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Climate Change and Technology Transfer: The Need for a Regional Perspective

The international negotiations on climate change actions, including mechanisms for the efficient and equitable transfer of technologies for mitigation and adaptation, are currently being deliberated under the auspices of the UNFCCC Bali Road Map and are at a crucial stage. The discussions stress the need for countries to move effectively from emission and impact assessments to project and programme implementation. This brief suggests that it is essential to incorporate a regional perspective on technology transfers and that regional technology innovation centres be established to tailor technology development and adaptation better to regional and country needs.

Regional Perspective

Thus far, the main thrust of the international debate has largely been on global arrangements to mobilize financing and to eliminate barriers, especially legal barriers, for facilitating the transfer of technologies from developed countries to the developing world. Although these global efforts are indeed necessary, they may be insufficient to address the complexity associated with climate change and the diversity of circumstances and impacts affecting developing regions. Regional mechanisms that allow for pooling of resources and achieving economies of scale could provide a bridge between what global arrangements can offer and what developing countries need in terms of cost-effective action programmes tailored to their own context.

It is becoming increasingly evident that global mechanisms for climate change-related technology transfer may not provide in all cases the level and kind of benefits that countries need. For example, a global mechanism that facilitates the transfer of carbon capture and storage (CCS) technology may be very valuable for relatively high-emitting countries like China or India, but less so for other countries emitting low levels of greenhouse gases (GHGs), like those in sub-Saharan Africa. Most African economies are still mainly agricultural based and two thirds of the population lacks access to electricity. Such countries are therefore likely to be more interested in support mechanisms that would allow immediate access to practical, affordable and proven renewable energy technologies as these would provide more cost-effective solutions to the development of their own low-carbon energy sectors, while at the same time giving a push to economic development and poverty reduction.

Regional characteristics are also important elsewhere. For example, most economies of the Caribbean rely heavily on agriculture, tourism or banking services—activities with low GHG emissions. There is also considerable potential for generating energy through renewable resources such as wind and solar power. At the same time, the region is also highly vulnerable to devastating hurricanes and other extreme events, which possibly have become more intense because of climate change. Climate change impacts are also already being felt through rising sea levels and the bleaching of coral reefs. In other words, next to development of renewable energy production, adaptation measures are critical for the Caribbean countries. Technology development and diffusion programmes should thus be tailored to these specific regional conditions in order to be cost-effective.

Conditions of countries in the Andean-Amazon region of South America provide other examples suggesting the need for a regional approach. Most countries in this region are highly dependent on hydropower, and GHG emissions are below the world average. Reforestation, limiting deforestation and investing in renewable energy would help decrease reliance on imported fossil fuels and contribute to the mitigation of GHG emissions. The immediate climate change impacts for these countries are related, inter alia, to the melting of Andean glaciers which affects water availability, atmospheric changes creating droughts or floods which in turn affect the integrity of the Amazon ecosystem and/or lead to salinization and desertification of agricultural

lands. The high dependency on hydropower represents a potential risk to ecosystems and the economies if the rain, humidity and water course patterns change. In this region, therefore, water, forest and land resource management programmes and technologies, and diversification into other renewable technologies for energy supply are important.

These examples show that specific regional solutions may be necessary to address common circumstances and barriers. Support through regional mechanisms will be indispensable for countries that are too small or too poor to tackle impacts and problems on their own. Small island developing States (SIDS) in the Caribbean and the Pacific and Least Developed Countries (LDCs) in sub-Saharan Africa are cases in point, needing assistance in obtaining access to affordable technology and in adapting technologies to their development needs.

Regional Technology Innovation Centres

The creation of regional technology innovation centres in developing regions, as a technology cooperation mechanism, has been proposed by some countries as part of the global climate negotiations.[1] The centres are envisioned to be directly supported by and linked to national, regional and international organizations from both the public and private sectors. They could be based on a combination of North-South, South-South, and triangular partnerships intended to advance the development and availability of key technologies needed for the region, the establishment of corresponding markets for these technologies and the enabling of activities to overcome region-specific barriers. Creation of these centres and details about their specific financing and institutional arrangements under the UNFCCC process still need to be discussed and will hopefully be agreed upon.

The centres would provide support in all phases of the innovation process: from the early stage of technology demonstration to its full market deployment. Specific activities related to addressing regional barriers would include: applied R&D, technology accelerators, business incubator services, enterprise creation, early stage funding, deployment of existing technologies, skills and capacity building, market intelligence and support to national policy formulation.[2] The centres can also play a more direct role in the early stages of the innovation process in cases where financial constraints need to be overcome. This may apply to the stage where the technology has been sufficiently developed, but now needs investment in infrastructure and other conditions so as to launch the technology on a scale that markets can be successfully penetrated. Targeted interventions in these phases would reduce the cost of technology deployment, thus enhancing the conditions for increased private investment. Regional cooperation could help create the economies of scale needed for successful technology transfer and adaptation. In doing so, they would also reduce risks associated with investing in new technologies by helping demonstrate their commercial viability and thereby attract private investors. The centres could further leverage needed private sector investment by creating innovation breakthroughs in the costs of technologies and by enhancing market acceptance so that technologies can be adopted on a large enough scale.

The dedicated technology centres would serve as regional innovation hubs that would develop important technologies shaped by regional or local needs and rooted in local contexts to meet important challenges such as increased energy access, improved energy efficiency, increased uptake of renewable energy and enhanced resilience through effective adaptation. A number of regional centres of excellence could eventually be linked into an international network that could pool knowledge and share technologies across regions. ■

Prepared by:
Ivan Vera

For further information please contact:

Ivan Vera
Division for Sustainable Development
Department of Economic and Social Affairs
United Nations, Rm. DC2-2104
New York, NY 10017, U.S.A.

Tel: +1 212 963-2043 • Fax: +1 212 963-4340
e-mail: vera@un.org
website: http://www.un.org/esa/policy

1 UNFCCC, "Recommendations on future financing options for enhancing the development, deployment, diffusion and transfer of technologies under the Convention." Report by the Chair of the Expert Group on Technology Transfer, FCCC/SB/2009/2, 26 May 2009.

2 UN-DESA, *Climate Change: Technology Development and Technology Transfer*, available at http://www.un.org/esa/dsd/resources/res_pdfs/publications/sdt_tec/tec_technology_dev.pdf.