



EU think-piece: Defining a Technology and Investment Element of a Post 2012 Agreement

Introduction

The EU recognises that mechanisms and instruments for scaling up financial flows for technology, including through carbon finance that can result from deep and binding emissions reductions by all Annex I Parties, are key building blocks of a comprehensive, fair and effective global post 2012 climate change agreement.

This note focuses on Technology and Investment (T&I), primarily in relation to decarbonisation of energy producing and consuming sectors.

Overall, a T&I element will need to be considered within the wider context of a comprehensive post 2012 agreement, including:

- Meeting developed countries commitments for assisting developing countries in financing for technology, particularly to meet growing energy needs;
- Providing positive incentives for assisting developing countries in implementation of the Convention;
- Longer-term evolution of a global carbon market, ensuring incentives and mechanisms for certain sectors are designed to allow countries to enter into trading schemes in the future;
- Demonstrates a new paradigm for international technology cooperation as called for by Brazil, China, India, Mexico and South Africa at the Gleneagles Summit in 2005.

Whilst a T&I package of agreements must work to fulfil technology transfer commitments under the UNFCCC and be codified within a >2012 framework, it may be that many of the constituent parts of this package can be progressed for outside of the UNFCCC, e.g. through EU bilateral agreements with key countries, or amongst a group of countries such as the 20 largest energy users. Similarly, in *providing positive incentives* for developing countries to move onto low carbon paths of development, attention must also be focused on *removing perverse incentives*, for example through trade barriers to climate-friendly technologies, high levels of fossil fuels subsidies in OECD and non-OECD countries or maintenance of public support for high carbon investment.

Technology and Investment as Part of a >2012 Agreement

Stabilisation of the climate at a safe level requires urgent action for rapidly scaling up investment in low carbon technology globally, particularly in countries with large and growing energy needs. It is a shared dilemma that requires effective international cooperation, particularly amongst the major economies, to unlock and accelerate investment flows into low carbon energy. Broadly, the T&I element of a >2012 framework must provide the basis for accelerating the global transition to a low carbon economy with an emphasis on the need to assist developing countries in decarbonising their growth. More specifically, the approach will need to balance costs, risks and responsibilities for technology investment both between developed and developing countries, as well as between the public and private sector.

Developing countries will need to be convinced of the benefits and opportunities for investing more of their national resources into low carbon technology, both in terms of co-benefits of energy security and access to energy for the poor, or for export to rapidly expanding markets



for low carbon technologies. At the same major economies should also start to recognise their responsibilities in tackling climate change, in line with the principle of common but differentiated responsibilities and respective capabilities.

Defining a “Technology and Investment Element”

Urgent action is necessary to identify and overcome the gaps and barriers (including high costs and risks) to deployment of existing low carbon technology as well as development and demonstration of new low carbon technology. As there is no single technological bullet, there is no single approach for decarbonising the economy. Rather a range of approaches will be required to support a portfolio of investments across the economy.

Notably for the energy sector this will include investments in:

1. Energy supply - renewable electricity, clean coal, CCS, nuclear; CHP, renewable heat and cooling, smart distribution systems and micro-generation;
2. Energy efficiency – large energy consuming industries; appliances and the built environment;
3. Transport - vehicle efficiency; sustainable urban planning and biofuels.

To achieve this efforts will need to focus on creating favourable investment frameworks (enabling environments) at the national and international levels, notably by:

- Agreement to implement a range of policy and regulatory approaches necessary to attract investment across the innovation cycle (from development to commercial deployment and widespread diffusion) and AI support for building human and institutional capacity;
- Support for development and utilisation of dedicated financing instruments to scale-up investment in key sectors (differentiated for technologies at varied stages of development);
- Specific international agreements for key sectors, e.g. energy efficiency standards.

A **range of technology related agreements** should therefore be explored in more detail, and considered in light of the above considerations and strategic objectives. Notably:

- Technology deployment agreements to be developed at the country and multilateral level as **positive incentives** for supporting NAI contribution towards implementation of the Convention, and be applicable on the basis of criteria related to differentiated responsibilities and respective capabilities within NAI.
- Sectoral approaches in sectors appropriate for early trading, would help accelerate transition towards a global carbon market (and overcome competitiveness concerns).

Such deployment incentives would be designed to enable countries progressively to take on more meaningful commitments and support countries entry into a global carbon market initially as no-lose targets and moving towards full trading over time and on the basis of agreed criteria.

- Scaling up of public investment and international cooperation for more rapidly developing and demonstrating new technologies, including ensuring learning by doing occurs simultaneously in developed, newly industrialising and more advanced developing countries.
- Action to overcome non-cost barriers for example energy efficiency in key sectors.
- Removing other barriers for example those related to trade or existing fossil fuel subsidies.

Overall, whilst international cooperation is key, successful technology investment will also be specific to countries needs and circumstances as well as require differentiated approaches across sectors. Hence, the need for a range of options for meeting the technology and investment challenge, as well as the particular value of bilaterally agreed cooperation in many cases.

Examples of possible technology agreements relating to deployment; research development and; demonstration are annex A.

Financing Options

A T&I element of a proposition will need to be backed up by scaled-up financial support to assist in financing the incremental costs of mitigation. The underpinning analysis of Stern estimates that these incremental costs are around US\$350 billion/year, which implies for non-OECD countries an additional investment in 2015 of around US\$70bn, rising to around \$294bn/yr in 2025. Whilst clearly substantial, these figures represent a relatively modest percentage of industry turnover at around 5% rising to 10%. At the same time Stern concludes that a carbon price of €40/ton this would generate flows of up to US\$25bn/yr in 2015 rising to up to \$170bn/year in 2025. More precise financial flows through the carbon market, and the gap to be met through other sources of finance, will depend on the details of a >2012 agreement.

In the coming months it will be important to identify with greater specificity a credible package of financial assistance sufficient to leverage wider public and private finance into low carbon energy, and should consider the likely contributions through:

- Carbon finance: likely flows to developing countries on the basis of AI KP commitments and level of supplementarity; and ways to facilitate this through programmatic CDM and sectoral agreements (no lose targets etc);
- The role of new financing instruments such as GEEREF and private sector finance vehicles;
- Support to leverage the Clean Energy Investment Frameworks necessary to support country-driven strategies, plans, targets and prioritised needs;
- Bilateral agreements on technology deployment and demonstration as well as trade related incentives;
- Potential for an international Technology Cooperation Fund (or networked national funds) to publicly support R,D&D activities such as:
 - Scaled up collaborative R&D between developed and developing countries;
 - Demonstration and implementation of technology roadmaps;
 - Licensing of key technologies (where IPR has been identified as a key barrier);

Finance for such international or national technology cooperation fund(s) could be sourced from:

- Using a proportion of countries "assigned amount" which would be monetized and put into an international fund and/or national auctioning of a proportion of countries allowances for contribution to a national or international fund;
- Public finance provided by industrialised countries (perhaps sourced through reform of subsidies for fossil fuels or agriculture).
- Financing from developing countries for South-South cooperation and technology transfer.

Role of the UNFCCC

As the international framework for tackling climate change the UNFCCC must provide the catalyst for investment in technology for mitigation and adaptation to climate change. Many of the

technology and investment related agreements outlined in Annex I may be progressed outside of the formal UNFCCC process, yet should be codified within it to ensure commitments by both AI and NAI Parties are recognised and credited as appropriate. Therefore, a scaled up approach towards technology cooperation under the UNFCCC will require the infrastructure to support this, including for:

- Building upon existing tools such as the TT:Clear; Technology Needs Assessments and developing with NAI national strategies and targets for prioritised areas of investment;
- Enhancing relevant tools to assist in accessing finance and match-making with relevant services for implementation of prioritised needs and strategies;
- Monitoring and reporting (primarily through regular National Communications) and development of registers of relevant technology agreements;
- Tools to evaluate different approaches and compare level effort between these;
- Strengthening expert input and support for assisting Parties in implementation.

In assessing how best to scale up financial flows for technology cooperation and potential value of a technology related fund it may also be necessary to consider the role of Technology and Economic Assessment Panels, similar to that of the Montreal Protocol.

Developing a Technology and Investment Component of a Global Agreement

Key areas to focus in the coming months are:

1. Defining the technology and investment elements of a comprehensive, fair and effective post 2012 agreement.
2. How positive incentives for investment in technology can be designed to assist developing countries in making commitments (whether voluntary or more binding) towards a lower carbon path of development;
3. Within the context of (1) and (2), the what a COP decision may do in terms of establishing a new “constituted body” with a mandate to:
 - a. Take forward medium-term (2008-2012), activities identified as important for enhancing the existing technology transfer framework, notably joint R&D;
 - b. Developing long-term strategies on technology elements of a post 2012 agreement reporting to Parties in (early?) 2009; and
 - c. A two step approach towards considering the adequacy of financing for technology transfer, also to report in 2009.
 - d. Consideration of indicators to monitor and evaluate performance (in terms of developed and developing countries actions to support technology investment).

A number of meetings, notably the Gleneagles Dialogue and the US meeting of Major Economies provide the opportunity for exploring these ideas in more detail and considering how potential technology and investment related agreements can form part of a comprehensive, fair and effective global post 2012 climate change agreement.

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Annex A: Potential Technology and Investment Agreements and Incentives

Technology and investment agreements will differ for technologies at different points on the innovation chain (or technology learning curve), and support mechanisms will need to be differentiated for:

- Deployment - where technologies are well known and already cost-effective but other barriers may exist to their deployment;
- Deployment - where technologies are well known but currently more expensive than high carbon alternatives and therefore need incremental cost support to drive down their costs;
- Demonstration - where technologies are unproven at commercial scale and therefore demonstration support is necessary;
- R&D - where technologies need developing and associated skills improved.

Technology Deployment Agreements (Positive Incentives)

- T-PAMS: technical assistance and limited finance for implementing policies and measures to support prioritised technology needs (similar to SD PAMs);
- Fuller package of incentives for countries to develop and commit to national strategies, plans and targets for low carbon investment across range of sectors;
- Sectoral trading agreements based on technology performance standards/benchmarks; energy efficiency standards or carbon intensity targets (the no lose targets approach);
- International technology deployment schemes, for example linking existing renewable energy trading schemes to allow trading between countries.

Technology Demonstration Platforms or Roadmaps

- Bilaterally, or with a group of countries, support for in-country demonstration to enable learning by doing and accelerated commercialisation of new technologies. For example on Carbon Capture and Storage; 2nd generation biofuels or hydrogen fuel cells.

Technology R&D

- Major global public-private partnership on R&D for collaborative efforts for developing the international research base and development of key technologies.

Targeted Energy Efficiency Agreements

- Bilateral, regional or international agreements on energy efficiency based on common or benchmarked standards (notably for sectors less responsive to market-based approaches) e.g. appliances; vehicles; lighting; and the built environment.
- A Technology "Protocol" for phasing out inefficient technologies for key products and sectors and (as with the Montreal Protocol), financial assistance provided for introduction of technologies at minimum energy efficiency or performance standards.

Trade and Investment Agreements

- Bilateral or WTO negotiated agreements to remove existing trade barriers to develop markets for key low carbon technologies and products. Joint standards for climate-friendly goods and services would assist in creating markets for key technologies;
- Agreement to develop a global market for sustainable biofuels, including support for developing countries to become sustainable biofuel producers.