The role of biodiversity science for the Convention on Biological Diversity

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Dr. Mulongoy started his presentation with an overview of the Convention on Biological Diversity (CBD). The preamble of the Convention highlights the importance of (scientific) information and knowledge:

- Scientific information and knowledge regarding biological diversity is necessary for the basic understanding upon which to plan and implement appropriate measures for the conservation of biodiversity and its services.
- Our knowledge of biodiversity is limited.
- Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.

Which scientific information is particularly needed to reach the goals of the Convention? The text of the Convention on Biological Diversity as well as the Conferences of the Parties (COP) decisions give guidance in this respect. As defined in Article 2 of the Convention, the scope of biodiversity is very wide, reaching from the genetic level to species and ecosystem levels, and including plants, animals and micro-organisms. According to the Convention, scientific information is particularly needed for those components of biodiversity which require urgent conservation measures and for those which offer the greatest potential for sustainable use through their services.

Particular attention is to be given to endangered species, genetic resources and dangerously degraded ecosystems. Information on the importance of biodiversity for human well-being is needed especially in the context of the Millennium Development Goals (MDG), on resources required by migratory species in the context of the Convention on Migratory Species (CMS) and on species that are over-traded to support decision-making in the context of the Convention on International Trade in Endangered Species (CITES). In addition, scientific information is needed on processes and categories of activities which have or are likely to have significant adverse impacts on biodiversity and their services. Therefore, studies on the status and trends of biodiversity and its services as well as on the status and trends of threats to biodiversity are most important for governments. Research and information on economic valuation issues and the development of scenarios of possible future developments is also needed, in particular with respect to sudden shifts in ecosystem properties, i.e. the so-called „tipping points“.

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The CBD has a Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA). Its mandate is to provide advice relating to the implementation of the Convention, specifically:

- scientific and technical assessments of the status of biological diversity
- scientific and technical assessments of the effects of types of measures taken
- innovative, efficient and state-of-the-art technologies and know-how
- new and emerging issues
- advice on scientific programmes and international cooperation in R&D
- address COP scientific, technical, technological and methodological questions

Currently, a second scientific body, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), is in preparation. Its role will be to provide good and credible scientific information for supporting not only the CBD, but the other biodiversity-related conventions as well, such as the Ramsar Convention, WHC, CMS, CITES and ITPGRFA.

In connection with the so-called 2010 target and the more specific framework of goals and targets adopted within the Convention on Biological Diversity, two sets of indicators have been developed: the indicators for immediate use and the indicators for further development. The first set comprises indicators for which enough information is already available. It includes:

- coverage of protected areas
- trends in extent of selected biomes, ecosystems and habitats
- trends in abundance and distribution of selected species
- change in status of threatened species
- trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance
- trends in invasive alien species
- status and trends of linguistic diversity and numbers of speakers of indigenous languages

The second list of indicators poses challenges to scientists, because for these indicators enough information is not yet available. This list includes the following indicators:

- biodiversity used in food and medicine (indicator under development)
- area of forest, agricultural and aquaculture ecosystems under sustainable management,
- proportion of products derived from sustainable sources (indicator under development)
- marine trophic index
- nitrogen deposition
- water quality in aquatic ecosystems
- ecological footprint and related concepts
- connectivity/fragmentation of ecosystems
- incidence of human-induced ecosystem failure
- health and well-being of communities who depend directly on local ecosystem goods and services

The concrete challenges to scientists regarding these indicators are mainly:

- institutional, technological, financial and human capacities for data collection, analysis and validation
- high uncertainty: Data is often based on samples collected in limited areas and during a short period of time
- the dynamic nature of marine and other aquatic areas (horizontally and vertically)
- the need for a minimum of three points in time to present trends.

For the post 2010 targets to be adopted at the COP10, some indicators adopted previously can be used, but also new indicators will be needed, and their baselines need to be defined. In addition, the importance of biodiversity-inclusive Strategic Environment Assessment and Environmental Impact Assessment has to be acknowledged.

An important question is: Do reports such as the Global Biodiversity Outlook (GBO), the Millenium Ecosystem Assessment (MA) or The Economics of Ecosystems and Biodiversity (TEEB) study have the expected impact on policy-makers? For this, it is necessary to work with communicators to improve the communication system and style. Especially, it is necessary to make results easy to understand, which is not done by scientific jargon, tabular data and complicated texts, but with visually interesting data or figures.