



**Global Climate  
Network**

# Breaking Through on Technology

Overcoming the barriers to the development and wide deployment of low-carbon technology

**SUMMARY**

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## Breaking Through on Technology: Summary

Technology is critical for human development and progress. The fight against climate change will not be won without a revolution in the use of existing low-carbon technology and a tidal wave of new inventions. Yet the importance of doing that, especially in healing the rifts in international climate negotiations, is not yet being recognised.

The Global Climate Network asked more than 100 experts from government, private sector firms, academic institutes and non-governmental organisations in eight countries (Australia, Brazil, China, Germany, India, Nigeria, South Africa and the United States) for their views on the barriers to the 'development and transfer' of low-carbon technology. Their responses are detailed and complex but below we draw together our key findings, conclusions and recommendations.

Success at the United Nations Framework Convention on Climate Change Conference of the Parties meeting in Copenhagen in December depends on agreement being reached in each of the five areas currently under negotiation. But without a firm commitment to develop and transfer new technologies, with industrialised countries taking the lead on financing these endeavours, consensus will be difficult to reach and, in practical terms, emissions will be hard to reduce, at least without unacceptable penalties to human development, social cohesion and economic wellbeing.

### **Low-carbon technology development and transfer**

Technologies, of all types, developed in one jurisdiction are regularly transferred to another but there is a long and largely unhappy history to the debate concerning technology transfer from developed to developing countries. This has been evident in climate negotiations. The challenge for an international negotiation in which technology transfer is an existing legal obligation on the part of developed countries is how such a process can best facilitate, support and enable strong domestic policies. For many developing countries building indigenous capacity to innovate, manufacture and export is as important as buying in equipment and skills.

Finance has a crucial role. It is perhaps through the financing agenda that the negotiations can make the most difference to the development and transfer of low-carbon technology by helping to support developing countries to meet the cost of low-carbon technology policies and minimise the potential trade-offs, such as increased taxation, changes in energy tariffs and regulation, all of which will increase costs ultimately levied on the taxpayer or consumer.

Intellectual property (IP) law can also act as a barrier and measures to encourage companies to use or relinquish IP (and in some circumstances to use the flexibility already available through the World Trade Organisation's TRIPs agreement) may be necessary. Yet IP is central to innovation and important to vertical transfer as it provides competitive advantage to technology developers.

### **Key findings**

#### **1. The importance of technology**

The emphasis in the technology debate should be placed not only on mitigating and adapting to climate change but also on sustainable human development and, in particular, on poverty alleviation. Low-carbon technology should therefore be celebrated as a means by which countries can address human needs and reduce poverty, develop new economic opportunities and markets and create good quality jobs.

#### **2. Finance goes hand in hand with technology development and transfer**

Participants in the study from both developed and developing countries identified lack of access to finance, both private and public, as a barrier to technology development and deployment. Most low-carbon technologies require high up-front investment and may be more costly to deploy than carbon-intensive alternatives. Therefore while the focus on finance in the negotiations has been on either establishing carbon markets or on new funding mechanisms, other, often government-led, financing initiatives may be necessary. Although in the longer term the private sector will be

the major source of low-carbon finance, government money is needed early on to make new technologies cheaper and less risky.

### **3. Domestic low-carbon policies are woefully inadequate**

While no government is building from scratch, in all eight countries, the absence of a long-term low-carbon policy framework or coherent set of policies appears to be a major impediment to the development and deployment of low-carbon technology. Interviewees in all countries were in favour of government intervention to address technology barriers and most felt that domestic low-carbon strategy with strong political support, often lacking in some quarters, was essential. Consequently, more keenly focused government policies are desperately needed, including regulating on carbon standards and providing clear, targeted incentives and tax breaks.

### **4. Knowledge and capacity are as important as equipment**

Technology transfer is not wholly or perhaps even mostly about the movement or licensing of equipment from jurisdiction to jurisdiction (although clearly some early climate and political victories might emerge from ensuring this happens). It also concerns the development of skills and know-how in order to use equipment and to innovate in the future. In developing countries in particular, interviewees identified a lack of skills and know-how to deploy low-carbon technology.

### **5. Intellectual property rights need careful attention**

In some cases stronger observance and enforcement of IP rights might encourage technology developers to roll out new technology in more jurisdictions more quickly. In others, the costs of licensing (as distinct from wholesale purchase of IP by governments) could be another focus of financial support by developed country governments, a *de facto* subsidy to developers of low-carbon technology.

## **Recommendations**

### **1. Put technology at the heart of climate negotiations**

More emphasis should be placed on technology in the climate change debate especially in the ongoing UNFCCC negotiations: recognising its role in enabling countries at all stages of development to reach environmental and sustainable development goals simultaneously is critical.

### **2. Create focused incentives for technology deployment**

The key technologies identified in this study require focused incentives. These might include new tariff structures, the removal of established energy subsidies and government-led finance to reduce the higher risks associated with large scale low-carbon technology deployment.

### **3. Link technology and finance in international talks**

International processes, such as the UNFCCC, should focus on how developed country governments and private sector financiers can support the development of incentives in developing countries, such as meeting the cost of feed-in tariffs and helping to reduce the negative social impacts of removing fossil fuel subsidies.

### **4. Develop national low-carbon technology strategies**

Beyond the UNFCCC negotiations, leadership countries at different levels of development should establish low-carbon technology strategies. Such initiatives could attract formal recognition and finance within a future international framework.

### **5. Give an urgent boost to R&D initiatives**

Calls for an increase in low-carbon R&D spending must be taken seriously. Governments should increase their support for R&D at the national level as part of their national low-carbon technology strategies and increased R&D finance. A major, International Technologies Initiative to accelerate R&D should be a key part of any new international framework for action.

### **6. Pilot joint learning and capacity-building**

One clear area that could benefit from international agreement is in the sharing of technical knowledge, through capacity-building and mutual learning programmes.

### **7. Establish joint innovation for future technologies**

The GCN believes a new International Technologies Initiative is necessary, in which regional and global innovation 'hubs' would provide a focal point for collaboration on the development of breakthrough low-carbon technology. An international network of low-carbon research, development and demonstration initiatives could also help in future to overcome the barrier posed by IP.

### **8. Reward technology risk-takers with strong IP**

The developers of existing technology, some of which is subject to patents restricting its generic manufacture and use, should be assured of strong enforcement of their IP if they license and do so at reasonable cost. Conversely, patents could be withdrawn if developers who are guaranteed protection do not seek to deploy technology.

### **9. Develop new technology collaboratively**

In future, low-carbon innovation could be driven by collaborative initiatives, such as the International Technology Initiative above. Technology might therefore be open access, with an emphasis on a sharing of equipment, but also on the development of locally appropriate versions.

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