

UNEP submission to the report of the United Nations Secretary-General for the 2013 Annual Ministerial Review (AMR) on "Science, technology and innovation, and the potential of culture, for promoting sustainable development and achieving the Millennium Development Goals"

1. Promoting sustainable development and achieving the Millennium Development Goals (MDGs) is a complex challenge. It demands an urgent rethink of the links between resource use and economic prosperity, supported by technological, financial and social innovation. Up-to-date, scientifically proven information is required to help decision-makers assess the situation with regards to natural resource management and use, and to take effective action. Expertise is needed from economics, environmental science and other inter-disciplinary fields to study the impact of resource extraction and use on the environment, ecosystems and human society, as well as the unintended consequences of resource use.
2. In June 2012, world leaders met at the UN Conference on Sustainable Development (UNCSD or Rio +20) in Rio de Janeiro to examine the major challenges that we face globally, and the way forward to address them. The outcome document, 'The Future We Want', contains over 13 references to the importance of "science" and the science-policy interface, often calling for its strengthening. This highlights a global awareness that science provides a critical underpinning to sustainability.
3. 'The Future We Want' also notes importance of culture, "We acknowledge the natural and cultural diversity of the world and recognize that all cultures and civilizations can contribute to sustainable development."

UNEP Activities in relation to Science, Technology and Culture

1. Since its first session in 1973, the UNEP Governing Council has, in successive sessions, emphasized the importance of a more holistic approach to achieve environmental protection and sustainable development, including the inter-linkages between global environmental changes and adverse social, cultural and economic effects. A specific decision at the 16th Session of the UNEP Governing Council addresses environment and cultural diversity.
2. Governing Council decisions related to the Global Environment Outlook and to UNEP's work on environmental assessments reiterate the importance of strengthening scientific basis of the assessment process, so that government policies can be informed by science. This issue has been consistently on the agenda since the 23rd Governing Council.
3. The implementation of these decisions has led to a range of activities within UNEP on science, technology, indigenous languages and practices, cultural diversity and biodiversity, cultural behaviour, and more.
4. UNEP recognizes Indigenous Peoples' rights, vulnerabilities and contributions in caring for the environment and acknowledges the importance of Indigenous Peoples' participation in planning and implementation of development processes and the

valuable contributions which those holders of traditional knowledge can provide to environmental assessments and sustainable ecosystem management.

5. UNEP has engaged in multiple activities to support indigenous peoples and communities in their efforts to preserve natural resources and develop and maintain sustainable livelihoods. Below are three examples:
 - a. In partnership with GRID/Arendal, UNEP has implemented the Nomadic Herders Project, which aims at assessing the impacts of land-use and climate changes on reindeer and yak herders and on their resilience and adaptation opportunities (webpage www.nomadicherders.org).
 - b. Another UNEP-GRID/Arendal partnership, the 'Many Strong Voices' project (www.manystrongvoices.com), brings together the peoples of the Arctic and Small Island Developing States to tackle challenges of climate change.
 - c. In partnership with the Indigenous Peoples of Africa Coordinating Committee (IPACC) and Natural Justice, UNEP has facilitated a workshop with African indigenous leaders in August 2011. The report 'African Indigenous Peoples and the UNEP Green Economy Initiative' is available at UNEP's website (http://www.unep.org/civil-society/Portals/59/Documents/publications/UNEP_GEI.pdf).

a. Science-policy-society interface

1. The need to strengthen not only scientific knowledge on sustainability issues, but also the interface with policy-making, has led to the establishment of a number of important expert panels that feed into specific policy process or develop policy-relevant assessments more generally. These include the Intergovernmental Platform on Biodiversity and Ecosystem services (IPBES), the Intergovernmental Panel on Climate Change (IPCC), the International Resource Panel (IRP), the Programme of Research on Climate Vulnerability, Impacts and Adaptation (PROVIA), the Science and Technology Panel of GEF. Further, many of the secretariats of multilateral environmental agreements (MEAs) have technical bodies that are at the interface of science and policy, such as the Subsidiary Body on Scientific, Technical and Technological Advice of the Convention on Biological Diversity.
2. Such panels contribute to the science-policy interface in several ways. They bring together the scientific and policy-making communities in order to identify new scientific issues of impending importance to the policy community. They provide a forum for policy-makers to ensure that research is dedicated to critical knowledge gaps for addressing sustainability challenges.

b. Access, usage and application of technology information

1. UNEP's International Environmental Technology Centre is devoted to promoting the application of Environmentally Sound Technologies (ESTs) in developing countries and countries in transition, with a focus on waste management. Over the last couple of years, the centre has developed a number of compendia of technologies, addressing various waste streams (i.e. waste agricultural biomass, healthcare waste, waste plastics, waste oils). The centre has raised awareness about the application of different technologies and developed a methodology to assist decision makers in

selecting the appropriate technology, from a combined economic, social, environmental and technical perspective.

c. Improved coordination among multiple actors providing technical advice and assistance

1. UNEP's International Environmental Technology Centre in collaboration with the United Nations Institute for Training and Research (UNITAR) is leading an initiative to prepare guidelines on the development, review and updating of national waste management strategies. The strategy guidelines are intended to assist with and foster a holistic and overarching approach to national waste management planning as an integral part of the overall national planning and as a wider approach to sustainable development. The guidelines will also help to enhance inter-ministerial coordination and cooperation as well as coordination with a wider group of stakeholders.

d. Integrating STI into sustainable development and MDGs

1. UNEP's International Environmental Technology Centre assists developing countries and countries in transition in improving their waste management practices and technologies. As improper waste management bears a number of hazards, such as soil and water contamination, air pollution, and the spread of vector-borne diseases, improvements are needed to support the provision of basic necessities for public health such as clean water, clean air and safe food.
2. The centre has also worked on improving water quality and providing access to sanitation through affordable, locally available, and more importantly locally manageable environmentally sound technologies (ESTs) to ensure the long-term sustainability of the intervention. In particular, decentralized technology options to meet basic water needs are critical for socio-economic development in peri-urban and rural areas. The centre prioritizes involvement of local communities and primary beneficiaries through capacity building activities in implementing technology-demonstration projects, and in parallel encourages policy support by decision-makers to promote ESTs as practical solution on the ground.

e. Integrating culture into sustainable development and MDGs

1. In 1999, UNEP published "Cultural and spiritual values of biodiversity", an addendum to the Global Biodiversity Assessment which highlights the central importance of cultural and spiritual values in the appreciation and preservation of all life and argues that these values give us a true reflection. It demonstrates how many cultures see nature as an extension of society, and how sensitive stewardship is an integral part of sustainable development.
2. The Biocultural Community Protocols (BCPs) were developed with UNEP's assistance, and were show-cased at the COP10 of the Convention on Biological Diversity in Nagoya, Japan in October 2010. UNEP supported the development of bio-cultural protocols to empower communities on biodiversity management issues.
3. Also in 2010, a book on "*Traditional Knowledge in Policy and Practice: Approaches to Development and Human Well-Being*" was published by the United Nations University Press through support from UNEP, with specific contributions on different issues such as the role of traditional knowledge in water management.

4. UNEP has participated as a co-leading and as a supporting partner in various joint programmes under the MDG-Achievement Fund. Among those are success stories which have been designed and implemented in a multi-disciplinary and integrated way and which demonstrate opportunities and inspire replication to put sustainable development into practice by effectively using the potential of culture and its inter-linkages with environment, gender and local governance. Examples to be highlighted are: the JP 'Local and regional environmental management for the management of natural resources and the provision of environmental services' in Nicaragua, the JP 'Integration of ecosystems and adaptation to climate change' in Colombia and the 'management of the Yasuni Biosphere reserve' in Ecuador.

Policy Measures that can be promoted by ECOSOC

a. Technology

1. Technology has a substantial role to play in the effort to meet the most pressing global challenges. According to UNEP's fifth *Global Environment Outlook (GEO-5)*, released in 2012, advanced and environmentally sustainable technologies can help developing economies leapfrog the resource-intensive, highly polluting growth phase of development. As technology systems include not only the deployment of hardware but also knowledge and know-how, lessons from traditional knowledge and practices can also be shared and adapted.
2. Technologies can help improve performance along the supply chain from resource extraction to manufacture and transportation and more efficient, greener end-use equipment for consumers. System-level technology links are often crucial for transformative change. For example, the smart grid concept aims to integrate electric vehicles, the power sector, information management and consumers into a single network. Technologies are also essential for successful adaptation to changing environments, from drought-resilient seeds through efficient methods of irrigation to flood defenses.
3. While there is little doubt that novel technologies can contribute to a higher standard of living, technological innovations can pose risks, as highlighted in UNEP's report *21 Issues for the 21st Century*. Examples of unforeseen side effects include contamination caused by nuclear accidents, airborne and waterborne transport of dioxin, and stratospheric ozone depletion. As the pace of new technology increases society must move from a reactive approach to an anticipatory approach by which implications of novel technologies and chemicals are systematically and comprehensively assessed before production. For example, the amended EU Cosmetics Directive (2009) requires manufacturers to report cosmetic production containing nanomaterials six month prior to production.
4. It should be noted that technology transfer regimes may also have to be improved. Criticism exists of the high transaction costs of obtaining information or negotiating and acquiring technologies protected by intellectual property rights. According to *GEO 5*, it has been argued that there may be a need for beneficial differentiation in patent rights such as expedited patent examinations in environmentally sustainable technologies, and the facilitation of voluntary patent pools.

b. R&D

1. Research can be used to reduce friction among MDG goals. For example, reducing hunger and poverty will require getting more food to more people, but this may have negative consequences for environmental sustainability. Research can identify ways to improve efficiency along the whole food chain by increasing crop yields and reducing crop harvest losses. Furthermore, research can be used to identify innovative approaches to food production to shorten food supply chains and enhance food security.
2. According to *GEO-5*, collaborative research for environmentally sustainable technologies should be encouraged. Research coordination between governments and the private sector is needed in early pre-competitive stages of technology system development, before particular standards or industry value chains become embedded in national economies and the global industrial system (as happened in the semiconductor market). Model technology cooperation agreements could take different levels of development and jurisdictional requirements into account to limit the potential of patent related conflicts and to encourage joint development. National laboratories could be twinned, or new ones set up that are multilaterally managed and funded in pursuit of agreed long-term technology objectives, ideally with the participation of industry.

c. Support for knowledge-sharing platforms

1. Collaborative initiatives on agriculture and the environment, such as the Consultative Group on International Agricultural Research (CGIAR), demonstrate the potential of stakeholder advice platforms and provide support for knowledge-sharing structures at the regional level. These initiatives could be emulated to scale up much needed environmentally sustainable technologies. Existing and potential barriers to the development and diffusion of such technologies could be assessed at the sectoral level to create the most appropriate incentives.

d. Innovation

1. International cooperation is needed to build and strengthen innovation links between different sectors, especially between developing and developed countries.
2. Innovation is a recognized driver of sustainable development, addressing its three dimensions (environment, economic and social) on a national (macro) level as well as a driver of business success and competitive advantage at the firm (micro) level. Such innovation - namely eco-innovation - allows for new ways of addressing current and future environmental problems, and decreasing energy and resource consumption, while promoting sustainable economic activity. The EC Eco-Innovation Observatory (EIO) project defined eco-innovation as “the introduction of any new or significantly improved product (good or service), process, organizational change or marketing solution that reduces the use of resources and decreases the release of harmful substances across the whole life-cycle” (EIO website, www.eco-innovation.eu).

3. According to *GEO-5*, prize funds and similar awards could be an effective means of bridging innovation gaps, including technologies to improve sustainability for the poor, as demonstrated by some successes in the public health and energy sectors. A range of global technology prizes could be established to promote innovation in all areas that support sustainability, especially for developing economies. Such prize funds could function as a patent pool and/or a repository for cross-licensing environmental technologies.

e. Cultural and Genetic Diversity

1. Exploitation of genetic resources may help contribute to development progress. However, according to *GEO-5*, fair and equitable sharing of the benefits of such resources is critical. The Nagoya Protocol is an important milestone for rectifying issues of equality associated with commercial use of genetic resources. A number of countries have national legislation and regulations pertaining to issues of access and benefit sharing. Further development of such regulations could be a useful indicator of progress.
2. Within the UN system the Permanent Forum on Indigenous Issues (UNPFII), which constitutes an Advisory Body to the ECOSOC since 2002, is the main and central forum to discuss indigenous issues related to social and economic development, the environment, culture and human rights. This forum provides an excellent platform to further encourage interaction with regard to the nexus between culture, environment and sustainable development.
3. UNEP recommends that its recently delivered policy document, 'UNEP and Indigenous Peoples: A partnership in Caring for the Environment' (November 2012), be broadly shared and used to inform and inspire the UN internal and inter-governmental preparatory discussions in the run up to the AMR 2013. The policy document has been developed in line with the recommendations by the UNPFII and on the basis of the UN Declaration on the Rights of Indigenous Peoples (UNDRIP). It also refers to the Rio+20 outcome document – 'The Future We Want'. In the run-up to the 2013 Governing Council/GMEF and the Global Major Groups and Stakeholders Forum, which will take place in Nairobi in February 2013, UNEP is actively encouraging and facilitating the accreditation and participation of indigenous peoples' organizations.
4. In addition UNEP, advocates that key recommendations which will come out of the next session of the UNPFII in May 2013 be fed into the AMR in July and that a specific item, focusing on the role of indigenous peoples and communities as stewards of natural resources and as drivers of transformative change in society towards SD, will be included into the AMR agenda for the July 2013 session. This will not only enhance the voice and participation of major groups and stakeholders but also enhance the UN's compliance with Principle 10.