



# Climate technology & development

## Final conference - summary



The CDKN funded Climate Technology & Development project held a final conference in Bonn on June 25<sup>th</sup> 2013. The event was kindly hosted by the German Development Institute (DIE) in Bonn and was attended by 25 researchers, policymakers and Technology Executive Committee (TEC) members.

The project's principal aim is to refocus national and international policy agendas in order to improve the prospects for enhancing technology development, diffusion and transfer in developing countries. The overarching question the project answers is: What are conditions for innovation for climate-compatible development for different categories (i.e. the industrialising economy, rising middle class and bottom of the pyramid) in developing countries? Results were presented in the form of 5 case studies on specific technologies and 5 policy briefs covering these different categories and the Technology Mechanism more broadly, as well as an upcoming final report that brings together these deliverables.

The final workshop consisted of two parts: Part I discussed the project results, with contributions from invited speakers, to address questions from policymakers; Part II turned the tables, with an interactive session that looked at 'quick wins' and further research.

### Part I

**Gabriel Blanco** (UNICEN; vice-chair TEC) opened the afternoon by noting the importance of technology and innovation systems in developing countries, but also the scale of the challenge to build these systems in countries where such capacity is often weak.

**Heleen de Coninck** (Radboud University Nijmegen) gave an introduction to the project and summary of findings, including the bus rapid transit (BRT) case study and policy brief on the rising middle class [[presentation](#)]. She explained that the project looked at three different 'groups' that typically exist within any country: the bottom of the pyramid, the rising middle class and the industrialising economy. These groups often have different innovation and technology needs and the project reached a number of conclusions on national policy based on this (Figure 1)<sup>1</sup>. It was stressed that low-carbon interventions in developing countries can be achieved through the use of technology interventions rather than economic incentives alone. At the same time, one of the key lessons from the case studies is that the political economy of interventions should be taken into account.

At the international level, it was found that the Technology Mechanism could do much good if it devotes structural attention to building technological innovation capabilities in least-developed countries. Recommendations for the Technology mechanisms included the need to:

- i. establish clear linkages between UNFCCC bodies,
- ii. involve a wide range of institutions (covering the breadth of innovation systems),
- iii. promote cooperative R&D programmes,

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<sup>1</sup> Full policy-briefs can be found at the link at the end of this conference summary.

- iv. create enabling environments by considering the systemic nature of innovation and strengthening both push and pull factors
- v. demonstrate the necessity and value of supporting R&D and demonstration projects, and
- vi. engage with the GCF on a technology funding window.

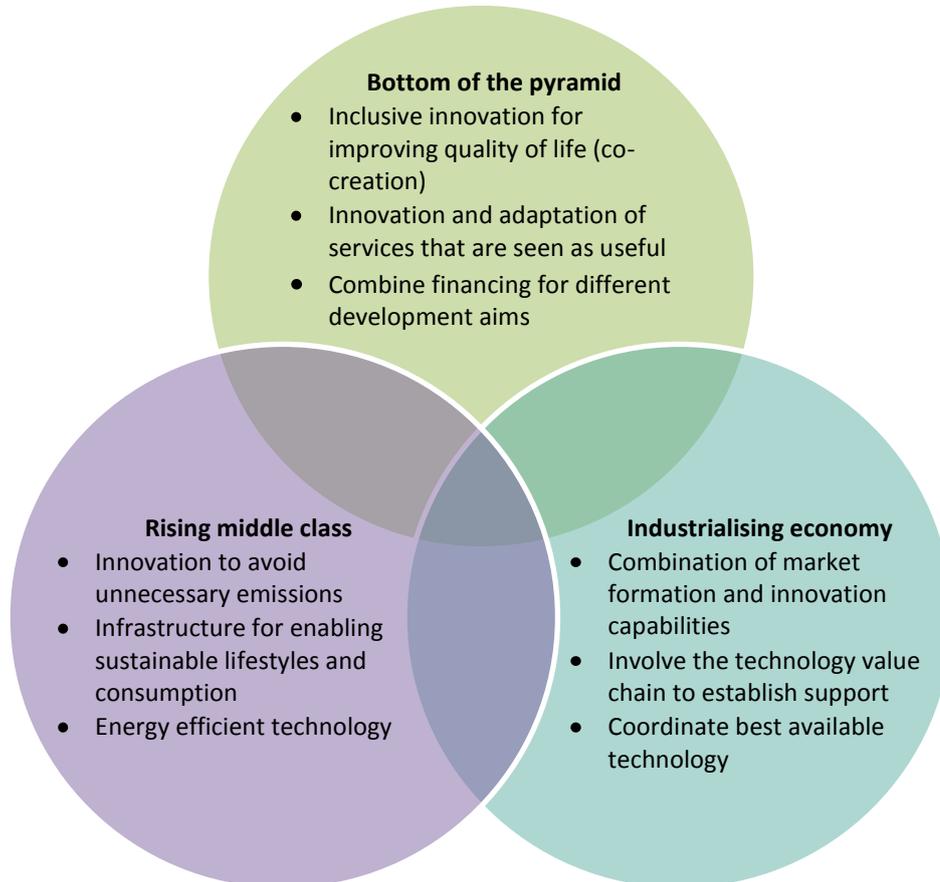


Figure 1: National policy conclusions of the Climate Technology and Development project

**Tilman Altenburg** (German Development Institute; DIE) introduced recent complementary work from DIE. This included an ongoing project that examines how the emerging technological trajectories for climate change mitigation in Europe, China and India differ [[link](#)], which showed that competitiveness concerns can be an important driver of innovation and can involve new types of innovation capacity development, such as firm acquisitions, joint R&D programmes and reverse migration of experts, amongst others.

**Rob Byrne** (University of Sussex) then responded to a written statement from **Matthew Kennedy** (Sustainable Energy Authority of Ireland; TEC member) on the role of technology policy in providing the means of implementation [[presentation](#)]. Rob argued that the building of innovation systems needs to be the overarching goal, in order to help countries develop in self-directed ways, contributing to sustainability, while adapting to changing circumstances. Technology policy is only part of nurturing innovation systems, there are also important links with policies for education, industrialisation, energy, environment, etc, and these capacities must be given time to build up. For innovation systems to then bear fruit, demand side measures are also needed, for example market-creation or improving the ability to exploit existing markets. Strategies for building innovation systems include:



- i. Projects that involve actors of different kinds; help to build the fundamentals of innovation systems
- ii. Individual projects and programmes should link over time; builds knowledge and informs new projects, increases coherence in overall strategy and helps learning and so allows adjustments
- iii. Protection and incentives likely to be necessary; for firms to build technological capabilities and to create markets

**Xiaohua Zhang** (National Center for Climate Change Strategy and International Cooperation in China; NCSC) introduced the topic of innovation for the industrialising economy by noting that technology value chains need to be considered when developing policy and that capacity needs will change over time as a country develops. In response two case studies were presented: the first by **Fang Zhang** (Tufts University) considered a value chain analysis of China's PV manufacturing industry [[presentation](#)] and the second, from **Raluca Ionita**, looked at low-carbon innovation in the cement industry in Sub-Saharan Africa (SSA) [[presentation](#)].

Fang showed that vertical integration along the value chain had played a major role in increasing competitiveness of Chinese firms, but also caused unplanned production clusters and, effectively, a learning network leading to process innovation. The main methods used by Chinese firms to acquire PV production technology from abroad included import of the majority of equipment, recruitment of talent from abroad and R&D cooperation with foreign partners. Continued and reliable support from the Chinese government in the face of export restrictions had also contributed to the meteoric rise of the industry. A number of resulting policy recommendations can be found in the presentation.

Raluca introduced the urgency of improvements in the cement sector, with 7% of global emissions and developing country cement use expected to be more than 90% of world demand by 2025. In SSA the industry is dominated by a small set of multinational OECD-based firms and two growing SSA-based firms. It is observed that best available technology (BAT) is not naturally transferred to SSA in the absence of appropriate policy and that domestic innovation capacity is generally low. Price competitiveness and the need for increased production capacity are the main drivers for innovation in the sector, suggesting that open markets and regulation of BAT are key policy measures (from a broader list presented).

**Ambuj Sagar** (Indian Institute of Technology Delhi) then presented on knowledge gaps and possible priorities for the research community and TEC. He proposed 4 main areas to focus on:

- i. A deeper understanding of, and more focus on, developing/deploying technologies in poorer countries while balancing mitigation and development considerations. What do programmes look like to achieve this? How do countries prioritise actions and effort when looking at more than just mitigation and when thinking about long term impact, rather than short term results? What do you need to think about when deciding where to focus resources, which groups within a country?
- ii. Broadening the discussion on innovation and technology beyond its current focus on deployment and generation technologies. For example, certain necessary technologies don't yet exist, so deployment is not as relevant, or other technologies, like energy efficiency, need supportive social systems in order to be implemented.
- iii. Analyse existing programmes from the perspective of innovation system creation and technology transfer. Are current programmes achieving results? What are the appropriate assessment



metrics and methods for examining this? How can we measure innovation capacity and domestic capabilities?

- iv. What is the role for international bodies and bilateral initiatives? What are they currently achieving and what are the appropriate metrics of measuring success for these organisations?

## Part II

Due to additional time spent on Part I of the afternoon's programme, **Tilman Altenburg** (DIE) moderated a shortened second session that invited questions from researchers for policymakers and TEC members. He presented questions inspired by the first session and opened the floor to further ideas, to come up with 8 topics:

- i. What is the focus of the Technology Mechanism and its bodies? Mitigation and the largest polluters or should it be a pro-poor agenda?
- ii. Capacity-building is required, but for what? Topics like technology roadmaps narrowly or is a broader capacity building agenda required?
- iii. How do we bring the private sector in to engage with the Technology Mechanism? For example, private sector CTCN members or specific alliances?
- iv. IPR sales and usage rights plus capacity building to negotiate and use them.
- v. Is there value in establishing a multilateral technology research network (modelled after the CGIAR)?
- vi. How can south-south cooperation be stimulated and facilitated?
- vii. Funding arrangements for low-income countries and how can absorptive capacity be built?
- viii. What are the proper driving forces for building innovation systems in different contexts?

Responses from policymaker representatives recognised that these are all important issues and added additional challenges such as: how can the TEC outputs have impact and lead to implementation and how the TEC can set the agenda on priority issues when this may be dictated by discussions under the ADP? At the same time it was noted that there are easy wins available to the TEC through improving institutional linkages with other bodies.

### Further details and contact:

The Climate Technology & Development project is led by the Energy research Centre of the Netherlands (ECN) and involved the University of Sussex in the UK, IIT Delhi in India, Radboud University Nijmegen in the Netherlands, UNICEN in Argentina, Tufts University in the United States and Climate Strategies in the UK.

More information and publications by the project can be found at:

<http://climatestrategies.org/research/current-projects/climate-technology-and-development-project/>

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## List of participants

### Date and time

Tuesday 25th of June 2013, 13:30 – 18:30 hrs.

### Venue

German Development Institute/ Deutsches Institut für Entwicklungspolitik (DIE)  
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