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THE MILLENNIUM ECOSYSTEM ASSESSMENT

Note by the secretariat

The Millennium Ecosystem Assessment (MA) was initiated in 2002 under the auspices of the United Nations, with its secretariat coordinated by the United Nations Environment Programme, and governed by a multi-stakeholder board involving international institutions and representatives of Governments, business, non-governmental organizations and indigenous peoples. The objective of the MA was to assess the consequences of ecosystem change for human well-being and to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems and their contributions to human well-being.

By decision 19/COP.6, the Conference of the Parties (COP) requested the secretariat to continue to follow closely the activities of the MA and, *inter alia*, to facilitate the involvement of the Parties in order that the needs and concerns of the Parties were taken into account in the assessment. The secretariat has participated in the Executive Committee and the Board meetings of the MA, including in the drafting of the relevant reports. Moreover, the secretariat submitted the names of experts from the roster to serve as reviewers for the MA reports, and information on the progress of the MA has been sent to the focal points as appropriate.

The MA prepared a report entitled “Ecosystems and Human Well-being – Desertification Synthesis: A Report of the Millennium Ecosystem Assessment”. This synthesis report is based on a sound summary of scientific evidence, and states that desertification must imperatively be addressed to meet the Millennium Development Goals of the United Nations. Desertification must be fought at all levels, but this battle must ultimately be won at the local level. There is evidence that success is possible. Meanwhile, this report makes it now clearer that this phenomenon is embedded in a global chain of causality and that its impact is felt far beyond the boundaries of affected areas. Desertification contributes significantly to climate change and biodiversity loss.

This report is organized around the core questions originally posed to the MA:

- How has desertification affected ecosystems and human well-being?
- What are the main causes of desertification?
- Who is affected by desertification?
- How might desertification affect human well-being in the future?
- What options exist to avoid or reverse the negative impacts of desertification?
- How can we improve our understanding of desertification and its impacts?

The Secretariat of the MA has made the published report available, and it will be distributed to the Parties during COP 7. The report will also be presented to the Committee on Science and Technology by a representative of the MA Secretariat. Moreover, a summary for decision makers has also been prepared and is before the Committee for consideration. The Committee may wish to make observations and recommendations, as deemed appropriate.

**ECOSYSTEMS AND HUMAN WELL-BEING: DESERTIFICATION SYNTHESIS
A REPORT OF THE MILLENNIUM ECOSYSTEM ASSESSMENT**

SUMMARY FOR DECISION MAKERS¹

1. Desertification is defined by the United Nations Convention to Combat Desertification as “land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities”. Land degradation is in turn defined as the reduction or loss of the biological or economic productivity of drylands. This report evaluates the condition of desertification in drylands, including hyper-arid areas, by asking pointed questions and providing answers based exclusively on the reports generated for the MA.
2. Desertification occurs in all continents except Antarctica and affects the livelihoods of millions of people, including a large proportion of the poor in drylands. Desertification takes place worldwide in drylands, and its effects are experienced locally, nationally, regionally and globally. Drylands occupy 41 per cent of the Earth’s land area and are home to more than two billion people — a third of the human population in the year 2000. Drylands include all terrestrial regions where water scarcity limits the production of crops, forage, wood and other ecosystem provisioning services. Formally, the MA definition encompasses all lands where the climate is classified as dry sub-humid, semi-arid, arid or hyper-arid. Please see appendix A of the report for more details about their geography and demography.
3. Some 10–20 per cent of drylands are already degraded (medium certainty). Based on these rough estimates, about 1–6 per cent of the dryland people live in desertified areas, while a much larger number is under threat from further desertification. Scenarios of future development show that if unchecked, desertification and degradation of ecosystem services in drylands will threaten future improvements in human well-being and possibly reverse gains in some regions. Therefore, desertification ranks among the greatest environmental challenges today and is a major impediment to meeting basic human needs in drylands.
4. Persistent, substantial reduction in the provision of ecosystem services as a result of water scarcity, intensive use of services and climate change is a much greater threat in drylands than in non-dryland systems. In particular, the projected intensification of freshwater scarcity as a result of climate change will cause greater stresses in drylands. If left unmitigated, these stresses will further exacerbate desertification. The greatest vulnerability is ascribed to sub-Saharan and Central Asian drylands. For example, in three key regions of Africa — the Sahel, the Horn of Africa, and South-east Africa — severe droughts occur on average once every 30 years. These droughts triple the number of people exposed to severe water scarcity at least once in every generation, leading to major food and health crises.
5. Desertification is a result of a long-term failure to balance demand for and supply of ecosystem services in drylands. The pressure is increasing on dryland ecosystems for the provision of services such as food, forage, fuel, building materials, and water for humans and livestock, for irrigation, and for sanitation. This increase is attributed to a combination of human factors and climatic factors. The former includes indirect factors such as population pressure,

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socioeconomic and policy factors, and globalization phenomena such as distortions to international food markets, and direct factors such as land-use patterns and practices and climate-related processes. The climatic factors of concern include droughts and projected reductions in freshwater availability due to global warming. While the global and regional interplay of these factors is complex, it is possible to understand it at the local scale.

6. The magnitude and impacts of desertification vary greatly from place to place, and change over time. This variability is driven by the degree of aridity combined with the pressure people put on the ecosystem's resources. There are, however, wide gaps in our understanding and observation of desertification processes and their underlying factors. A better delineation of desertification would enable cost-effective action in areas affected by it.

7. Measurement of a persistent reduction in the capacity of ecosystems to supply services provides a robust and operational way of quantifying land degradation, and thus desertification. Such a quantification approach is robust because these services can be monitored, and some of them are already routinely monitored.

8. Desertification has strong adverse impacts on non-drylands as well; affected areas may sometimes be located thousands of kilometres away from the desertified areas. The biophysical impacts include dust storms, downstream flooding, impairment of global carbon sequestration capacity, and regional and global climate change. The societal impacts relate notably to human migration and economic refugees, leading to deepening poverty and political instability.

9. Tailored to the degree of aridity, interventions and adaptations are available and used to prevent desertification and to restore, where needed, the capacity of the dryland ecosystems to provide services. Increased integration of land and water management is a key method for desertification prevention. Local communities play a central role in the adoption and success of effective land and water management policies. In this respect, they require institutional and technological capacity, access to markets and financial capital. Similarly, increased integration of pastoral and agricultural land uses provides an environmentally sustainable way to avoid desertification. However, policies to replace pastoralism with sedentary cultivation in rangelands can contribute to desertification. On the whole, prevention is a much more effective way if coping with desertification, because subsequent attempts to rehabilitate desertified areas are costly and tend to deliver limited results.

10. Desertification can also be avoided by reducing the stress on dryland ecosystems. This can be achieved in two ways. First, by the introduction of alternative livelihoods that have less of an impact on dryland resources. These livelihoods benefit from the unique advantages of drylands: round-the-year available solar energy, attractive landscapes and large wilderness areas. Second, by the creation of economic opportunities in urban centres and areas outside drylands.

11. Scenarios for future development show that the desertified area is likely to increase, and the relief of pressures on drylands is strongly correlated with poverty reduction. There is medium certainty that population growth and increase in food demand will drive an expansion of cultivated land, often at the expense of woodlands and rangelands. This is likely to increase the spatial extent of desertified land.

12. The MA scenarios also show that coping with desertification and its related economic conditions is likely to fare better when proactive management approaches are used. Proactive land and water management policies can help to avoid the adverse impacts of desertification. These approaches may initially have a high cost due to technological development and deployment and may also have a slower rate of environmental improvement. Their long-term implementation may be facilitated by globalization trends through greater cooperation and resource transfer.

13. On the whole, combating desertification yields multiple local and global benefits and helps mitigate biodiversity loss and human-induced global climate change. Environmental management approaches for combating desertification, mitigating climate change and conserving biodiversity are interlinked in many ways. Therefore, joint implementation of major environmental conventions can lead to increased synergy and effectiveness, benefiting dryland people.

14. Effectively dealing with desertification will lead to a reduction in global poverty. Addressing desertification is critical and essential for meeting the Millennium Development Goals successfully. Viable alternatives must be provided to dryland people to maintain their livelihoods without causing desertification. These alternatives should be embedded in national strategies to reduce poverty and in national action programmes to combat desertification.
