



Biodiversity: an assessment of the implementation of the convention in Europe

The Convention on Biological Diversity (CBD) is an international legally-binding treaty which pursues three main goals: the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources. The Convention was presented in 1992 at the United Nations Conference on Environment and Development in Rio de Janeiro, and entered into force in 1993 after being ratified by 30 parties, including the European Union. Italy ratified the Convention in 1994. This article analyses the strategies set out by the European Commission and the Italian government respectively, in the attempt of halting or significantly reducing the current rate of biodiversity loss

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Biodiversità: il punto sulla implementazione della convenzione in Europa

La Convenzione sulla diversità biologica (CBD) è un trattato internazionale giuridicamente vincolante che persegue tre obiettivi principali: la conservazione della biodiversità, l'uso sostenibile delle sue componenti e l'equa ripartizione dei benefici derivanti dalle risorse genetiche. La Convenzione, presentata alla Conferenza delle Nazioni Unite sull'Ambiente e lo Sviluppo a Rio de Janeiro nel 1992, è entrata in vigore nel 1993, dopo essere stata ratificata da 30 Paesi, compresa l'Unione Europea. L'Italia ha ratificato la Convenzione nel 1994. Questo saggio analizza le strategie messe a punto, rispettivamente, dalla Commissione Europea e dal governo italiano nel tentativo di arrestare o ridurre in modo significativo l'attuale tasso di perdita di biodiversità

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The European biodiversity assessment

Degradation of ecosystems and persistent reduction in their capacity to provide ecosystem services crucial to humankind – e.g., from clean air and water, to pollination of crops and protection from floods – represent enormous social and economic losses at the global level. For instance, the total economic value of insect pollination in 2005 was 153 billion Euro which is 9.5% of world agricultural output for human food in the same year (<http://www.teebweb.org>).

At the European level, biological diversity is under severe threat from habitat loss due to various causes, *inter alia*: overexploitation and/or unsustainable use of resources, transformation of land use and its fragmentation, invasive “*alien species*”, pollution and climate change (<http://www.iewy.com/25306-qa-on-the-communication-an-eu-biodiversity-strategy-to-2020.html>).

In 1998, on the basis of the European Community participation in the UN Convention on Biological Diversity, the European Parliament adopted a Communication on a **European Biodiversity Strategy** (European Commission, 1998), with the aim to “*anticipate and prevent significant reduction in or loss of biodiversity and to tackle its root causes*” (http://europa.eu/legislation_summaries/environment/nature_and_biodiversity/128183_en.htm). Such a Strategy creates the framework within which policies and Community instruments will be adopted to ensure the implementation of the Convention on Biodiversity in Europe on the basis of four main themes reflecting the principal obligations under the Convention on Biodiversity: conservation and sustainable use of biodiversity; sharing of benefits arising out of the utilization of genetic resources; research, identification, monitoring and exchange of information; education, training and awareness.

In 2001, the European Union set the ambitious target of halting biodiversity loss by 2010. With this aim, the Commission addressed the Council and the European Parliament a Communication on biodiversity action plans in the areas of conservation of natural resources, agriculture, fisheries, and development and economic co-operation, in order to define the main contents and procedures of the EU Biodiversity Action Plan (European Commission, 2001).

In May 2006, the European Commission adopted a communication on “*Halting Biodiversity Loss by 2010 – and Beyond: Sustaining ecosystem services for human well-being*” (European Commission, 2006) which highlighted the importance of biodiversity’s protection as a prerequisite for sustainable development. A detailed **EU Biodiversity Action Plan (BAP)** was also set out with 10 priority actions divided into 4 policy areas (biodiversity in Europe; the EU and global biodiversity; biodiversity and climate change; to strengthen the knowledge base for conservation and sustainable use of biodiversity). The BAP aims at integrating biodiversity concerns into other policy sectors and outlines the responsibility of community institutions and Member States in relation to each of the above policy areas. It further identifies four main supporting measures (financing; decision-making; building partnerships; public education, awareness and participation) and includes indicators and a timetable to monitor progresses.

Four years (2006-2010) have not been enough to achieve tangible outcomes, even less at the national level.

Besides the limited time, the failing of the 2006 Action Plan was also due to a combination of different factors, such as:

- the inadequate implementation of the EU “Natura 2000” legislation,
- the insufficient funding for biodiversity protection,
- the knowledge gaps,
- the insufficient integration of biodiversity concerns into other policy areas,
- the new emerging threats such as climate change,
- the failure to reach an agreement on the European Soil Framework Directive, and
- the crucial policy gaps which have a significant impact on biodiversity loss, including the lack of a comprehensive policy on invasive species.

Biodiversity is a complex cross-cutting issue which cannot be tackled by focusing on a single sector since it is primarily linked to an increased awareness of its importance for the various productive sectors and the social area.

In May 2011, undeterred by the failed attempt to achieve the 2010 goals, and as a natural hereinafter of the 2001 strategy, the European Commission pub-

lished a new Biodiversity Strategy to 2020 (European Commission, 2011-a). The new strategy is aimed at reversing biodiversity loss and hastening the transition of the European Union towards a resource efficient and green economy, introducing more concrete and pressing references to sustainable development. In fact, it is recognized that, in addition to its intrinsic importance, biodiversity and the services it provides have significant economic value that can be emphasized in markets.

The new strategy sets out six interconnected targets

and accompanying measures which, when implemented, will deliver significant, scaled-up benefits for biodiversity (see table 1).

The measures related to the six above mentioned targets should assist in maintaining and enhancing ecosystem services, providing wide-ranging socio-economic benefits to society and the private sector.

Well-managed ecosystems provide clean air and water, carbon storage and natural disaster control, reduced soil erosion as well as lower vulnerability to climate change, with associated socio-economic bene-

TARGET 1

CONSERVING AND RESTORING NATURE:

To halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status so that, by 2020, compared to current assessments:

- 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status; and
- 50% more species assessments under the Birds Directive show a secure or improved status

TARGET 2

MAINTAINING AND ENHANCING ECOSYSTEMS AND THEIR SERVICES:

By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems

TARGET 3

ENSURING THE SUSTAINABILITY OF AGRICULTURE, FORESTRY, AND:

3a) Agriculture: By 2020, maximize areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement* in the conservation status of species and habitats that depend on, or are affected by, agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline, thus contributing to enhance sustainable management.

3b) Forests: By 2020, Forest Management Plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and for forest holdings above a certain size (to be defined by the Member States or regions and communicated in their Rural Development Programmes) that or receive funding under the EU Rural Development Policy, in line with Sustainable Forest Management (SFM) so as to bring about a measurable improvement* in the conservation status of forest ecosystems and species and in the provision of related ecosystem services as compared to the EU 2010 Baseline.

By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritized, priority species controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.

TARGET 4

ENSURING THE SUSTAINABILITY OF FISHERIES:

To achieve Maximum Sustainable Yield (MSY) by 2015. Achieve a population age and size distribution indicative of a healthy stock, through fisheries management with no significant adverse impacts on other stocks, species and ecosystems, in support of achieving Good Environmental Status by 2020, as required under the Marine Strategy Framework Directive.

TARGET 5

COMBATING INVASIVE ALIEN SPECIES:

By 2020, Invasive Alien Species (IAS) and their pathways are identified and prioritized, priority species controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.

TARGET 6

ADDRESSING THE GLOBAL BIODIVERSITY CRISIS:

By 2020, the EU has stepped up its contribution to averting global biodiversity loss.

TABLE 1 Targets of the EU Biodiversity Strategy

Source: European Commission, 2011 (a)

ITEM	ACTION
Landscape	
	<ul style="list-style-type: none"> • Provide for diachronic analyses to monitor use changes in landscape. • Enhance landscape diversity, with particular reference to cultural landscapes. • Promote forest restoration, including reforestation and afforestation, also in urban areas, through valorization and use of species related to the indigenous habitat. • Promote the use of an ecological network at landscape level as framework for cities, new general planning and new design.
Terrestrial Fauna	
	<ul style="list-style-type: none"> • Improve monitoring protocols at regional level to be coherent with the national one. • Encourage the integration of fauna conservation measures with sustainable agro-silvopastoral management strategies. • Mitigate damages of wild fauna to enhance public opinion consensus • Promote a sustainable hunting strategy. • Promote management plans (eradication and control) coherent with alien species invasion. • Activate plans to restore the relic alluvial forest, the wetlands throughout the country, the springs and small watercourses in the main islands. • Assign a central role to protected areas in the conservation of one or more species.
Flora	
	<ul style="list-style-type: none"> • Compile the mapping of flora on a regional scale and identify the territorial habitats with elevated diversity to insert in the future revision of the “Natura 2000” network. • Involve the protected areas in the identification of one or more <i>in situ</i> conservation objectives. • Involve the museums and, in particular, the Botanical Gardens throughout the territory in planning coherent policies with <i>ex situ</i> conservation. • Monitoring the evolution in structural and qualitative terms of the Important Plant Areas.
Bryophytes, Fungi, Lichens and Algae	
	<ul style="list-style-type: none"> • Draw up and updated list of Italian fungus species, maps of their distribution and data on their ecology, as well as red lists of fungus species. • Promote a correct forestry management (naturalistic and systematic silviculture).
	<ul style="list-style-type: none"> • Draw up a national and regional red list and action plan for the species considered endangered according to the IUCN categories. • Compile the mapping of algal flora on a regional scale and identify the territorial habitats with elevated diversity to insert in the future revision phases of the “Natura 2000” network. • Carry out an inventory of freshwater species at a national and regional level. • Realize a monitoring network of sites of lichens monitoring within old growth forests. • Realize lichens monitoring in term of biomonitoring of air quality.
Marine environment	
	<ul style="list-style-type: none"> • Define action plans to assess the degree of biological invasion phenomenon within marine and coastal areas. • Carry out the network <i>naturalness island</i> along coastal areas and delocalize some of the human activities that trigger a significant environmental impact (tourism, cities and unsustainable agriculture). • Define environmental policies to oppose climate change effects and to conserve the ecological role of the <i>small islands</i> at global and local level. • Regulate fishery and touristic activities along coasts.
Nature 2000 Network	
	<ul style="list-style-type: none"> - (No actions expected)
Protected areas	
	<ul style="list-style-type: none"> • Evaluate efficiency of protected areas in terms of ecological network. • Verify relationships between national ecologic network, “Natura 2000” network, territorial ecological network and ecological network at species, groups of species and communities level. • Encourage land management around protected areas in line with their objectives and characteristics, thus promoting the maintenance of naturalness in the whole territory and not only in corridor areas. • Increase the system of marine protected areas, presently incomplete and not enough developed in relation to the need of protection of marine and coastal environments. • Verify through gap analysis the coherence between protected areas and environment heterogeneity at landscape level. • Verify efficiency of management tools.

TABLE 2 Items and actions of the Italian National Biodiversity Strategy
 Source: Ministry for the Environment, Land and Sea Protection, 2009 (b)



fits. Yet a full quantification of the cumulative impacts of the proposed measures is not possible at this stage. The costs' review of the measures outlined in the Strategy shows that the needs for funding will differ according to the targets and measures identified. Nature-based innovation and action to restore ecosystems and conserve biodiversity can create new skills, jobs and business opportunities. The study on "The

Economy of Ecosystems and Biodiversity" (TEEB) estimates that global business opportunities from investing in biodiversity could be worth from 2 to 6 trillion of US dollars by 2050 (full details available at <http://www.teebweb.org/>). Nevertheless, so far in Europe the goals of biodiversity's conservation have prevailed on the "sustainable uses". In fact, the designation of "Natura 2000" terrestrial

PATHS Actions

Adapting to Climate Change and mitigating its effects

- To manage ecosystems and *natural infrastructures* through the use of new and improved management technologies.
- Highlight the role of fighting illegal logging.
- Encourage the use of new and improved technologies in priority areas (water management, forestry, agriculture, infrastructure development) so as to minimize biodiversity loss at all levels.
- To develop forest-based climate mitigation options, such as Reduced of Emission from Deforestation and Degradation (REDD).
- A proper transfer of best practices, as well as soft and hard technologies through cooperation programmes.

Biodiversity, Economics and Business

- To support the urgent completion of the international process on access and equitable sharing of the benefit arising out from the utilization of genetic resources.
- To avoid or minimize any further nature destruction in the implementation of infrastructural programs.
- To recognize and promote the role of governments in setting up policies, incentives and resources for incorporating ecosystem values into commercial decision-making.

Enhancing biodiversity and ecosystem services in human modified ecosystems

- To develop and implement specific biodiversity related policies and incentives in all relevant sectors and to promote markets for biodiversity-friendly and traditional products.
- To apply the principles of Integrated Coastal Zone Management (UNEP – Regional Seas Programme).
- To establish an ecologically coherent networks of marine protected areas.
- To develop and strengthen prevention actions (including early warning and rapid responses), improved procedures for information exchange and to identify best practices for risk assessment procedures, to prevent impact of invasive alien species on biodiversity and ecosystem services.
- To promote a new approach to urban planning which integrates ecosystem services (air, water cleaning, noise reduction etc.) and ecologically friendly buildings, infrastructure and transport systems.

Science, Research and Policy

- To strengthen the Italian capacity to develop, establish and maintain a global science-policy interface to ensure Italian international environmental cooperation.
- To complete the process to establish an effective science-policy interface for biodiversity and ecosystem services for conservation and sustainable use of biodiversity, long term human well-being and sustainable development.
- To set up and implement strong actions to promote the cooperation among countries, international organizations, research institutes and NGOs to develop a global monitoring scheme on biodiversity to improve the development and the use of advanced technologies to carry out monitoring of change of biodiversity and global environmental assessment.
- To ensure permanent and timely communication on the status and trend of biodiversity.

TABLE 3 Strategic paths of the Italian National Biodiversity Strategy
 Source: Ministry for the Environment, Land and Sea Protection, 2009 (b)

sites is nearly complete, with 18% of European territory covered. As such, the EU has already met the global 2020 target of having at least 17% of terrestrial and inland water conserved through protected areas. However, if the EU is to reach the global target of protecting at least 10% of coastal and marine areas, more efforts will be needed in the marine environment. At present, just over 4% of EU marine areas are part of the “Natura 2000” network.

Furthermore, ecosystems outside protected areas provide essential services that need to be protected and restored. Green infrastructure can be used to re-establish connections between natural areas that have been fragmented by infrastructure development, agriculture or urban sprawl, creating ecological corridors to link up protected areas and using nature-based approaches.

The strategy will be reviewed in 2014 and adjustments made, if needed. The Commission will follow up different proposals and initiatives listed in the Strategy, including a separate strategy on Green Infrastructure, and legislative proposals on Invasive Alien Species and on access and benefit sharing in 2012.

The Italian National Biodiversity Strategy

The Italian Fourth National Report to the Convention on Biological Diversity states that Italy is uniquely rich in biodiversity and that more than 20% of the territory is included into different types of protected areas (Ministry of the Environment, Land and Sea Protection, 2009 - a).

In the light of the above, following the EU biodiversity Strategy, the Italian National Biodiversity Strategy (Ministry of the Environment, Land and Sea Protection, 2009 - b) asserts that biodiversity and ecosystem services must be preserved, evaluated and, where possible, restored, to continue to support the sustainable economic prosperity and human well-being despite global changes.

While the thematic areas still seem to follow a traditional track linked to the naturalistic area, the projection of the Italian National Strategy beyond 2020 convenes at least part of the message expressed by the EU strategy on biodiversity.

In fact, for each item the National Strategy focuses on a list of actions that represent the core of the strategy (see table 2).

In its second part, on future engagements, the Strategy suggests strategic paths to be achieved by 2020, more in accordance with the international framework (table 3).

Conclusions

It is difficult to assess the novelty and the effectiveness of the new European strategy as well as of the strategies carried out at the national level. The focus on agriculture, forestry and fishery is surely offering concrete possibilities of action. The recognition of the linkage between biodiversity and climate change, with its bi-directional effects, is important but would deserve a punctual analysis in quantitative terms to identify the possible important actions to be carried out in integrated terms. However, the fact that the outcomes of desertification and land degradation on biodiversity are not taken into account as related to the above mentioned linkage suggests the permanence of ultra-specialized scientific views and bureaucratic approaches.

Apart from these novelties, the present strategy appears very similar to the previous (unsuccessful) one: a long list of protectionist recommendations that it is difficult to forecast if they will be applied and if they will generate appreciable effects.

Nevertheless, some specific points are not considered, such as:

- operational suggestions toward a sustainable use of living resources (a delay in this field is clearly recognized in the National strategy);
- operational indications on alien species: permissible vs. prohibited in the various habitats;
- no consideration of the fruition of biodiversity (in concrete terms: where, when, how) is present and, therefore, no analysis of the relation between biodiversity and development or biodiversity and tourism. Also the linkage between biodiversity and cultural heritage, so important in Italy, is missing;
- the prioritization is not extended to a precise list of habitats, ecosystems, regions, with consequent lack of a real priority list; finally
- the “*ecosystem approach*”, as the real, applicable scientific advancement of the Convention, is missing.

In synthesis, there exists the commitment to protection, but science-based policy choices are scarce. Furthermore, if protected areas, in the enlarged sense of the word, are 20% or more of the National territory, it is difficult to think of a further increase. Perhaps, we should now focus on sustainable use and sustainable management. This focus is also suggested by the report published by the European Commission in May 2011, concerning life and resource efficiency. It calls for the necessity of decoupling growth from resource use (European Commission, 2011 - b), introducing a clear link between the conservation of biodiversity and the different sectors of economy, society and environment in the broadest sense.

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