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LitusGo Manual

Module 7

**Ecosystems management
(land and coastal ecosystems)**



Education and Culture DG
Lifelong Learning Programme

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Preface to the LitusGo Education Manual

The LitusGo Manual is part of the LitusGo educational package which is included in the LitusGo portal: www.litusgo.eu. LitusGo aims at the training and capacity building of Local Authorities and local stakeholders in Integrated Coastal Zone Management issues and the reaction to the impacts of climate change.

This Manual consists of 20 autonomous, self-contained and inter-related modules. The modules are available in four languages, Greek, English, Maltese and Turkish and in three different forms: the dedicated wiki application in the LitusGo portal, the dvd and the hard copy version. This hard copy version of the LitusGo Manual consists of 20 self-contained booklets, one for each module, kept in a hard collective case.

List of modules of the LitusGo Educational Manual

- Module 1: European legal framework
- Module 2: Stakeholder involvement/Public participation
- Module 3: Sustainable tourism-carrying capacity
- Module 4: Water resources management
- Module 5: Fisheries/fish farming
- Module 6: Coastal water quality
- Module 7: Ecosystems management (land and coastal ecosystems)
- Module 8: Waste management/recycling/compost
- Module 9: Air pollution
- Module 10: Land uses/urban planning/coastal over-development
Landscape and marine-scape management
- Module 11: Coastal erosion control
- Module 12: Community annoyance issues 1: noise pollution
- Module 13: Community annoyance issues 2: light and thermal
- Module 14: pollution, odours
Archeological areas/historic sites/cultural heritage
- Module 15: Extreme conditions management: flood risks, coastal
- Module 16: flooding and storm surge
- Module 17: Droughts
- Module 18: Desertification
- Module 19: Energy use, consumption and management
- Module 20: Green buildings

Credits

The LitusGo Education Manual has been developed by the LitusGo Educational Manual Working group:

Modules 1, 2, 6, 7, 8, 9, 12, 13, 14, 16, 17, 18, 19 have been prepared by the scientific team of the beneficiary/coordinators ISOTECH Ltd. Major authors: Michael I. Loizides, Chemical/Environmental Engineer and Xenia I. Loizidou, Civil/Coastal Engineer. Constantinos Georgiades (MSc in ICZM) is responsible for the overall editing. The hard copy of the educational Manual is designed by Anastasia Georgiou.

Modules 3, 4, 5, 10, 11, 15, 20 have been prepared by the scientific team of the Sustainable Aegean Programme of ELLINIKI ETAIRIA - Society for the Environment and Cultural Heritage. Major authors: Georgia Kikou, Geographer, MSc Environment (Manager of the Sustainable Aegean Programme), Alexandros Moutaftsis, Economist, MSc Environment, Leonidas Economakis, Political Sciences, MA International Development.

Dr Alan Pickaver on behalf of partner The Coastal & Marine Union (EUCC) was responsible for the quality control of the educational material.

LitusGo partnership:

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ELLINIKI ETAIRIA - Society for the Environment and Cultural Heritage www.ellet.gr / **Sustainable Aegean Programme,**
www.egaio.gr

ONISIS web development www.onisis.gr

Malta:

Municipality of Kirkop www.kirkop.gov.mt

The Netherlands:

EUCC – The Coastal & Marine Union www.eucc.net

Module 7

Ecosystems management (land and coastal ecosystems)

1| Theoretical background

Human well-being depends on the health of ecosystems. An ecosystem is a dynamic complex of plants, animals, microorganisms and their nonliving environment, of which people are an integral part. The benefits that we derive from nature and rely on every day, from timber and food, to water and climate regulation, are called ecosystem services [3].

The IUCN's Commission for Ecosystem Management (IUCN-CEM) defines ecosystem management as "a process that integrates ecological, socio-economic, and institutional factors into comprehensive analysis and action in order to sustain and enhance the quality of the ecosystem to meet current and future needs." The core objective of ecosystem management is the sustainable, efficient and equitable use of natural resources. Ecosystem management recognizes that the inter-connectivity of ecological, socio-cultural, economic and institutional systems is fundamental to our understanding of the factors which influence environmental objectives and outcomes. It is a holistic, multi-disciplinary and integrated approach, which requires a substantial shift in the way we perceive and approach the management of both our natural and modified environments [6].

Ecosystem management goals

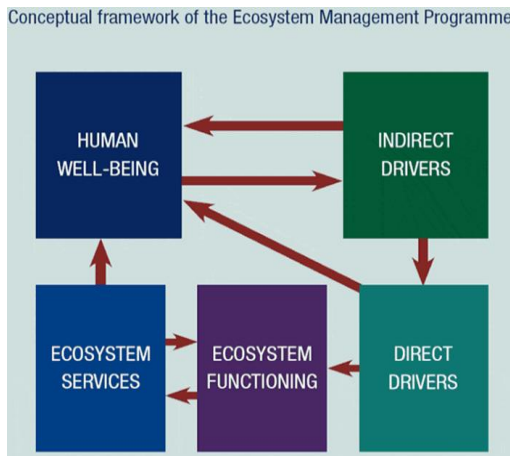
Setting clear goals is crucial for the success of ecosystem management. Within the overall goal of sustaining ecological integrity, five specific goals have been frequently approved [4]:

- Maintain viable populations of all native species *in situ*
- Represent, within protected areas, all native ecosystem types across their natural range of variation
- Maintain evolutionary and ecological processes (i.e. disturbance regimes, hydrological processes, nutrient cycles, etc.)
- Manage over periods of time long enough to maintain the evolutionary potential of species and ecosystems
- Accommodate human use and occupancy within these constraints

If ecosystem management is to take hold and flourish, the relationship between the new goal of protecting ecological integrity and the old standard of providing goods and services for humans must be reconciled [4].

2| Objective

Human well-being, food security and sustainable livelihoods are intimately linked to the future health of our diverse ecosystems. Ecosystem management demands an understanding of the functions of ecosystems in supporting and regulating the processes which underpin life on earth. Furthermore, the approach recognizes that ecosystems provide diverse goods and services which are directly or indirectly valued by society in ecological, economic and socio-cultural terms.



Picture 1. Representation of the conceptual framework of the ecosystem management programme [7].

Many conventional approaches to resource management have usually been single-purposed and limited in space (e.g. local, regional, national and transboundary) and time (e.g. short-, medium- and long-term). Ecosystem management, in recognizing the critical role humans have as managers of biodiversity, aims to avoid these short-comings by identifying and communicating the

benefits and values of healthy ecosystems in ensuring both species survival and human well-being [6].

But people still know very little about ecosystems management (land and coastal ecosystem), and there is a gap in information, training and capacity building on ecosystems management, especially in the Mediterranean at Local level. LitusGo is making an effort to support Local Authorities and local societies towards a sustainable ecosystems management.

3| Problem

Ecological systems or ecosystems are responsible for life-supporting environmental processes, such as the hydrological, nitrogen and carbon global cycles. They are essential for the survival of human beings. However, human interactions can have profound impacts upon the biological, chemical, and physical processes essential to maintaining the structure and functions of ecosystems (both natural and human-made) [1].

Throughout the world, ecosystems are increasingly being subjected to human-induced impacts, such as [1]:

- overexploitation of forests,
- clearing of land for agriculture,
- infrastructure development,
- fossil fuel combustion, and burning of biomass,
- loss of biological diversity,
- land degradation,
- disruptions in water flow regimes,

- poor water quality,
- and increases in the concentration of atmospheric greenhouse gases.

These impacts often have profound effects on human health and welfare as well as economic development.

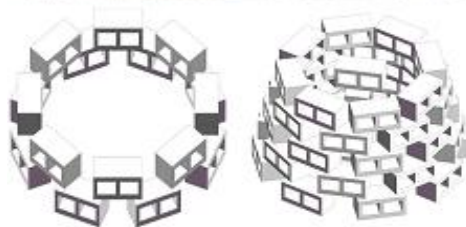
4| How to deal with the problem

Here are some practical and implementable solutions/ suggestions on how a Local Authority can support local ecosystems:

- Introduce education/ training programs aiming at creating and maintaining awareness among local decision makers and local stakeholders (e.g. civil society (NGOs) etc.), and skills and competences among the staff of the Municipality and local NGOs.
- Awareness raising events/activities:
 - Municipalities can organise field trips in various areas to implement easy and practical activities for upgrading ecosystems (some suggestions are mentioned below) with the participation and volunteering of local people
 - Organise Info days
 - Set-up awareness raising campaigns at schools, supported by local NGOs
 - Stakeholder Meetings
- Support inclusion of areas to a protected area's network like the NATURA 2000 network. The regulations of a protected area are usually based on an ecosystem approach and combine

controlled development with protection.

- Support control or prohibitions on fishing, hunting, quarrying, logging and other activities that contribute to the degradation of ecosystems.
- Support and promote the construction of small structures that support the ecosystem . Examples:
 - An artificial reef within the Municipal coastal waters. Artificial reefs boost the biodiversity of the coastal zone. They provide interconnected living spaces for marine reef species. They provide hard surfaces for algae growth and invertebrates such as barnacles and oysters. Avoid the areas of Poseidonia meadows. Public participation in the construction of artificial reefs must be encouraged [8].



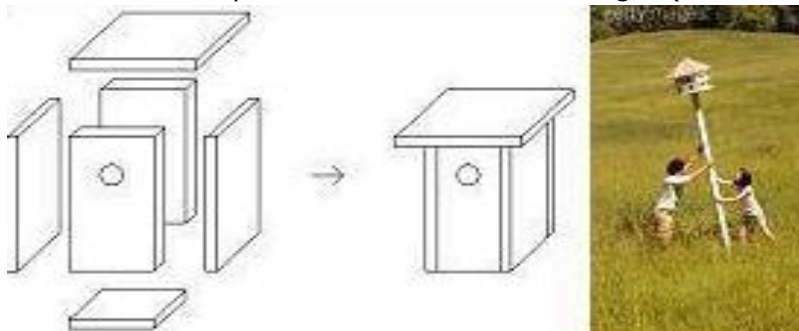
Picture 2. A small artificial reef [8].

- Artificial nest (as nesting place) to protect young birds, minimize losses and promote the development and conservation of the stock.

➤ Here are some steps how to build an artificial bird nest [9]:

-Make a hole in one side of a wooden box as big as the bird to attract

-Put the box on a pole two or three meters height (Picture 3).



Picture 3. Artificial bird nest [9, 10].

-And finally the box is ready to attract the birds and be their new nest.

➤ Place animal feeders and waterers and maintain them, especially in areas that animals (birds included) have problems with water and food.



Picture 4. Animal feeders and waterers [11 and 12].

- Construct bird watching houses/towers. It is an activity that supports awareness raising of citizens.
- Place interactive and information signs for the flora and fauna of the area with environmental tips for visitors.



Picture 5. Interactive and information signs [13].

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