



**DESERTLINKS**

**COMBATING DESERTIFICATION IN MEDITERRANEAN EUROPE  
LINKING SCIENCE WITH STAKEHOLDERS**

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**DELIVERABLE 3.4b  
Guidelines on the use of the desertification indicator system  
by local stakeholders  
J. García Gómez**

**CO-ORDINATORS: DR JANE BRANDT AND DR NICHOLA GEESON,  
KING'S COLLEGE, LONDON**

**Website: <http://www.kcl.ac.uk/projects/desertlinks>**

## GUIDELINES ON THE USE OF THE DESERTIFICATION INDICATOR SYSTEM BY LOCAL STAKEHOLDERS

Jorge García Gómez

*In early 2005 DIS4ME was presented to the local stakeholders with whom DESERTLINKS has been working at series of final workshops in the Alentejo, Guadalentín, Agri and Lesvos. This paper contains the explanatory guidelines that were used to introduce the stakeholders to the indicator system before they went on to explore it on their own on PCs and laptops.*

### INTRODUCTION

First of all it is necessary to know what the system can be used for. The system can be used:

- to better understand the problem of desertification, which areas are more affected, which socio-economic activities can affect the problem and to assess how critical the problem is.
- It can be also used to know more about indicators. An indicator is a measurement that reflects the status of some social, economic or environmental system over time. We use indicators (physical, social, economic, agricultural...) to better identify, define and assess desertification.

The project has been developed in four target areas: Alentejo (Portugal), Agri (Italy), Island of Lesvos (Greece) and Guadalentín basin, Murcia (Spain), so you will find examples and specific approaches to each of these target areas inside the system.

The system does not directly give solutions, but it is a part of the identification of the problem of desertification. Remediation activities are much more difficult to face than the preventive ones. The main and the most challenging task is to prevent the problem since it is more feasible to act on the driving forces leading to degradation and desertification that act when the problem is fully developed.

### CONTENT

The system can be divided in four parts:

1. *Desertification and DIS4ME*, where an introduction about desertification and indicators is showed and where the evaluation questionnaire is available.
2. *Indicators*, where it is possible to find background information about indicators and the indicator system. There are a **list** with more than 120 indicators and his **description**, grouped in different aspects (economic, social, ecological...), and a database (**DIS-DataBase**), where it is possible to sort and search the data base of indicators. On the other hand it is also possible to view indicators relating to specific **desertification issues** (such as intensive irrigation, land abandonment or institutional organisation).
3. *Using and combining indicators*. Here there are grouped a set of **headline indicators**, single indicators integrating several aspects of a more complex system.

It is also possible to view indicators of relevance to **national and Mediterranean-wide scales** and of relevance to the **Annex IV National Action Programmes**.

Several tools are available. They will allow us to:

- Assess the sensitivity to desertification of your local area. The **ESI tool**, based on the ESA methodology. Some examples of how the ESA methodology can be used to develop different **scenarios** based on changes in land use or management practice are showed.
  - Calculate desertification risk from **salinisation** and **erosion** under specific land uses (such as pine forest, cereals).
  - Assess the economic and environmental consequences of the decisions land users make concerning the various agricultural practices used.
4. *Linking science and stakeholders*, where users can obtain information which has been developed to **disseminate** scientific information about desertification to the stakeholder community. In this section there is also a complete report on the **consultation of stakeholders** about their experience and perception of desertification, land management measures they take to combat desertification and factors affecting their decision making. These activities have been of fundamental importance to the development of DIS4ME. The comments and suggestions made by stakeholders are reported here. Lastly, some of the methodologies and indicators contained in DIS4ME have already been **used and applied** in other areas. Here they are showed.

The site map on DIS4ME will help users to find the page they are interested in.

## A QUICK APPROACH TO DESERTIFICATION

According to the United Nations Convention to Combat Desertification (UNCCD), Desertification is defined as "land degradation in arid, semi-arid and dry sub-humid regions resulting from various factors, including climatic variations and human activities." This is the definition that is now universally used. This is a very general definition that must be adapted to the specific situation in each area because initial situation, driving forces and responses are different in each area. For example, a particular issue associated with desertification in the Alentejo is rural depopulation driven by the search of the young for better incomes and standards of living in the cities and resulting in an ageing rural population. In the Guadalentín the issues relate to changing land uses in response to available EU subsidies resulting in large-scale contouring of hillslopes and planting of almond trees. The land degradation in these two situations has different causes and consequences. A different set of indicators is required to understand the bigger picture in each. We recommend your visit to "desertification issues" page, where a lot of issues associated with desertification are reported, with specific examples for each target area.

## ABOUT INDICATORS

Indicators are a very important part of the system. It is very important to understand what an indicator is and what can be used it for in order to better use the tools that the system provides.

**What is an indicator?** An indicator is a measurement that reflects the status of some social, economic or environmental system over time. Indicators are small, manageable, tangible and telling pieces of a system to give people a sense of the bigger picture. They are used to track changes in complex systems and monitor progress towards pre-determined goals.

For example, annual rainfall is indispensable in the suite of desertification indicators as is parent material (rock type) and population density. The data for all these are widely available, easily understood, measured and monitored, essential criteria for all successful indicators. Indicators are being used as substitute measures for issues that are not directly observable or measurable.

In addition, it is often advantageous to aggregate several indicators into an index allowing different factors to be taken into account at the same time. The aridity index is a good example for this, combining annual rainfall and potential evapotranspiration rates.

In DIS4ME you will find a wide range of indicators, fully defined. The aim of this long list is to provide the maximum information available. Users don't need to work with all the indicators, but now they have the chance of using those more accurate to their necessities or those more adapted to their availability of data.

**How can I use the indicators?** The indicators are applied to better define and assess desertification. In addition to the use of the system as a database of indicators, the system provides some tools to use the indicators to assess desertification in a specific area. These tools are:

- **ESI tool.** Environmental sensitivity is a composite index which can be used to gain an understanding of factors causing desertification risk within a land unit. The Environmental Sensitivity to desertification of an area arises from the result of the interactions among elementary factors (indicators) that are differently linked to direct and indirect degradation or desertification phenomena. The ESI tool is the practical application of this index. With this tool the user can obtain:
  - an evaluation of the quality of the environment being examined for the four main components of vegetation, climate, soil and management;
  - the estimate of the Environmental Sensitivity to desertification of the area (both ES Index and ESAs score);
  - an evaluation of the most critical factors that are present in the area;
  - an evaluation of the critical interactions among factors that are present in the area.
- **ManPrAs** is a tool for Agricultural Management Practices Assessment. The objective is to suggest a method, based on the indicators list in DIS4ME, to assess the sustainability of agricultural practices through its soil conservation index (SCI) and economic results (Gross Margin-GM), and to simulate the impact on soil degradation, farm profitability and socio-economic features of alternative crops in a specific context. The tool is strongly user-orientated, and allows assessment of the environmental and economic aspects of agricultural practice, giving a powerful simulation tool to farmers and stakeholders involved in land management.

- **ManData** is a database that includes all the data gathered in the four target areas of Desertlinks project (Agri Basin – Italy; Alentejo – Portugal; Guadalentín – Spain; Lesvos – Greece) about the current, past and potential land use management practices, specifically the agricultural techniques. Agricultural practices embrace decisions about the special intensity of farming including every step of the cultivation method and livestock breeding. It is a first temptation to give an answer to the increasing interest on the strong linkages between agricultural activities and environmental issues. Since there are clear evidences that is not the agricultural activities itself that could create negative effects on natural resources but how the agriculture is performed, ManData can be considered as a first phase of a process that try to shad lights among specific agricultural techniques and Environmental risk. In particular it constitute the first data set that can be considered the main variables involved in that links.