



Conservation strategies for islands -
the "Park Island" of Pico (Azores)
(Project SMARTPARKS)

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Islands: a particular problem for Nature Conservation policies

Islands build a particular difficult challenge for nature conservation and sustainable development policies.

This is due to the ecological isolation and the impossibility to ensure naturally the genetic exchanges that can ensure minimal viable populations of the different target species.

Simultaneously the scarcity of economical resources (particularly space) puts a large pressure on natural areas and habitats endangering even more their survival due to direct destruction or fragmentation.

Therefore nature conservation policies must search different approaches from those of the fest land where ecological interactions and ecological restoration approaches have a much larger chance of success

These approaches must be focused on two main perspectives:

- integrated management of all classified areas
- integration of that management concept in the frame of a consensual management of the entire island balancing all interests (social, economical and environmental)

The concept of “Island Natural Park” in Azores

In this context the Regional Government of Azores (Portugal) approved a new concept for the Regional Protected Areas Network, where every protected or classified area in each island where aggregated in a single management entity: the "Natural Island Park".

These type of park correspond to the UICN concept of "Natural Park" and integrates all previous protected and classified areas in a single management instrument without implying their fusion as a single entity but preserving instead their individuality.

IUCN Category II: Natural Park

Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.

Primary objective

To protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.

Other objectives:

- To manage the area in order to perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources and unimpaired natural processes;
- To maintain viable and ecologically functional populations and assemblages of native species at densities sufficient to conserve ecosystem integrity and resilience in the long term;
- To contribute in particular to conservation of wide-ranging species, regional ecological processes and migration routes;
- To manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will not cause significant biological or ecological degradation to the natural resources;
- To take into account the needs of indigenous people and local communities, including subsistence resource use, in so far as these will not adversely affect the primary management objective;
- To contribute to local economies through tourism.

The concept of “Park Island”

- These concept was based on the need to buil and ensure a coherent ecological network against the classical sum of individual mangement units, allowing a bether integration of all values natural, esthetical, cultural or even economic.
- The Natural Island Park is build trough the agregation of all classified areas in each island together with maritime areas of particular value, richness or contribution to natural ressouces.

The Natural Island park integrates three distinct levels of planning and management with different administrative and legal frameworks:

Protected areas

Other elements of the national fundamental nature conservation network

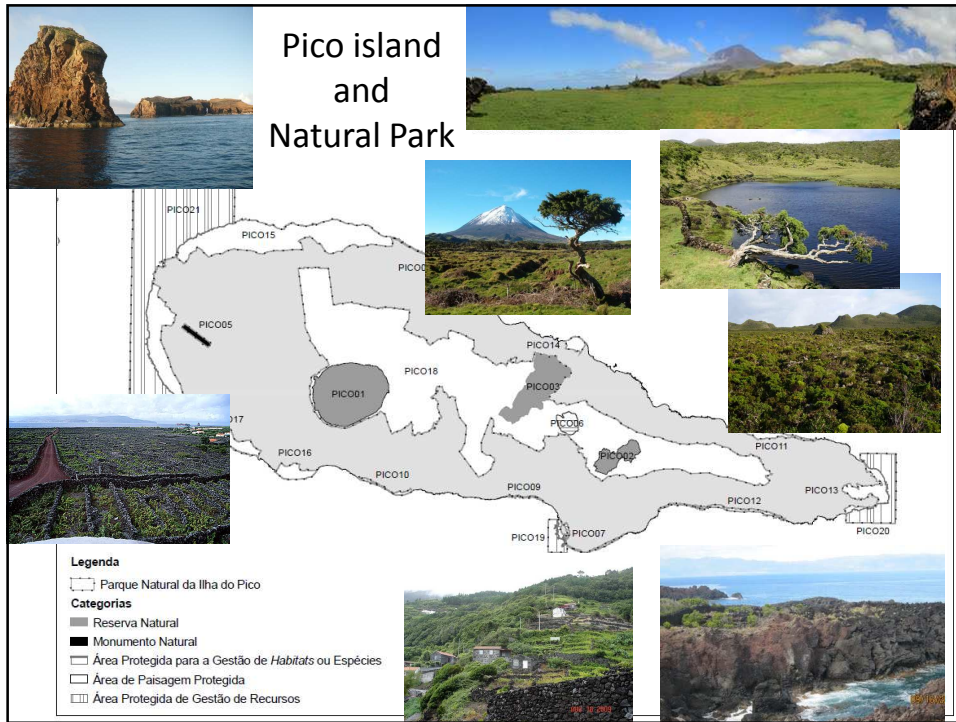
Every other area of the island and surrounding sea

The last item is the great innovation because it integrates the targets of nature conservation with the development of the entire island in economical, social and cultural terms.

Implicit to this concept is the need to clarify hierarchies of value of importance among the different natural and cultural values within a given socio-economical framework. Therefore, the preservation of target species and animals must be balanced with the anthropic factors that historically or presently promote those values or endanger them, without compromising the global viability of both natural systems and assets and the economical viability of the island society.

This integrated approach allows a clear comprehension and evaluation of the relative values of natural habitats, man related habitats and other cultural values and, therefore a clarification of the evaluation criteria to be applied to each situation and to the global context.

The main challenge of this new concept is the development of multi-dimensional evaluation and decision making processes within a tententially closed environment with very little ability to modify the available resources and biological assets. .

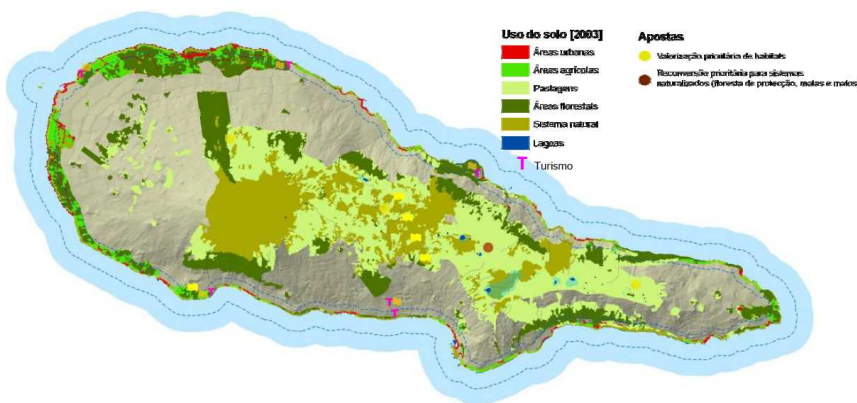


At the same time Regional Plans for each islands are developed integrating and giving coherence to the individual plans of each municipality and building an articulation between these plans and the plans and management policies in the protected areas.



This approach, although building a very important contribution to a better management of all the natural, social economical and cultural values of each island, poses a series of technical and practical challenges that imply new approaches to the characterization and evaluation of the existing and potential values, as well as to the convergence of the different expectation of the varied involved stakeholders.

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The SMARTPARKS project

The objective of the SMARTPARKS project is the development of models to help meet those challenges.

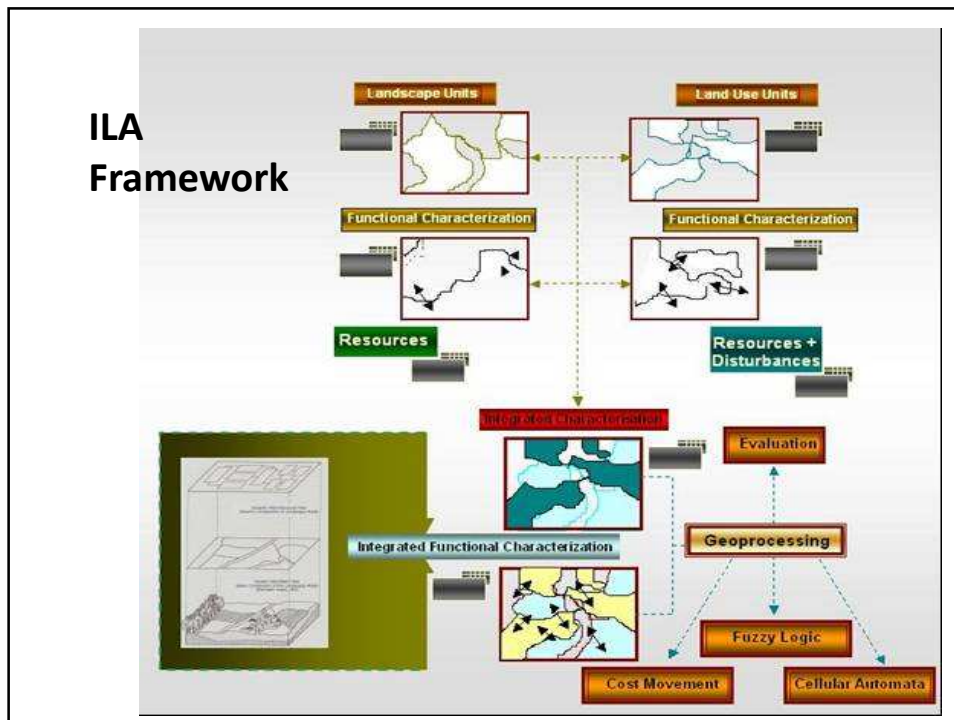
The first step of the project (characterization and evaluation) is developed in order to define and test methodologies able to :

- Characterization and evaluation of natural assets, functions, processes, etc.
- Characterization of the interaction between land use patterns and systems with the existing and potential natural values
- Characterization and evaluation of the societal expectation towards those values and assets

The first set of data imply the use of characterization and evaluation methods able to compare and evaluate different geographical objects according to different value criteria.

This need is explained because, there are classified values associated with the naturalness criteria, values associated with the existence and preservation of a given target habitat for given species, values associated with strong constructed cultural landscapes and values eventually associated with particular types of agro-florestal use of certain landscapes.

In order to be able to compare these different sets of evaluation criteria when applied to the same geographical object the Integrated landscape analysis method (ILA) was selected.

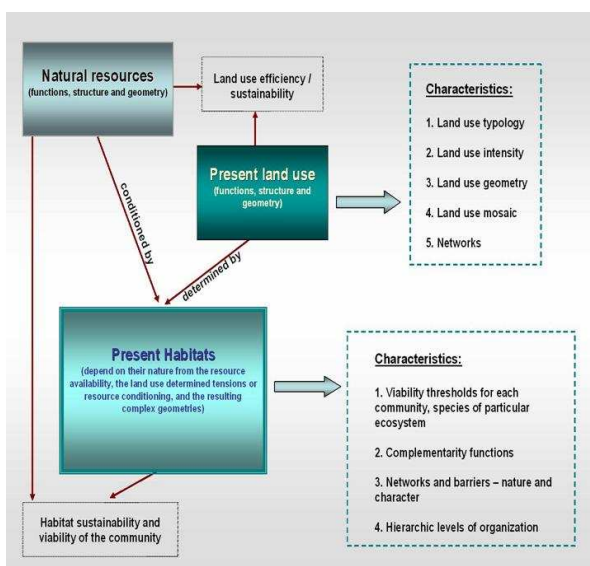


This method allows the consistent consideration, comparison and evaluation of the same geographical object in different forms (e.g. land use or natural habitats spatial allocation) or according to different evaluation criteria (naturalness, adaptation to given target species or habitats, etc.). This consistency derives from the definition of an independent object of reference (e.g. Potential natural vegetation or reference vegetation) that can be characterized with the same set of indicators as all scenarios or land use alternatives and support evaluation algorithms adapted to the different selected evaluation criteria.

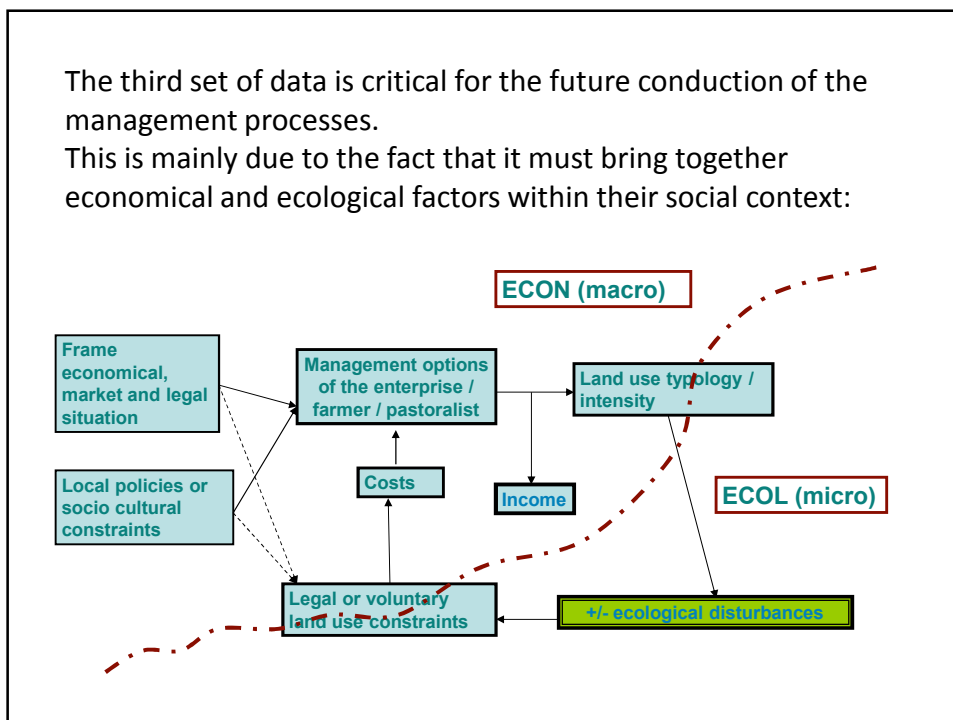
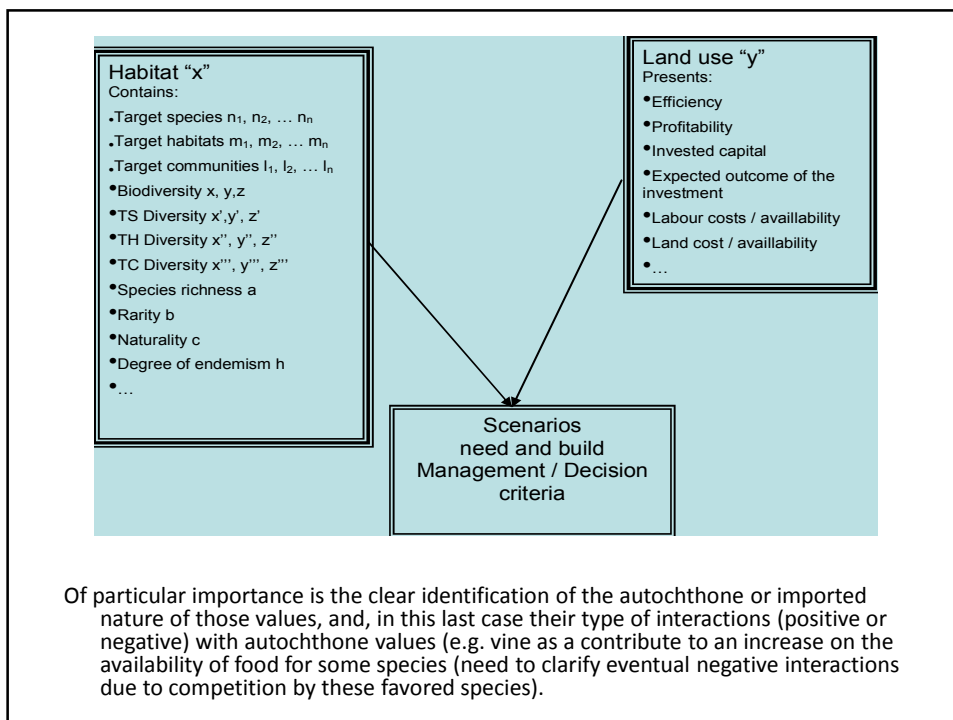
Critical for the development of all the algorithms based on target habitat or target species criteria is the availability of detailed data of the autoecology of those particular species or the synecology of those habitats.

Particularly important is the determination of criteria for the definition of MVP and the identification of critical factors affecting those criteria (habitat area, fragmentation, patchiness, edge/core relation, etc.).

The second set of data: interaction between land uses and natural values, implies the creation of a detailed data base on each type of patch (be it subject to any form of land use, be it natural (pristine, remanescent, recovering, etc.)) where at least the associated natural values be identified together with the historical and present factors determining their characteristics and conditioning the existence of those values.



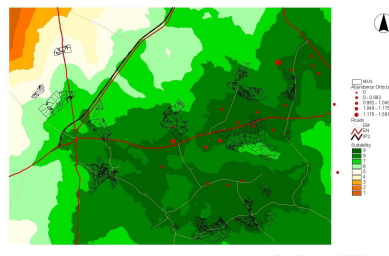
Landscape components	Structural characteristics	Nature (types)	Functions	Dynamic (changes)
Matrix	Microheterogeneity Macroheterogeneity Connectivity Continuity Porosity	Resource Disturbance (chronicle) Endurance Consistence	Habitat Complementarity Control of the spatial dynamics	Stability Resilience Seasonality
Patch	Size Shape Number Biotype Configuration Vertical structure Internal heterogeneity (gradient character)	Resource Disturbance (chronicle) Remanescent Regenerated Introduced Ephemorous	Habitat Complementarity Polarity Permeability Source (productivity) Absorption / Accumulation	Meta-stability Resilience Seasonality
Corridor (Border/ Ecotone)	Width Connectivity (continuity) Biotype Ecotone convolution Gradient character	Resource Disturbance (chronicle) Remanescent Regenerated Introduced Ephemorous Contrast-Similitude	Habitat Conductivity Filter/Barrier Source Absorption / Accumulation Hygroscope Permeability Complementarity	Seasonality Type of border



Framework for nature conservation policies in island environments

The above mentioned integrated landscape assessment tool allows the comparative analysis of alternative management scenarios.

These scenarios can be developed using common tools, like Habitat Suitability Models or simulations of ecological cost benefits balances of maintenance vs restoration vs creation of target habitats

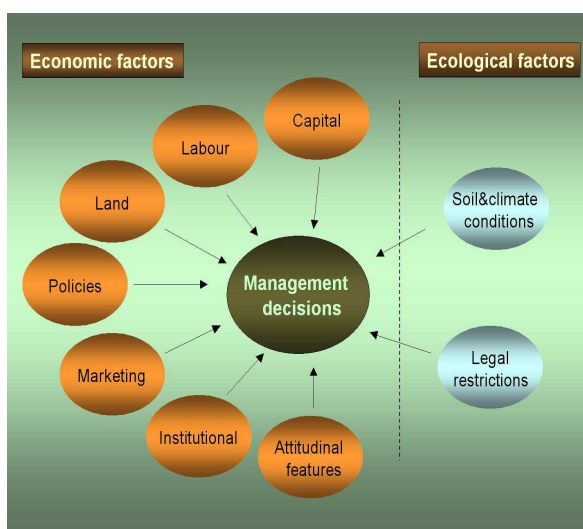


Simulated Suitability for the Melanocorypha calandra in the study area

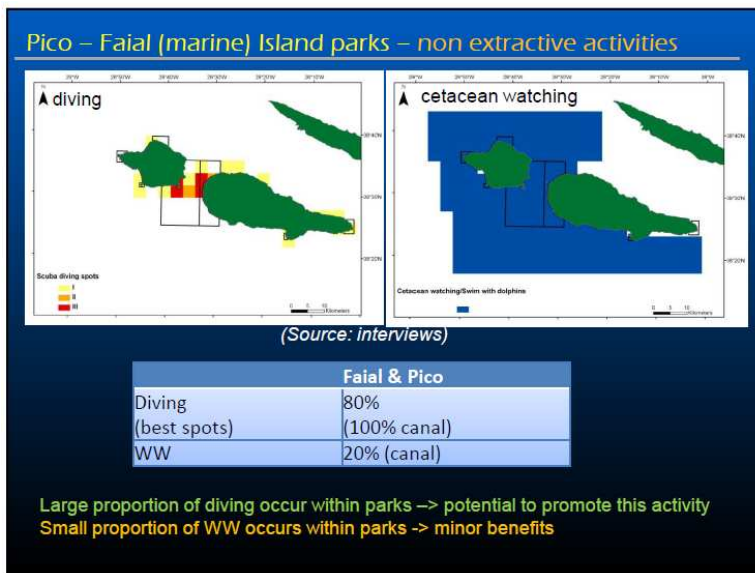


Development of management models

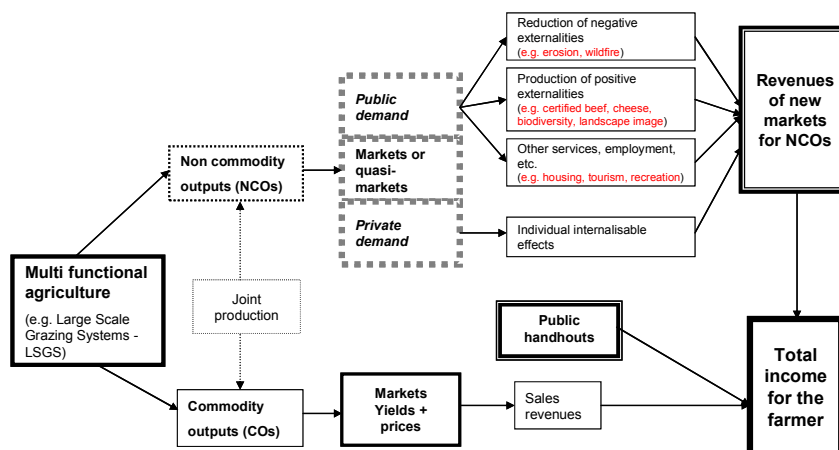
The first question that must be assessed is the way in which the different stakeholders (e.g. farmers) make their management decisions, in order to search for factors that potentiate a positive involvement instead of the classical limitation (prohibition) approach of many conservation policies



There are domains where it was possible to find a replacement for former damaging practices:

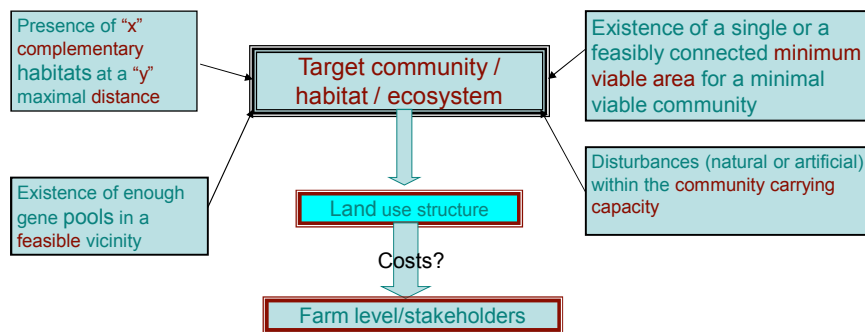


But at the level of much of the stakeholders (farmers and fishers) the alternative is not so easy
 Lets consider, for example, the following farmer's management model:

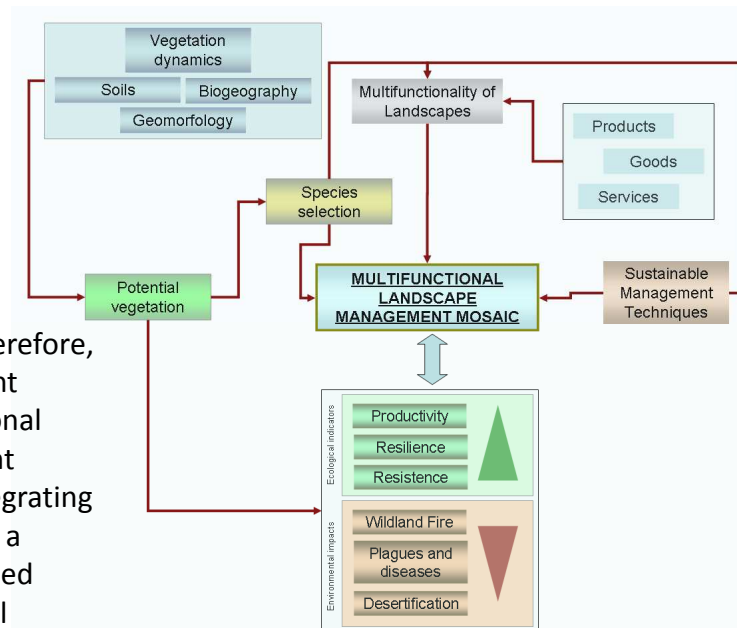


It is critical that the production of NCOs be perceived as a source of profit potentiated by the National Park policy

This is exactly the level where the ability to evaluate and simulate in a single integrated tool alternative management approaches will be able not only to define policies, but mainly to allow the involvement of all stakeholders in the definition of those alternatives, and particularly in their implementation

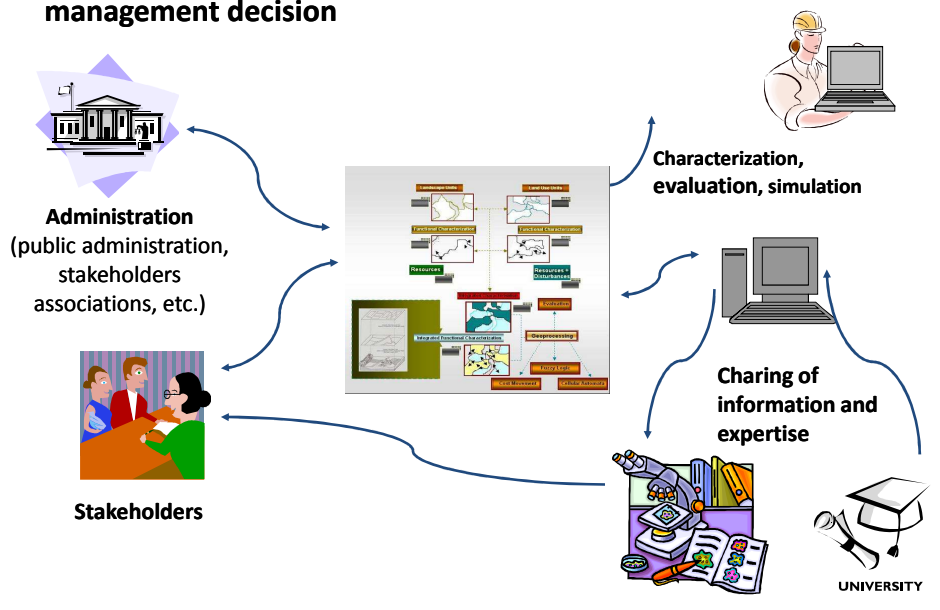


One has, therefore, to implement multifunctional management systems integrating all factors in a clearly defined geographical framework



In an Island environment, with strictly limited resources, consensual management approaches are of critical importance. Therefore, the ability to sample all information in a coherent framework where all evaluation procedures can be lead in a reproducible way with a comprehensive system of reference, allows an active involvement of all stakeholders in the development of the best solutions for each site and moment and the permanent reevaluation of those solutions.

ILA, Stakeholders involvement and management decision



It is critical that a Natural Park and the conservation policy do not build a burden to the inhabitants and economy of the island! On the contrary!

This is only achievable through their active involvement through knowledge and experience exchange and practical involvement in the management and improvement of the entire islands, ensuring their individual benefits and maintaining their autonomy, individuality and cultural particularities.

For example: the Nature Park "Forest of Thuringia" as created, in articulation with the population and their association a Park marketing system and a Park – card in order to associate the belonging spirit of the population in relation to the park and support their active involvement in the park policies and targets

Thank you for your attention