

**Report of the United Nations Secretary-General
for the 2013 Annual Ministerial Review**

WIPO CONTRIBUTION

I. Introduction (1-2 pages) (Leader: Office for ECOSOC Support and Coordination (DESA))

II. The nexus between science, technology and innovation (STI), and culture, the MDGs and sustainable development (3-4 pages) (Co-leader: UNESCO)

A. Science base, technology, innovation and capacity building for sustainable development

a. Science-policy-society interface

b. STI education

c. Research, monitoring and observations

d. Science diplomacy

e. Culture of science

f. Access, usage and application of technology information (WIPO)

The ability to access, use and apply leading edge technological information is one critical factor driving growth and creating quality employment, both in developed and developing countries. Making publicly available the full technical background to innovations is a condition for the granting of patents. Making that information available, preferably in multiple languages and online, is a task that the UN through its specialized agency, the World Intellectual Property Organization, assists Governments to achieve. This wealth of information can be used to identify potentially appropriate technologies and partners.¹

¹ WIPO's PATENTSCOPE[®] search service provides free access to the technology contained in over 18 million patent documents. WIPO's Access to Specialized Patent Information (ASPI) program allows free of charge or low cost access for developing countries to the world's leading commercial patent databases.

Also, online access to scientific journals and publications can also be critical in placing this commercially available technology in context, identifying trends and best practice. Developing and extending existing ways of making these available at low or no cost to developing countries should be considered.²

Within Developing and Least Developed Countries, a network of Technology and Innovation Support Centres has also been created to facilitate accessing technological information from these many online resources including patent, scientific and technical journal databases.

g. STI policies

B. Culture and the role of the creative sector in supporting sustainable development

C. The changing geography and models of innovation (WIPO)

A conventional view of innovation has relied upon the so-called "closed model," based upon an approach common to traditional manufacturing industries, in which new concepts are centrally conceived by engineers and scientists who have typically operated under the aegis of a single entity, possibly working out of an R&D laboratory. Other types of commercial entities, including small enterprises, sole enterprises and start-ups based upon core product concepts, have also traditionally relied upon innovation generated by one or more individuals working for a given entity in relative isolation.

Technological developments in communication and computing have enabled business models to evolve that were simply impossible hitherto. Open innovation, networked innovation and collaborative innovation are all related models in which entities draw upon multiple sources of knowledge, allowing incorporation of concepts from disparate disciplines to arrive at solutions, products and services that have to date been unavailable. These new models of open or networked innovation are both available and widespread, allowing robust development of knowledge-based economies. Companies now much more readily collaborate to develop innovative products and services, and either jointly or separately diffuse the knowledge and commercialize the results of those efforts worldwide. Open innovation can also be linked to additional policy mechanisms such as competitions and prizes which can incentivize the creativity of a broad spectrum of contributors.

Models of innovation have thus evolved from centrally directed efforts to projects involving teams that are built from individuals who would conventionally never collaborate. Input is provided from and to multiple sources, resulting in new concepts either from newly developed knowledge or even from existing knowledge and techniques

² WIPO's Access to Research for Development and Innovation (ARDI) program provides access to scientific and technical journals through a public-private partnership. Access to over 10,000 key journals in various fields of research, particularly in engineering and applied sciences, is now provided by 16 publisher partners. The ARDI program is also a member of the Research4Life partnership which offers online access to over 17,000 peer-reviewed international scientific journals, books, and databases.

brought to bear upon problems in a manner not earlier available. This has implications for the ownership, use and protection of those new concepts, and requires new thinking for innovation and intellectual property policies. In addition, collaborative solutions to targeted problems are becoming a greater focus not only for commercial enterprises but also for developing countries with emphasis upon specific important needs in areas such as health, water supply and conservation and energy.

These new models of innovation have also allowed the use of knowledge from more developed economies in developing economies by local adaptation. This adaptation often reduces product complexity by removing features thus making them not only more suitable for local needs but also simpler, more reliable and cheaper to produce. These reduced-feature developments may then "trickle up" to the original designers and be used and globalized in a manner not originally anticipated.

These developing models of innovation place emphasis not on knowledge within an enterprise, but rather much more on untapped knowledge outside the enterprise, increasing the value of collaborative research and communication tools and arrangements and newly developed networks of people. These networks can be systemically organized or developed ad hoc for particular projects, among individuals who have the necessary expertise and knowledge. This, in turn, implies increasing importance for managing the fruits of that innovation, including knowledge transfer to geographical regions that can benefit, creating policies and structures that encourage such innovation, protecting the innovative results through intellectual property and other mechanisms, and creating education and training programs for those who will generate as well as , commercialize the new products and services.

Innovation is not only rapidly changing in terms of how it is carried out, but also in terms of where it occurs. Firms are investing historically unprecedented amounts in the creation of intangible assets – new ideas, technologies, designs, brands, organizational know-how and business models. And this is true not only in high-income countries. The last twenty-five years have seen a significant shift in the geography of innovation with a new dynamic of innovation emerging. In particular, firms in middle-income countries – especially in East Asia – have seen a marked increase in their share of global R&D spending. The dynamics of innovation continue to be affected by the emergence of new successful innovators, as seen by the range of countries across continents in the top twenty Global Innovation Index ranking, as well as the good performances of emerging countries. Data on the top 1,000 global R&D spenders confirm that a number of multinationals from middle-income economies now conduct substantial R&D on a par with R&D-intensive multinationals of high-income countries.

That said, while there are many welcome changes in the geography and models of innovation, it must also be pointed out that persistent innovation divides between countries and regions continue to exist. The most important innovation gaps exist between countries at different stages of development. On average, high-income countries outpace countries with less income per capita by a wide margin across the board in all innovation performance metrics. Large innovation divides also exist when comparing geographic regions. It continues to be the case that most R&D spending takes place in high-income countries – around 70 percent of the world total. While middle- and low-income economies have increased their share of global R&D expenditure and patent applications, most of this increase is accounted for by east Asia. For other middle and low income countries, gains have been more modest.

While R&D spending and patent applications are important measures of innovative capacity, of equal importance is the “innovation ecosystem” within which collaborative new models of innovation can flourish. Within a well constructed innovation ecosystem the flow of ideas between different innovation actors, and access to knowledge are increasingly important. Such innovation ecosystems have become more complex and are now built on more internationalized, collaborative and open innovation models and knowledge markets. In this light, a focus on the systemic dimension of innovation and building strong linkages across the innovation ecosystem is crucial. Innovation leaders have improved the linkages across the various innovation actors, most notably in science, higher education, public entities, and both the private and not-for-profit sectors. Experiences and lessons in designing effective policies that foster innovation linkages are still scarce. Modern innovation policies aim to support science-industry collaboration, the formation of innovation clusters and, for instance, knowledge diffusion. And yet, creating innovation linkages is probably the most complex innovation policy area, with no easy recipes for achieving tangible outcomes and benefits.

III. Shaping the course of development: the role of STI (4-5 pages) (Co-leader: UNCTAD (tbc), UNESCO, WIPO / Contributors: ITU, UNDP, WIPO, Division of Sustainable Development (DESA))

A. Filling the MDGs Gap (UNDP, Development Policy and Analysis Division (DESA))

a. Mainstreaming STI to support achievement of the MDGs

B. Integrating STI and sustainable development

a. Integrating STI to support the Sustainable Development Goals (SDGs)

b. Focus on new and/or priority challenges (clean energy, water technologies, technology for food security, non-communicable diseases).

C. Improving the application of STI for the post-2015 development agenda

D. Strengthening multi-stakeholder collaboration and building partnerships

IV. Shaping the course of development: the potential of culture (4-5 pages) (Leader: UNESCO / Contributors: ITC, WIPO)

- A. Filling the MDGs Gap (UNDP/MDG Fund)
 - a. Mainstreaming culture to support the achievement of the MDGs
- B. Integrating culture and sustainable development
 - a. Integrating culture to support the Sustainable Development Goals
 - b. Public-private partnerships (especially those supporting transfer of technology and know-how as well as adaption and dissemination of tech)
- C. Incorporating culture into the post-2015 development agenda
- D. Strengthening multi-stakeholder collaboration and building partnerships
 - a. Private sector
 - b. Public-private partnerships

V. An enabling environment for transformative change in society towards sustainable development through STI and culture (4-5 pages) (Co-leader: Division of Sustainable Development (DESA) and UNESCO / Contributor: UNIDO)

- A. National level
 - a. Improved coordination among multiple actors providing technical advice and assistance

The conditions and contexts in which science, technology and innovation policies are created and applied in the different countries of the world (industrialized, developing, least developed and countries with economies in transition) are changing rapidly. And when considering the enabling environment and how to improve coordination among multiple actors, differences in the level economic development, as well as the relative contributions of the public and private sectors to the economy, and the levels of education and knowledge accumulation need to be taken fully into account.

But while the context for each country is unique, Developing and Least Developed Countries are learning from the experiences of successful countries and building institutions and systems working within this changing world environment and recognising that a stable policy framework at macro and microeconomic level is important to innovative capacity. Equally important is the development of market institutions and legal systems with a supportive set of policies in relation to industry, education and skill formation, research institutions, health, business, environment, culture, etc. In this context, the institutions in relation to property rights, law, and public administration also matter.

For Developing and Least Developed Countries it may also be important to build the indigenous capabilities which are needed to transform and modify technologies to suit local conditions. These capabilities can, at later stages of development, underpin the attempt to forge ahead to gain technological independence and advance frontier science and technology. New knowledge opens up opportunities for new activities that in turn

lead to further knowledge in a self-reinforcing process. Strengthening these national institutions is an important part of this development process.

In addition, with respect to culture, improved coordination at a national level is important. In the late 1990s, culture was included in only 30% of United Nations Development Assistance Frameworks (UNDAFs), but since then the place of culture in national and international aid programming has steadily increased, reaching 70% inclusion by January 2012. This positive trend has been visible across regions between 2006 and 2008 thus demonstrating a strong demand from Member States for culturally-sensitive approaches and culture-related programmes conducive to sustainable development. The integration of culture into National Development Plans would also lead to more dynamic cultural sectors, generating multiple benefits for societies and diverse constituencies. There should be greater awareness of culture's contribution to economic growth, social cohesion and environmental sustainability. Creating an evidence base through the development of culture-related indicators will help evaluate its contribution to a number of development dimensions.

B. Regional Level

- a. Regional technology markets
- b. South-South cooperation, especially on technology transfer

Cultural cooperation fosters the integration of regions through knowledge transfer and mutually beneficial economic and policy agreements. Some regional entities have successfully integrated culture into regional economic and policy debates and key policy/cooperation framework documents and recommendations³. Such intraregional collaboration is beneficial not only for facilitating the circulation of cultural goods, the networking of professionals (artisans and artists), and the development of market chains and opportunities for mutual learning, but it can also nurture a culture of peace and cohabitation, through grass-root ties and networking.

It is also recognized that while science, technology and innovation (STI) have made a significant contribution in some cases to improved productivity of agriculture and industries both in Developing and Least Developed Countries, it remains the case that application and diffusion of appropriate technologies still remains patchy. The rise of innovative tailor-made, transferable and adaptable Southern solutions and technologies to address common Southern challenges, means that South-South cooperation has become an increasingly significant vector for the exchange of knowledge and technology.

Improving access by developing countries to existing and new technologies as well as promoting the development of their own technological capabilities remains an important component of establishing balanced and equitable knowledge-based global markets. As part of the innovation ecosystem, the promotion of a balanced legal and administrative framework of intellectual property protection is also crucial to promoting and incentivizing innovation, investment and technology transfer.

³ The Economic Community of Central Africa adopted a policy of integrating culture into their common strategic direction at the occasion of a regional meeting in November in Yaoundé, Cameroon.

The new and more collaborative models of innovation discussed above, as well as, developmentally-focused South-South flows of finance, know-how and technology should be further encouraged as an increasingly important dimension of development cooperation. Focus should be placed on priority challenges in areas such as clean energy, water technologies, and technology for food security. In this regard, the role of developing countries as sources and not simply as recipients of international technology innovations should be emphasized. Scaling up South-South cooperation initiatives and facilitating inclusive partnerships among stakeholders both in the North and in the South, will be increasingly important in optimizing the use of South-South and triangular approaches to achieve inclusive and sustainable development.

C. International level

a. Improving measurement of STI, including through WIPO Global Innovation Index

To support the global innovation debate, to guide policies and to highlight good practices, metrics are required to assess innovation and related policy performance. Measuring innovation is a moving target. The definition of innovation has broadened—it is no longer restricted to R&D laboratories and to published scientific papers. Innovation also includes social innovations and business model innovations.

The WIPO-INSEAD Global Innovation Index (GII) helps to create an environment in which innovation factors are under continual evaluation, and it provides a key tool and a rich database of detailed metrics for refining innovation policies. While the end results take the shape of several rankings, the GII is about improving the journey to better measuring and understanding innovation and with identifying targeted policies, good practices and other levers to foster innovation.

VI. Toward coherent policy and action frameworks: the role of the ECOSOC System (3-4 pages) (Leader: Office for ECOSOC Support and Coordination (DESA))

VII. Recommendations (2-3 pages) (Leader: Office for ECOSOC Support and Coordination (DESA))