



# Biodiversity: two decades of International Convention

## Where things stand

The Convention on Biological Diversity, opened for signature at the Earth Summit in Rio de Janeiro on 1992, represents a significant step forward for human kind from an intellectual, cultural, ethic, and scientific point of view, although its path has often been marked by difficulties, both at national and international levels. This article aims at describing where things stand, after almost two decades of the treaty entry into force, pending Rio +20

■ *Laura Maria Padovani, Paola Carrabba, Barbara Di Giovanni e Francesco Mauro*

## Biodiversità: due decenni di Convenzione Internazionale. Il punto della situazione

La Convenzione sulla Diversità Biologica, presentata al Summit della Terra di Rio de Janeiro nel 1992, rappresenta per il genere umano un significativo passo avanti dal punto di vista intellettuale, culturale, etico e scientifico, anche se il suo percorso è stato spesso segnato da difficoltà, sia a livello nazionale che internazionale. Questo articolo intende fare il punto della situazione dopo quasi due decenni dalla entrata in vigore del trattato, in attesa di Rio +20

Along with the Framework Convention on Climate Change (FCCC) and the Convention to Combat Desertification (CCD), the Convention on Biological Diversity (CBD) is one of the three international legally-binding instruments originated at the Earth Sum-

mit (the United Nations Conference on Environment and Development) in Rio de Janeiro, in 1992. Conversely, the other documents approved on that occasion, e.g., Agenda 21 – which pursues sustainable development – are political, expressing mere declarations of intent.

The CBD was signed in Rio by 156 countries and entered into force in 1993, after being ratified by 30 parties. The European Commission ratified the Convention in 1993 whereas Italy in 1994; both parties participated with diplomatic and scientific delegations in the preparatory meetings of the CBD prior to the Rio Sum-

■ **Laura Maria Padovani, Paola Carrabba, Barbara Di Giovanni**

*ENEA, Unità Tecnica Sviluppo Sostenibile ed Innovazione del Sistema Agro-industriale*

■ **Francesco Mauro**

*Università degli Studi "Guglielmo Marconi", Roma*

mit. As of today, in 2011, 193 parties have joined the CBD, with the notable absence of the United States that signed but did not ratify the Convention.

The three CBD objectives are quite ambitious:

- the conservation of biological diversity;
- the sustainable use of the biological diversity components; and
- the fair and equitable sharing of the benefits arising from the use of genetic resources.

The Convention's overall objective is to plan and encourage actions leading to a sustainable future.

Biodiversity refers to all levels of life on the planet, namely:

- the genetic diversity within and between species;
- the inter-species diversity; and
- the diversity of ecosystems and landscapes.

Considering that man is an integral part of ecosystems, some authors include human cultural diversity in this context.

The Convention covers also biotechnology in its transboundary aspects through the Cartagena Protocol on Biosafety (with 160 Parties in 2011).

The CBD governing body is the Conference of the Parties (COP). This ultimate authority of all governments or international Parties that have ratified the treaty meets every two years to review progress, set priorities, and commit to work plans.

The Convention on Biological Diversity represents a significant step forward from an intellectual, cultural, ethic, and scientific point of view:

- 1) it clarifies that biodiversity is not limited to the number and size of species but extends its paradigm to the molecular and genetic level as well as to ecosystems and landscapes with their biotic and abiotic components;
- 2) besides conservation, it also embraces the objectives of sustainable use and equitable sharing, so that biodiversity itself becomes a factor of development of human communities within a context of environmental, social and economic sustainability;
- 3) it brings a set of issues until recently considered only by the scientific and NGO communities to the attention of public opinion and policy makers;
- 4) several sensitive issues are dealt with in the text of the convention: the exchange of information (through the so called "*Clearing-House Mecha-*

*nism*"), inequities and rights of indigenous peoples and local communities, traditional knowledge and practices, technology transfer, protected areas, social-economic aspects (poverty, women, exploitation), etc.;

- 5) the so-called "*ecosystem approach*" has been elaborated and promoted, although there was a great difficulty in applying its principles at the local level, as the most appropriate level of implementation;
- 6) special attention has been paid to particular sectors: agri-biodiversity, dry and sub-humid lands biodiversity, island biodiversity, nature-related tourism, etc.;
- 7) studies and projects have been fostered not only concerning high levels of biodiversity (for instance, in tropical countries) but also areas where biodiversity is scarce though relatively unique (small islands, mountains, the Mediterranean region, etc.).

At the same time, almost two decades of life of the Convention have, not surprisingly, been characterized by difficulties. The main reason is certainly due to its ambitious goals. In particular:

- a) to conjugate conservation with use (even if sustainable) is *per se* not an easy task, both intellectually and practically;
- b) the need to pinpoint quantitative or, at least, accurately described targets of the CBD actions is difficult to fulfil;
- c) developing countries, particularly those rich in biodiversity (mega-diversity countries), often unsustainably use their biodiversity (e.g., by exploiting forests for fuel and construction material) also because of economic problems. By so doing, they are unable to tackle conservation problems and to trigger sustainable management;
- d) the problem of funding (from North to South and from developed to developing countries) is politically unsolved.

Besides the above difficulties, two problems related to communication and the political context have also affected the implementation of CBD. First, greater importance, among the three Rio Conventions, has been attributed by governments, business and public opinion to climate and energy and, therefore, to the FCCC. There is, in fact, a more obvious interconnection of

economic development and the geopolitical situation with climate change, whereas the same connection is less emphasized, though not less evident, with regard to biological diversity.

The second problem is related to the great amount of time and attention dedicated to the preparation and approval of the Cartagena Protocol on Biosafety that captured the effort of Parties.

In 2002, ten years after Rio, seemingly the Convention succeeded in establishing itself and in sensitizing public opinion (as well as the scientific and communication communities) to the importance of biodiversity, although the actions to achieve concrete goals resulted not incisive enough and relatively insufficient. In fact, in the same year, the Convention Parties thought it worthwhile to commit themselves *“to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level, as a contribution to poverty alleviation and to the benefit of all life on Earth”* (CBD Secretariat, 2010). This target was endorsed by the World Summit on Sustainable Development (Rio +10) and by the United Nations General Assembly, and was then incorporated as a new target under the Millennium Development Goals.

A notable effort has been made to assess the progress toward the 2010 target. An important instrument of analysis, the Global Biodiversity Outlook, has been developed, drawing on a range of information sources, including national reports, biodiversity indicators, scientific literature, and a study assessing biodiversity scenarios.

The conclusion of the Global Biodiversity Outlook 3, published in 2010, is blunt and unmistakable: *“the target agreed by the world’s governments in 2002 to achieve by 2010 a significant reduction of the current rate of biodiversity loss ... has not been met”* (CBD Secretariat, 2010). Unfortunately, *“there are multiple indications of continuing decline in biodiversity in all three of its main components - genes, species, and ecosystems”* (CBD Secretariat, 2010). The Global Biodiversity Outlook reported that, among all:

- amphibians face the greatest risk of extinction and nearly a quarter of plant species are estimated to be threatened with it;
- the number of vertebrate species diminished by *“nearly a third, on average, between 1970 and 2006, and continues to fall globally, with especially*

*severe declines in the tropics and among freshwater species”* (CBD Secretariat, 2010);

- *“natural habitats in most parts of the world continue to decline in extent and integrity”* (CBD Secretariat, 2010), in particular freshwater wetlands, sea ice habitats, salt marshes, coral reefs, seagrass beds, and shellfish reefs, whereas the rate of loss of tropical forests and mangroves has been slowing down;
- the loss of biodiversity and ecosystem services is also due to the extensive fragmentation and degradation of forests, rivers and other ecosystems;
- *“crop and livestock genetic diversity continues to decline in agricultural systems”* (CBD Secretariat, 2010);
- *“the five principal pressures directly driving biodiversity loss (habitat change, overexploitation, pollution, invasive alien species, and climate change) are either constant or increasing in intensity”* (CBD Secretariat, 2010).

The loss of biodiversity is an issue of profound concern *per se* and in relation to the functioning of ecosystems which provide a wide range of services to human societies. *“Its continued loss has major implications for current and future human well-being. The provision of food, fibre, medicines and fresh water, pollination of crops, filtration of pollutants, and protection from natural disasters are among those ecosystem services potentially threatened by declines and changes in biodiversity. Cultural services, such as spiritual and religious values, opportunities for knowledge and education, as well as recreational and aesthetic values, are also declining”* (CBD Secretariat, 2010).

Certainly, the Convention has promoted important actions (protected areas on land and in coastal waters, conservation of particular species, initiatives against pollution and alien species invasions) but they have not been sufficient to offset the pressures on biodiversity in most places. *“Most future scenarios project continuing high levels of extinctions and loss of habitats throughout this century”* (due to clearing of tropical forests, climate change, alien species, overfishing, etc.) *“with associated decline of some ecosystem services important to the human well-being”* (CBD Secretariat, 2010).

These difficulties were evident to most of the delegations preparing for the 10<sup>th</sup> Conference of the Parties

(COP) scheduled in the Fall of 2010 in Nagoya, Japan. All the more so because COPs are surely the legitimate governing body of the Convention but are also well known for being subject to diplomatic delays and minimum common denominator compromises in the anxious search of unanimity, according to the rules of the UN, and the need of keeping regional equilibriums in balance. Nevertheless, the previous COPs have attained many results, *inter alia*:

- the establishment of the Clearing-House Mechanism (CHM -<http://www.cbd.int/chm/>) and the Subsidiary Body on Scientific Technical and Technological Advice (SBSSTA), as well as the designation of GEF (Global Environment Facility) as the interim financial mechanism, by COP 1;
- the starting up of *ad hoc* working groups on: biosafety, traditional knowledge, and access and benefit sharing from COP 2 to 5;
- the Cartagena Protocol on Biosafety (focused on trans-boundary movements of living modified organisms that may have an adverse effect on biodiversity), signed in Montreal (CBD Secretariat, 2000);
- the “*ecosystem approach*”, one of the most important scientific and intellectual contribution of the Convention, presented and accepted in COP 5 (<http://www.cbd.int/decision/cop/?id=7148>);
- finally, while COP 6 to 9 concentrated on issues related to specific sectors (coastal, agricultural, dry land, mountain biodiversity, etc.), only COP 6 adopted a Strategic Plan aiming at the 2010 main objective of a significant reduction in biodiversity loss.

In an atmosphere of both expectation and skepticism, the COP in Nagoya has produced, as main result, the Nagoya Protocol on Access to genetic resources and fair and equitable Sharing of Benefit arising from their utilization (ABS) (CBD Secretariat, 2011 a). After a very long negotiation to establish an international regime for access to and benefit-sharing of genetic resources and the associated traditional knowledge, the Protocol defines procedures for Prior Informed Consent (PIC), Mutually Agreed Terms (MAT), certification, monitoring, etc. The core issue of the negotiation has been whether derivatives can be included in the definition of genetic resources and how to monitor the utilization of genetic resources. However, the requirement of dis-

closure has not been adopted in the Protocol, the monitoring is also limited and, furthermore, the version is not very clear as to benefit-sharing of the genetic resources collected in the industrial countries' gene banks and accessed in the past.

In line with an approach typical of the international instruments, the Protocol underlines the importance of legal certainty in this difficult field although, as in the case of the Cartagena Protocol, it will take a long time and a strong effort to implement it and even more to enforce it.

The COP also approved the Strategic Plan 2011-2020 “*Living in Harmony with Nature*,” in which “*by 2050, biodiversity is valued, conserved, restored, and wisely used, maintaining ecosystem services, sustaining a healthy planet, and delivering benefits essential for all people*.” The mission implies effective and urgent actions to halt biodiversity loss by reducing pressures on biodiversity, in order “*to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human wellbeing and poverty eradication*” (CBD Secretariat, 2011 b). Special attention is dedicated to: coral reefs, forests, aquatic plants, agro-biodiversity, ecosystems (and their relation to climate change and the CO<sub>2</sub> cycle).

So, at Nagoya, an effort has been made to re-launch a concrete target; and the Protocol meets, at least in part, the requests of the biodiversity-rich developing countries. Yet, the strategic plan looks like a repetition of the previous unsuccessful edition. Perhaps, a less all-comprehensive but more precise plan, with clear, concrete, and possibly pre-negotiated objectives, could be an approach to be explored. Also: so far the Convention has focused on its first objective: “*conservation*” (with good results in some countries, including Italy, in terms of protected areas); and on the third one: “*benefit-sharing*” (CBD Secretariat, 2011 a);

At this stage, two consequences can be noted:

- 1) the CBD guidelines have not been implemented at the local level (with the exception of conservation in protected areas) despite the development of the “*ecosystem approach*” principle and its very practical nature. Therefore, the sustainable development's slogan: “*think globally, act locally*” is still a mere statement and not a practical action;
- 2) while acknowledging a general interest in conserv-



ing biodiversity, the public perceives itself as a separate entity, with an inability to understand the importance of personal commitment to reach the common goal of biodiversity conservation. In addition, the lack of information has not allowed the general public to fully understand the importance of biodiversity both for human health and the economy. This need is more pronounced here than in other major global issues, such as climate change. Furthermore, it is not always comprehensible how the activities carried out to minimize the impacts on biodiversity are also important for other issues and how the substantial investments required to conserve biodiversity should produce significant environmental, economic and social benefits in return.

Perhaps, the time is ripe to pursue the second item of the CBD, “*sustainable use*”, and to use an integrated approach.

In conclusion, sustainability and conservation of biological diversity will be finally advocated by public opinion, stakeholders, decision makers only if perceived as the decisive factors of development, and only when the actual value of biodiversity-related environmental services will be recognized.

#### Bibliography

- [1] Batjargal, Z., Bridgewater, P., di Castri, F., Hammer, M.B., Henne, G., Kabwaza, M.P., Maltby, E., Martin, R.B., Mauro, F., Prins, H.H.T., Ruggiero, M., Schei, P.J., Seyani, J.H., Vogel, J., & Vokhiwa, Z.M., 1998. Report on the Workshop on the Ecosystem Approach, Lilongwe. UNEP/CBD/COP/4/Inf.9.
- [2] di Castri, F., & Younès, T. (eds.), 1996. Biodiversity, Science and Development: A New Partnership. CABI Publishing, Cambridge, Mass..
- [3] International Institute for Sustainable Development, 2010. Summary of the tenth Conference of the Parties to the Convention on Biological Diversity: 18-29 October 2010. Earth Negotiations Bulletin, Vol. 9, No. 544: 1-30 (<http://www.iisd.ca/download/pdf/enb09544e.pdf>)
- [4] Leveque, C. & J. Moundlou, 2002. Biodiversity. John Wiley, New York.
- [5] Padovani, L.M., Carrabba, P., Di Giovanni, B., & Mauro, F., 2010. Biodiversity: Development and Sustainable Use of Living Resources. eBookMall, New York. (<http://ebooks.ebookmall.com/title/biodiversity-development-and-sustainable-use-of-living-resources-padovani-carrabba-di-giovanni-mauro-ebook.htm>)
- [6] Secretariat of the Convention on Biological Diversity, 2000. Cartagena Protocol on Biosafety to the Convention on Biological Diversity. Text and Annexes. Montreal (Canada) ISBN: 92-807-1924-6 (<http://www.cbd.int/doc/legal/cartagena-protocol-en.pdf>)
- [7] Secretariat of the Convention on Biological Diversity, 2010. Global Biodiversity Outlook 3. Montréal (Canada) ISBN-92-9225-220-8. (<http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>)
- [8] Secretariat of the Convention on Biological Diversity, 2011 (a). Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity : text and annex. Montreal (Canada) ISBN: 92-9225-306-9. (<http://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>)
- [9] Secretariat of the Convention on Biological Diversity, 2011 (b). Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets “Living in Harmony with Nature”. Montreal (Canada) (<http://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf>)

[biodiversity-chm.eea.europa.eu/en.wikipedia.org/wiki/Biodiversity](http://biodiversity-chm.eea.europa.eu/en.wikipedia.org/wiki/Biodiversity)  
[www.cbd.int](http://www.cbd.int)  
[www.cbd.int/chm/](http://www.cbd.int/chm/)  
[www.conservation.org/documentaries/Pages/megadiversity.aspx](http://www.conservation.org/documentaries/Pages/megadiversity.aspx)