



Executive Summary

Desertification in the Mediterranean Region: A Security Issue*

William G. Kepner¹ and Jose L. Rubio²

1. U.S. Environmental Protection Agency, Office of Research and Development, Las Vegas, Nevada, USA
2. Centro de Investigaciones sobre Desertification, Valencia, Spain

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Security issues related to desertification in the Mediterranean Region were the subject of a special NATO workshop held on 2-5 December 2003 at the Museum of Sciences in Valencia, Spain.

This workshop was organized by the U.S. Environmental Protection Agency (Las Vegas, Nevada, USA), Center for Desertification Studies (Valencia, Spain), and the Desert Research Institute (Reno, Nevada, USA) on behalf of the NATO Science Committee and the NATO Committee on the Challenges of Modern Society (Public Diplomacy Division). Additionally, the European Society for Soil Conservation participated as a collaborating institution.

The Workshop focused on two basic concepts: *security* and *desertification* and their linkages. Since the end of the Cold War, traditional security concepts based on national sovereignty and territorial security have increasingly been brought under review. Currently, a broader definition of security that would incorporate non-traditional threats and their causes, including environmental stress, has been advocated. Most current research indicates that global environmental change and its subsequent socio-economic effects are likely to continue and intensify in the future. The intensity as well as the interdependence of these problems will have

affects not only at local scales, but also on an international scale and will begin to impact developing and industrialized countries more directly. These challenges call for mutual cooperation at the international level which provides for multi-disciplinary integration of both technical and policy-making individuals involved in the areas of environment, development of natural resources, foreign relations, and security.

Desertification is recognized as a process of land degradation in arid, semi-arid, and dry sub-humid areas that is the result of several factors, including human activities and climate variation. Desertification is a worldwide phenomenon estimated to affect 40 million km² or approximately one-third of the Earth's surface area and 1 billion people in over 100 countries (or about one-fifth of the human population of the world).

At the global level, it is estimated that the annual income lost in areas immediately affected by desertification amounts to approximately \$42 billion (USD) each year. However, there are enormous social costs as well. There is strong evidence that desertification exacerbates poverty and negatively affects social order and stability. It can contribute significantly to water scarcity, famine, internal displacement of people, migration, and social breakdown and thus presents a recipe for political, social, and economic instability which can also lead to tension between neighboring countries and armed conflict. In sum, resource scarcity and environmental degradation create inequity in resource distribution that often contributes to insecurity and conflict.

While arid, semi-arid, and dry sub-humid ecosystems of the Mediterranean Region are vulnerable to numerous threats, including pollution from current or past anthropogenic activities, the overwhelming threat is from human population density and associated uncontrolled development, leading to depletion or degradation of natural resources (water, soil, biota). The predominant considerations in many parts of the world for environmental management decisions and ecosystem protection include understanding and establishing land and resource use priorities, establishing time frames for management, using comparative evaluation and assessment analyses, and clarifying where decision authority resides (i.e., local, regional, national, international).

It is a challenge for both scientists and decision-makers to include all these considerations and communicate effectively among multiple user groups. As a direct result of increasing discussion and research about the potential for large, regional-scale environmental changes and the general acknowledgment of the relationship between environmental change and human social, economic, and demographic issues, there is now more attention paid to the question of the relationship between environment and security. Thus, "how environmental degradation in arid, semi-arid, and dry sub-humid lands (i.e. desertification) in the Mediterranean Region is related to human security" became the central issue of the workshop.

For the purpose of this workshop the organizers turned to the Mediterranean countries that included 7 NATO Member countries, 3 NATO Partner countries, and 7 countries that comprise the Mediterranean Dialogue in the Middle East and North Africa for discussion of the issue (Figure 1). The region has a long historical record of political, economical, and cultural division and subsequently a long period of human occupation and resource utilization. The central

importance of the topic and its relation to security attracted a large and diverse participation; over 225 participants from 22 different countries registered for the workshop. The challenge before the workshop participants was to identify the linkages between the regional causes and physical processes of desertification and the consequences of past and future land use, especially as they relate to international security.



Figure 1. Mediterranean Region

For the purposes of the workshop the following key factors were central to the discussion:

- A) Variable *population growth* in the northern vs. southern Mediterranean;
- B) Impact of *climate change* due to increased temperatures and decline in precipitation;
- C) *Scarcity of water* for potable consumption and irrigation;
- D) *Decline in food production* and the increased dependence on imported goods, e.g. cereals,
- E) *Progressive soil erosion, salinization, and sodification*;
- F) *Increased urbanization* in major metropolitan areas.

The workshop was organized into five special sessions dealing with consequences of degradation on social, economic, and political issues (especially food security and human migration); soil and vegetation monitoring techniques and programs; water resources and management; and forecasting techniques and advanced technologies. Desertification was not treated solely as an environmental problem but as an issue with cultural, political, social, and economic importance. Thus the purpose of the NATO Desertification Workshop became eight-fold:

1. To provide a focus on land degradation in arid, semi-arid, and dry sub-humid areas (i.e. desertification) within the Mediterranean Region;
2. To bring together interdisciplinary technical experts and decision/policy-makers throughout both the northern and southern Mediterranean States;
3. To recognize that there are remarkable demographic differences between the North and South Mediterranean and thus there are different socio-economic disturbance gradients as well as climatic gradients that affect environmental condition, sustainability of resources, employment, poverty, migration, and ultimately, security.
4. To evaluate the consequences of desertification to security both in regard to the ability of the environment to provide important ecological goods and services and relative to social and political instability;
5. To open discussion on the issue of linking security to environmental condition throughout the Mediterranean Region and to explore likely impacts on the social, economical, and political dimensions of human society;
6. To increase the knowledge base and provide assistance in developing mitigative measures and policy to thwart social and environmental instability;
7. To encourage interdisciplinary research especially in regard to integrating social and natural science;
8. To promote better mutual understanding and friendly relations across the region.

The workshop has been made possible through the active cooperation and participation of experts from government, academia, private industry, and non-governmental organizations from the NATO member and partner countries and the seven member countries of the Mediterranean Dialogue. The workshop provided a multi-lateral forum for cooperation, information exchange, and dialogue among the environmental, development, foreign and security policy communities. Additionally, it provided an “enabling environment” to facilitate joint work programmes, e.g. bridging the Regional Implementation Annexes for Africa and the Northern Mediterranean within the UN Convention to Combat Desertification. The organizers recognize the importance of understanding the linkages between the environment and security in the Mediterranean and the further importance of having open discussion which is inclusive to all those who inhabit the

region. It has been our sincere hope that this small effort represents the beginning of a larger process intended to bring environmental and societal stabilization to the area and thus will help advance the cause of peace. We would like to acknowledge and thank all those who participated in the NATO Desertification Workshop including those who not only provided expertise through the presentation of papers but to all those who engaged in discussion and contributed their organizational support and planning assistance in making the workshop a success.

William G. Kepner
U.S. Environmental Protection Agency
Office of Research and Development
Las Vegas, Nevada, USA

Jose L. Rubio
Centro de Investigaciones sobre Desertification
Valencia, Spain