



LeaDra

Land & Ecosystem
Degradation & Desertification

Response
Assessment

Overview of LEDDRA

Three years of research on responses to LEDD

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Coordinators meeting Brussels, June 10-11, 2013

Coordinating institution

University of the Aegean (Greece)

Project partners

- Agricultural University of Athens (Greece)
- 3D-Environmental Change (The Netherlands)
- University of Plymouth (United Kingdom)
- MEDES Foundation (Italy)
- University of Basilicata (Italy)
- Ecologic Institute (Germany)
- Consejo Superior de Investigaciones Científicas (Spain)
- University of Valencia (Spain)
- Changjiang River Scientific Research Institute (China)
- Institut Agronomique et Vétérinaire Hassan II (Morocco)

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- LEDDRA aim
- LEDDRA philosophy and approach
- LEDDRA objectives
- LEDDRA study sites
- LEDDRA preliminary results
- Dissemination and exploitation plan
- Future research priorities

Integrated assessment of the **fit of human responses** to land and ecosystem degradation and desertification (LEDD) to support
(a) rational, responsive and effective sustainable land management and land use planning and
(b) sensible policy making at all levels

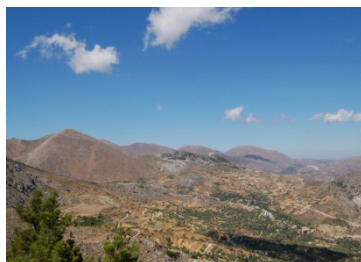
Human responses to LEDD: any type of formal (planned, institutionalized) and/or informal (unplanned, non-institutionalized) action in LEDD-affected regions that purports to:

- (a) directly and explicitly tackle a LEDD problem or
- (b) address other socio-economic problems as well as individual and collective goals

The **success of responses** in meeting environmental and social goals depends on **how they fit** and how they are **well adapted** to the biophysical and societal conditions in a region

LEDDRA philosophy and approach

Responses to LEDD depend critically on
WHO does **WHAT, WHEN, WHERE** and **WHY**



LEDDRA philosophy and approach

LEDD occurs in **socio-ecological systems (SES)**

i.e. in **coupled human-environment systems**

There is a **dynamic two-way relationship** between

- (a) LEDD problems **and** their geographic, socio-environmental and institutional context, and
- (b) responses to LEDD problems **and** their context.

LEDDRA adopts the **Complex Adaptive Systems** paradigm and the **Resilience Thinking** approach to study the **socio-ecological fit of responses to LEDD**

Three main **land themes**, distinguished according to three land use/land cover types, are examined:

cropland, grazing land, forests/shrubland

Each theme is characterized by a particular **mode of production**

Study sites, representative of the land themes, have been chosen from Italy, Greece, Spain, Morocco and China

LEDDRA objectives

- A. To develop the **theory of responses to LEDD**
in general, for cropland, grazing land and forest/shrubland
regions and in selected study sites
- B. To compile, improve and enrich **existing** and develop
new integrated assessment methodologies to:
 - (a) assess the socio-ecological fit of various types of existing or
proposed responses to LEDD and
 - (b) identify **optimal response assemblages**
- C. To provide **applications** in selected study sites
- D. To introduce **the policy context** and to provide
policy recommendations at various levels;
in general, for cropland, grazing land and forest/shrubland
regions and in selected study sites drawing on the
theoretical and applied research results

LEDDRA study sites

Cropland	Grazing land	Forests/ shrubland
Greece, Italy, Spain, China	Spain, Greece, Morocco	Italy, Spain
<ul style="list-style-type: none"> ▪ Messara Valley, Crete (Greece) ▪ Alento river basin (Italy) ▪ Zhang Jiachong area-Zi Gui County (China) ▪ Jucar river watershed (Spain) ▪ Western Andevalo-Sanlucar de Guadiana area (Spain) and Huel Baixo Guadiana (Mertola & Alentejo (Spain-Portugal)) 	<ul style="list-style-type: none"> ▪ Sobrabe Area-Huesca Province, Aragon (Spain) ▪ Timhdit area-Land of the Ait Beni Yakoub tribe-Middle Atlas (Morocco) ▪ Asteroussia Mts., Crete (Greece) 	<ul style="list-style-type: none"> ▪ Matera Prefecture-Mediterranean Coastal & Upland study site (Italy) ▪ Western Andevalo-Sanlucar de Guadiana area (Spain)

The analysis is performed at the level of the study site as a whole (regional level) and at the level of selected communities from each study site (community level)

LEDDRA preliminary results

- LEDDRA conceptual framework
- LEDDRA theoretical framework
- LEDDRA methodology
- Study Site Applications and Study Site Application Plan (SSAP)
- Policy analysis – EU, national/regional and study site level
- LEDDRiS – a web-based information system

LEDDRA conceptual framework

- Definitions of concepts and typology of responses to LEDD
- Frames the systematic analysis of responses to LEDD in a socio-ecological system (SES) and the provision of policy & land management guidance under alternative future scenarios
- Guides the development of the theoretical framework, methodology and SSAP

Socio-ecological resilience

Central concept for the analysis of responses to LEDD

LEDDRA preliminary results

LEDDRA conceptual framework

Stages

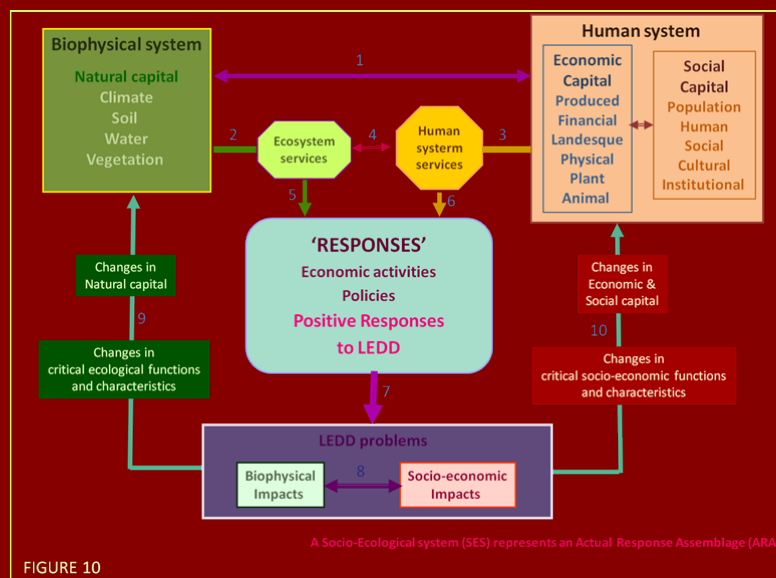
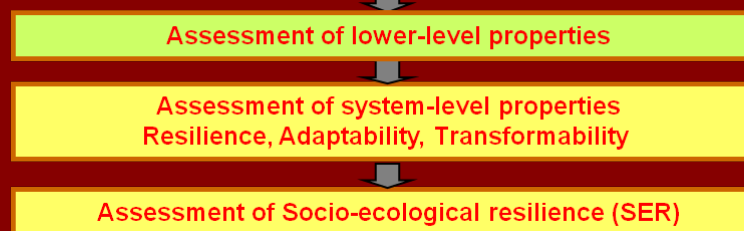


FIGURE 10

**Theory
&
Assessment
(description
and explanation)
of SES/ARA**



**Assessment of
system level
properties &
SER**

**Evaluation criteria
Assessing the Fit of responses to LEDD**

**Assessment & explanation (theory)
of fit of responses to LEDD**

**Fit of ARA?
Policy and management recommendations
ORA?**

**Guidance for managers &
policy makers**

FIGURE 11

LEDDRA preliminary results

LEDDRA theoretical framework

A coherent theoretical framework offers the basis for:

- (a) describing and explaining LEDD and responses to LEDD as the product of interactions of natural, economic and social capital; special emphasis on the important role of the latter.
- (b) theorizing on socio-ecological resilience (regional level) and community resilience (local level) as emerging from the context-specific interactions among the components of the three capitals.

LEDDRA preliminary results

LEDDRA methodology

Drawing on the conceptual framework, and guided by the CAS paradigm and Resilience thinking, it prescribes the steps to be followed and indicates quantitative and qualitative assessment methods and techniques for:

- ◆ the analysis of the SES and its evolution over time,
- ◆ the assessment of socio-ecological/community resilience and of the fit of responses to LEDD,
- ◆ the design of Optimal Response Assemblages and
- ◆ the provision of policy and land management guidance.

Qualitative methods include in-depth and elite interviews and stakeholder workshops

LEDDRA preliminary results

Study Site Applications and Study Site Application Plan (SSAP)

The study site applications in LEDDRA serve as research tools to:

- ✚ assist in the development of theory, assessment methods and techniques, and policy analysis,
- ✚ illustrate of theory, assessment methodologies and policy analysis that are developed in LEDDRA

A **Study Site Application Plan (SSAP)** has been developed, and it is continuously being refined and updated, to guide the consistent analysis of all **10** study sites.

LEDDRA preliminary results

Policy analysis – international, EU, national/regional and study site level

Selection of policies that directly and/or indirectly relate to LEDD and to responses to LEDD, acting as drivers either of LEDD or of responses to LEDD:

International agreements, EU policies, national policies

Some policies may be land theme-specific (e.g. forest policies)

National level: Description of selected policies

Study site level: Analysis of policy implementation, impacts, effectiveness

Example of policies analyzed at the two Greek study sites

Development policies: agricultural/rural, regional development, transport, spatial, energy, tourism

Environmental Policies: horizontal, water, nature protection, forest, Greek NAP to CDD

Horizontal policies: administrative

Dissemination and exploitation plan

Implementation of the LEDDRA DUE plan:

- ✿ Actors
- ✿ Media
- ✿ Modes

Actors

Stakeholders from the international to the local level

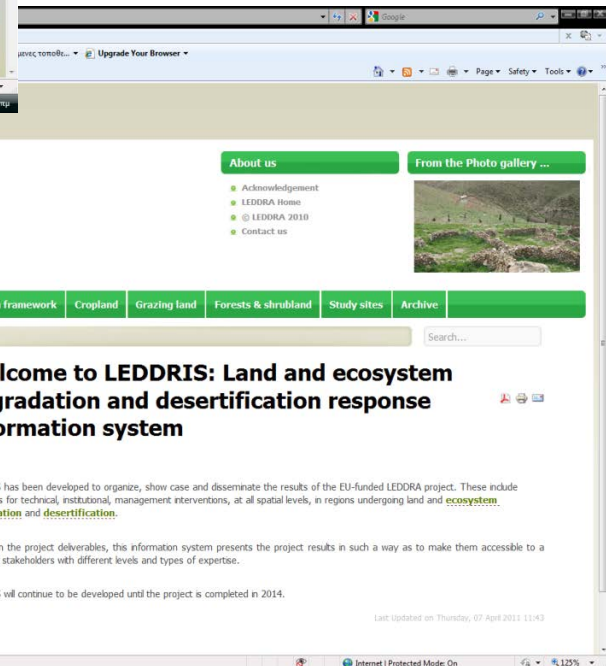
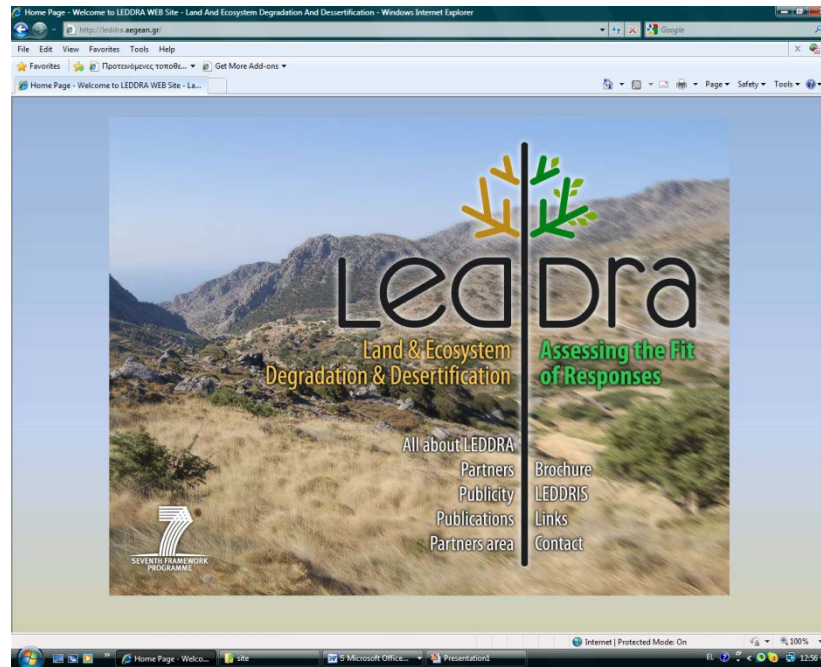
Media

Journal publications, conference presentations, press releases, LEDDRA brochure, LEDDRA website (<http://leddra.aegean.gr>). LEDDRiS (<http://www2.aegean.gr/leddris>)

Modes

Conferences (participation, organization, special sessions)
Special events (China, Morocco) + Crete (3rd plenary meeting)
Stakeholder workshops
Radio and TV talks

Dissemination and exploitation plan



Future research priorities related to land degradation and desertification

- Integrated analysis of socio-ecological systems (SES) at various scales to address theoretical and methodological issues; e.g. **delineation of SES, integration of natural and social science methods, development of integrated assessment methods and techniques and indicators of LDD, SER, etc., cross-scale interactions and their effects on LDD, urban rural interactions, etc.**
- Study of mechanisms behind the emergence of SER as a function of a system's properties and characteristics
- Analysis of socio-ecological resilience in relation to ecosystem services in diverse settings
- Analysis of socio-ecological resilience with regard to important social issues; e.g. food security, energy sufficiency, water resources management, resource exhaustion
- Resilience thinking-based policy studies; resilience as an emerging policy goal (replacing sustainability?) and as a guide for policy design
- Case studies in a variety of geographical, land use and socio-cultural contexts

Thank you