

CDP-DPAD contribution to the 2013 theme of the AMR, “Science, technology and innovation, and the potential of culture, for promoting sustainable development and achieving the MDGs”

For most developing countries, the underlying strategic objective in the area of science, technology and innovation (STI) has been to promote technological catch-up with developed countries -- the technology forerunners. The role of technology in economic development has been considered in the context of national development or structural change strategy, which aims at enhancing national capacity building and long-term growth prospects with human and institutional development. Yet, achieving a dynamic structural transformation of the economy is not an easy task by itself, while recent and emerging trends in the global economic environment have made this already difficult task even more challenging for many developing countries for the reasons indicated below.

First, globalization has implied increased competition among producers/countries and further stressed the importance of STI for the dynamic transformation of economies and sustaining growth. For example, the rapid development of digital technologies and their accelerated use in hardware (computers, mobile phones, etc.) and production processes have changed many aspects of daily lives of people in various parts of the world. Countries and individuals lacking capacity to access, adapt and fully utilize these technologies have lagged behind the STI frontier, while the productivity and welfare gaps between the haves and have-nots have widened. Second, STI policies in the context of structural change are increasingly required to be consistent with achieving sustainable development goals. This is particularly the case with regard to the use and development of clean energy technologies thus neutralizing or minimizing impacts of economic activities on climate change. Third, the unprecedented pace of technological progress in recent decades implies that the target of the technological catch up is not only constantly but also quickly shifting away. As a result, market opportunities created by new technologies are changing rapidly and capturing market opportunities need to be realized much faster than before but, if successful, the rewards are much greater. Finally, intellectual property rights are now set by multilateral agreements (e.g., TRIPS) and bilateral investment and free trade agreements, which restrict the space of policy options available for developing countries.

Advances in technology provide an opportunity to accelerate poverty reduction and sustainable development through opening up opportunities not available before. In its upcoming annual report to the Economic and Social Council, the Committee for Development Policy¹ (CDP) argues that STI plays a critical role in expediting transition of a developing economy to a sustainable development path. A key to achieve such transition is to leapfrog into the use of environmentally sustainable technologies without going through (or minimizing) the use of fossil-fuelled

¹ Committee for Development Policy, *Report on the fifteenth session (18-22 March 2013)*, Economic and Social Council, Official Records, 2013, forthcoming.

technologies. The approach could not only facilitate technological catching-up, but also contribute to sustain growth rates in the long term. Leapfrogging makes sense for developing countries -- the latecomer industrializers -- because they are less “locked in” in the existing technologies and the infrastructure that supports these technologies, as compared with the developed countries which originated the vast majority of the technologies currently in use.² In fact, leapfrogging is already a reality in some developing countries where dedicated policies facilitated technological learning and national capacity building at an unprecedented speed and allowed for technological upgrading and the country’s fast advancement in the technological ladder.

A fundamental concern is how to advance a nation’s capacity in STI and its effective application in productive activities, so as to achieve robust economic growth while maintaining environmental sustainability. Often, market-based approaches do not guarantee the promotion of new technologies because many of them are still not commercially viable or are very expensive for developing countries. The CDP report argues that targeted policy interventions are required to promote widespread use of these technologies by making investments in these technologies “artificially” attractive. Subsidizing such investments, including R&D activities, is one possible alternative. Others include tax exemptions and the provision of guarantees of a monopolistic position in the market for certain duration of time by, say, erecting market-entry barriers. Such interventions can induce the deployment of new technologies, thereby spurring technological learning and allowing producers to reap economies of scale. Thus, alternative approaches towards industrial policy – or organizational innovations at a national level as already suggested in the 2012 CDP Report³ – relying on innovative public-private institutional arrangements need to be contemplated to promote entrepreneurship and innovation via a mixed, market-based approach.

International cooperation is another critical factor for the latecomer to expand learning and catch-up possibilities. For many least developed countries (LDCs) that do not possess a minimal technological base to start or advance in the catch-up process, external assistance may be required to enable them to establish a minimum technological platform from which the process is initiated. The initial success of the catch-up would make it possible for a country – LDCs and otherwise -- to climb up the ladder in the global technological hierarchy and eventually to participate in the generation of new technology. But international cooperation is also required in relation enhancing the governance of the global intellectual property regime.

Achieving a balance between the need to provide incentives for the generation of knowledge and innovation and the need to facilitate access to knowledge and innovation is not easy. In this regard, the role that intellectual property rights play in the technological development of a country has long been the subject of an intense debate. Since the 1980s, those in favour of greater uniformity and protection for IP

² See also CDP, “Policy Note on Achieving Sustainable Development in an Age of Climate Change” (United Nations sales publication No. E.08.II.A.16) where leapfrogging was discussed in connection with an investment-based mitigation strategy as a feasible strategy for developing countries to address the challenges of climate change.

³ Committee for Development Policy. Report on the fourteenth session (12-16 March 2012), E/2012/33.

rights succeed in defining the IP regime with an agenda of global harmonization of national rules, which has implied in a more restricted policy space for developing countries, thus placing the late developers at a disadvantage as the policy tools and approaches used by other countries –including developed countries themselves—in the past are no longer available.

More recently, however, there have been revived concerns about the negative effects of the current IP system and recognition that the IP system needs to evolve to foster dissemination of technology, including by allowing countries to have room to tailor their own national IP system to their specific development needs. In this regard, patent based regimes are not necessarily compatible with the technological development stage of many developing countries and may deter innovation in these countries. The use of alternative ‘petit patent regime’ also called the utility model -- a less stringent alternative to the patent system and used by some East Asian and other developing countries-- could open up new opportunities for business in developing countries to introduce incremental improvements over existing technologies and protect intellectual property thus providing an incentive for undertaking the innovation effort.