UN SYSTEM TASK TEAM ON THE POST-2015 UN DEVELOPMENT AGENDA

Science, technology and innovation and intellectual property rights: The vision for development

Thematic Think Piece

IAEA, ITU, UNESCO, UNOOSA, WIPO

Following on the outcome of the 2010 High-level Plenary Meeting of the General Assembly on the Millennium Development Goals, the United Nations Secretary-General established the UN System Task Team in September 2011 to support UN system-wide preparations for the post-2015 UN development agenda, in consultation with all stakeholders. The Task Team is led by the Department of Economic and Social Affairs and the United Nations Development Programme and brings together senior experts from over 50 UN entities and international organizations to provide system-wide support to the post-2015 consultation process, including analytical input, expertise and outreach.

Science, technology and innovation and intellectual property rights: The vision for development

1. A brief introduction to the relevance of the issue/theme

We will not be able to protect, feed, and educate our children, or keep them healthy, if we cannot find better, cheaper, smarter ways of producing goods and bringing them to markets. We cannot create sustainable jobs or robust economies, capable of withstanding fluctuations in global markets without being able to harness the power of knowledge, innovation and creativity. And we cannot create fully functional health, education or social systems if the public and private sectors remain in separate silos. The need to create growth, which is environmentally, economically and socially sustainable, raises new, global and interconnected challenges. What we need now and in the years after 2015, is a genuine partnership, in particular between the public and private sector, grounded in the belief that the fruits of scientific endeavour, innovation and creativity should be equitably shared. It is also through such partnerships that science, technology and innovation (STI) can inform our understanding of the mechanisms of sustainable development, produce options for future sustainable growth, and promote adoption of practices founded in the best evidence available.

Creating the knowledge necessary to tackle these interrelated challenges will require breaking down barriers between disciplines and strengthening the connection between science and society. There is also a clear linkage to wider social policies, in particular education. Tertiary education systems play a critical role in developing the knowledge intensive skills and innovation on which productivity, job creation and competitiveness depend.[1] Therefore, strengthening capacity-building in science, technology and innovation,

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1 An estimated 2.5 million engineers and technicians will be needed in sub-Saharan Africa to achieve improved access to clean water and sanitation. UNESCO, Engineering: Issues, Challenges and Opportunities for Development (Paris, 2010)

as well as basic technical skills, for both men and women, and developing 'brain gain' approaches are absolute prerequisites for the future development agenda. Creating platforms and systems through which scientific knowledge can be shared; through which centres of learning can access and add to the stock of human knowledge; and through which people can learn about the frontiers of technology must be a priority. Related to this is a need to recognize that a rich body of scientific and technological information exists in patent databases and more needs to be done to increase access and analysis of that data to support innovation. It must be a priority not only for its own sake but also because it is the basis upon which new technologies will be created and from which development benefits will flow given the appropriate innovation ecosystem. Likewise, there is a need to expand international cooperation in addressing inequalities and bridging the gaps in capabilities to access scientific data and information for development at national, regional and global levels.

There is a responsibility upon policy makers to create an environment where development needs truly influence science and innovation priorities and where development policy and practice is appropriately informed by the science and knowledge base. And there is a responsibility on policy makers to create an environment where there are adequate incentives for both the public and private sectors to grow that science and knowledge base and place it at the service of humanity. Creativity and innovation are a natural resource in which every country and every community is potentially rich. Intellectual property provides a policy framework that can enable these intangible resources to be transformed into sustainable development assets through the protection and promotion of creativity and innovation.

2. Why this should be part of the global development agenda

Creativity and innovation as the basis for strengthened science, technology and innovation frameworks will remain central to tackling the key challenges facing us in the future, such as: global growth, health, the environment and food security.

Global growth

As the world economy recovers from the biggest downturn since the 1930s, reinvigorating economic growth post-2015 will continue to be a challenge. This will adversely affect many underlying factors critical for development, especially in the most fragile states – Least Developed Countries, Landlocked Developing Countries and Small Island Developing States. Innovation is a central driver of economic growth, development, and better jobs. It is one of the key factors that enable firms to compete successfully in the global marketplace, and the process by which solutions are found to social, environmental and economic challenges. It is the source of improvements to the quality of our everyday lives. In order to increase productive capacity, employment and decent work, and to eradicate poverty through inclusive, sustainable and equitable economic growth, there needs to be a significant scaling up in support for innovation and in equitable access to its benefits.

A major challenge for many developing countries seeking to strengthen productive capacity, and to invest in private sector development and competitiveness is the need to strengthen national innovation capacity. Part of the solution to that lies in using the intellectual property (IP) system for the protection and promotion of domestic creations, innovations and inventions, for attracting foreign direct investments and, hence, contributing to the transfer of technology, and to support the development of national scientific and technological infrastructure.

In addressing the challenge of growth, productivity and job creation, policy makers are looking to create an enabling innovation eco-system where enterprises can be formed, flourish and ultimately expand. Small and Medium Size Enterprises (SMEs), are prime candidates for rapid creation and expansion. However, as much as SMEs are critical for economic growth and stability, they face high failure rates. Policy intervention is therefore necessary both to create but equally importantly to strengthen and grow the SME base. Similarly, a conducive environment needs to be put in place to enable creators and creative enterprises to prosper thus making a positive contribution to social, economic and cultural wellbeing of developing countries. While many factors play a role in ensuring the

competitiveness of SMEs, evidence shows that effective use of intellectual property is an indicator of success.[2]

Another relevant factor to take into consideration is the need to improve access to technologies, in particular to information and communication technologies (ICTs). ICTs enable a wide range of services and applications that can increase the added value of the products and services delivered by SMEs. It is estimated that a 10% increase in the penetration of high-speed Internet broadband networks contributes to a 1.8% increase in GDP. This is a clear indication of why promoting access to these networks through improved public policies and regulations can become a vehicle to promote economic growth.

Food security

Food security will remain a major challenge after 2015. As identified in the main body of this report, more food needs to be produced in a sustainable way. Agricultural productivity needs to be increased with the same level or lower of inputs such as land, water, fertilizer and pesticides. And improved technology and know-how need to be developed and made available to farmers, in particular in Africa. Appropriate incentives are required to develop and to introduce suitable agricultural technology, including better-adapted varieties of plants.

There is evidence that a balanced and transparent legal and administrative framework of intellectual property protection may provide a key incentive for innovation, investment and knowledge transfer in many different circumstances and in agriculture in particular, for both, the public and the private sectors.

However the application of technology, including biotechnology, to agriculture is not and should not be looked at as a panacea. The conservation and use of biological diversity in the form of plant genetic varieties used in food and agriculture constitutes a significant contribution to tackling the poverty with which small-scale producers are faced. Traditional and indigenous knowledge that support the selection and utilization of crop varieties that best respond to extreme climate events such as drought and floods and that can inform the

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2 OECD, Intellectual assets and Innovation: The SME Dimension (Paris, 2011)

design of sustainable irrigation systems must become an integral element of national agricultural practices. Well functioning local, regional and global markets will assist local producers to compete in a manner that supports sustainable development.

Public health

Achieving public health outcomes cannot be a matter of simply providing a technological fix: public health depends on a host of active interventions and infrastructure needs – educational and preventative programs, safe and reliable utilities, effective and sustained clinical support, sustainable financing and availability of necessary resources, and medical services. International cooperation for public health assumes many dimensions, but recent years have seen an intensified focus on the role of medical technologies: both the innovation processes that develop new technologies, and the way in which health solutions are disseminated to those most in need. Specifically, access to essential medicines as an aspect of the right to health has been an active concern over the last fifteen years, but the policy focus has broadened to consider health "systems": how to promote necessary innovation; address neglected health needs; and ensure access to vital medical technologies, such as diagnostic tools and modern vaccines. Innovation and access are inevitably intertwined, and the evolving state of the global disease burden (including both communicable and non-communicable diseases) creates a constant demand for new and adapted technologies.

The intellectual property (IP) system, and in particular the patent system, can play a pivotal role in relation to health-related development objectives as an incentive for innovation in the pharmaceutical field and as a policy tool to facilitate technology diffusion and access to essential drugs. Conversely, poorly structured IP systems, with an inappropriate balance between innovation and access, can hamper the ability of governments to deliver one of their primary development objectives, safeguarding the health of their populations.

Technology and innovation can introduce significant improvement and services into health services. One of the best examples in this regard is the use of ICTs to introduce telemedicine services and to improve the management of health records. A significant example of this trend is the use of mobile phones in health services (also known as m-health), a trend already initiated in developing countries, where more than 70% of the population have

access to a mobile phone, enabling several applications that are already dramatically improving the delivery of public services. Learning from these experiences and replicating them using advanced broadband networks is an aspect to be included in the post 2015 agenda.

The environment and climate change

A pervasive remaining challenge in the post-2015 world will be the difficulty in shifting the installed fossil-fuelled technological base towards a base of environmentally sound technologies in a manner which supports the three pillars of sustainable development: economic, social and environmental development. This shift to a new technology base requires policies that not only incentivize investments in R&D, but which also support the transfer, adaptation and widespread dissemination of these technologies. A critical component of this new technology base is the need to respond to increased demand for energy. With expectations of global demand for energy set to double by 2030, replacing existing fossil fuel based sources of energy with renewable technologies, such as wind power, biomass, solar, geothermal and wave, will be one of the main challenges facing the transformation to a green economy. In addition to transferring power generation to renewable sources it is imperative that actions are taken to reduce power consumption. Technology and innovation can introduce significant improvement and services into health services. One of the best examples on this regard is the use of ICTs to introduce telemedicine services and to improve the management of health records. A significant example of this trend is the use of mobile phones in health services (also known as m-health), a trend already initiated in developing countries, where more than 70% of the population have access to a mobile phone, enabling several applications that are already dramatically improving the delivery of public services. Learning from these experiences and replicating them using advanced broadband networks is an aspect to be included in the post-2015 agenda.

Considerable resources have already been invested globally in supporting capacity building in science, technology and innovation. The establishment of the Green Climate Fund envisages significant additional resources directed to climate change mitigation and adaptation, including technology transfer. National scientific, technological and engineering

capacities have been enhanced, but in the absence of a mechanism to translate that capacity into policy and practice, science fails to be at the service of development. In addition, the mechanisms through which policy makers and the development community define agendas and priorities in international research and science, to obtain the best solutions to solve problems, remains poorly developed. For example, many hydrologists in government and development institutions are not aware of nuclear techniques to assess ground water resources. As a result, sub-optimal policy choices are made and the lost opportunities are compounded in policy making environments with limited national capacities, or in countries in conflict or post-conflict situations where development partners frequently directly design and implement development programmes on behalf of national authorities. In this context, the essential role of indigenous and local communities to broaden the contribution that innovation and creativity can make towards building equitable societies living in harmony with the environment must be appropriately recognized and valued.

Disaster Risk Reduction

There is also a clear linkage to disaster risk reduction. A critical, but frequently overlooked, element in the contribution that the international community can make in this context is space science and technology and their applications, such as satellite communications, earth observation systems, tsunami early warning systems and satellite navigation technologies. When combined with ICTs, real time data can be used to produce critical early disaster warnings which can be quickly and easily disseminated to large populations. ICT-based early warning systems are already instrumental in providing people with alerts and information regarding threats like extreme weather events.

And more broadly, information generated from space-derived data, together with information from surface-based observations, is indispensable to policy makers today, in a wide range of contexts, such as climate monitoring, agriculture and food security, land management, and public health. Integrating such data into decision support systems would allow for more accurate environmental impact assessment and more informed decision-making. These provide indispensable tools for viable long-term solutions for sustainable development as well as to enhance the preparedness for and mitigation of the consequences of disasters.

Furthermore a number of nuclear techniques and applications, made available through the Technical Cooperation programme of the IAEA, have a comparative advantage for making a contribution to human development in areas such as improving human health, supporting agriculture and rural development, advancing water resource management, addressing environmental challenges, and helping sustainable energy development.[3]

3. Concrete proposals

Possible ways to include science, technology and innovation and intellectual property systems

Science, technology and innovation has a cross cutting role to play in development. While the advancement of fundamental science is a global benefit to humanity in its own right, in the context of specific development goals after 2015 it has a supporting role to play in advancing international ambitions on global growth, environment, food security, health and a variety of other public policies including disaster risk reduction. For that reason, including specific targets with respect to science, technology and innovation, as part of broader public policy goals would present the most appropriate way ahead.

If that is accepted, then what should those specific targets be? The United Nations Secretary-General's High Level Panel on Global Sustainability has recommended "a better interface between policymakers and the scientific community, which, in turn, can contribute to a deeper understanding of the causes and impacts of sustainable development and point to innovative and effective ways of addressing them".[4] The practicalities of how to achieve that remain to be determined. Below are some ideas on potential concrete steps towards that objective:

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3 With respect to the Millennium Development Goals (MDGs), the IAEA contribution targets: MDG 1 – End Poverty and Hunger; MDG 4 – Child Health; MDG 5 – Maternal Health; MDG 6 – Combat HIV/AIDS; MDG 7 – Environmental Sustainability; and MDG 8 – Global Partnership.
4 Note by the Secretary-General, A/66/700 (New York, 2012), available at:
http://www.un.org/ga/search/view_doc.asp?symbol=A/66/700&referer=/english/&Lang=E

- Increase the space for collaboration between science and development policy and practice through more effective mutual use of development and scientific fora;

- Increase 'development-driven' scientific research through more proactive outreach across both sectors;

- Include the scientific community in large scale planning of development funding, so that science-based solutions to development problems can be considered from the beginning;

- Increase the provision of information on the scientific research agenda to the development community, so that development practitioners can plan how and when to incorporate research findings and successful applications into future development programmes;

- Promote access to information and communication technologies and support regulatory reform by government communication regulators in order to create sustainable private/ public partnerships that will encourage ICT investment and growth.

- Set a science-development community interface as a condition for scientific research funding, when appropriate, to encourage a direct contribution of science and technology to today's development challenges; and in turn, setting a similar condition for development funding, as a tool to maximize the extent to which development programmes are science-based;

- Strengthen autonomous national capacities and establish well-defined, standards-based infrastructures to enable access to geospatial data at no or low cost.

4. The Context

A key part of the wider context for this theme of work are the inter-governmental and inter-stakeholder discussions currently taking place in preparation for the United Nations Conference on Sustainable Development (Rio+20), on-going discussions in the UNFCCC negotiations and preparations for ECOSOC 2013, which has as its theme: "Science, technology, innovation, and the potential of culture for promoting sustainable development and achieving the MDGs". As identified in the Report of the United Nations Secretary-General's High Level Panel on Global Sustainability in its conclusions, solutions to sustainable development challenges can only be effective through the vast network of stakeholders in the international community. This network includes scientific (and by

definition nuclear and geo-spatial) actors. Through these inter-governmental and inter-stakeholder processes, there will be a scaling up of efforts to support the diffusion of environmentally sound technologies.

More broadly, within the UN family and the wider international community there has been, and will continue to be, a debate on the appropriate role for intellectual property systems, and how to balance the incentive to create and innovate with the need to share the fruits of creativity. The Millennium Project Task Force on Science, Technology and Innovation sets out the contribution that can be made to human welfare, energy, health, water and sanitation, as well as political stability and global security. The document sets out in detail the full range of contributions that can be made.

While views may differ this does not hide the need, now and in the years after 2015, for a genuine partnership, in particular between the public and private sector. This partnership must provide the basis for a science, technology and innovation ecosystem where a genuine commonality of interest in the shared challenges facing humanity can be addressed, where creativity and innovation is properly rewarded, and where the fruits of that creativity and innovation can be equitably shared.

UN System Task Team on the Post-2015 UN Development Agenda

Membership

Department of Economic and Social Affairs (DESA), Co-Chair

United Nations Development Programme (UNDP), Co-Chair

Convention on Biological Diversity (CBD)

Department of Public Information (DPI)

Economic Commission for Africa (ECA)

Economic Commission for Europe (ECE)

Economic Commission for Latin America and the Caribbean (ECLAC)

Economic and Social Commission for Asia and the Pacific (ESCAP)

Economic and Social Commission for Western Asia (ESCWA)

Executive Office of the Secretary-General (EOSG)

Food and Agricultural Organization of the United Nations (FAO)

Global Environment Facility (GEF)

International Atomic Energy Agency (IAEA)

International Civil Aviation Organization (ICAO)

International Fund for Agricultural Development (IFAD)

International Labour Organization (ILO)

International Maritime Organization (IMO)

International Monetary Fund (IMF)

International Organization for Migration (IOM)

International Telecommunication Union (ITU)

Joint United Nations Programme on HIV/AIDS (UNAIDS)

Non-Governmental Liaison Service (NGLS)

Office of the Deputy Secretary-General (ODSG)

Office of the High Commission for Human Rights (OHCHR)

Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (OHRLLS)

Office of the Special Advisor on Africa (OSAA)

Peace building Support Office (PBSO)

United Nations Children's Fund (UNICEF)

United Nations Conference on Trade and Development (UNCTAD)

United Nations Convention to Combat Desertification (UNCCD)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United Nations Entity for Gender Equality and Empowerment of Women (UN Women)

United Nations Environment Programme (UNEP)

United Nations Framework Convention on Climate Change (UNFCCC)

United Nations Fund for International Partnerships (UNFIP)

United Nations Global Compact Office

United Nations High Commissioner for Refugees (UNHCR)

United Nations Human Settlements Programme (UN-HABITAT)

United Nations Industrial Development Organization (UNIDO)

United Nations International Strategy for Disaster Reduction (UNISDR)

United Nations Institute for Training and Research (UNITAR)

United Nations Millennium Campaign

United Nations Office for Outer Space Affairs (UNOOSA)

United Nations Office for Project Services (UNOPS)

United Nations Office on Drugs and Crime (UNODC)

United Nations Population Fund (UNFPA)

United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA)

United Nations Research Institute for Social Development (UNRISD)

United Nations System Chief Executives Board for Coordination Secretariat (CEB)

United Nations University (UNU)

United Nations Volunteers (UNV)

United Nations World Tourism Organization (UNWTO)

Universal Postal Union (UPU)

World Bank

World Food Programme (WFP)

World Health Organization (WHO)

World Intellectual Property Organization (WIPO)

World Meteorological Organization (WMO)

World Trade Organization (WTO)