THE FACTS OF DESERTIFICATION AND UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

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1. Introduction

Desertification is a serious problem that threatens the livelihoods and the lives of nearly a billion people in more than 100 countries. The total area affected covers one-third of the Earth's land surface. The people living in these areas are at risk of having to abandon their homes and migrate because the land can no longer sustain them. Though significant efforts have been initiated to combat desertification, the problem is worsening: each year, according to the Worldwatch Institute, the continents lose 24 billion tons of topsoil, creating a condition that often results in severe desertification.

Desertification does not, as many think, mean the expansion of deserts. It is a process of land degradation in the drylands where previously stable environments are degraded by humans through erosion, overgrazing, overcropping, poor irrigation practices and deforestation, combined with variations in climate. Desertification is an environmental problem that is both the reason behind and the consequence of numerous other ecological concerns, including the loss of biological diversity and the depletion of water resources. As such, it contributes to an environmental spiral that could get progressively worse unless drastic and immediate efforts are taken to correct it. Similarly, it stems from and leads to extreme poverty.

Rapid growth in population causes agricultural expansion into marginal lands, leading to subdivision of land, deforestation and, again, desertification. Excessive use of pesticides and other chemical substances can lead to depletion of soil fertility and soil degradation which, again, contributes to desertification.

The deterioration of lifesupport systems as a result of desertification causes significant social and economic disruptions. Desertification has a debilitating impact on the capacity of populations and communities to sustain the means needed for livelihood. In extreme cases, as during periods of drought, the land is no longer capable of supporting the people who live there. Often they have no other alternative but to leave the countryside for urban areas. Where rural human settlements gradually disappear, what is left is often a socioecological situation in which no development is possible.

Though most of the countries that are affected by desertification are in developing countries, desertification is a problem that must be viewed in an international context because it cuts across political boundaries and is found in all continents. Desertification is the result of a complex interaction of numerous factors, including external aspects such as the state of the world economy, commodity prices, interest rates, energy imports, cultural behaviour and conditional aid packages. These external factors, together with internal ones such as inappropriate political and policy instruments, low environmental investment levels and high population growth, combine to work against good land management and to worsen desertification.

The current global economic system also is part of the problem. The rapid incorporation of indigenous economic systems based on subsistence production into a world economy of mass commodity production often causes indigenous peoples to over-cultivate their land. Trade and structural adjustment programmes and the transfer of inappropriate technology exacerbates the problem. The economies of many developing countries are heavily dependent on the export of raw materials, such as agricultural cash crops, into markets over which they have no control. This leads to an over-exploitation of often fragile dryland resources.

Because desertification brings about the loss of vegetation, it can result in the extinction of plant and animal species, and therefore contribute to the loss of biodiversity. Drylands are the source of many of the world's varieties of food and medicines. The loss of these plants through desertification represents the loss of valuable and irreplaceable genetic material.

2. The Causes of Desertification

Desertification is the degradation of drylands. It involves the loss of biological or economic productivity and complexity in croplands, pastures, and woodlands. It is due mainly to climate variability and unsustainable human activities. The most commonly cited forms of unsustainable land use are overcultivation, overgrazing, deforestation, and poor irrigation practices. Seventy percent of the world's drylands (excluding hyper-arid deserts), or some 3,600 million hectares, are degraded. While drought is often associated with land degradation, it is a natural phenomenon that occurs when rainfall is significantly below normal recorded levels for a long time.

Drylands respond quickly to climatic fluctuations. By definition, drylands have limited freshwater supplies. Precipitation can vary greatly during the year. In addition to this seasonal variability, wide fluctuations occur over years and decades, frequently leading to drought. Over the ages, dryland ecology has become attuned to this variability in moisture; plants and animals can respond to it rapidly.

People must also adjust to these natural fluctuations. The biological and economic resources of drylands, notably soil quality, freshwater supplies, vegetation, and crops, are easily damaged. People have learned to protect these resources with age-old strategies such as shifting agriculture and nomadic herding. However, in recent decades these strategies have become less practical due to changing economic and political circumstances, population growth, and a trend towards more settled communities. When land managers cannot or do not respond flexibly to climate variations, desertification is the result.

The relatively low priority given to environmental protection often leads to poor land management decisions. The overuse of land may result from specific economic conditions or from inappropriate land laws or customs. In many cases, unregulated access to land resources may lead some individuals to maximize their own gains by overexploiting the land at the expense of the community as a whole. Poor people, particularly poor women, often lack access to the best land, depending instead on the most fragile areas and resources. Their poverty may give them little alternative but to extract what they can from the scarce resources available to them, even though this degrades the land.

International economic forces can encourage people to overexploit their land. International trade patterns can lead to the short-term exploitation of local resources for export, leaving little profit at the community level for managing or restoring the land. Similarly, the development of an economy based on cash crops, or the imposition of taxes, can distort local markets and promote overexploitation of the land.

Ignorance, errors, and natural and man-made disasters can also contribute to land degradation. Ignorance of the natural environment played an important role in the US during the infamous Dust Bowl of the 1930s; among other errors, during a time of drought Midwestern farmers used ploughs better suited for the more temperate latitudes of Western Europe. In recent decades, similar mistakes in the choice of policies or technologies have led to land degradation in many countries, both developed and developing. Disasters such as wars and national emergencies also destroy productive land by displacing its managers or causing heavy concentrations of migrants to overburden an area. Natural disasters such as floods and droughts can have a similar effect.

What role do increasing populations and population densities play? It is tempting to conclude that an expanding human population is the ultimate driving force behind desertification. More people in an area inevitably exert a greater pressure on that area's resources; sometimes this pressure is indirect, as when growing urban populations place demands on food production in uncrowded rural areas. But the causes of desertification are complex, and the relationship between two variables such as population and desertification is not clear-cut. For example, a decline in population can result in desertification since there may no longer be enough people to manage the land adequately.

3. The Consequences of Desertification

Desertification reduces the land's resilience to natural climate variability. Soil, vegetation, freshwater supplies, and other dryland resources tend to be resilient. They can eventually recover from climatic disturbances, such as drought, and even from human-induced impacts,

such as overgrazing. When land is degraded, however, this resilience is greatly weakened. This has both physical and socio-economic consequences.

Soil becomes less productive. Exposed and eroded topsoil can be blown away by the wind or washed away by rainstorms. The soil's physical structure and bio-chemical composition can change for the worse. Gullies and cracks may appear and vital nutrients can be removed by wind or water. If the water table rises due to inadequate drainage and poor irrigation practices, the soil can become waterlogged, and salts may build up. When soil is trampled and compacted by cattle, it can lose its ability to support plant growth and to hold moisture, resulting in increased evaporation and surface run-off.

Vegetation becomes damaged. The loss of vegetation cover is both a consequence and a cause of land degradation. Loose soil can sandblast plants, bury them, or leave their roots dangerously exposed. When pastures are overgrazed by too many animals, or by inappropriate types, edible plant species may be lost, allowing inedible species to invade.

Some of the consequences are borne by people living outside the immediately affected area. Degraded land may cause downstream flooding, reduced water quality, sedimentation in rivers and lakes, and siltation of reservoirs and navigation channels. It can also cause dust storms and air pollution, resulting in damaged machinery, reduced visibility, unwanted sediment deposits, and mental stress. Wind-blown dust can also worsen health problems, including eye infections, respiratory illnesses, and allergies.

Food production is undermined. Desertification is considered a major global environmental issue largely because of the link between dryland degradation and food production. A nutritionally adequate diet for the world's growing population implies tripling food production over the next 50 years. This will be difficult to achieve even under favourable circumstances. If desertification is not stopped and reversed, food yields in many affected areas will decline. Malnutrition, starvation, and ultimately famine may result. The relationship between soil degradation and crop yields, however, is seldom straightforward. Productivity is affected by many different factors, such as the weather, disease and pests, farming methods, and external markets and other economic forces.

Desertification contributes to famine. Famine typically occurs in areas that also suffer from poverty, civil unrest, or war. Drought and land degradation often help to trigger a crisis, which is then made worse by poor food distribution and the inability to buy what is available.

Desertification has enormous social costs. There is now increased awareness of the relationship between desertification, movements of people, and conflicts. In Africa, many people have become internally displaced or forced to migrate to other countries due to war, drought, and dryland degradation. The environmental resources in and around the cities and camps where these people settle come under severe pressure. Difficult living conditions and the loss of cultural identity further undermine social stability.

Desertification is a huge drain on economic resources. There is little detailed data on the economic losses resulting from desertification, although an unpublished World Bank study suggested that the depletion of natural resources in one Sahelian country was equivalent to 20% of its annual Gross Domestic Product (GDP). At the global level, it is estimated that the annual income foregone in the areas immediately affected by desertification amounts to approximately US$ 42 billion each year. The indirect economic and social costs suffered outside the affected areas, including the influx of "environmental refugees" and losses to national food production, may be much greater.

4. An Introduction to the United Nations Convention to Combat Desertification

The Convention offers new hope in the struggle against desertification. Over the past two decades, the problem of land degradation in dryland regions has continued to worsen. The Convention promotes a fresh new approach to managing dryland ecosystems and -- just as important -- to managing development aid flows.

Desertification is caused by climate variability and human activities. In the past, drylands recovered easily following long droughts and dry periods. Under modern conditions, however, they tend to lose their biological and economic productivity quickly unless they are sustainably managed. Today drylands on every continent are being degraded by overcultivation,

overgrazing, deforestation, and poor irrigation practices. Such overexploitation is generally caused by economic and social pressure, ignorance, war, and drought.

Desertification undermines the land's productivity and contributes to poverty. Prime resources -- fertile topsoil, vegetation cover, and healthy crops -- are the first victims of desertification. The people themselves begin to suffer when food and water supplies become threatened. In the worst cases, they endure famine, mass migration, and colossal economic losses. Over 250 million people are directly affected by desertification, and some one thousand million (or one billion) are at risk.

The Convention to Combat Desertification will be implemented through action programmes. These programmes are the core of the Convention. At the national level, they will address the underlying causes of desertification and drought and identify measures to prevent and reverse it. National programmes will be complemented by subregional and regional programmes, particularly when transboundary resources such as lakes and rivers are involved. Action programmes are detailed in the four regional implementation annexes to the Convention -- Africa, Asia, Latin America and the Caribbean, and the Northern Mediterranean.

The Convention promises to dramatically reshape the international aid process. It seeks to engage donor nations and agencies and recipient countries in a new partnership. In the case of Africa, the respective roles of donors and recipients will be worked out in partnership agreements developed through a consultative process. The aim is to ensure that funding programmes are better coordinated, that funding is based on the needs of the affected countries, that donors can be sure their funds are well-spent, and that recipients obtain the maximum benefit from the sums available.

Another radical departure is the strong emphasis on a "bottom-up" approach with strong local participation in decision-making. Traditionally, local communities have been relatively passive participants in development projects. Now the Convention puts them on an equal footing with other actors in the development process. Communities and their leaders, as well as non-governmental organizations, experts, and government officials, will work closely together to formulate action programmes. For this innovative and complicated process to work, awareness campaigns may be needed to inform people about the new opportunities presented by this Convention.

Science and technology are vital tools in the fight against desertification. Much remains to be learned about the causes and impacts of desertification, so international cooperation in scientific research and observation must be strengthened. Land degradation can be minimized with both new and traditional technologies, ranging from satellite monitoring to the terracing of steep hill slopes. Science and technology must respond to people's real needs, and the Convention encourages researchers around the world to combine their talents for this purpose.

Financial resources need to be channeled and invested more efficiently. Most funding is raised domestically by the affected countries, but bilateral assistance programmes and international agencies also provide large sums. The Convention establishes a Global Mechanism to promote the mobilization of financial resources. Innovative funding sources, including debt swaps and private-sector financing, will also be encouraged.

The Convention establishes a number of institutions and procedures for guiding international action. The supreme body of the Convention is the Conference of the Parties (COP), which include all ratifying governments. There will also be subordinate bodies for science and technology and for the promotion of funding. The Convention, which has been signed by over 160 countries, entered into force on 26 December 1996, three months after the 50th country ratified it. The COP held its first session in Rome in October 1997.

Desertification is primarily a problem of sustainable development. It is a matter of addressing poverty and human well-being, as well as preserving the environment. Social and economic issues, including food security, migration, and political stability, are closely linked to land degradation. So are such environmental issues as climate change, biological diversity, and freshwater supplies. The Convention emphasizes the need to coordinate research efforts and action programmes for combating desertification with these related concerns.

5. Action Programmes for Combating Desertification

The Convention to Combat Desertification will be implemented through national action programmes. Donors and affected countries will consult together on their respective roles in supporting these programmes, which will be developed with the full participation of local communities. Once the (significant) effort has been made to design an overall programme, it should be possible to initiate specific projects and activities within its framework with minimal paperwork and bureaucracy. Because programmes need to be adapted to particular regional circumstances, most of the specific requirements are described in the four regional implementation annexes for Africa, Asia, Latin America, and the Northern Mediterranean.

Programmes will start with long-term strategies and priorities. This is essential for providing continuity for long-term programming and for enabling governments to coordinate and administer their resources more effectively. Programmes will address the underlying causes of desertification and pay particular attention to preventive measures. They will consider all aspects of the problem -- loss of agricultural productivity, reduced vegetation cover, soil erosion, socio-economic costs, and so on.

Local communities will play a key role in formulating programmes. They will also be active in designing and carrying out the resulting projects. Ongoing discussions and effective communication between the local and national levels will be vital. In this spirit, programmes must be sufficiently flexible to accommodate new initiatives and local adaptations as circumstances change. The end result should be an evolving programme that is "owned" by the very people who most depend on and understand the land.

National governments will commit themselves to providing an "enabling environment". Communities can only play a leading part in carrying out a programme if the national government removes obstacles and provides support. This will mean strengthening existing legislation and, when necessary, enacting new laws. For example, the government may adopt long-term policies encouraging greater decentralization of political power. Or it may introduce reforms granting people greater security of land tenure. Other important steps might be effective institutions for resolving conflicts over land and other resources, energy policies that encourage sustainable woodland management or the replacement of fuelwood by other energy sources, and economic reforms that promote investment and reduce poverty.

Action programmes will also specify the practical steps and measures to be taken. Specific measures to improve the economic environment could include creating financial instruments suited to local needs or introducing drought-resistant crops. Measures to conserve natural resources could involve diversifying energy sources away from the uncontrolled gathering of fuelwood. Other measures could include promoting research activities, drought contingency plans, and improved early warning systems.

Efforts to combat desertification will be fully integrated with other development programmes. Reversing land degradation and alleviating poverty go hand in hand. Both involve improving food security, educating and training people, strengthening the capacity of local communities, and mobilizing non-governmental organizations. Similarly, because desertification affects and is affected by environmental concerns such as biological diversity and climate change, national action programmes need to be integrated with the programmes dealing with these issues.

Programmes will specify the resources available and those still needed. Part of the national budget must be clearly ear-marked for efforts to combat desertification and drought. The amount will vary according to national conditions and capabilities. At the same time, action programmes will seek to mobilize substantial financial resources from external sources. The requirements for technical cooperation will also be identified and prioritized.

Subregional and regional action programmes can help to harmonize and strengthen national programmes. They will be designed through consultations among the affected countries of each region (e.g. Africa) and sub-region (e.g. West Africa). In addition to boosting the efficiency of national programmes, they could promote joint programmes for the sustainable management of shared rivers and other cross-boundary ecosystems. They could also promote better cooperation among scientific and technical institutions.

6. Partnership Arrangements Between Donors and Affected States

The Convention to Combat Desertification aims to improve the channeling and investment of official development aid. It recognizes that, in this era of tightening foreign aid budgets, development aid must be used as effectively as possible. Donors need to be confident that their contributions are well-spent. Recipients need to get the maximum benefit from the limited sums available.

The Convention expresses a consensus on the lessons of the past. Over the years, a great deal of insight has been gained on how to improve the process of development aid. For example, it is generally agreed that many past aid efforts suffered because they were "supply driven" by the financing agency, handled top-down by planners, or delivered without adequate coordination at all levels. These insights are recognized in the Convention.

Partnership arrangements will improve communication and coordination between donors and recipients. A vital part of the Regional Implementation annexes, these agreements will spell out explicitly the role of each partner, including donor agencies and governments, recipient governments, and non-governmental organizations (NGOs). This should help to harmonize efforts and maximize the impact of assistance. Partnership arrangements would be part of, or associated with, national action programmes. They could be used for many different purposes, such as mobilizing financial resources, reorienting assistance mechanisms to fit the Convention's approach, making inventories of funding sources, or developing new models of technological cooperation.

These agreements will be negotiated through a consultative process. Traditionally, consultations have been initiated and led by a donor agency. Under the Convention, however, consultations would be initiated and managed by the recipient country itself. They will be a continuous process. The resulting aid package should better serve the communities affected by desertification.

The consultative process will start within the affected country. The government could set up a coordinating body to act as a forum for consultations. To prepare the way it might want to promote the Convention through public awareness and training activities. It would then need to gain the participation of policymakers, community leaders, members of non-governmental organizations, and others responsible for the resulting activities. They would work together to evaluate past efforts, identify the country's needs, and set priorities. This participatory approach should result in a national action programme and a national consensus on how to work with international partners.

The recipient country must link up with international partners. These partners could include donor governments, regional development banks, and other international agencies. At the same time, donor partners, particularly developed country governments, could also develop a consultation process among themselves to structure their dialogue with recipient governments. This would help them to coordinate their policies, minimize overlaps and gaps, and evaluate and respond to requests for assistance.

Non-governmental organizations are granted an unprecedented role in this process. NGOs tend to be well-organized, close to the community level, and able to draw on a pool of skilled and experienced people. The Convention recognizes these strengths and makes specific provisions for NGOs to become active partners in these partnership arrangements.

7. Participatory Development: A bottom-up approach to combating desertification

What role do local communities have under the Convention to Combat Desertification? Traditional development planning has too often been "top-down". Outside experts start the process by defining objectives, activities, and expected outputs. Sometimes they visit the area to consult local authorities, inform them of the plan, and invite the community to help execute projects. The Convention turns this approach upside-down. The spirit and letter of the Convention reflect the philosophy of participatory development. Action programmes to combat desertification are now to originate at the local level and be based on genuine local participation.

Why is local participation in project planning so important? Over the past two decades, programmes designed with little reference to the perceptions and capacities of local people have often failed. Outsiders cannot necessarily identify local needs and priorities or figure out

how best to meet them. Local communities have valuable experience and a special understanding of their own environment. When the responsibility for natural resource management is taken away from them, their use of land and other natural resources can become highly inefficient. The result is often land degradation. Participatory development recognizes the rights of local communities over their resources. They have a greater stake than anyone else in improving agricultural productivity while ensuring the long-term ecological balance of their fragile lands. In addition, local participation in planning and decision-making is essential for building local capacity.

Who should participate? Those most directly involved in the management, use, and benefits of a particular resource must be active participants. In the case of desertification, small farmers (both men and women), pastoralists, nomads, and other local land users are clearly vital to the process, as they have the most intimate contact with the land. Local leaders -- village elders, traditional chiefs, representatives of community groups -- and regional and national officials are also essential for mobilizing action. Technical experts, researchers, non-governmental organizations (NGOs), and voluntary associations are needed for the invaluable skills and expertise they can bring.

When should local participation start? At the very inception of a development initiative. To begin with, the objectives and planned activities should be identified through a participatory process. Once a programme has started, the participants will need to make regular reviews of the progress made and obstacles encountered. When each phase is completed, they should all be involved in evaluating its outcome and deciding on the next steps.

How should the process be initiated? The unique culture of each society shapes its patterns of decision-making and communication. Activities *must* originate at the local level, but sometimes additional encouragement may be needed to make people feel that they truly own the process of participatory development. NGOs may have a key role to play here. It may also be necessary for the government to delegate more decision-making authority to the local grassroots level.

How can participation be strengthened? The participatory process is time-consuming and labour-intensive. There are no short-cuts. Awareness campaigns may be needed to educate the public about the Convention and about national action programmes. Agricultural extension services and NGOs can help to build up the community's capacity for "participatory programming". Local decision-making procedures may have to be adapted and strengthened. The community may have to go through a long learning and confidence-building process in order to take full advantage of the new resources it will now receive and manage directly. Due attention should also be paid to involving the more marginalized social groups.

How should local inputs be used at the regional and national levels? At the local level, discussions are likely to take place in informal groups as well as in organized meetings. The results need to be brought forward to the provincial level to ensure inter-village cooperation and the coordinated management of the regional environment. At the national level, all of this input will need to be translated into a national action programme. In addition, the national government will need to respond to local aspirations by providing an "enabling environment", including public infrastructure and technical assistance. It will also serve as the central contact point with foreign aid providers. Ideally, information and ideas will flow back and forth continuously between the various levels.

8. The Role of Science and Technology

The Convention to Combat Desertification establishes a Committee on Science and Technology. Composed of government representatives, the Committee will advise the Conference of the Parties to the Convention (COP) on scientific and technological matters relevant to desertification and drought. In addition, ad hoc panels of government-nominated experts will provide information and advice on specific issues. These experts will be appointed by the COP on the recommendation of the Committee. They must have field experience and will represent a wide range of disciplines.

Success in combating desertification will require an improved understanding of its causes and impacts. There is still much to learn about the linkages between desertification and climate, soils, water, plants, animals, and, in particular, people. Key research areas include

climatology and meteorology, soil sciences, hydrology, botany, zoology, ecology, and the social sciences. Action programmes for combating desertification will outline the research priorities for particular regions and subregions, reflecting local conditions. The Committee on Science and Technology will also advise on research priorities.

The Convention promotes international cooperation in scientific research and observation. The Parties to the Convention agree to integrate and coordinate the collection, analysis, and exchange of scientific data and information. They will also ensure the systematic observation of land degradation in an effort to better understand and assess the processes and effects of drought and desertification. The Convention stresses the need to coordinate such efforts with other related Conventions, in particular those dealing with climate change and biological diversity.

New technologies and know-how should be developed, transferred to affected countries, and adapted to local circumstances. Modern communications, satellite imagery, and genetic engineering are only some examples of modern tools that can help to combat desertification. Better weather forecasts and alerts can help to maintain or increase the land's productivity while improving food security and local living conditions. So too can new plant and animal varieties that are resistant to pests, diseases, and other dryland stresses. Photovoltaic cells and wind energy may reduce the consumption of scarce fuelwood and thus deforestation. For all these reasons, the Convention commits Parties to promoting technological cooperation. It calls for promoting and financing the transfer, acquisition, adaptation, and development of technologies that help to combat desertification or cope with its effects. These technologies should also be environmentally sound, economically viable, and socially acceptable.

Local and traditional technologies and know-how should be protected. People have been coping with the degradation of land and other natural resources at least since the advent of agriculture thousands of years ago. Many local populations have developed techniques for managing soil and water, domesticating plants and animals, and even forecasting the weather. Examples include the terracing of steep slopes in the Andes and Himalayas and the use of irrigation systems around the world since prehistoric times. Many of these traditional technologies are still in use and have proved their effectiveness over centuries. Too often, however, changes in economic, ecological, or cultural conditions have led people to abandon techniques that could still be valuable today. The Convention therefore states that traditional and local technologies and know-how should be protected. Inventories should be made of such technologies and information about them widely disseminated. Local populations should benefit directly from any commercial use of their techniques.

The Conference of the Parties will draw scientific and technology researchers into a global network to support the Convention. Under the leadership of the COP, the Committee on Science and Technology will survey and evaluate existing networks, institutions, agencies, and other bodies working on issues relevant to desertification. It will then promote a global research network committed to supporting the Convention. Scientists world-wide will be encouraged to contribute their know-how and research results to this international effort.

Affected developing countries need more scientific and technological capacity. They often suffer from a scarcity of domestic skills, expertise, libraries, and research centres. Many also need improved hydrological and meteorological services. The Convention encourages developed countries to support capacity-building efforts that will enable developing countries to combat desertification more effectively through science and technology.

9. Institutions and Procedures of the Convention

The Convention to Combat Desertification was negotiated under the auspices of the United Nations. In June 1992, the United Nations Conference on Environment and Development (UNCED -- also known as the Rio Earth Summit) recommended that the United Nations General Assembly establish an Intergovernmental Negotiating Committee (INCD) to prepare a convention to combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa. The Committee was established in early 1993. It held five preparatory sessions before adopting the Convention on 17 June 1994 in Paris. The Convention was opened for signature in Paris on 14-15 October 1994.

The Convention entered into force on 26 December 1996, 90 days after it had been ratified by 50 countries. Over 160 countries have signed it. After a government's representatives have signed the Convention, the national parliament of other designated authority must ratify it. The government then sends its instrument of ratification to the United Nations in New York, which acts as the Depository. Only after the 50th such ratification was received did the 90-day countdown begin for the Convention to enter into force. The first 50 ratifiers became Parties and legally responsible for carrying out their treaty commitments, while other governments will become Parties 90 days after they ratify. In the meantime, many of the Convention's provisions are being carried out voluntarily on the basis of a Committee resolution on urgent action in Africa.

The Conference of the Parties (COP) will oversee the implementation of the Convention. It is established by the Convention as the supreme decision-making body, and it will comprise all ratifying governments (and regional economic integration organizations, such as the European Union). The COP held its first session in October 1997 in Rome, second session in November in Dakar, third session in October in Recife and will hold the fourth session in October in Adelaide. One of its main functions will be to review reports submitted by the Parties detailing how they are carrying out their commitments. The COP will make recommendations on the basis of these reports. It also has the power to make amendments to the Convention or to launch negotiations for new annexes, such as additional regional implementation annexes. In this way, the COP can guide the Convention as global circumstances and national needs change. To assist the COP, the Convention provides for several other supporting bodies and allows the COP to establish additional ones if necessary.

The COP will be supported by a secretariat. Like other Convention secretariats, this one will service the COP by arranging its meetings, preparing documents, coordinating with other relevant bodies, compiling and transmitting information, and facilitating consultations and other actions. Affected developing countries should also be able to rely on the secretariat for information or advice on, for example, organizing their national consultation process.

The Committee on Science and Technology will advise the COP on scientific and technological matters. It will identify priorities for research and recommend ways of strengthening cooperation amongst researchers. It could also advise on such issues as joint research programmes for new technologies. The COP may set up ad hoc panels to assist with specialized issues. The panels would draw their members from a roster of government-nominated experts.

A Global Mechanism will help the COP to promote funding for Convention-related activities and programmes. This Mechanism will not raise or administer funds. Instead, it will encourage and assist donors, recipients, development banks, non-governmental organizations (NGOs), and others to mobilize funds and to channel them to where they are most needed. It will seek to promote greater coordination among existing sources of funding, and greater efficiency and effectiveness in the use of funds. The Global Mechanism will be under the authority of the COP, but the COP will identify another organization to house and operate it.

While only national governments that ratify the Convention can be members of the COP, other bodies and organizations can also participate. International conventions are, of course, legal agreements among sovereign countries. However, this Convention makes special provision for national and international agencies and qualified NGOs to attend the COP's meetings and to contribute to its work. NGOs have not only played a prominent role in the Convention process, but they continue to raise public awareness of the Convention and to lobby parliamentarians for its speedy ratification. For their part, international and regional organizations provide crucial information, expertise, contacts, and research and managerial capabilities.

10. Desertification, Global Change, and Sustainable Development

The Convention to Combat Desertification cannot be viewed in isolation from other efforts to promote sustainable development. The Convention text refers frequently to sustainable development, climate change, biological diversity, water resources, energy sources, food security, and socio-economic factors. The interactions between these issues and desertification are often not fully understood, but they are clearly important. The Convention

therefore emphasizes the need to coordinate desertification-related activities with the research efforts and response strategies inspired by these other concerns.

Efforts to combat desertification complement efforts to protect biological diversity. While many people tend to identify the issue of biodiversity with tropical rain forests, dryland ecosystems also contain a rich biota, including plant and animal species not found elsewhere. Many of humanity's most important food crops, such as barley and sorghum, originated in drylands. Though disappearing fast, indigenous varieties remain a vital resource for plant breeders because of their resistance to stresses such as disease. Dryland species also provide drugs, resins, waxes, oils, and other commercial products. Finally, drylands provide critical habitats for wildlife, including large mammals and migratory birds. These habitats are particularly vulnerable to land degradation.

Land degradation affects the quantity and quality of freshwater supplies. Drought and desertification are associated with lower water levels in rivers, lakes, and aquifers. For example, unsustainable irrigation practices can dry the rivers that feed large lakes; the Aral Sea and Lake Chad have both seen their shorelines shrink dramatically in this way. Water crises are raising political tensions in many parts of the world, particularly where rivers and lakes are shared across borders. Land degradation is also a leading source of land-based pollution for the oceans, as polluted sediment and water washes down major rivers.

Natural climate variations can strongly affect drought patterns. Currently the best understood link between global climate variability and drought involves sea-surface temperature patterns. For example, the El Niño-Southern Oscillation, or ENSO, events, are associated with a warming of the eastern equatorial Pacific; they were especially frequent in the 1980s and early 1990s and occurred in tandem with widespread droughts in southern Africa and elsewhere. Research into such climate patterns is starting to improve seasonal rainfall predictions. Efforts to strengthen predictions are an important part of national action programmes to combat desertification and will help dryland farmers and herders to prepare better for droughts.

Climate change could worsen the effects of desertification. According to the United Nations Framework Convention on Climate Change, "countries with arid and semi-arid areas or areas liable to floods, drought and desertification ... are particularly vulnerable to the adverse effects of climate change." Scientists cannot yet predict how rising atmospheric levels of greenhouse gases will affect the global rate of desertification. What they can predict is that changes in temperature, evaporation, and rainfall will vary from region to region. As a result, desertification is likely to be aggravated in some critical areas but eased in other places.

Desertification may temporarily affect climate change. Land degradation tends to reduce surface moisture. Because less water is available for the sun's energy to evaporate, more energy is left over for warming the ground and, as a result, the lower atmosphere. Meanwhile, wind erosion in drylands releases dust and other particulates into the atmosphere. By absorbing the sun's rays or reflecting them back out into space, they may help to cool the Earth's surface. However, the energy they absorb can heat the lower atmosphere and in this way reduce temperature differences between the atmosphere's vertical layers; this can lead to fewer rainshowers and thus drier land. Finally, the periodic burning of arid and semi-arid grasslands, often associated with unsustainable slash-and-burn agriculture, emits greenhouse gases. So does the unsustainable use of fuel-wood and charcoal, a major cause of land degradation. On the other hand, reforestation is likely to have a cooling effect and is also, of course, an important way to combat land degradation.

Desertification exacerbates poverty and political instability. It contributes significantly to water scarcity, famine, the internal displacement of people, migration, and social breakdown. This is a recipe for political instability, for tensions between neighboring countries, and even for armed conflict. Evidence is mounting that there is often a strong correlation between civil strife and conflict on the one hand and environmental factors such as desertification on the other.

11. Combating Desertification in the Northern Mediterranean

The Northern Mediterranean region is a complex mosaic of diversified landscapes. It has been settled and cultivated for millennia by various cultures and civilizations. Much of the region is semi-arid and subject to seasonal droughts, high rainfall variability, or sudden intense downpours. It is also marked by high population densities, heavy concentrations of industry, and

intensive agriculture. Although people here often use the term "desert", they do so in the sense of wilderness, lack of population, or isolation.

Mediterranean land degradation is often linked to poor agricultural practices. Soils become salinized, dry, sterile, and unproductive in response to a combination of natural hazards - droughts, floods, forest fires - and human-controlled activities - notably over-tilling and overgrazing. The situation has been aggravated by the social and economic crisis in traditional agriculture in recent years and the resulting migration of people from rural to urban areas. The result is abandoned land, particularly on marginal and easily eroded hillsides, and weakened agricultural planning and land management.

The modern economy is also contributing to the problem. Fertilizers, pesticides, irrigation, contamination by heavy metals, and the introduction of exotic (invasive) plant species is undermining the long-term health of the region's soils. Physical changes imposed on watercourses by the construction of reservoirs, the canalization of rivers, and the drainage of wetlands are affecting land quality. Meanwhile, groundwater levels are declining widely, resulting among other things in salt-water intrusion into coastal aquifers. Some 80% of the region's available freshwater is used for irrigation. The dramatic and continuing growth of industry, tourism, intensive agriculture, and other modern economic activities along the coastlines is placing particular stress on coastal areas.

Four members of the Convention's Regional Annex for the Northern Mediterranean belong to the European Union. The Convention to Combat Desertification offers these countries - Greece, Italy, Portugal, and Spain - a framework for mutual cooperation and more effective national action. In addition to intra-regional cooperation, the Annex calls on its members to cooperate with other regions and subregions, particularly with the developing countries of Northern Africa. The Annex's fifth member is Turkey. Other countries in the region are expected to join soon.

The Annex-4 calls for harmonizing action programmes and reviewing progress in combating desertification. This could be done through a coordination committee. The committee could advise on the preparation and implementation of a national, sub-regional or regional programmes and act as a focal point for promoting and coordinating technical cooperation.

Desertification research is receiving a renewed emphasis. Dryland degradation has been studied for years in Africa and other regions, but less so in Europe. Fortunately, a number of research programmes are now assessing the impact of climate and weather on land and soil degradation in the region. EU members are also investing more in the systematic monitoring of land degradation, although there is still a need for better coordination of the collection, analysis, and exchange of data, including with countries outside the EU. There is a need too for more technical and scientific cooperation on research into the causes of land degradation and on other desertification issues.

A number of other strategies also have great potential. It is widely recognized that one priority for the region should be protecting land that has not yet been significantly degraded. An effective and "integrated" approach to water management at the local, national, and regional levels needs to simultaneously address traditional and intensive agriculture, industry, employment, biodiversity, freshwater resources, water pollution, and the special problems of coastal areas. Synergies with other treaties should be exploited. Traditional knowledge and know-how need to be conserved and used. The development, adaptation, and transfer of anti-desertification technologies that are environmentally sound, economically viable, and socially acceptable can be more actively promoted. Finally, local communities and non-governmental organizations can be further engaged.

12. Conclusion and Recommendations

Combating desertification effectively will require both top-down solutions from governments and bottom-up approaches from communities. Managing the drylands of the world in a manner that can increase overall food security while maintaining the sustainable livelihoods of the people is important. During the past few decades, numerous approaches to this problem have been made. These efforts include reforestation, establishment of shelter or green belts, sand dune stabilization, protection of existing forest reserves, the introduction of agro-forestry practices, establishment of communal woodlots and soil and water conservation measures.

Many of the national and regional action programmes, however, have been hampered by lack of political will, poor financial resources and huge external debts.

The 1977 UN Conference on Desertification (UNCOD) acknowledged desertification as a global problem that will require concerted efforts from all nations if practical solutions are to be found. Seventeen years later, an international legal agreement to curb the degradation of drylands worldwide was agreed upon by more than 100 governments. This UN Convention to Combat Desertification, which was called for at the 1992 Earth Summit in Rio de Janeiro, established a framework for national, regional and local programmes to counter the degradation of drylands. It also calls for international action, including the mobilization of "substantial financial resources," transfer of anti-desertification technologies, information exchange and research and training programmes.

The agreement commits countries to a bottom-up approach that integrates local people, national authorities and the international community. The negotiating process to produce the agreement involved an unprecedented number of community and international organizations. The Convention's approach reflects a growing recognition of the importance of grassroots groups and NGOs in fighting desertification, because they reach the people who work the land. The Convention assigns NGOs a role in designing and implementing national programmes and in overseeing national desertification funds.

To combat the problems associated with desertification, it is essential to address a number of environmental issues such as mass migration, loss of plant and animal species and climate change. Often, these issues are best resolved by addressing certain areas of social development such as awareness-raising, education and the empowerment of the marginalized members of society-especially women, who often work the land.

Desertification reflects fundamental ills, such as poverty, underdevelopment and lack of food security. At its root is the fact that, in order simply to survive, many people are forced to engage in environmentally-unsustainable activities. Solving the problem of desertification will not be possible without simultaneously attacking the causes of poverty and addressing the basic needs of rural people.

Stopping desertification would necessitate reversing the processes of land degradation and protecting soil, water and biological resources. At the level of government policy, this would require the promotion of sustainable socio-economic development in order to eradicate poverty and ensure food and energy security, as well as the improvement of living conditions and habitat.

There is a need for international, regional, national and local-level government action to stop the process of desertification. There is also much that must be done at both the community and individual level. Following are some specific suggestions related to desertification that can be carried out at both the individual and community level.

- ***Get your community involved.*** Community organizations and international NGOs have a vital role to play in combating desertification. This is because community organizations are well placed to help governments put appropriate projects into place. To help communities cope with the effects of drought and the impacts of desertification, there is a need for both short and long-term solutions. If the entire community is motivated and mobilized to deal with desertification, true sustainable solutions will be found.
- ***Promote sustainable agriculture.*** The development and dissemination of sustainable agricultural methods is essential to reducing causes of desertification, including soil erosion, over-exploitation of fragile lands, overgrazing on rangelands, and in some areas, overuse of chemical inputs that can reduce long-term productivity. Overall, it is important to reduce pressure on marginal lands, to counter land degradation and to rehabilitate degraded lands through the use of appropriate land management techniques, to reforest deforested areas and to develop the use of alternative energy sources.
- ***Support education.*** More research is needed on how and why land users degrade their land. This research should also focus on land tenure systems, which constitute a major impediment to communities living in fragile ecosystems. Public environmental education is necessary to ensure long-term sustainability of all measures that combat desertification.

- ***Promote public information.*** Programmes to educate citizens about the value of preserving woodland and about alternatives to current practices are necessary, along with citizen participation in developing the best methods of implementing the goals. Your community can do much to spread awareness of the reality of desertification through media campaigns and public speaking.
- ***Pursue partnership with your government.*** A supportive political environment together with the necessary infrastructure plays an important role in the success of projects aimed at combating. Community organizations can persuade their governments through letter-writing campaigns, the use of media and other methods to get them to take notice of the problem of desertification. Governments seeking to protect the fundamental, long-term interests of their people in dryland areas should seek to arrest desertification and reverse its effects whenever possible. This involves not only the direct responsibility of each government to sustain lands under its legal authority, but also a responsibility for all governments to cooperate and to assist in this task as part of a global effort.
- ***Get involved in the Conventions.*** Find out if your government has ratified the Conventions on desertification and biodiversity. If it has, find out what your organization can do to support their implementation. Community organizations also could analyse these Conventions to determine how they can best ensure their implementation in a local context.
- ***Promote popular participation and use of local knowledge.*** Many indigenous people have lived for thousands of years on their land without desertifying it. The inherent survival skills and knowledge of the Earth's processes of traditional peoples living in drylands could offer many solutions to these problems. Any policy taken to combat desertification should take into account the ways of life of indigenous peoples in the areas affected, and try to incorporate their knowledge into an overall action plan.

Reference: *Most of this document is taken and compiled from UNCCD web pages and printed materials.*