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## International technology transfer - not quite the silver bullet in international climate policy

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## INTERNATIONAL TECHNOLOGY TRANSFER – NOT QUITE THE SILVER BULLET IN INTERNATIONAL CLIMATE POLICY

*Technology is often described as crucial for rapid and sustained global climate mitigation. Particularly important for reducing CO<sub>2</sub> emissions and for mitigating climate change are technologies that increase the efficiency of energy supply and consumptions, technologies that facilitate a switch to low-carbon fuels like natural gas, and technologies related to the development of renewable energy sources and nuclear power. The ability to research and develop such technologies, however, is not uniformly distributed and the calls for greater access to and transfer of clean technologies from those who have them (industrialized countries, bar a few exceptions) to those who don't (developing countries) have been made repeatedly both in political and academic circles. Are international technology transfers the panacea for reducing global greenhouse emissions?*



Sonja Peterson

There are two reasons why the transfer of energy-efficient and advanced technologies from the industrialized to the developing countries has to play an important role in the global mitigation of greenhouse gases. The first reason has to do with the desire to reach ambitious emission targets at reasonable cost. In developing countries energy is often used very inefficiently. The same global output could be produced with only half the GHG emissions if all economies would have the same low energy intensity (the amount of energy to produce a good or service worth 1 USD) as, for example, Germany. At the same time investments into research and development of emission saving technologies are taking place mainly in industrialized countries. The second reason has to do with the burden sharing between industrialized and developing countries. While the former are responsible for the major share of past emissions and have more means for emission abatement, the developing countries will suffer most from the adverse effects of climate change. Before the 2009 climate conference in Copenhagen representatives from developed as well as developing countries signaled that technology transfer financed by the industrialized countries could be a feasible solution in the negotiations. Even though Copenhagen failed, technology transfer is seen as the preferable way to move forward and was one of the major issues in the Cancun meeting in December 2010.

While I agree that technology transfer is indeed important, I strongly doubt that it can play an

important role to reduce global GHG emissions as a stand-alone measure. First of all, the question remains how to induce such technology transfer and how to channel it to the most useful places. Then there is the question about the scope of the resultant emission savings: the transfer that we have seen so far through channels such as foreign direct investment, trade or development aid has not led to major emission savings. Emissions savings per unit of output were at least partly invalidated by an increased scale in production or a shift in the output mix towards more emission-intensive products. Targeted transfers, such as CDM projects or technology funds, have been more effective and have a higher potential to reduce emissions but they are still not sufficient without additional measures. Rather than trying to initiate emission reductions by fostering technology transfer, the international community should initiate emission reductions, i.e. set absolute emission targets and install carbon prices, and this will then automatically foster technology transfer. An international carbon price will provide incentives for technology transfers and channel them to the most cost- or otherwise effective areas. Furthermore, a reduction in the existing barriers to technology transfers such as missing patent rights or missing absorptive capacity (education, trained staff, etc.) in developing countries cuts the overall costs of reaching a given target. In that sense, what holds true on a national level where the public good nature of information calls for support of technology policies and support for research and development is also true on an international level: we

need both carbon pricing and technology policies hand in hand. Where I do see a role that technology funds can play in fostering technology transfer is their ability to pave the way towards an international agreement on binding emission targets. By lowering emissions in developing countries such funds can provide incentives for these countries to agree to emission targets. Also, if part of the monetary transfers from industrialized to developing countries perceived as a necessary part of a fair burden sharing is happening via such a fund, a transfer can be more acceptable to industrialized countries than buying large amounts of emission permits from developing countries.

In a nutshell: fostering international technology transfer alone will never be able to fix the problem of climate change. It is more important to set absolute global emission targets and to install an international price for carbon. Yet, to get there, support of technology transfer may be of help.

Whereas international technology transfer is not the silver bullet to climate change, it can play an important role. The devil though is as always in the detail and there are lots of wrinkles to be ironed out. How do we actually design a technology fund? How do we acquire the funds? How do we divide them among recipient countries? How do we make sure that adequate technology leading to emission savings and reducing the global costs of emission savings is being transferred? How do we tackle the problem of missing absorptive capacity in the developing countries? How do we induce the owners of technologies to employ them in developing countries? How do we link such a fund to a global agreement? How successful the role of such a fund will be depends on how these questions are answered.

#### BACKGROUND FACTS

- Future GHG emissions will increase primarily in the developing world. In the next 30 years, only one-third of the global growth in carbon dioxide (CO<sub>2</sub>) emissions is projected to take place in the industrialized countries. Hence, developing countries will need to leapfrog a technological generation or two in order to avoid the fossil-fuel trap and move directly to environmentally friendly

technologies.

- Industrial countries on are responsible for almost 80 per cent of cumulated industrial GHG emissions up to date and have per capita emissions that are 5 to 200 times larger than those in many developing countries. For example, per capita emissions of approximately 20 t CO<sub>2</sub> in the USA and ca. 10 t CO<sub>2</sub> in Germany stand in contrast to ca. 4 t CO<sub>2</sub> per capita emissions in China, around 1.2 tCO<sub>2</sub> in India and less than 0.1 tCO<sub>2</sub> in many African countries.
- Currently, there are 22 supranational and national funding programs that include several funds by the World Bank, but also program and funds by the United Nations Development Program (UNEP), the Brazilian Development Bank, the African Development Bank, the European Commission, as well as the Governments of Germany, Japan and Australia. The pledges of these funds and programs currently add up to around 26.8 billion USD. Most of the funds have a limited time horizon, with no commitments being made beyond 2012. The World Bank Technology Fund (CTF) and the funds from the Global Environmental Facility (GEF) for the elimination of barriers to energy-efficient and renewable technologies focus explicitly on technology transfer.
- Estimates for the necessary fund for fighting climate change in developing countries range between USD 200 and 250 billion a year by 2030.