



# Developing financial mechanisms to support sectoral approaches

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# What are the needs in terms of international funding?

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## Technology financing

- Aimed at technologies with higher upfront capital costs or higher operating costs

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## Policy financing

- Aimed at supporting policy implementation, so to reduce the impact on consumers of taxpayers

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## Removal of financial barriers

- Aimed at improving access to capital for hard-to-reach sectors and companies

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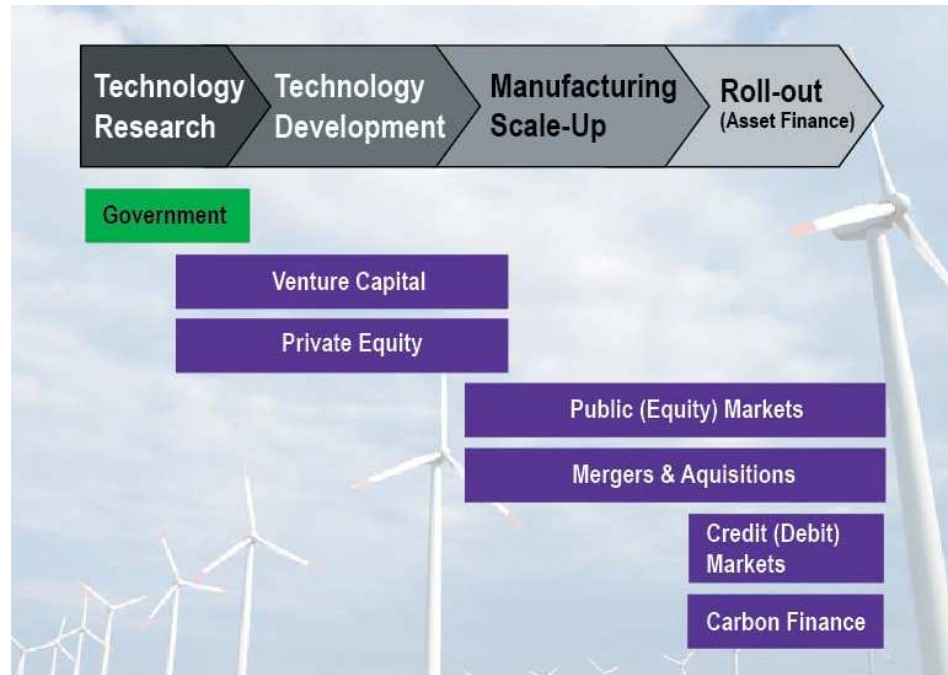
## Removal of non-financial barriers

- Aimed at removing other barriers through, for example, capacity building or support for transition measures like social policies that may be needed to accompany climate policy

# Scale of private sector clean energy financing now

This analysis identifies **total** financing, not additional financing

- Clean energy is a mainstream, rapidly growing sector with \$150 billion in new money entering the sector in 2007; projections suggest this will reach \$450 billion annually by 2012
- “There is a continuing shift in investment from developed to developing countries. While developing countries’ share of total investment remained almost constant at around 20% between 2006 and 2007, this conceals a significant shift in asset finance. In 2004-05, developing countries accounted for 10% of global asset finance, which doubled to 20% in 2006-07, reflecting a surge in sustainable energy capacity in these countries.”
- Amongst developing countries, China, India and Brazil dominate sustainable energy asset financing but Mexico is noted as an new focus of investor interest
- Venture capital and private equity remain limited sources of financing in developing countries



- Globally:
  - ▶ Clean energy companies raised \$27 billion on the stock market in 2007, double the level in 2006
  - ▶ Early stage venture capital increased 116% to \$2 billion
  - ▶ Asset financing increased 61% to \$108 billion
  - ▶ Corporate M&A increased 52% to \$25.7 billion

Source: UNEP, NEF, SEFI (July 2008)

## What scale of additional financing is needed?

This analysis identifies **additional financing**, not total financing

- It is estimated that global additional investment and financial flows of USD 200 – 210 billion will be necessary in 2030 to return global greenhouse gas (GHG) emissions to current levels.
- Investment and financial flows for mitigation in developing countries are likely to be particularly cost effective.
  - ▶ While investment flows in non-Annex I Parties are estimated at about 46 per cent of the total needed in 2030, the emission reductions achieved by the countries amount to 68 per cent of global emission reductions

Given this additional expenditure, investment on other areas such as fossil fuel infrastructure is expected to be lower in the Mitigation Scenario compared to the Reference Scenario. This means the overall additional investment is \$210bn rather than the \$380bn displayed in the adjacent table

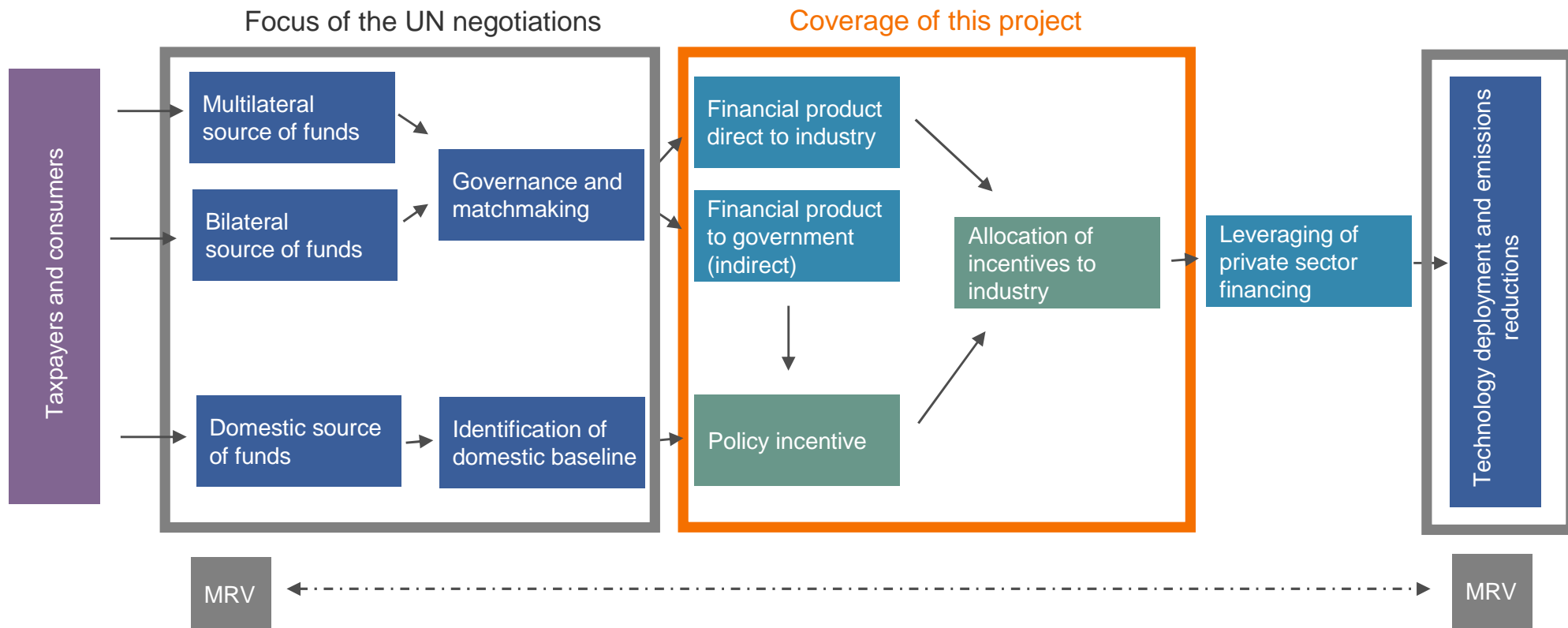
Sectors	Global		Non-Annex I Parties			
	Emission Reduction Gt CO <sub>2</sub> eq	Investment and financial flows in 2030 USD billion	Emission Reduction Gt CO <sub>2</sub> eq	Investment and financial flows in 2030 USD billion	Per cent of global emission reduction	Per cent of global investment and financial flows
Power generation <sup>a</sup>	9.4	148.5	5.0	73.4	53	49
Industry <sup>b</sup>	3.8	35.6	2.3	19.1	60	54
Transport	2.1	87.9	0.9	35.5	42	40
Building <sup>b</sup>	0.6	50.8	0.3	14.0	48	28
Waste	0.7	0.9	0.5	0.6	64	64
Agriculture	2.7	35.0	0.4	13.0	14	37
Forestry	12.5	20.7	12.4	20.6	100	99
<b>Total</b>	<b>31.7</b>	<b>379.5</b>	<b>21.7</b>	<b>176.2</b>	<b>68</b>	<b>46</b>

<sup>a</sup> Total investment for power supply in 2030 declines from USD 439 billion in the Reference scenario to USD 432 billion in the Mitigation scenario (see TABLE IV-11). The USD 148 billion reported in this table is the additional investment that would be needed for renewables, CCS, nuclear power and hydropower. Investment for coal-, oil- and gas-fired generation and transmission and distribution would be reduced by USD 155 billion.

<sup>b</sup> The emission reductions reported for the Industry and Building sectors reflect only the direct emission reductions for those sectors. The investment in electricity efficiency measures is included in the investment flows for the Industry and Building sectors, but the emission reductions due to those measures are reflected in lower emissions for the power sector.

Source: UNFCCC Investment and Financing Flows to Address Climate Change

# Disaggregating financial flows



- For clarity, a distinction needs to be drawn between:
  - ▶ Funding, which is the sourcing and aggregation of funds
  - ▶ Financial products, which can be direct to industry or indirect via governments
  - ▶ Policy incentives, which include regulation, taxes etc
  - ▶ Allocation of incentives to industry, which is how projects are selected for support
- The Bali Action Plan intends MRV for both funding and outcomes

# Domestic sources of funding

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- In a market economy, business always passes costs onto customers eventually; so, any new cost on business resulting from a new regulation will be financed via an increase in prices
  - ▶ But, industry argues that 'cost pass through' may not be possible where the increase in cost would result in a lower market share because products are internationally traded but regulation is not uniform
- There are only 3 potential sources of domestic funding:
  - ▶ From the consumer via a consumer subsidy which is either directly levied on bills or which has a direct impact on price;
  - ▶ From the taxpayer by direct allocation of government revenue, which means that business does not need to pass the cost onto customers;
  - ▶ From both the consumer and the taxpayer (due to the opportunity cost associated with foregone tax revenue) through hypothecation of auction or tax revenues or award of emissions allowances for sale on the market.
- As a general rule, it is better for consumers to pay than taxpayers because higher prices will also impact behaviour, whereas the use of tax revenues will not
- All of these imply an immediate cost to society, some or all of which may be offset by improved energy efficiency/security and other co-benefits; however, given very high discount rates for individuals and limited tax revenues in developing countries, international support may be desirable

# International sources of funding

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- Multilateral support can be derived from the following sources:
  - ▶ IFI or MDB
    - Can be direct to project or via government
    - Original source of funds is taxpayers in developed countries as well as taxpayers in developing countries in the event of loans to government or contingent liability associated with guarantees
  - ▶ Multilateral fund – would need to be ‘invented’ by the UNFCCC process
- Bilateral arrangement such as ODA, export credits or tax incentives
  - ▶ Can be direct to project or via government
  - ▶ Original source is taxpayers in developed countries
- Carbon market
  - ▶ Direct to project unless taken as a levy on transactions or derived from auction revenues
  - ▶ Original source is energy consumers in developed countries

# Examples of financial products

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- Concessional financing includes:
  - ▶ **Grants**, including for buying down costs, as well as technical assistance for feasibility studies, capacity building and removal of non-financial barriers such as information or addressing social impacts e.g. worker retraining
  - ▶ **Loans** below the market rate of interest
  - ▶ **Mezzanine financing or subordinated debt** has a lesser priority for repayment than other financing in the event of default or bankruptcy so may encourage more risk-averse debt or equity partners to invest
- **Equity** means investing in a company through shares and can occur on private markets (private equity) or through public markets (stock exchanges); while there are strong venture capital and private equity markets in the US and the EU, this type of capital may be less abundant in some developing countries
- Risk instruments include:
  - ▶ **Partial risk guarantees** cover host government failure, i.e. change in the regulatory environment that was agreed as part of a financing package, thereby reducing policy risk and improving access to capital
  - ▶ **Credit or loan guarantees and insurance** cover debt service defaults and improve the credit rating of an entity/project, improving access to capital
  - ▶ First-of-kind risk including technology risk could also be covered by a guarantee but the ability of the private sector to take on capital and operating risk is often underestimated
- **Leasing** – the asset is owned by the financial provider and is resold in the event of a default
- Bilateral incentives that originate in the donor country, such as **export credits and tax incentives**, could encourage international joint ventures and SPVs

# Financial products need a broader service offering

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- Capacity building is essential for all involved – governments, financial institutions and companies
- Blending and risk sharing
  - ▶ Optimising different sources and financial products
  - ▶ Increasing concessionality depending upon scale of effort?
  - ▶ Over time, host country financial institutions will gain in familiarity with new technologies and programmes and will require less external support in appraising and mitigating risks
- Improving access to capital for SMEs
  - ▶ International experience shows that financial intermediaries and dedicated programmes are essential to support SME activity e.g. UK Carbon Trust and E&Co
  - ▶ Bundling/aggregation of small projects will also reduce transaction costs
  - ▶ Leasing arrangements are often appropriate for SMEs
  - ▶ This may involve providing funds directly to local or provincial governments; this will often need a guarantee from national government to improve their creditworthiness so new types of support may be needed

# Possible policy incentives

## Policy options

- Economic instruments (market-based instruments)
  - ▶ Price instruments: taxes, charges/fees, subsidies
  - ▶ Quantity instruments: tradeable emissions markets
- Regulatory instruments
  - ▶ Standards, licences, product bans
- Financial support
  - ▶ Loans, grants, guarantees
- Voluntary approaches
  - ▶ Negotiated agreements, unilateral commitments

## Assessment criteria

- Cost of policy
  - ▶ How much will this policy cost and who will bear the cost
- Policy efficiency
  - ▶ How efficiently can the policy deliver energy efficiency investments in industrial sectors
- Administration costs
  - ▶ Monitoring costs
  - ▶ Transaction costs
- Incentive to innovate
  - ▶ Does the policy deliver a strong signal to innovate
- Acceptability
  - ▶ How will players respond to the introduction of this policy

# Assessing policy effectiveness

Criteria	Subsidies	Standards	Taxes on emissions	Cap and trade market (Free allocation)	Cap and trade market (Auctioning)
<b>Cost minimisation</b>	Low - Participants do not have the option to look for least cost abatement option	Low – Participants do not have the option to look for least cost abatement option	High – Abatement occurs up to the point where the marginal cost of abatement is equal to the tax	High – Abatement occurs along the short run marginal cost curve until cap is reached	High – Abatement occurs along the short run marginal cost curve until cap is reached
<b>Policy efficiency</b>	Low – No guarantee that subsidies will result in abatement	High – Participants have to comply	Low – Participants may chose to pay the tax and not reduce emissions	Medium – Depending on the size of the cap	High – Depending on the size of the cap
<b>Encourage innovation</b>	Medium – Only within the subsidised framework	Medium – Depends if the standards are dynamic. If they are not, there is no incentive to innovate	Medium – No immediate incentive to overachieve vs. possibility that targets become more stringent	Medium – Emissions reductions have a value if the cap is stringent	High – Emissions reductions have a value on the market
<b>Acceptability for industry</b>	Very high – May support investments that would have gone ahead otherwise; no obligation	Low – Participants have no flexibility on options for emissions reductions; some might like being told what to invest in	Low - Participants have no flexibility on options for emissions reductions	Medium – Participants that can pass on costs will reap the profits; the system is complex to navigate	Medium – Participants pay full cost of their emissions and the system is complex to navigate
<b>Administrative costs</b>	Low – Technology certification	Low – Technology certification and monitoring	Medium –need to control that tax revenues match emissions	High – Need for historical emissions data to set the cap and allocation level	High – Need for historical emissions data to set the cap

# Allocating incentives to industry – key principles

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- **Performance based.** The instrument should be based on the delivery of the required objective (e.g. verified permanent storage of CO<sub>2</sub>). The value of the support instrument might be certain: in the form of a fixed payment from government; or variable where the instrument is tradable. The more established and predictable the value of the instrument is the less risk discount will be applied to the long term value of the support. Tradable instruments are therefore less attractive for early stage technologies but can be used for improving the cost-effectiveness of more mature technologies (e.g. onshore wind).
- **Aimed at commercial projects.** The current debate in the EU on designing a support mechanism for CCS demonstrates that the private sector is often more willing to take on capital and operating (technology) risk than policy makers realise. Support mechanisms should therefore be aimed, wherever possible, at projects that are commercial, i.e. that deploy technologies that carry manufacturer warranties.
- **Duration appropriate to cost structure.** A support instrument should provide payment over the operating lifetime of the project if there is additional operating cost associated with the technology (e.g. the energy penalty associated with CCS).

# Allocating incentives to industry – key principles

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- **Competition in allocation.** Ex-ante competition (i.e. tendering) for an award of support or any form of public procurement process for said support is self defeating. Quite simply, the costs and time required to bid on large engineering projects are too great for any such process to remain at all competitive, and hence the objective of setting up the competitive framework is defeated by the process of executing it. Moreover, this type of process incurs inevitable problems of moral hazard and adverse selection. The ideal mechanism is a time and volume limited, rules-based allocation mechanism where developers know that if they have an eligible project operational by a certain date then they will automatically qualify for the support (i.e. on a first come, first served basis).
- **Manageable conditions for support.** Provided that the allocation process is sufficiently competitive, the private sector should be free to manage the risks of new projects unfettered by onerous conditions which come with support. Information on demonstration projects will naturally flow through the market to the benefit of next generation projects; therefore, light reporting requirements are sufficient. While government might find it necessary to put in place mechanisms which limit excess profits from any support regime, this should be balanced against the risk of crushing the profit motive for early movers.

# Key messages

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- Policy makers need to disaggregate the component parts of international financial flows in order to enable accurate problem identification
- International support can occur in two ways:
  - ▶ *Indirectly* to industry, via government, through an international financial product such as a grant for policy development or implementation, a loan or a guarantee
  - ▶ *Directly* to industry, thereby reducing the scale of incentive needed domestically e.g. how China has relied on CDM to provide a lower feed-in tariff for onshore wind that would otherwise be needed
- Different policy instruments have different implications: is the objective to improve the performance of the worst in a sector or to encourage innovation in the best of a sector? Who should bare the costs? What costs can the economy absorb and where is international support needed? Are the barriers to action financial or non-financial?
- Governments must avoid disintermediating the private sector, i.e. avoid making concessional financing available where a market rate would have worked as is increasingly the case with much of the infrastructure financing in middle income countries
- There is a need to focus on identifying which risks specifically the private sector will not bear – this will vary from region to region, technology to technology, counterparty to counterparty
- How funds are allocated to industry will critically determine the success of a mitigation effort

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