



Assessing the Fit of Responses to Land and Ecosystem Degradation and Desertification

April 2010 - March 2014

The LEDDRA Philosophy and Approach

Land and ecosystem degradation and desertification (LEDD) are serious problems, the unwanted environmental and social welfare impacts of which hamper the achievement of sustainable development and increase the vulnerability of affected regions.

Positive responses to LEDD aim to prevent the deterioration of land resources, to restore the vitality of ecosystems and to promote human and environmental welfare; more importantly, **to protect and conserve the socio-ecological resilience of affected regions.**

Prevention, mitigation, adaptation and restoration/rehabilitation are categories of positive responses. They comprise measures such as regulations, plans, strategies, and policies, sustainable land management practices, good practice codes, taxation, subsidies, resource pricing, environmental communication and education, voluntary measures, etc. A single measure rarely proves effective or appropriate in all situations.

Successful responses are those that combine complementary measures, which fit and are well adapted to the biophysical and societal conditions and goals of a region.

LEDDRA seeks to advance the **holistic study and assessment of the socio-environmental fit of responses to land and ecosystem degradation and desertification.** This is a fundamental requirement for rational, responsive and effective land management, planning and policy making for sustainable development in affected areas. Towards this aim, it:

- Adopts the **Complex Adaptive Systems (CAS) paradigm and the Drylands Desertification Paradigm**
- Employs the **ecosystem approach** to the study of human-environment interactions
- Focuses on **response assemblages** that are actual combinations of response actions under particular environmental, socio-economic and institutional circumstances and the stakeholders involved
- Examines their associated costs and benefits, barriers to and opportunities for adoption of proper measures, and knowledge transfer processes for various categories of stakeholders
- Recommends procedures for designing **optimal response assemblages** that combine mutually supportive and complementary measures to assure the balance between human activities and available resources and conserve the ecological and the community resilience of affected areas
- Involves EU and international co-operation countries (ICPC)

Spain: The area in the photo below was converted into an orange plantation 8 years ago, transforming the area as shown in the cover photo (study area)



LEDDRA Objectives, Methodology, Deliverables

LEDDRA aims to:

- **Develop the general theory of responses to LEDD** and its variants for selected land use/cover classes and study sites
- To **compile and improve existing, and to develop new integrated methodologies** for assessing the fit of responses to LEDD and for designing optimal response assemblages
- To **provide applications** in selected EU and ICPC sites to support the development and illustrate the use of theoretical knowledge and methodologies
- To **introduce the policy context and provide recommendations for policy and land management actions** at the international, EU and national levels
- To **disseminate the research findings** to as many user groups and organizational levels as possible

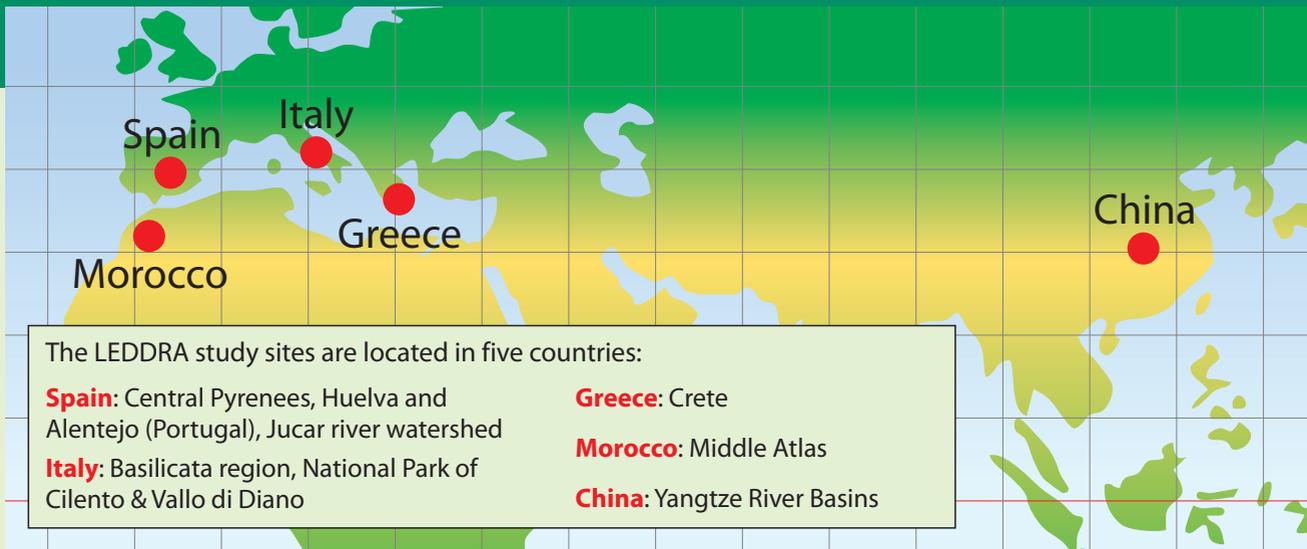
LEDDRA employs an integrated methodology with feedback between theory, methods, applications and policies.

- **Three thematic Work Packages** focus on three major land use/cover classes: cropland, grazing land and forests/shrublands
- **Three analytical Work Packages** coordinate the sequence of integrated LEDD analysis – theory, methods, applications, policy analysis – within each thematic work package
- **Scientific coordination and research synthesis** is a separate Work Package
- Two Work Packages deal with the **administrative and technical coordination and management of the consortium** and the **dissemination, use and exploitation of research results** respectively



Italy: Typical effects of heavy soil erosion in Basilicata

Italy: Terracing for erosion control of Basilicata and Campania regions (study areas)



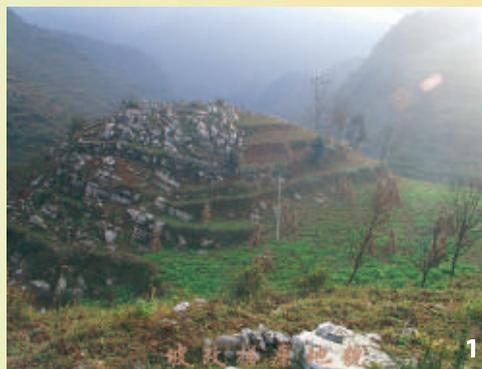
Greece:

1. Land cleared for orchards without terraces suffers severe soil erosion (E. Crete)
2. Contrast between the irrigated orchard and naturally growing vegetation (south of Chania)

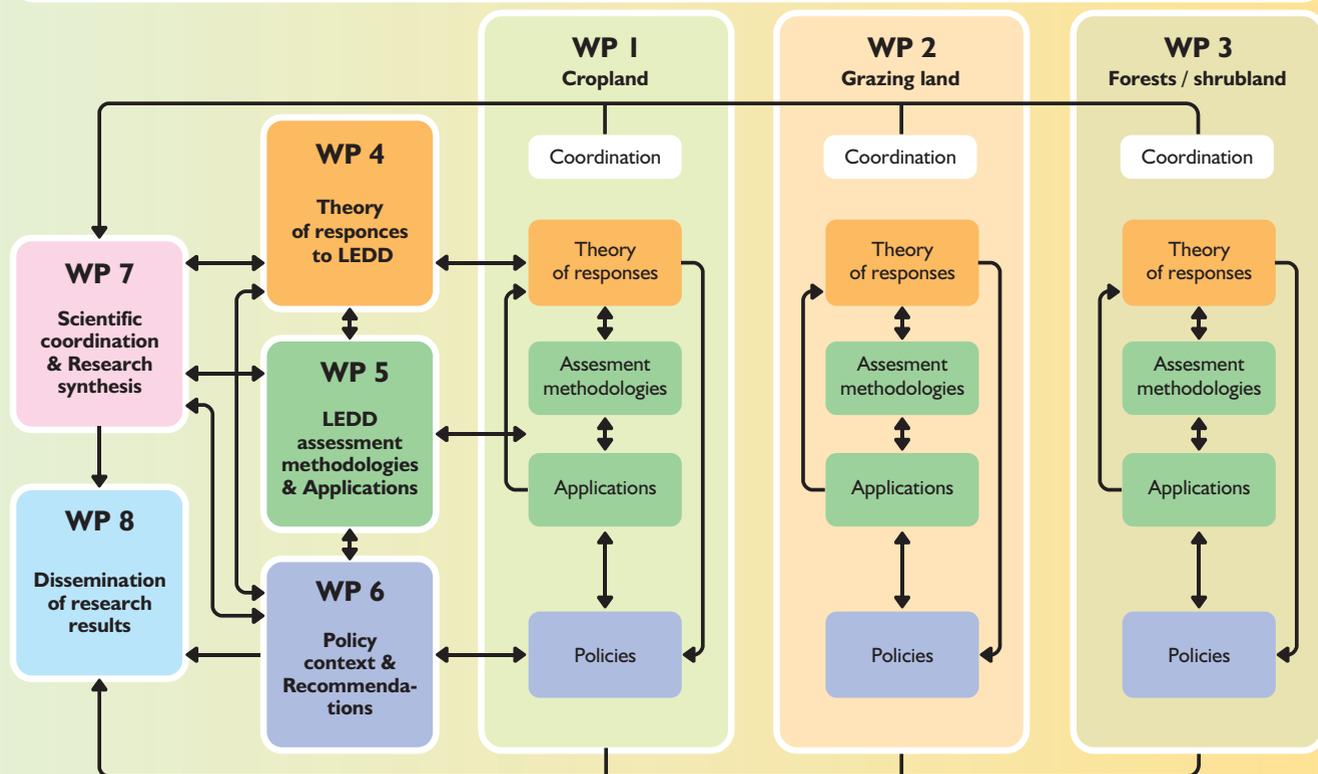
Photos by N. Geeson, May 2009

China:

1. Typical petrification phenomenon in Nayong County, Guizhou Province, Southwest of China
2. Stone faced terraces stopping further erosion and resuming grain production by putting back topsoils from nearby area in Nayong County, Guizhou Province, Southwest of China



WP 0 Administrative and technical coordination and management



The principal outputs of LEDDRA include:

- **Theory of responses to LEDD**
 - general; specific to cropland, grazing land and forests/shrubland; and, specific to study sites
- **Assessment methodologies of responses to LEDD**
 - general; specific to cropland, grazing land and forests/shrubland; and, specific to study sites
- **Applications: study of responses to LEDD** in cropland, grazing land and forests/shrubland study sites
- **Policy context and policy recommendations for LEDD**
 - general; specific to cropland, grazing land and forests/shrubland; and, specific to study sites
- **Final synthesis**
 - Assessing the Fit of Responses to LEDD: Theory, assessment, applications, recommendations, knowledge transfer
- **Responses to LEDD: A web-based information system**
- **Stakeholder workshops** and special events in selected study sites
- **A policy conference**
 - “LEDD: theory, assessment methodologies and policies”

CONSORTIUM

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(<http://www.aua.gr/gr/dep/a3i/#>)
- 3D – Environmental Change
(www.3d-ec.com)
- University of Plymouth
(www.plymouth.ac.uk/schools/sogees)
- MEDES Foundation - Foundation for the
Sustainable development of the Mediterranean
(www.fondazionemedes.it)
- Università degli Studi della Basilicata
(www.unibas.it)
- Ecologic Institute
(<http://ecologic.eu>)
- Agencia Estatal Consejo Superior De
Investigaciones Científicas (www.ipe.csic.es)
- Changjing River Scientific Research Institute
(www.crsri.cn/english/english.asp)
- Institut Agronomique et Vétérinaire Hassan II
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Land & Ecosystem
Degradation & Desertification

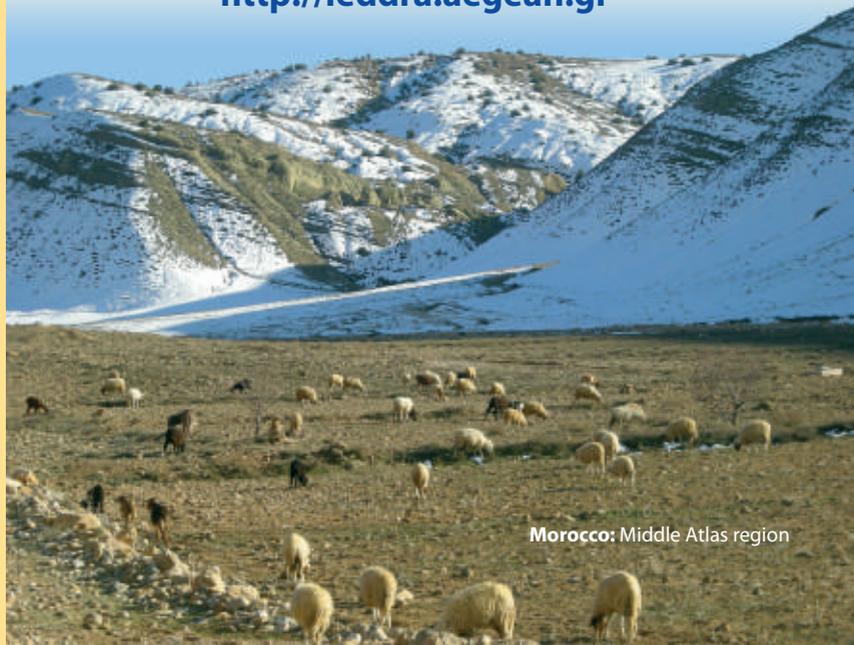
Response
Assessment

LEDDRA,
by adding new and
refining existing
scientific and policy-
relevant knowledge on
responses to LEDD in a
cross-national context,
will provide valuable
support to:

- the goals of the 10-year
Strategic Plan of the UNCCD
- the work of the
UNCCD Committee
on Science & Technology
- the activities of international,
EU and national organizations
- environmental NGOs, local
stakeholders and others

in the perspective of elaborating scientifically sound
approaches and informed policies to combat land and
ecosystem degradation and desertification

<http://leddra.aegean.gr>



Morocco: Middle Atlas region