

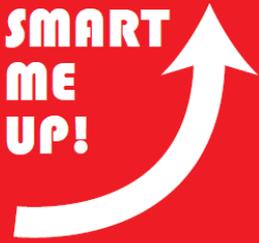


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Ecosystem services as external drivers in the Strategic environmental assessment of management plans of the sites of the Natura 2000 Network

Federica Leone, Corrado Zoppi

This essay is written within the Research Program "Natura 2000: Assessment of management plans and definition of ecological corridors as a complex network", funded by the Autonomous Region of Sardinia for the period 2015-2018, under the provisions of the Call for the presentation of "Projects related to fundamental or basic research" of the year 2013, implemented at the Department of Civil and Environmental Engineering and Architecture (DICAAR) of the University of Cagliari, Italy.



Structure of presentation

1. Concept of ecosystem services (ESs)
2. ESs, environmental protection and spatial planning
3. Natura 2000 Network
4. Strategic environmental assessment (SEA)
5. Research ideas
6. Methodology
7. Discussion of results
8. Conclusions



Concept of ecosystem services

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Ecosystems and Human Well-being

In late 2003, the MA and Island Press published *Ecosystems and Human Well-being: A Framework for Assessment*. This volume lays out the assumptions, processes and parameters that were used in the MA. [Learn more](#)



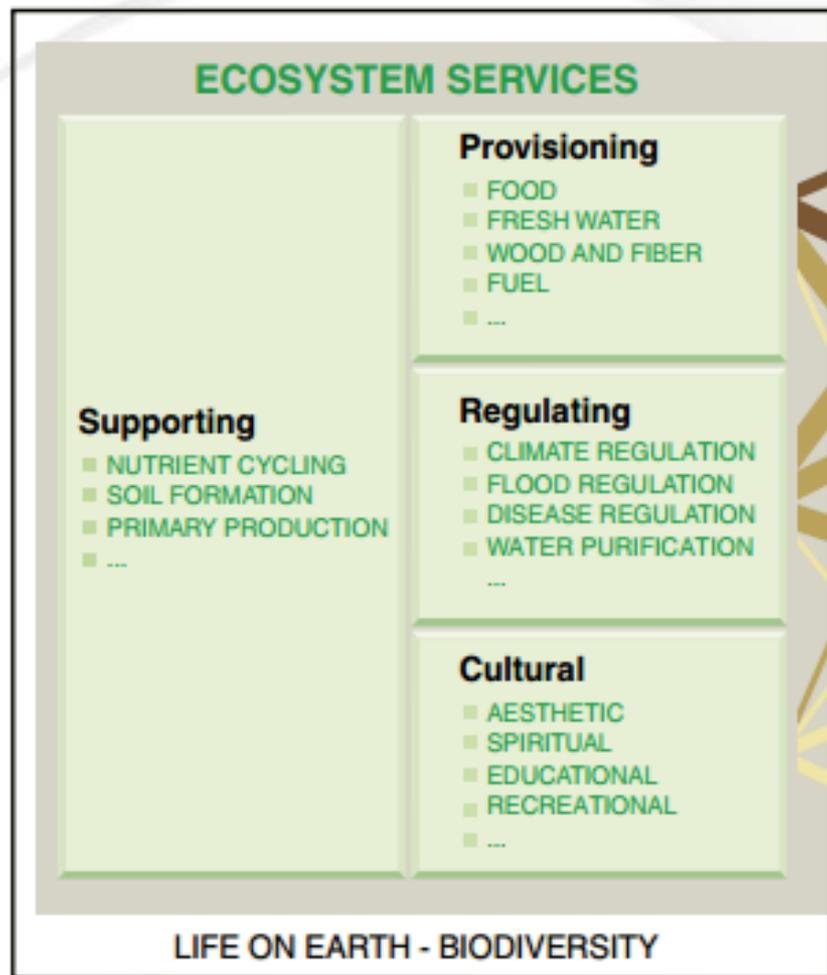
ECOSYSTEMS AND HUMAN WELL-BEING

Synthesis

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Concept of ecosystem services



CONSTITUENTS OF WELL-BEING



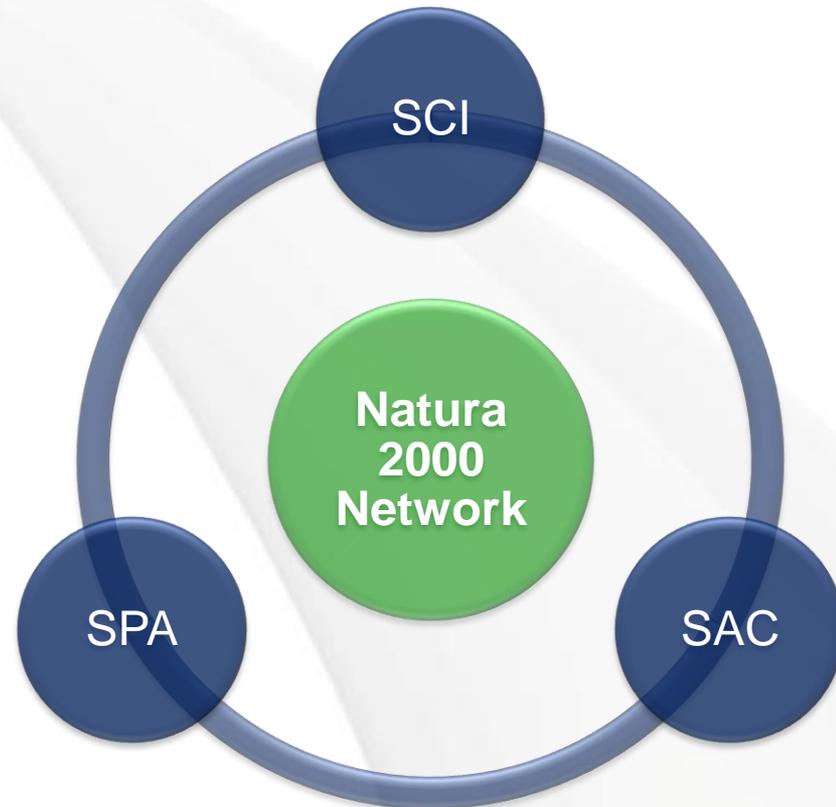
Source: Millennium Ecosystem Assessment



Natura 2000 Network

Natura 2000 is a coherent network of areas established under the provisions of Directive 92/43/EEC and includes **Sites of Community Interest (SCIs)** and **Special Areas of Conservation (SACs)** identified under the provisions of the Habitats Directive itself, as well as **Special Protection Areas (SPAs)**, identified under the provisions of the Directive 2009/147/EC.

The network was established to protect **biodiversity, species** and **habitats** that are threatened with extinction, or deemed valuable, or typical within a certain biogeographic area.





Natura 2000 Network – conservation measures

European level

European Commission provides few directions on structure and contents of Management Plans (MPs)

National level

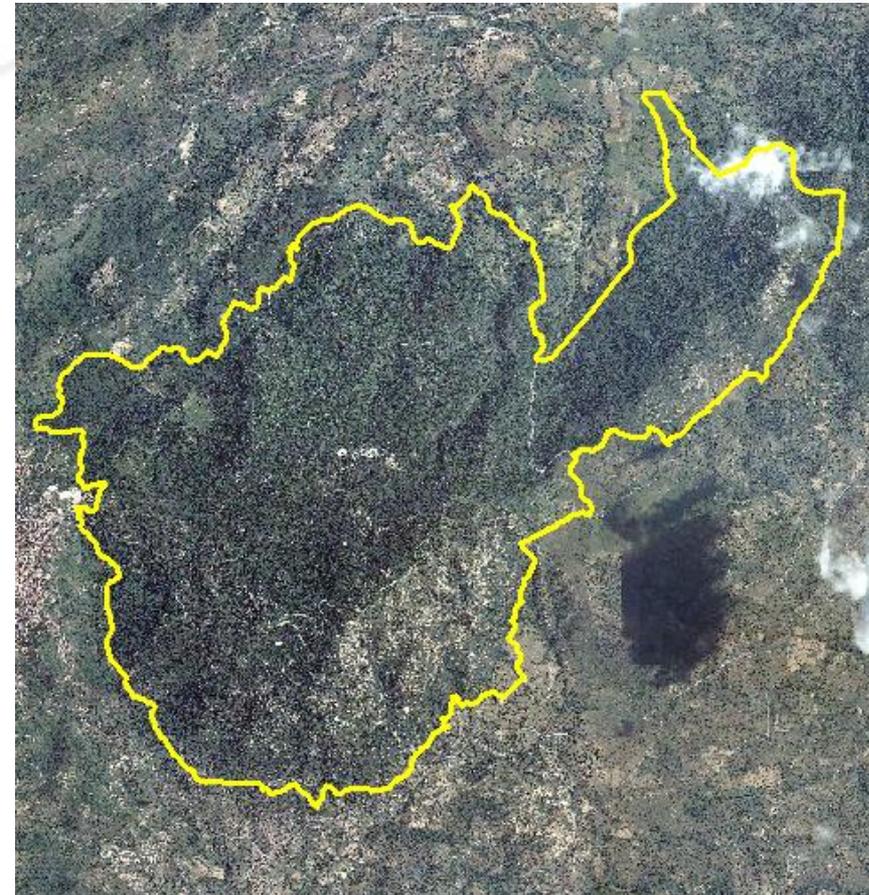
In Italy, in compliance with Decree of the President of the Republic no. 357 of 1997, regional administrations are in charge of the implementation and approval of MPs



In the absence of common rules and procedures, regional administrations are taking different approaches with reference to the identification of the authorities responsible for the preparation of MPs and for the SEA, and with reference to their approval.



Natura 2000 Network and human activities





Strategic environmental assessment

Aims

The SEA procedure is based on a continuous assessment of the implementation of planning policies and of their impacts in order to evaluate if and to what extent they are consistent with environmental protection and sustainability-related objectives

SEA entails the assessment of the potentially-negative effects of the plan actions, implemented to address the plans' specific goals, on sustainability objectives and the definition of alternative operations which may possibly either mitigate or eliminate these effects.



Research ideas



Ideas 1

The SEA process, as related to regulating ESs, aims at making consistent MPs and MMPs by an adequate and effective effort towards the general goal of protecting and possibly increasing biodiversity, that is habitats and species, in the context of the municipal area.

Ideas 2

The implementation of the MPs' objectives into the sustainability-based framework of the SEA of MMPs may possibly imply a loss of the ESs' productive output due to measures adopted by the MPs in order to protect habitats and species.

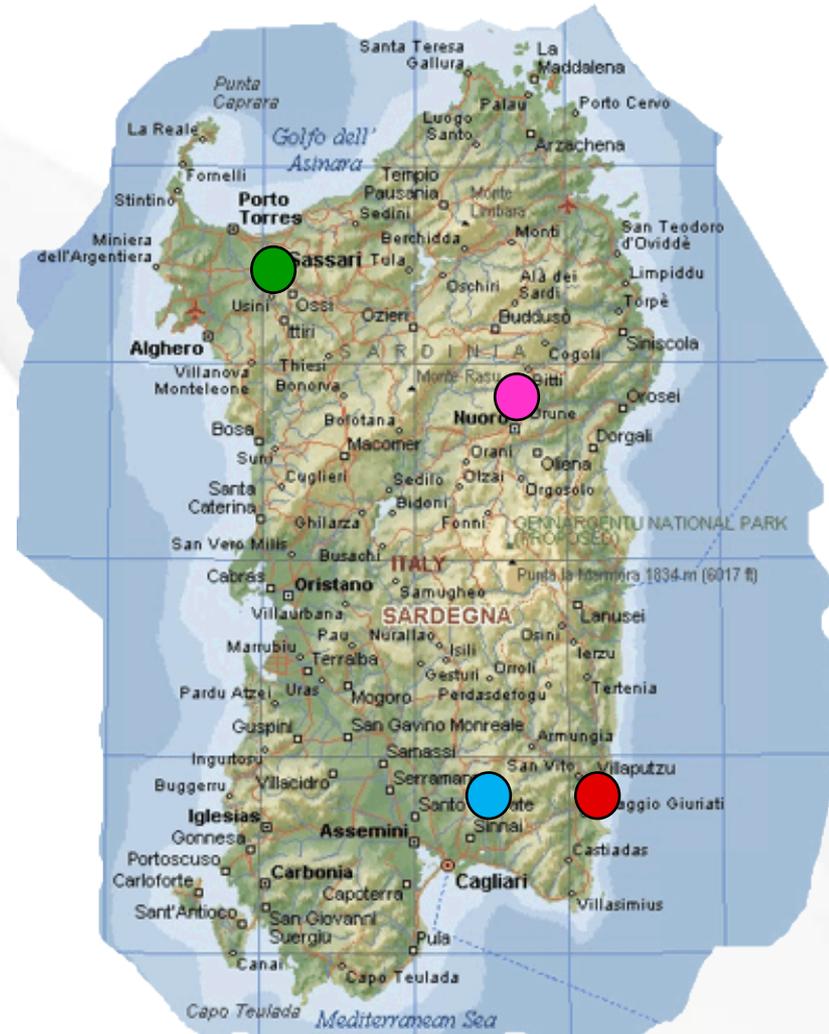
Methodology

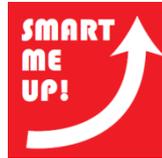
Case studies

1. Muravera
2. Sassari
3. Dolianova
4. Nuoro

Framework of assessment

- i. content analysis, in order to check if, and to what extent, ESs-related terms are used in the MPs-, MMPs- and SEA-related documents;
- ii. on a Logical Framework, in order to control for consistency of MPs and MMPs within the SEA procedure.





Methodology – content analysis

Documents

- the MMP textual documents of the four municipalities;
- the MPs of the four Natura 2000 Sites;
- the four SEA reports of the MMPs.

Key term	Associated key term	Sub-categories	Code
Ecosystem	Goods/services		A1
	Benefits	/	A2
	Human well-being		A3
Ecosystemic	Goods/services		B1
	Benefits	/	B2
	Human well-being		B3
Nature	Goods/services	/	C1
	Benefits		C2
Provisioning services	/	Agricultural crops Livestock	D1
Regulating services	/		D2
Cultural services	/	Environmental tourism	D3
		Sustainable tourism	
		Ecotourism	
Supporting services	/	/	D4
Natural capital	/	/	E
Ecosystem functions	/	/	F
Environmental services	/	/	G



Methodology – Logical framework

Sustainability-oriented objectives	MMP specific objectives	MP specific objectives	Potentially unfavorable MMP actions	Potentially unfavorable impacts on ESs production
Sustainability-oriented objectives 1	Specific objective 1 of MMP	Specific objective 1 of MP	Action 1	Impact 1
			Action k	Impact l
		Specific objective j of MP	Action 1	Impact 1
			Action k	Impact l
	Specific objective i of MMP	Specific objective 1 of MP	Action 1	Impact 1
			Action k	Impact l
		Specific objective j of MP	Action 1	Impact 1
			Action k	Impact l



Discussion of results – content analysis

Code Document	A1	A2	A3	B1	B2	B3	C1	C2	D1	D2	D3	D4	E	F	G	Total
Dolianova																
D_MMP	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5
D_MP	2	0	0	0	0	0	0	0	101	0	0	0	0	0	0	103
D_SEA	0	0	0	0	0	0	0	0	10	0	4	0	0	0	0	14
Muravera																
M_MMP	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
M_MP	2	0	0	0	0	0	0	0	28	0	2	0	0	0	0	32
M_SEA	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	4
Nuoro																
N_MMP	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
N_MP	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	17
N_SEA	0	0	0	0	0	0	0	0	9	0	1	0	0	0	0	10
Sassari																
S_MMP	0	0	0	0	0	0	0	0	37	0	6	0	0	0	2	45
S_MP	0	0	0	0	0	0	0	0	42	0	0	0	0	0	1	43
S_SEA	0	0	0	0	0	0	0	0	10	0	5	0	0	0	0	15
Total	4	0	260	0	21	0	1	0	5							



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Discussion of results – Logical framework

Sustainability-oriented objectives	MMP specific objectives	MP specific objectives	Potentially unfavorable MMP actions	Potentially unfavorable impacts on ESs production
Analysis and promotion of the landscape and environmental system	Protection and promotion of the areas and sites characterized by an environmental and/or naturalistic value	OD1 Improvement of the effectiveness of the activities concerning communication, and spatial management and control, related to the municipal area in terms of environmental protection, minimization of the risk of fire, and maximization of rapid-intervention capability through the active participation of the stakeholders	D1 Construction of a system of pathways and roads to connect the urban settlement to areas of environmental and natural interest with regard to tourism	Pasture
			D2 Setting-up of rural areas to develop quality crops	
			D3 Integration of agriculture and complementary activities such as agritourism, and rural, environmental and didactic tourism	
			D4 Promotion of the use of common lands through the elaboration and implementation of appropriate recovery and enhancement projects	



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Conclusions

SEA can play a role to build consistency between the MMPs and MPs processes.

The analysis of the four cases concerning the municipalities of Muravera, Dolianova, Nuoro and Sassari puts in evidence that MPs and MMPs are studied and established quite independently from each other and, as a consequence, they are quite inconsistent. This is due to the different public administrations that rule over the two planning processes, that is the Region in case of the MPs and the municipality in case of the MMPs, and to the scopes of the plans. Indeed, the MPs concern the spatial context of the SPAs and of SCIs, and are mainly focused on conservation and qualitative and quantitative enhancement of habitats and species, while the MMPs aim at the definition and implementation of sustainable land uses, services and infrastructure in the municipal area.

We show, by detailed comparative appraisals of four MMPs/MPs, that the SEA procedure entails an enormous potential in order to build consistency and, much more important, to drive the issue of conservation and enhancement of habitats and species outside the narrow boundaries of sectoral policies concerning the sites of the Natura 2000 Network.



Conclusions

SEA makes the issue a comprehensive and fundamental question related to the definition and implementation of MMPs. The implementation of the MPs-related sustainability objectives into the MMPs through the SEA procedure is based on the environmental characterization of the regulating ESs supplied by habitats and species. In the first place, ESs are identified in the spatial context of the sites of the Natura 2000 Network, and, afterwards, during the implementation of the SEA procedure, they become spatial and environmental characteristics of the whole municipal area.

The SEA-based logical framework we propose in order to implement MPs into MMPs not only is suitable to assess and drive the definition and establishment of planning decisions (ex-ante phases of MPs/MMPs), but also to support the implementation of the planning policies, since the ESs-related sustainability objectives entail a monitoring system based on benchmarks concerning the environmental indicators related to the ESs.

Furthermore, it has to be put in evidence that the definition and implementation of planning policies concerning regulating ESs may generate conflicts related to provisioning ESs, whose land uses may be prevented by conservative measures entailed by the MPs/MMPs. So, SEA procedures which imply ESs-based sustainability objectives should take account of regulating ESs not only in terms of conservation and enhancement of habitats and species, but also as sources of conflicts between alternative land uses related to alternative types of ESs, that is regulating and provisioning.



Conclusions – future research

Moreover, the outcomes and discussion proposed in this essay open the doors to promising future research concerning the following two directions.

First, the implementation of objectives of MPs within the LF could possibly imply a loss in the supply of provisioning ESs, e.g. decrease in cattle farming and agricultural production due to restrictions in land uses related to conservative measures adopted by MPs in order to protect habitats and species of the Natura 2000 Sites. This entails an assessment which concerns the trade-off between the loss of provisioning ESs and the protection of supporting ESs. The former can be easily analyzed through the market value of the implied agricultural production and cattle. The second still needs attention in terms of future research.

Second, there is the following nontrivial issue related to the decision concerning the trade-off question. The estimate of the economic value of the loss of provisioning ESs which the protection of supporting ESs entails should be based on the assessment of the demand for provisioning ESs which may eventually remain unsatisfied and of the additional demand for supporting ESs which will be met. So, it is not enough to compare the economic value of the lost production and the economic value gained in terms of protected habitats and species, but a correct assessment implies the availability of complete information on the size of the demand of provisioning and supporting services, since only truly-demanded ESs have an economic value.



Thank you for attention

