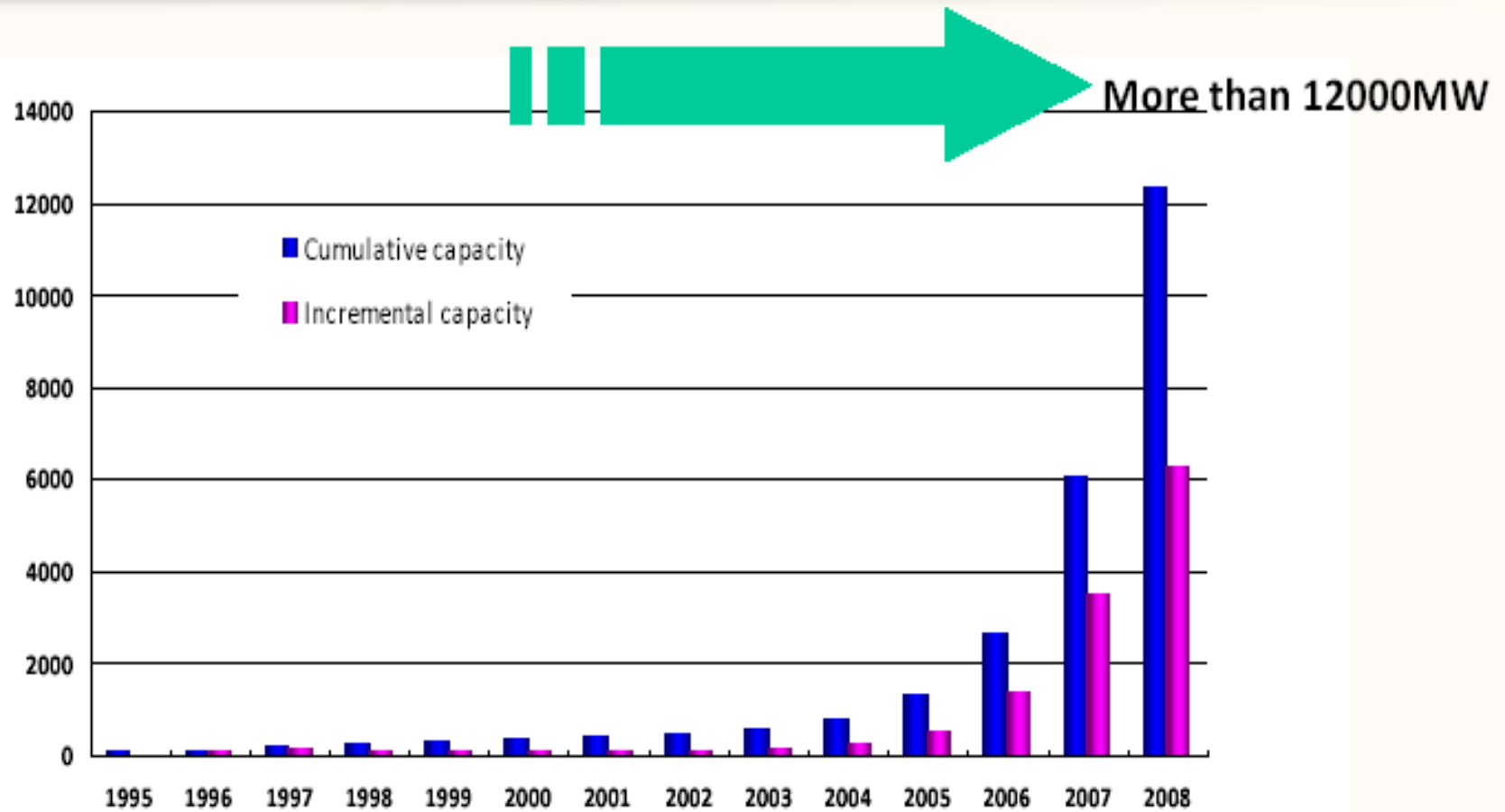
Message Take a phased approach, with different support provided during each phase.

The Wrong Approach



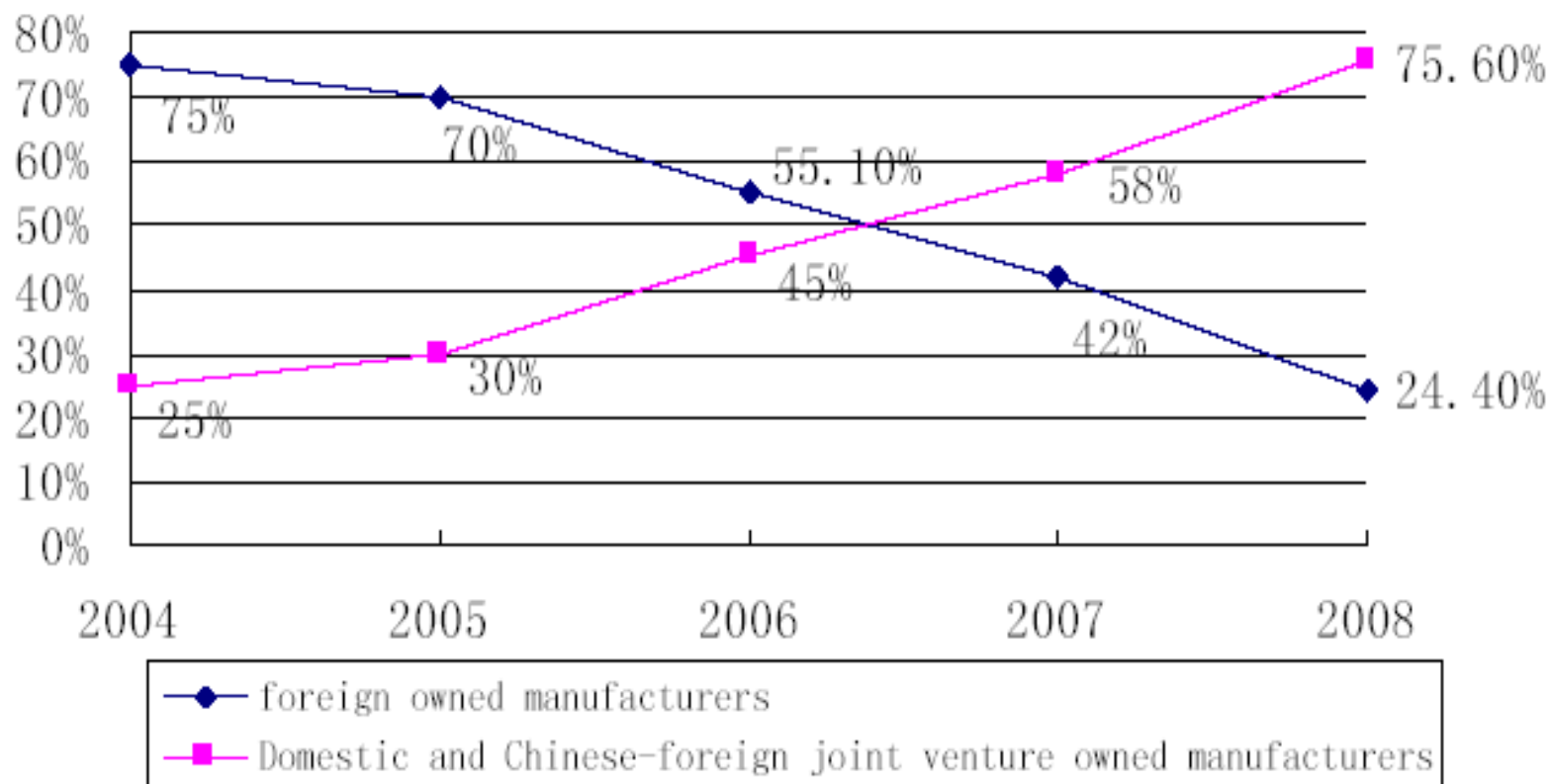
Message: Don't separate capacity building from mobilizing investment.

Wind Power Capacity in China



Source: Li & Gao, 2008

Changes in Wind Power Market Structure



Source: Li and Gao, 2008

A Stakeholder Analysis of Wind Technology Transfer in China

Stakeholders	Motivations/Objectives	Actions
Domestic companies	<ul style="list-style-type: none"> ● Technology leapfrogging ● Increased Intellectual property ● More market share ● Brand recognition 	<ul style="list-style-type: none"> ● Licensing ● Jointly develop ● Joint venture
Foreign companies	<ul style="list-style-type: none"> ● More profit from licensing sales ● Increased market share in China ● Lower labor cost in china ● More financial return ● Understand China wind conditions 	
China government	<ul style="list-style-type: none"> ● Lower cost of wind turbine manufacturing ● Address energy crisis and climate change ● Economy development of wind industry ● Technology leapfrogging ● More job opportunities 	<ul style="list-style-type: none"> ● Value added tax reduction ● Guaranteed grid connection ● Premium ● R&D ● Custom duty relief ● Favorable loan
Foreign governments	<ul style="list-style-type: none"> ● Improved reputations in fulfilling their UNFCCC financial and technology obligations under UNFCCC ● Assisting the wind companies in occupying more Chinese wind power market 	<ul style="list-style-type: none"> ● Financial support for purchase of foreign wind turbines ● Protecting intellectual property ● Joint research and development ● Help capacity building