

THE CHALLENGE OF BIODIVERSITY LOSS

1. The fourth Global Environment Outlook (GEO-4) report concluded that Biodiversity provides the basis for ecosystems and the services they provide, upon which all people fundamentally depend. Chapter 5 of the report identified the following main messages:

2. **People rely on biodiversity in their daily lives, often without realizing it.** Biodiversity contributes to many aspects of people's livelihoods and well-being, providing products, such as food and fibres, whose values are widely recognized. However, biodiversity underpins a much wider range of services, many of which are currently undervalued. The bacteria and microbes that transform waste into usable products, insects that pollinate crops and flowers, coral reefs and mangroves that protect coastlines, and the biologically-rich landscapes and seascapes that provide enjoyment are only a few. Although much more remains to be understood about the relationships between biodiversity and ecosystem services, it is well established that if the products and services that are provided by biodiversity are not managed effectively, future options will become ever more restricted, for rich and poor people alike. However, poor people tend to be the most directly affected by the deterioration or loss of ecosystem services, as they are the most dependent on local ecosystems, and often live in places most vulnerable to ecosystem change.

3. **Current losses of biodiversity are restricting future development options.** Ecosystems are being transformed, and, in some cases, irreversibly degraded, a large number of species have gone extinct in recent history or are threatened with extinction, reductions in populations are widespread and genetic diversity is widely considered to be in decline. It is well established that changes to biodiversity currently underway on land and in the world's fresh and marine waters are more rapid than at any time in human history, and have led to degradation in many of the world's ecosystem services.

4. **Reducing the rate of loss of biodiversity, and ensuring that decisions made incorporate the full values of goods-and-services provided by biodiversity will contribute substantially towards achieving sustainable development as described in the report of the World Commission on Environment and Development (Brundtland Commission report).**

(a) Biodiversity plays a critical role in providing livelihood security for people. It is particularly important for the livelihoods of the rural poor, and for regulating local environmental conditions. Functioning ecosystems are crucial as buffers against extreme climate events, as carbon sinks, and as filters for waterborne and airborne pollutants.

(b) From the use of genetic resources to harnessing other ecosystem services, agriculture throughout the world is dependent on biodiversity. Agriculture is also the largest driver of genetic erosion, species loss and conversion of natural habitats. Meeting increasing global food needs will require one or both of two approaches: intensification and extensification. Intensification is based on higher or more efficient use of inputs, such as more efficient breeds and crops, agrochemicals, energy and water. Extensification requires converting increasing additional areas of land to cultivation. Both approaches have the potential to dramatically and negatively affect biodiversity. In addition, the loss of diversity in agricultural ecosystems may undermine the ecosystem services necessary to sustain agriculture, such as pollination and soil nutrient cycling.

(c) Many of the factors leading to the accelerating loss of biodiversity are linked to the increasing use of energy by society. Dependence on and growing requirements for energy are resulting in significant changes in species and ecosystems, as a result of the search for energy sources and of current energy use patterns. The consequences can be seen at all levels: locally, where the availability of traditional biomass energy is under threat, nationally, where energy prices affect government policies, and globally, where climate change driven by fossil-fuel use is changing species ranges and behaviour. The latter is likely to have very significant consequences for livelihoods, including changing patterns of human infectious disease distribution, and increased opportunities for invasive alien species.

(d) Human health is affected by changes in biodiversity and ecosystem services. Changes to the environment have altered disease patterns and human exposure to disease

outbreaks. In addition, current patterns of farming, based on high resource inputs (such as water and fertilizers) and agricultural intensification, are putting great strains on ecosystems, contributing to nutritional imbalances and reduced access to wild foods.

(e) Human societies everywhere have depended on biodiversity for cultural identity, spirituality, inspiration, aesthetic enjoyment and recreation. Culture can also play a key role in the conservation and sustainable use of biodiversity. Loss of biodiversity affects both material and non-material human well-being. Both the continued loss of biodiversity and the disruption of cultural integrity represent obstacles towards the attainment of the Millennium Development Goals (MDGs).

5. **Biodiversity loss continues because current policies and economic systems do not incorporate the values of biodiversity effectively in either the political or the market systems, and many current policies are not fully implemented.** Although many losses of biodiversity, including the degradation of ecosystems, are slow or gradual, they can lead to sudden and dramatic declines in the capacity of biodiversity to contribute to human wellbeing. Modern societies can continue to develop without further loss of biodiversity only if market and policy failures are rectified. These failures include perverse production subsidies, undervaluation of biological resources, failure to internalize environmental costs into prices and failure to appreciate global values at the local level. Reducing the rate of biodiversity loss by 2010 or beyond will require multiple and mutually supportive policies of conservation, sustainable use and the effective recognition of value for the benefits derived from the wide variety of life on Earth. Some such policies are already in place at local, national and international scales, but their full implementation remains elusive.

