

# Harnessing the Opportunities of Technology Transfer for Sustainable Development

fact sheet

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## Technology transfer and sustainable development

The development, transfer and dissemination of technologies is vital in enabling countries to speed up progress towards sustainable development as reflected in the outcome document of the 2012 United Nations Conference on Sustainable Development (Rio+20). This is also true for the agricultural sector which remains a key source of national income in many developing countries, contributing on average 29 per cent of GDP and 65 per cent of all employment in Asia and the Pacific, yet accounting for the highest share of poor people. It is apparent from these statistics that the sector must raise land and labour productivity while operating under the constraint of increasing degradation of natural resources, including land, soil, water and nutrients, and having to adapt to and mitigate climate change impacts.

The Rio+20 outcome document stresses the importance of cooperative action in technology innovation, research and development, and of exploring modalities for enhanced access to technologies by developing countries. The importance of technology transfer for developing countries in Asia and the Pacific was also highlighted in the Bangkok Declaration on the United Nations Development Agenda beyond 2015 (ESCAP, 2013).

Recognition of the relevance of the international diffusion of agricultural technology is not new. As discussed by Ruttan and Hayami (1973), international and intercontinental diffusion of cultivated plants, domesticated animals, hand tools and production practices was a major source of productivity growth even in prehistory and in classical civilizations. The Green Revolution of the 1970s and 1980s that contributed to widespread poverty reduction and prevented millions of people from going hungry, was explicitly based on the premise that, given appropriate institutional mechanisms, technology spillover across political and agro-climatic boundaries was possible (Pingali, 2012).

A number of countries in South and South-East Asia have achieved significant progress in enhancing agricultural productivity and reducing poverty (Pender, 2008). Studies show that countries that invested most heavily in agricultural research and extension have had the strongest productivity growth in agriculture.

## Opportunities in reciprocal recognition of technology assessments

However, many countries in the region are still far from achieving the rapid agricultural productivity growth required to lift millions of small-scale farmers out of poverty. Countries lacking a research and development infrastructure can take advantage of low-cost innovative technologies developed by faster growing neighbouring countries if cross-border technology sharing is promoted and recognized. South and South-East Asia have similar agro-climatic conditions, soils and natural resources. Smallholder mechanization, improved seeds, fertilizer and water management technologies, thus require little adaptation to individual country contexts.

One way to promote technology transfer, sharing and adaptation, particularly of smallholder sustainable agricultural technologies, across countries is the reciprocal recognition of technology assessments. For example, under the North American Free Trade Agreement (NAFTA), signatory countries recognize seed varietal trials and field-testing in any signatory country, reducing trial and approval costs. Similar arrangements are also in place in the European Union (EU). Recently, the EU and China finalized a roadmap for mutual recognition of organic product certification.

This approach would not only increase the speed of diffusion of technology and innovation across the region, but also increase private sector investment and technology availability. Recognizing the results of pilot phase testing and stage 2 technology assessments across countries would offer a significant cost reduction in cross-border technology transfer, while boosting availability and market access for the technology.

India, for instance has invested significantly in the development of climate-resilient (drought-, flood- and salinity-tolerant) seeds, particularly for staple crops such as rice, wheat and maize. The country's existing framework of research institutions and agricultural universities has enabled farmers to access these technologies, improve agricultural productivity and adapt to climatic variability and stress. These seed varieties were released in the country after rigorous testing procedures and have gone through a long gestation period.

Climate change and sudden erratic shifts in weather cycles, pose a challenge for poorer countries in the region. The implementation of policy frameworks for reciprocal recognition of technology assessments could greatly speed up the process of identifying varieties with appropriate traits. Thus, if the seeds are developed by a public sector research institution, a regional technology assessment framework ratified by countries in the region would enable the varieties to be made available to smallholder farmers across the region. Similarly, if seeds are developed by a private sector firm, requirements for cross-border availability should be restricted to basic assessments that serve the purpose of scientific risk management strategies.

## Policy recommendations

The role of multilateral agencies, knowledge transfer platforms such as SATNET Asia and regional stakeholder groups is critical for engagement with national agricultural research institutions as well as the private sector to promote the role of innovation in addressing challenges in food and nutritional security, and to implement reciprocal recognition of technology assessments.

Multilateral institutions such as the United Nations can provide an unbiased platform for critical assessments of the merits of reciprocity arrangements and provide a level playing field for each country's voice to be heard. The idea of reciprocal recognition would gain traction once the benefits of such an arrangement are well understood by different stakeholders. In this context, the United Nations can play a key role in bringing together different actors, providing an unbiased platform for open discussion and allowing equal opportunity for stakeholders to express their views.

Regional organizations such as the Association of Southeast Asian Nations (ASEAN) and the South Asian Association for Regional Cooperation (SAARC) also have an inherent stake in such arrangements that can promote regional trade. Facilitation of these processes is part of their mandate and such arrangements could help pave the way for enhanced regional integration, participation and economic security.

Together, these institutions can develop a framework for engagement with policymakers in South and South-East Asia to formalize reciprocal recognition arrangements for agricultural technologies. In conclusion, policy-level intervention to promote reciprocal recognition offers strong potential for long-term positive impact as well as for addressing the food insecurity challenges of the region in a short timespan.

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