THE EFFECTIVENESS OF A NATIONAL NETWORK OF MPAS - THE EXPERIENCE ACQUIRED IN ITALY AND THE ROLE THE TRANSNATIONAL NETWORK SUCH AS ADRIAPAN COULD PLAY

UČINKOVITOST NACIONALNE MREŽE MORSKIH ZAVAROVANIH OBMOČIJ – IZKUŠNJE, PRIDOBLJENE V ITALIJI, IN VLOGA, KI BI JO LAHKO IGRALE NADNACIONALNE MREŽE, KAKRŠNA JE ADRIAPAN

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ABSTRACT

In 2005, WWF Italy and Federparchi started - with the assistance of the Ministry of Environment – an initiative aiming at spreading the tools for a management effectiveness evaluation.

The project was led by Miramare MPA, together with 4 other MPAs (Torre Guaceto, Isole Ciclopi, Torpaterno and Penisola del Sinis). The objectives – defined in further text – were stipulated in view of the relevant indicators and management priorities. The data were collected in a specific document, which accompanies the translation of the IUCN-WWF guidebook "How is your MPA doing?".

The results describe the capability of fulfilling the tasks assigned by each institutional decree, specifically in the fields of use of the maritime public domain, the environmental conservation, the communication/information, the management of resources, the local development.

Facilities for visitors, communication and information systems are the most developed; on the other hand, most of MPAs complain a low level of monitoring, control and management of tourist flows.

The 5 MPAs have a suitable range of tools and expertise, such as a cartographic GIS, studies running on the biological communities, and are compliant to the European "EMAS" environmental certification standards. Finally, the help provided in encouraging sustainable local productions is fairly good, while resources management is poor, same as the programs for the development of green energy, the adoption of waste separation schemes and garbage management.

The AdriaPAN network may enable monitoring of efficiency indicators among MPAs, as part of a shared method to evaluate the results of the management efforts.

IZVLEČEK

Leta 2005 sta italijanski WWF in Federparchi ob pomoči nacionalnega Ministrstva za okolje sprožila idejo o uporabi orodja za ocenjevanje učinkovitost upravljanja.

Projekt je vodilo MPA (morsko zavarovano območje) Miramare MPA ob pomoči še štirih MPA-jev (Torre Guaceto, Isole Ciclopi, Torpaterno in Penisola del Sinis). Cilji projekta – opisani v nadaljnjem besedilu – so bili začrtani glede na obstoječe indikatorje in prioritete upravljanja. Potrebni podatki so bili

zbrani v posebnem dokumentu, ki je nastal ob prevodu vodnika svetovnih organizacij IUCN in WWF z naslovom »How is your MPA doing?« (Kako pa kaj vaš MPA?).

Rezultati kažejo na zmožnosti uresničevanja nalog, ki jih nalaga vsak predpisani odlok, specifično na področjih uporabe javnega morskega območja, okoljevarstva, komuniciranja/informiranja, upravljanja z viri in lokalnega razvoja.

Medtem ko je razvitost objektov in naprav za goste, komunikacijo in informacijski sistem na visoki ravni, pa se v večini MPA-jev pritožujejo o nizki ravni monitoringa in nadzorovanja turističnih tokov. Pet MPA-jev ima sicer ustrezna orodja in strokovno znanje, kot na primer kartografski GIS in tekoče študije o bioloških združbah, ki so v skladu z evropskimi okoljskimi standardi "EMAS". Kar dobra je tudi pomoč za spodbujanje lokalne trajnostne proizvodnje, medtem ko je upravljanje z viri revno, tako kot so tudi programi za razvoj zelene energije, vpeljavo shem za ločevanje odpadkov in upravljanje z njimi. Mreža AdriaPAN bi lahko omogočila monitoring kazalcev učinkovitosti med MPA-ji kot del skupne metode za ocenjevanje rezultatov upravljalskih naporov.

1. INTRODUCTION

In 2000, the IUCN's World Commission on Protected Areas-Marine (WCPA-Marine) and the World Wide Fund for Nature (WWF) initiated the MPA Management Effectiveness Initiative (MEI) to provide MPA managers and practitioners with a simple instrument to conduct an evaluation. A major product of this initiative is the guidebook "How is your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness" (Pomeroy et al. 2004).

The Miramare MPA has been taking part since the beginning to the field-testing process of this methodology (Costantini et al. 2003). In 2004, its staff brought the experience outlined in the guidebook to the attention of the Italian Ministry of Environment. This started a project where the first set of 5 MPA has been evaluated, aiming at spreading this practice to the whole set of national MPAs.

→ This initiative represented a first opportunity to share work methods among managers, and to discuss on goals, objectives and priorities among peers which have the same institutional framework, with its opportunities and constraints, in common.

→ A transnational network such as AdriaPAN is therefore useful to share the above mentioned experience in a broader context - but which has in common the same biogeographical region - in order to be more effective towards overall environmental conservation and help in finding the gaps in the common efforts.

2. METHODS

In 2005, WWF Italy and Federparchi (Italian Federation of Parks and Nature Reserves) embarked on the project on behalf of the Ministry of Environment. It involved 5 MPAs: Miramare (northern Adriatic), Torre Guaceto (southern Adriatic), Isole Ciclopi (Sicily), Secche di Tor Paterno (Tyrrhenian sea) and Penisola del Sinis (Sardinia). All activities have been funded by the Ministry in full.

Figure 1: The 5 MPAs taking part in the effectiveness evaluation
Slika 1: Pet MPA-jev, ki sodelujejo pri ocenjevanju učinkovitosti upravljanja

The first steps of the project were a preliminary review of the available methodologies for estimating the effectiveness of conservation activities in marine-coastal environment (Franzosini 2009, Stern 2006), then to start the Italian translation of the IUCN's »How Is Your MPA Doing ?« guidebook.

The operational activity started in June 2005: it involved a scientific reference committee with the purpose to help focusing on indicators pursuant to the national situation. This was a group of 8 academic people encompassing competences from ecology to marine biology to economics and to social sciences, plus 2 directors of MPAs. It adapted the 3 types of indicators (biophysical, socio-economic and governance) described in the guidebook to the Italian context, as the original manual puts a certain emphasis on specific aspects concerning countries in the developing world, while the current local situation is characterized by increased human pressure and tourism, as well as a higher level of welfare of the population living close to the MPAs.

In 2006, the stage of field trials started, and lasted until the end of 2007.

Data collection and writing of the report took place in coordination with the director of each MPA, thanks to the support of local collaborators and under the supervision of Miramare MPA's staff, which tutored the whole initiative.

For each of the 5 MPAs participating in the initiative, objectives, targets and indicators were defined according to their priorities and management needs. Accordingly, the use of indicators for assessing the effectiveness of management started on each site; the data collection and report drafting took place jointly with the directors of each area and their local collaborators, with the support of Miramare MPA's tutors. The data and results are published in a book (Various 2008), which includes the translation of IUCN's original guidebook.

3. RESULTS

The discussion with the referee resulted in some substantive changes to the original texts. As far as the socio-economic goals "Food security enhanced or maintained" and "Livelihoods enhanced or maintained" are concerned, they have been replaced by "Food quality enhanced or maintained" and " Quality of life enhanced or maintained". This is to highlight how, at the national level, one can talk of MPAs as a promoter of local products with a view to greater wholesomeness of the food chain, as well as an instrument to improve the welfare of the local residents, all within a framework aiming at improving the quality of life instead of focusing on the livelihood.

Specifically, the analysis of the biophysical goals, objectives and indicators showed that the objectives proposed were consistent with the institutional purposes of MPAs and how the objectives and indicators were conceptually appropriate for the purpose. The set of indicators proposed in the manual is the result of a synthetic approach that connects existence, intensity and spatial distribution of pressures as they are transmitted through the levels of ecological hierarchy: it follows that no indicator can be considered irrelevant. However, the contextualization of some of the indicators required a redefinition of the operational concepts.

Through changes of this nature, extended also to other goals and objectives, it has been possible to obtain an appropriate selection of pertinent indicators, in a comprehensible and functional way.

A scale of priorities has also been set up for each protected area, showing several convergences, as the Socio-economic Goal 6 - "Environmental awareness and knowledge enhanced", which is the most significant, and Goal 1 - "Food security enhanced or maintained", which is at the lowest level among the management priorities of the MPAs.

Similarly, the Governance priority goals have been listed: Goal 1 - "Effective management structures and strategies maintained", which is a priority goal for all the MPAs taking part in this project and, in further detail, what is recalled in the Objective 1A - "Management planning implemented and process effective", the Management Plan itself, which has been emphasized as the major planning, regulation and management tool. With regard to the Governance Indicators, a new indicator has been proposed by the group of referees: G17- "Coordination and integration with local plans".

The analysis of the biophysical section has identified some priority indicators after their information content and the relative simplicity and availability of inherent data. The priority indicators are:

- B3 - Habitat distribution and complexity
- B1 – Focal species abundance
- B2 - Focal species population structure
- B4 - Composition and structure of the community

First observation comes by comparing the goals and objectives selected by the 5 MPAs. Indeed, they are following the indications given in the institutional decrees and the management guidelines of each individual area, identified in accordance with its management plan and / or annual (or three-years) action plan, thereby giving an indication of what are presently the major management efforts and the destiny of public financial resources linked to them.

Management goals and objectives are assessed through appropriate indicators of management efficiency.

3.1 BIOPHYSICAL GOALS AND OBJECTIVES

In the chapter concerning biophysical evaluation, the IUCN's guidebook, revised and adapted to the Italian situation, shows, 26 objectives grouped into 5 goals. The set of 5 MPAs produced the following percentages for the total of their choices:

Goal 1 - Marine resources sustained or protected: 52.78 %

Goal 2 - Biological diversity protected: 25 %

Goal 3 - Individual species protected: 16.67 %

Goal 4 - Habitat protected: 5.55 %

Goal 5 - Degraded areas restored: 0 %

Table 1: Biophysical objectives (1 = extremely low – 5 = extremely high)
Tabela 1: Biofizični cilji (1 = izjemno nizki, 5 = izjemno visoki)

MPA's biophysical objectives (according to IUCN)	Ciclopi	Mira-mare	Sinis	Tor Paterno	Torre Guaceto
1A Populations of target species for extractive or non-extractive use restored to or maintained at	3	4	5	4	5
desired reference points					3
1B Losses to biodiversity and ecosystem functioning and structure prevented	5		5		5
1C Populations of target species for extractive or non-extractive use protected from harvest at	2	3	4	5	
sites and/or life history stages where they become vulnerable		5		4	3
1D Over-exploitation of living and/or non-living marine resources minimized, prevented or	3	4			
prohibited entirely	3				
1E Catch yields improved or sustained in fishing areas adjacent to the MPA					
1F Replenishment rate of fishery stocks increased or sustained within the MPA				4	
2A Resident ecosystems, communities, habitats, species, and gene pools adequately represented	2		3		

MPA's biophysical objectives (according to IUCN)	Ciclopi	Mira-mare	Sinis	Tor Paterno	Torre Guaceto
and protected	4	4	3	3	
2B Ecosystem functions maintained					4
2C Rare, localized or endemic species protected					
2D Areas protected that are essential for life history phases of species	2		5	4	
2E Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA					
2F Risk from unmanageable disturbances adequately spread across the MPA	3		3	4	
2G Alien and invasive species and genotypes removed or prevented from becoming established					
3A Focal species abundance increased or maintained		3			
3B Habitat and ecosystem functions required for focal species' survival restored or maintained					
3C Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA				3	
3D Alien and invasive species and genotypes removed from area or prevented from becoming					
established					
4A Habitat quality and/or quantity restored or maintained					
4B Ecological processes essential to habitat existence protected					
4C Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA					
4D Alien and invasive species and genotypes removed or prevented from becoming established					
5A Populations of native species restored to desired reference points					
5B Ecosystem functions restored					
5C Habitat quality and/or quantity restored or rehabilitated					
5D Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA					
5E Alien and invasive species and genotypes removed or prevented from becoming established					

In the biophysical field of management, 15 objectives are most responsive of the actions undertaken by the MPAs, as the 77.78% of them are encompassed within Goals 1 and 2. Target species protection and conservation of resources are very important, as MPAs choose primarily Objectives 1A - "Populations of target species for extractive or non-extractive use restored to or maintained at desired reference points" and 1D - "Over-exploitation of living and/or non-living marine resources minimized, prevented or prohibited entirely". Much attention is also focused on the control and management of human impact, as three areas chosen Objective 2E "Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA".

Some emphasis is also given to Goal 3 - "Individual species protected", while only two areas (Secche di Tor Paterno and Miramare) choose one of the objectives suggested by Goal 4, and no one opts for the "Degraded areas restored" (Goal 5), perhaps because this is not a priority in our management actions, at present.

3.2 BIOPHYSICAL INDICATORS

Among 10 biophysical indicators suggested by the IUCN's guidebook, the 5 protected areas chose to operate in 9 of them:

Table 2: Biophysical indicators applied in the 5 MPAs
Tabela 2: Biofizični kazalci, uporabljeni v petih MPA-jih

	Ciclopi	Miramare	Sinis	Tor Paterno	Torre Guaceto
B1 – Focal species abundance	•	•	•	•	•
B2 - Focal species population structure	•		•		•
B3 - Habitat distribution and complexity	•	•			•
B4 - Composition and structure of the community					•
B5 - Recruitment success within the community	•				
B6 - Food web integrity		•			
B7 - Type, level and return on fishing effort	•	•	•	•	•
B8 - Water quality	•		•		
B9 - Area showing signs of recovery					
B10 - Area under no or reduced human impact		•	•		•

There is a clear preference for the use of Indicators B1 and B7, which have been selected from all five areas: they are B1 - "Focal species abundance" and B7 - "Type, level and return on fishing effort". Conversely indicator B9 - "Area showing signs of recovery" was not assessed by any of the areas, probably due to the lack of earlier data for a comparison with any prior environmental situation.

3.3 SOCIO-ECONOMIC GOALS AND OBJECTIVES

Following the guidebook's indications, the chapter concerning the socio-economic evaluation encompasses 20 objectives grouped into 6 goals. The MPAs produced the following percentages for the total of their choices:
- Goal 1 Food security enhanced or maintained (**0 %**)
- Goal 2: Livelihoods enhanced or maintained (**0 %**)
- Goal 3: Non-monetary benefits to society enhanced or maintained (**45.45 %**)
- Goal 4: Benefits from the MPA equitably distributed (**3.03 %**)
- Goal 5: Compatibility between management and local culture maximized (**12.13 %**)
- Goal 6: Environmental awareness and knowledge enhanced (**39.39 %**)

Table 3: Socio-economic objectives (1 = extremely low – 5 = extremely high)
Tabela 3: Socio-ekonomski cilji (1 = izjemno nizki, 5 = izjemno visoki)

MPA's socio-economic objectives (according to IUCN)	Ciclopi	Mira-mare	Sinis	Tor Paterno	Torre Guaceto
1A Nutritional needs of coastal residents met or improved					
1B Improved availability of locally caught seafood for public consumption					
2A Economic status and relative wealth of coastal residents and/or resource users improved					
2B Household occupational and income structure stabilized or diversified through reduced marine resources dependency					
2C Local access to markets and capital improved					
2D Health of coastal residents and/or resource users improved					
3A Aesthetic value enhanced or maintained	3		3		3
3B Existence value enhanced or maintained	2		4		
3C Wilderness value enhanced or maintained	1		4		
3D Recreation opportunities enhanced or maintained		2		3	
3E Cultural value enhanced or maintained	3	4	4		
3F Ecological services values enhanced or maintained	1		3		4
4A Monetary benefits distributed equitably to and through coastal communities					
4B Non-monetary benefits distributed equitably to and through coastal communities	1				
4C Equity within social structures and between social groups improved and fair					
5A Adverse effects on traditional practices and relationships or social systems avoided or minimized	2	4	3		
5B Cultural features or historical sites and monuments linked to coastal resources protected			5		
6A Respect for and/or understanding of local knowledge enhanced	5	5	4	3	
6B Public's understanding of environmental and social 'sustainability' improved	4		3	3	4
6C Level of scientific knowledge held by the public increased			4	3	4
6D Scientific understanding expanded through research and monitoring			3	3	

The analysis shows that 13 among 20 objectives are corresponding to the activities ongoing in the test MPAs; these 13 objectives are pursuant to Goals 3, 5 and 6. Four of the five areas chose, as important, the Objective 6A - "Respect for and/or understanding of local knowledge enhanced" and 6B - "Public's understanding of environmental and social 'sustainability' improved", whereas only one area (Isole Ciclopi) chose one of the objectives of Goal 4 (4B - "Non-monetary benefits distributed equitably to and through coastal communities"). "Food security enhanced or maintained" (Goal 1) and "Livelihoods enhanced or maintained" (Goal 2) are not in the current management priorities of MPAs taking part in the initiative.

3.4 SOCIO-ECONOMIC INDICATORS

Among 16 socio-economic indicators, 6 have been assessed in the test areas:

Table 4: Socio-economic indicators applied in the 5 MPAs
Table 4: Socio-ekonomski kazalci, uporabljeni v petih MPA-jih

	Ciclopi	Miramare	Sinis	Tor Paterno	Torre Guaceto
S1 - Local marine resource use patterns	•	•	•		
S2 - Local values and beliefs about marine resources			•	•	•
S3 - Level of understanding of human impacts on resources	•			•	•
S4 - Perceptions of seafood availability					
S5 - Perceptions of local resource harvest					
S6 - Perceptions of non-market and non-use value	•	•	•	•	•
S7 - Material style of life					
S8 - Quality of human health					
S9 - Household income distribution by source					
S10 - Household occupational structure					
S11 - Community infrastructure and business					
S12 - Number and nature of markets					
S13 - Stakeholder knowledge of natural history	•	•	•	•	
S14 - Distribution of formal knowledge to community			•	•	•
S15 - Percentage of stakeholder group in leadership positions					
S16 - Changes in conditions of ancestral and historical sites/features/monuments					

One indicator, among 16, has been assessed at the same time in all 5 MPAs: S6 - "Perceptions of non-market and non-use value", which provides information on a non-monetary basis upon the value that the local community and users give to the marine protected area.

Four of five areas then chose to assess the indicator S13 - "Stakeholder knowledge of natural history".

3.5 GOVERNANCE GOALS AND OBJECTIVES

Following the indications given in the guidebook, the chapter concerning Governance in the MPAs considered 5 Goals associated with 21 objectives. Managers' activities have been considering all the suggested Goals:
- Goal 1 - "Effective management structures and strategies maintained": 58.62 %
- Goal 2 - "Effective legal structures and strategies for management maintained": 3.45 %
- Goal 3 - "Effective stakeholder participation and representation ensured": 3.45 %
- Goal 4 - "Management plan compliance by resource users enhanced": 31.03 %
- Goal 5 - "Resource use conflicts managed and reduced": 3.45 %

Table 5: Governance objectives (1 = extremely low – 5 = extremely high)
Tabela 5: Cilji nadzora (1 = izjemno nizki, 5 = izjemno visoki)

MPA's governance objectives (according to IUCN)	Ciclopi	Mira-mare	Sinis	Tor Paterno	Torre Guaceto
1A Management planning implemented and process effective	4		4	5	
1B Rules for resource use and access clearly defined and socially acceptable		2	3		3
1C Decision-making and management bodies present, effective, and accountable	1		5	5	3
1D Human and financial resources sufficient and used efficiently and effectively			5	5	
1E Local and/or informal governance system recognised and strategically incorporated into management planning			3		
1F Periodic monitoring, evaluation, and effective adaptation of management plan ensured	2		4		5
2A Existence of adequate legislation ensured	1				
2B Compatibility between legal (formal) and local (informal) arrangements maximized or ensured					
2C National and/or local legislation effectively incorporates rights and obligations set out in international legal instruments					
2D Compatibility between international, national, state, and local rights and obligations maximized or ensured					
2E Enforceability of arrangements ensured					
3A Representativeness, equity, and efficacy of collaborative management systems ensured					
3B Resource user capacity effectively built to participate in co-management				4	
3C Community organizing and participation strengthened and enhanced					
4A Surveillance and monitoring of coastal areas improved		2			
4B Willingness and acceptance of people increased to behave in ways that allow for sustainable management	4	4	4		3
4C Local ability and capacity built to use resources sustainably		5			
4D User participation in surveillance, monitoring, and enforcement increased					
4E Application of law and regulations adequately maintained or improved	2		3		
4F Access to and transparency and simplicity of management plan ensured and compliance fostered			3		
5A User conflicts managed and/or reduced: 1) within and between user groups, and/or 2) between user groups and the local community or between the community and people outside it			3		

Among the 21 overall objectives, much emphasis is given to those related to Goal 1, since the objectives included in it have been of interest to all MPAs. In particular, five areas have been following Objective 1C - "Decision-making and management bodies present, effective, and accountable", as much importance is aimed at Goal 4 and in particular to its Objective 4B

- "Willingness and acceptance of people increased to behave in ways that allow for sustainable management". Goals 2 and 3 have been selected, respectively, from one area through Objective 2A - "Existence of adequate legislation ensured" (Isole Ciclopi) and Objective 3B - "Resource user capacity effectively built to participate in co-management" (Secche di Tor Paterno).

3.6 GOVERNANCE INDICATORS

The use of governance indicators is rather more diverse, as 12 of 17 have been applied by the 5 marine protected areas:

Table 6: Governance indicators applied in the 5 MPAs
Tabela 6: Kazalci nadzora, uporabljeni v petih MPA-jih

	Ciclopi	Miramare	Sinis	Torre Guceto	Tor Paterno
G1 - Level of resource conflict			•		
G2 - Existence of a decision-making and management body	•	•	•	•	•
G3 - Existence and adoption of a management plan	•		•		•
G4 - Local understanding of MPA rules and regulations		•	•	•	
G5 - Existence and adequacy of enabling legislation	•				
G6 - Availability and allocation of MPA administrative resources			•		•
G7 - Existence and application of scientific research and input	•		•	•	
G8 - Existence and activity level of community organization(s)					
G9 - Degree of interaction between managers and stakeholders				•	•
G10 - Proportion of stakeholders trained in sustainable use					
G11 - Level of training provided to stakeholders in participation		•			•
G12 - Level of stakeholder participation and satisfaction in management processes and activities					
G13 - Level of stakeholder involvement in surveillance, monitoring and enforcement		•			
G14 - Clearly defined enforcement procedures					
G15 - Enforcement coverage					
G16 - Degree of information dissemination to encourage stakeholder compliance	•	•	•		
G17 (*) Coordination and integration with local plans of the Public bodies			•		

(*) G17 is a governance indicator set up and defined on purpose for the specific local (national) situation

One indicator, G2 - "Existence of a decision-making and management body", was chosen unanimously, since the presence of an institutional body responsible for managing the area is

of primary importance, at the stage presently reached by the network of MPAs taking part to this initiative, and cannot be ignored. Four indicators were then selected by 3 MPAs, i.e.: G3 - "Existence and adoption of a management plan", G4 - "Local understanding of MPA rules and regulations", G7 - "Existence and application of scientific research and input", and G16 - "Degree of information dissemination to encourage stakeholder compliance".

4. DISCUSSION

4.1 BIOPHYSICS, SOCIO ECONOMIC AND GOVERNANCE GOALS AND OBJECTIVES FOR THE 5 MPAS

Isole Ciclopi MPA gives equal importance to the biophysical and socio-economic categories of management actions (38% both), while the governance issues have less weight (25%).

We recorded a rather different situation in Penisola del Sinis, where management is more focused towards socio-economic (38%) and governance objectives (34%); the biophysical ones reach 28%.

Secche di Tor Paterno follows with greater attention given to the biophysical targets (47%), then gives similar weight to socio-economic (29%) and governance (24%) issues.

A similar situation is observed in Torre Guaceto where, however, the differences in the percentages are less evident: the socio-economic and the governance indicators have the same weight (31%).

Miramare MPA highlights biophysical and governance matters (36%), while slightly lower importance is given to the socio-economic (29%) issues.

4.2 PRIORITY LEVELS IN PURSUING MANAGEMENT GOALS AND OBJECTIVES

After ending the assessment of indicators, the Directors of the 5 MPAs provided a personal assessment of the priority levels, on a scale of increasing importance from 0 to 5, for each of the objectives pursued in their area. The following table presents, in a schematic way, the opinions expressed, providing an average value for each priority:

Table 7: Priority level of the management goals in five Italian MPAs (average values)
Tabela 7: Prioritetna raven upravljalskih ciljev v petih italijanskih MPA-jih (povprečne vrednosti)

Category	Management goals in five Italian MPAs	Average value	Ranking
B	1A Populations of target species for extractive or non-extractive use restored to or maintained at desired reference points	4,2	1
S	6A Respect for and/or understanding of local knowledge enhanced	3,4	2
B	1C Populations of target species for extractive or non-extractive use protected from harvest at sites and/or life history stages where they become vulnerable	3	3
G	1C Decision-making and management bodies present, effective, and accountable	3	3

Category	Management goals in five Italian MPAs	Average value	Ranking
G	4B Willingness and acceptance of people increased to behave in ways that allow for sustainable management	3	3
B	1D Over-exploitation of living and/or non-living marine resources minimized, prevented or prohibited entirely	2,8	4
B	2E Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA	2,8	4
S	6B Public's understanding of environmental and social 'sustainability' improved	2,8	4
G	1A Management planning implemented and process effective	2,6	5
B	1E Catch yields improved or sustained in fishing areas adjacent to the MPA	2,4	6
B	3A Focal species abundance increased or maintained	2,2	7
S	3E Cultural value enhanced or maintained	2,2	7
S	6C Level of scientific knowledge held by the public increased	2,2	7
G	1F Periodic monitoring, evaluation, and effective adaptation of management plan ensured	2,2	7
B	3C Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA	2	8
G	1D Human and financial resources sufficient and used efficiently and effectively	2	9
S	3A Aesthetic value enhanced or maintained	1,8	10
S	5A Adverse effects on traditional practices and relationships or social systems avoided or minimized	1,8	10
S	3F Ecological services values enhanced or maintained	1,6	11
G	1B Rules for resource use and access clearly defined and socially acceptable	1,6	11
B	1F Replenishment rate of fishery stocks increased or sustained within the MPA	1,4	12
S	3B Existence value enhanced or maintained	1,2	13
S	6D Scientific understanding expanded through research and monitoring	1,2	14
B	2D Areas protected that are essential for life history phases of species	1	15
S	3C Wilderness value enhanced or maintained	1	15
S	3D Recreation opportunities enhanced or maintained	1	15
S	5B Cultural features or historical sites and monuments linked to coastal resources protected	1	15
G	4C Local ability and capacity built to use resources sustainably	1	15
G	4E Application of law and regulations adequately maintained or improved	1	15
B	2C Rare, localized or endemic species protected	0,8	16
B	2F Risk from unmanageable disturbances adequately spread across the MPA	0,8	17
G	3B Resource user capacity effectively built to participate in co-management	0,8	17
B	1B Losses to biodiversity and ecosystem functioning and structure prevented	0,6	18
B	2A Resident ecosystems, communities, habitats, species, and gene pools adequately represented and protected	0,6	19
B	4A Habitat quality and/or quantity restored or maintained	0,6	19
B	4C Unnatural threats and human impacts eliminated or minimized inside and/or outside the MPA	0,6	20
G	1E Local and/or informal governance system recognised and strategically incorporated into management planning	0,6	20
G	4F Access to and transparency and simplicity of management plan ensured and compliance fostered	0,6	20

Category	Management goals in five Italian MPAs	Average value	Ranking
G	5A User conflicts managed and/or reduced: 1) within and between user groups, and/or 2) between user groups and the local community or between the community and people outside it	0,6	20
G	4A Surveillance and monitoring of coastal areas improved	0,4	21
G	2A Existence of adequate legislation ensured	0,2	21

Objectives: B = Biophysical, S = Socio-economic, G = Governance

Ranking of the priority management objectives according to their decreasing score is a way to express and to describe the commitment, accountability and awareness of MPA's managers to:

• the conservation of natural marine resources,
• make the local population accept and understand the institutional purpose of the MPA through the sustainable use of marine resources (prohibitions, regulations and monitoring) and through techniques of public participation and environmental education,
• pursue the adequacy of local administrative structures and management practice in relation to the objectives pursued.

This result is in line with the institutional purposes - issued by the Ministry of Environment - of each marine protected areas taking part to this network.

The choice of priorities is then calculated as a percentage of its single weight towards the overall weight of all objectives (set to 66.6). This shows that 38.74% of priority objectives are among the biophysical ones (total weight 25,8); 31.83% of priority objectives are within the socio-economic area (total weight 21.2) and that the remaining 29.43% priority objectives are related to the governance (total weight 19.6).

4.3 LESSONS LEARNT

The benefit of implementing an evaluation program lies in the setting up of a control system for the overall work done by the management body. But this system has to be objective, standardised, measurable, and has to be already valuated, approved and recognised by peers. This was the case in using the IUCN's guidebook, the methodology of which was already field-tested in 2004 in 18 pilot MPAs around the world.

The following table provides, in a graphical way, the results obtained in the 5 MPAs after assessing the efficiency indicators:

Table 8: Efficiency indicators assessed in the 5 MPAs
Tabela 8: Kazalci učinkovitosti, ocenjene v petih MPA-jih

	Indicators	Torre Guaceto	Sinis	Ciclopi	Tor Paterno	Miramare
	Biophysical indicators					
B1	Focal species abundance	☑	☑	☑	☑ ☐☐☐	☑
B2	Focal species population structure	☑	☐☐☐	☑ ☐☐☐		

	Indicators	Torre Guaceto	Sinis	Ciclopi	Tor Paterno	Miramare
B3	Habitat distribution and complexity	☑		☒ ☑		☑ ☐☐☐
B4	Composition and structure of the community	☑				
B5	Recruitment success within the community			☐☐☐		
B6	Food web integrity					☐☐☐
B7	Type, level and return on fishing effort	☑		☑ ☐☐☐	☑	
B8	Water quality		☐☐☐ ☒	☑		
B10	Area under no or reduced human impact	≈	☑ ☐☐☐		☐☐☐ ☒	≈ ☐☐☐
	Socio-economic indicators					
S1	Local marine resource use patterns		☐☐☐	☑		
S2	Local values and beliefs about marine resources	☑	≈ ☐☐☐		☑	
S3	Level of understanding of human impacts on resources	☑		≈	☑	
S6	Perceptions of non-market and non-use value	≈	☑ ☐☐☐	☑	☐☐☐	☑ ☐☐☐
S13	Stakeholder knowledge of natural history		☐☐☐	☑	☑	☑
S14	Distribution of formal knowledge to community	☑	☐☐☐		☐☐☐	
	Governance indicators					
G1	Level of resource conflict		≈			
G2	Existence of a decision-making and management body	☑ ☐☐☐		☑	☑	
G3	Existence and adoption of a management plan			☑	☑	
G4	Local understanding of MPA rules and regulations	☑	≈			≈
G5	Existence and adequacy of enabling legislation			☒ ☑		
G6	Availability and allocation of MPA administrative resources				☐☐☐	
G7	Existence and application of scientific research and input	☑	☑	☑		
G9	Degree of interaction between managers and stakeholders	☑			☒ ☑	
G11	Level of training provided to stakeholders in participation				☑	
G13	Level of stakeholder involvement in surveillance,, ...					
G16	Degree of information dissemination to encourage ...		≈	☑ ☐☐☐		☐☐☐
G17	Coordination and integration with local plans of the Public bodies		☑			

☑ **Positive trend**   ≈ **No changes**   ☒ **Negative trend**   ☐☐☐ **No data – poor significativity**

G17 is a Governance indicator set up and defined on purpose for the specific local (national) situation

4.4 CONCLUSION

The results assessed in the 5 MPAs describe the capability of fulfilling the tasks assigned by each institutional decree, specifically in the fields of use of the maritime public domain, the environmental conservation, the communication/information, the management of resources, the local development.

Facilities for visitors, communication and information systems (i.e. visitor centers, educational workshops, displays, mooring fields, nature trails, exhibition material, website, etc..) are the most developed taking into account that 75% of fruition possibilities usually used in the MPAs surveyed have been implemented and are fully operational. On the other hand, most of MPAs complain a low level of monitoring, control and management of tourist flows (e.g. disposal of waste on beaches and at sea).

With regard to environment conservation, the 5 MPAs have a suitable range of tools and expertise: in the overall, they own 72.5% of the facilities nowadays available, such as a cartographic GIS, biological monitoring programs undergoing in the core and buffer areas, studies running on the biological communities, and are compliant to the European "EMAS" environmental certification standards. Finally, encouraging sustainable local productions is fairly good (66.7%), while resources management is poor (30%), same as the presence of programs aiming at the development of alternative energy sources, at the adoption of waste separation schemes along the coast and at sea, the management of garbage, and the activities that should be certainly encouraged through specific action plans.

4.5 MIRAMARE MPA

The management body of Miramare marine reserve has set 5 high priority objectives for the three-year period program 2005-2007:
1. Conservation of the specific diversity of the tidal zone.
2. Conservation of the naturalness of the underwater and terrestrial landscapes.
3. Conservation of the ecological integrity of the communities living in the Gulf of Trieste.
4. Part of the people attending the Reserve get acquainted with the marine environment and its management, in view of a participative protection of the area shared among all the economic categories, which are operating hereby.
5. To help the conversion of fishing activities and pleasure boating habits, which are no longer sustainable and/or lead their adaptation in the environmental directions.

After the results provided by the effectiveness evaluation, the following are the indications for its next edition of the management plan:

Objective 1 - "Conservation of the specific diversity of the tidal zone"
Monitoring of benthic species will be conducted simultaneously among animal and vegetal

species, in order to assess the sensitivity of plant populations exposed to the same type of stress as animal ones.

The management body has to keep within the current limits the disturbance towards this priority environment, while allowing its fruition for visiting and educational activities.

Objective 2 - "Conservation of the naturalness of the underwater and terrestrial landscapes"

Monitoring activity will be continued by visual census, both on native species (in order to control the disturbancy linked to visiting activities within the MPA) and on alien species, as an overall supervision of Miramare fish community.

The sightings of fish, communicated by scuba visitors to their guides at the end of each visit, will serve as starting input on which to set specific actions for environmental conservation, as well as to ascribe to each species (or group of species) a non-market value on which to base the environmental accounting of the MPA.

The areas close to sensitive zones shall be monitored for documenting any repopulation and spillover of the species hosted by the MPA.

The map of underwater noise sources shall be referred to the reception sensitivity of some common fish species in the Reserve.

Objective 3 - "Conservation of the ecological integrity of the communities living in the Gulf of Trieste"

The dialogue with fishermen (activated thanks the assessment of indicator B 7) could bring the MPA to contribute in increasing the value of local fish production and also to offer managerial insights to the management committee of the "Zona di Tutela Biologica" (the area for the conservation of fish stock).

The model of Miramare MPA food web showed that some knowledge is still lacking, as for some functional groups only abundance data are available (in this case the use of average weights causes an inaccurate estimation of biomass). Furthermore, only limited information is available for some sectors of the food web (especially for intermediate levels: macroinvertebrates and meiofauna), while specific assessment of primary production and food requirements are missing.

Thus the indication is to assess the flows of energy production and consumption as specifically and locally as possible, in order to allow a more precise description of the ecosystem through the food web model.

Objective 4 - "Part of the people attending the Reserve get acquainted with the marine environment..."

There is the need to continually update and involve teacher in order to stabilize the group and to avoid their excessive turnover, thus to keep the quality of educational activities at the highest level.

The platform of e-learning should always be active to allow anyone to download the information, as well as to allow MPA personnel to update the catalogue of educational initiatives.

The daily communication towards users proves to be a key element, to be kept active steadily. An operational indication is to distribute multilingual information leaflets to the parking plots attendants.

Objective 5 - "Conversion of fishing activities and pleasure boating habits..."

The management body of Miramare MPA considers of the utmost importance involvement of the maritime police authorities in order to coordinate their vigilance and to ensure most effective environmental protection.

An action will be undertaken in order to extend the influence of MPA in surrounding areas not directly included in the protected perimeter, thus spreading behaviours and habits for the sustainable use of marine environment.

5. FURTHER DEVELOPMENT

The Italian MPAs are making their first steps within an international/ biogeographic coordination framed by international conventions (UNEP's Barcelona convention) and networks of managers (MedPan, AdriaPan). In this context, it is hoped that the experiences gained in the evaluation of management effectiveness will be made available to all MPAs sharing the same sea, encompassed in such frameworks.

The AdriaPAN network, which was established in 2008 by the "Cerrano Charter", is presently only a coordinating body for managers of coastal and marine protected areas along the shores of the Adriatic Sea. Within this network, the presence of management bodies such as consortia, research institutes and associations is strategic. Their presence should help overcoming the weaknesses of the schemes presently driving the coastal zone management, strengthening the operativity, the spatial planning and the socio-economic development on a common basis of ecological sustainability.

The coordination of the AdriaPAN network thereby may enable monitoring of efficiency indicators among MPAs, as part of a shared method to evaluate the results of the management and conservation efforts. At first, the initiative has to retrieve a common funding tool such as EU's Instrument for Pre-Accession Assistance (IPA). IPA's aim is to strengthen institutional capacity, cross-border cooperation, economic and social development and rural development. In this context, Priority 2 - measure 2.1 "Protection and enhancement of the marine and coastal environment" seems one of the most suitable funding tools. Coastal and marine MPAs represent a tool potentially useful to avoid natural, economical and socio-cultural losses related to unsustainable uses of natural resources and/or to unregulated socio-economic development in the coastal and marine area. The use of MPAs, therefore, is especially recommended to properly balance conservation needs (of natural and cultural values) and economic sustainability, in the perspective of an ecologically sustainable use of natural resources and respect of traditional customs, activities and cultures.

Within AdriaPan – which is the tool to share and discuss common experience at ecoregional level - MPAs managers should be able to build a project together with local scientific institutions in order to collect data/information and set up proper measures to manage their territory in a sustainable perspective and to promote local productions. This project should provide the indication of one or more conservation objectives at ecoregional scale, already stated among MPA's objectives, otherwise proper objectives should be included in the plans of the partner

MPA. Following the methodological scheme, each objective should be linked to one or more indicators. Thus the experience presented herewith should result in some help in working with objectives and related indicators in a cluster of MPAs.

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