

## Organisation

C.U.E.I.M., University Consortium for Industrial and Managerial Economics on behalf of the Ministry of the Environment and Territory

## Primary methodology reference

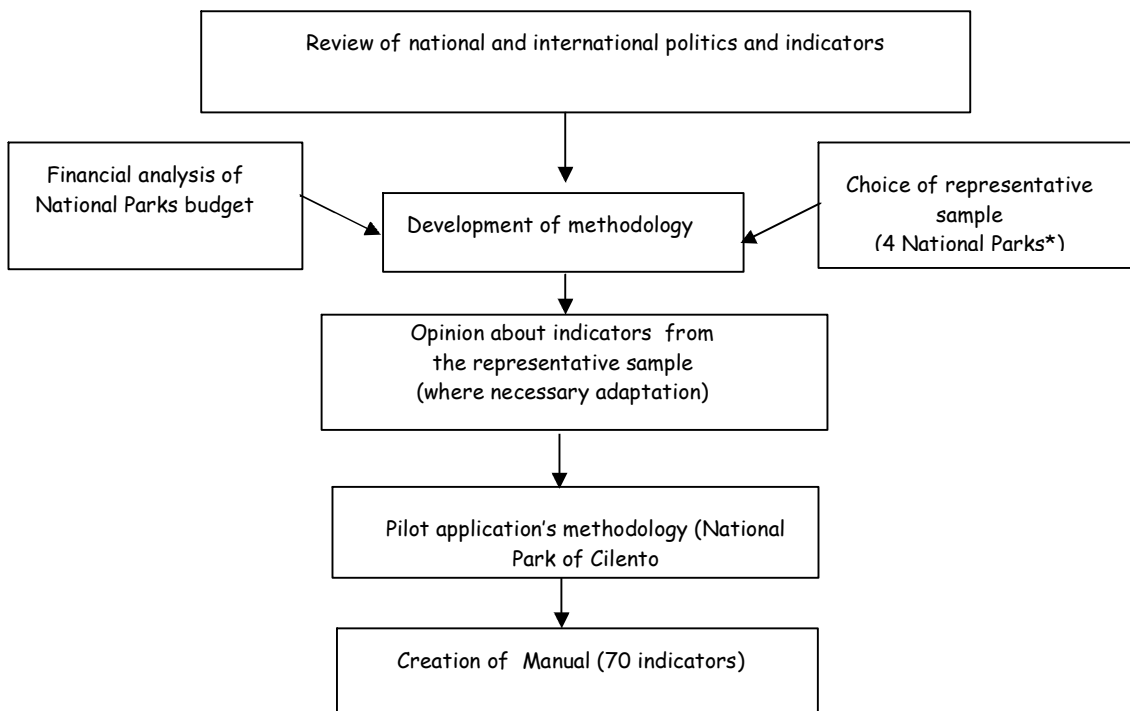
Banini S., Marino D., Lumaca C., Addis D., Alborino N., Marucci A., Palmieri M., Parasacchi A., Soffiotti E., Zaottini D., Zarlenga G. (2006) "Assessment of Protected Areas Management Effectiveness" Report phase n°1.

## Brief description of methodology

The aim of MEVAP (Monitoring and Evaluation of Protected Areas) methodology is to assess and monitor protected areas management effectiveness through a set of indicators.

The method developed for the Italian protected areas takes into account the instructions and recommendations from national and international policies on bio-diversity and sustainable development (General policy law n° 394, CBD, etc.).

## Path to work



\*Gran Paradiso, Dolomiti Bellunesi, Majella, Cilento Vallo di Diano National Parks

MEVAP allows:

- ✓ A macro-level assessment of protected area management: the achievement of national goals and objectives in observance of international treaties and national strategies
- ✓ A micro-level assessment of protected area management: developing methods and criteria in order to diffuse Best Practice arising from the assessment of local management system

The evaluation of management effectiveness is achieved by the assessment of a set of selected indicators. The criteria used for selecting indicators are:

- ✓ Ease of collection
- ✓ Quantification

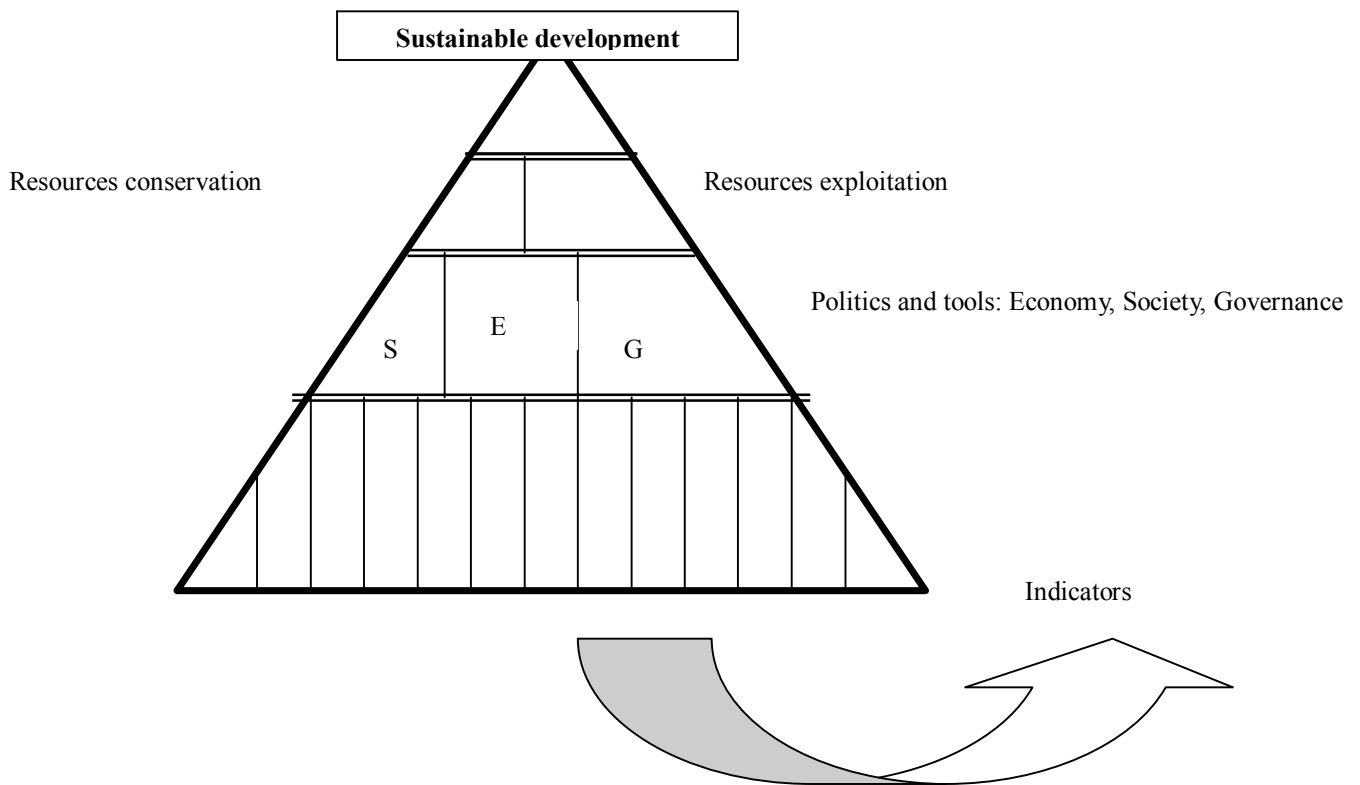
- ✓ Representativeness
- ✓ Scientific relevance
- ✓ Transferability

Indicators are associated with 4 domains: Environment, Economy, Governance, Society. Every domains is related with macro-objectives and topics. Successively the methodology has been adapted to IUCN-WCPA framework (see paragraph on elements and indicators)

**example**

Domain	Macro-objective	Topic	Indicator
Environment	Resource Conservation (CBD)	Bio-diversity	Levels of threat to animal species
Economy	Reconversion of productivity and promotion of sustainable activities (L. 394/91)	Δ+ products with quality certification	Presence of trademark
Governance	Development of economic management capacity	Park as a generator of creative projects	Promotion of international co-operation
Society	Access and benefit-sharing of genetic resources (CBD)	Access to benefits	Local residents' perception of benefits

**Theoretic Model**



The triangle shows the hierarchical order among elements of Sustainable Development referring to Protected Areas. Conservation and Resources Exploitation can be effected and can interact with Society, Economy and Governance, put under them. On the top there is Sustainable Development meant as the synthesis between two trends, Resources Conservation and Resources Exploitation.

Society, Economy and Governance are Sustainability management tools able to generate processes affecting its evolution. For this reason the assessment of PA management effectiveness must take into consideration the maintenance of biodiversity without neglect social, economic and governance aspects and as well as human needs.

## Purposes

- ✓ to improve management (adaptive management) primarily at a micro-level and afterwards at a macro-level widening the range of the study to a National Park network at a system level.
- ✓ for accountability/audit
- ✓ to raise best practices and support to Protected Areas authorities

## Objectives and application

MEVAP is a scientific tool designed to be flexible and accessible to different needs and context. It is made up of a wide range of 70 indicators which have been divided in core and supplementary. The set of indicators can be adapted and used in different circumstances and context:

- ✓ Evaluation or self-evaluation of protected areas management effectiveness
- ✓ To provide support for Best Practice diffusion
- ✓ Supporting different environmental procedures and programs like ISO 14001, The EU Eco-Management and Audit Scheme (EMAS) and Agenda 21 or State of the Environment Reports.
- ✓ In sectorial studies concerning protected areas (tourism, agriculture, etc.)
- ✓ Supporting procedures for Environment Balance and/or Sustainability Balance

## Origins

The General Directorate “Nature Protection” of The Ministry of the Environment and Territory charched C.U.E.I.M. with working-out a plan to assess the Italian National Parks in order to fulfil obligations under CBD’s Programme of Work on Protected Areas (goal 4.2- To evaluate and improve the effectiveness of protected areas management).

## Strengths

- ✓ High information details
- ✓ Possibility to evaluate Park management effectiveness in relation to the context
- ✓ A lot of data are objective and quantitative. Their information retrieval are official and outside the Park Authority. Because of these reasons the data are useful to a self-evaluation.
- ✓ The methodology is set out in high number of indicators and related index and can be applied to different needs and context (see paragraph on objectives and application).

## Constraints and weaknesses

- ✓ the information retrieval can be complex and expensive
- ✓ the information retrieval can be not updated and/or not reliable in territorial scale
- ✓ Sometimes the data analysis and evaluation can be not effective because of unavailability of historical series

## How the methodology is implemented

The work is in progress. MEVAP’s team is assessing Cilento Vallo di Diano National Park but the aim of the project is to develop an evaluation of the wide Italian National Parks.

Taking into account the nature of methodology (flexible and accessible to different needs)MEVAP can be also implemented in different kind of protected areas (marine reserves, etc).

## Elements and indicators

<b>WCPA elements</b>	<b>Environment</b>	<b>Economy</b>	<b>Society</b>	<b>Governance</b>
<b>Context</b>	Floristics resources	Soil exploitation	Growth and population density	Bio-ecological Architecture*
	Faunistic resources	Agriculture pressure in the environment	Social capital quality	
	Richness of vegetation	Tourist intensity*	Quality of life	
	Ecological network	Production of urban solid waste*		
	Level of threat to vegetable species	Proximity of sites at risk of incident		
	Level of threat to animal species	Consumption of energy		
	Level of threat to Habitats	Sustainable mobility*		
	Surface waters quality	Pressure from road infrastructure		
	Groundwaters quality	Intensity of water exploitation		
	Marine and costal waters quality	Local products*		
	Wooded fire	Farms and zootechnical enterprises agreeing to environmentally friendly measures and which practise organic farming*		
	Forest area condition and quality			
	Landscape quality	Energy production through alternative energy resources*		
	Genetic variation in agriculture and in zootechnics	Production of services and goods with a low intensity of material *		
	Territory geologic brittleness	Energetic intensity		
		Water Balance		
	Economic welfare			
	Absorption capacity*			

<b>Planning</b>				<p>Environmental planning capacity</p> <p>Administration complexity</p> <p>Management and planning instruments</p> <p>Indicators on fulfilment of legal obligations</p>
<b>Input</b>			Environmental education*	<p>Funding through planning activities</p> <p>Staff</p> <p>Balance indicators about revenue</p>
<b>Process</b>		<p>Sewage purification capacity</p> <p>Sustainable management from local authorities and local enterprise</p>		<p>Functioning of Park board</p> <p>National and international co-operation activities</p> <p>Indicators on budgetary expenditure</p> <p>Management of AIB service (Anti-fire wooded plan)</p> <p>Surveillance and sanction activities</p> <p>Indemnification</p> <p>Cost to prevent damages from hydrogeological upheaval</p> <p>Cost to restore damages from hydrogeological upheaval</p> <p>Intervention plan</p>

<b>Output</b>	Botanical garden Faunistic Area Collection and germplasm bank and/or conservatory	Tourist intensity* Production of urban solid waste* Sustainable mobility* Local products* Farms and zootechnical enterprises agreeing to environmentally friendly measures and which practise organic farming* Energy production through alternative energy resources* Production of services and goods with a low intensity of material * Enterprises related with the park respect the total of enterprises Presence of trademark Sustainable wooden production	Stakeholders' perception of benefits Local residents' perception of benefits Environmental education*	Management of forest resources Management of fauna Activity of environment recovery Reforestation Bio-ecological Architecture*
<b>Outcome</b>	Botanical garden Faunistic Area Collection and germplasm bank and/or conservatory	Absorption capacity*	Visitors' satisfaction	

\*Some indicators can be valued both as context and as output. They can be put in the output box when the Park promotes (directly or indirectly) projects and activities related with indicators and/or aimed at their achievement. Otherwise they can be put in the context box.

\*"Absorption capacity" can be valued both as context and as outcome depending on Park's policy and intervention in this field

\*Taking into account the different index of this indicators, "Environmental education" can be valued both as input (index: voluntary camp) and as output (index: doctoral thesis, environmental education centres etc.)

# List of indicators and related index

## Environment:

### 1. Floristics resources

- total of species (n°)
- endemic species (n°,%)
- autochthonous species (n°,%)
- rare species (n°, %)
- biological spectrum (n°, %)
- chorological spectrum (n°, %)

### 2. Faunistic resources

- total of species (n°)
- endemic species (n°)
- autochthonous species (n°,%)
- rare species (n°, %)

### 3. Richness of vegetation

- vegetable association (n°,%)

### 4. Ecological network

- pSIC and ZPS (n°, list)
- pSIC and ZPS sites extension (ha)
- priority habitat in pSIC and ZPS sites (n°, list)

### 5. Level of threat to vegetable species

- species protected by international conventions (n°, typology)
- species from IUCN Red list (n°, % , typology)
- species from Atlas of species at risk (DPN Ministry of Environment)
- allochthonous species (n°, %)

### 6. Level of threat to animal species

- species protected by international Conventions (n°, typology.)
- species from IUCN red list (n°, % , typology)
- allochthonous species (n°,%)

### 7. Level of threat to Habitats

- Habitats' fragmentation

### 8. Botanical garden

- presence/absence (yes/no)
- cultivated species (n°, typology)
- species from IUCN red list (n°, typology)
- Herbarium ( n° of sample)

### 9. Faunistic Area

- presence/absence (yes/no)
- type of species (n° and typology of vertebrate and invertebrate)
- autochthonous species (n°, %)
- IUCN Red List's species (n°, % for vertebrate class)

### 10. Surface waters quality

- list of waterworks with TRIX index
- list of waterworks with IQB index

- list of waterworks with SECA index
- list of waterworks with SEI index

### **11. Groundwaters quality**

- list of underground waterworks with SCAS index
- glacier evolution

### **12. Marine and coastal waters quality**

- list of basin with TRIX index
- list of areas with IQB index

### **13. Wooded fire**

- fires (n° for year)
- total area affected by fire (ha)
- no wooded area affected by fire for year (ha)
- wooded area affected by fire in relation to territory typology (%)

### **14. Forest area condition and quality**

- forest area subdivided for altimetric zone (ha)
- forest area subdivided for wood typology (ha)
- tree density index

### **15. Landscape quality**

- ILC index

### **16. Collection and germplasm bank and/or conservatory**

- presence/absence (yes/no)
- vegetable species preserved in germoplasm bank (n°)
- vegetable endemic species preserved in germaplasm bank (n°, %)
- vegetable dying species preserved in germoplasm bank (n°, %)
- agreement to Italian Network of Germoplasm Bank (RIBES) to ex situ conservation of naturally flora (yes/no)
- agreement to international organizations (yes/no –if yes specify which)
- vegetable species cultivated in conservatory (n°)
- vegetable endemic species cultivated conservatory (n°, %)
- vegetable dying species cultivated in conservatory (n°, %)

### **17. Genetic variation in agriculture and in zootechnics**

- autochthonous animal stock (n°, typology)
- variety of autochthonous crops (n°, typology)

### **18. Territory geologic brittleness**

- landslide phenomenon (n°)
- landslide index (%)
- landslide cause (natural, antropic)
- classification of town or village in the park in relation to vulnerability and landslide risk

## **Economy:**

### **19. Forest resources exploited**

- park's permit
- land subjected to logging (zone A,B,C,D)

### **20. Soil exploitation**

- SAU/SAT (%)
- fit for sowing (%)
- woody cultivation (%)
- permanent field under grass and grazing land (%)

- land exploited for wood arboriculture (%)
- wooded land (%)
- no exploited land (%)
- land to recreational activities (%)

### **21. Agriculture pressure in the environment**

- quintals of fertilizing to hectare of SAU (q/ha)
- horse-power to hectare of SAU (hp/ha)
- quantity of waste produced (t)

### **22. Sewage purification capacity**

- sewerage (presence/absence)
- sewage purification (partial, complete, absent)

### **23. Tourist intensity**

- visitors/local residents (n°, %)
- temporal concentration index (%)
- visitors of museums, monuments, archaeological sites (n°)
- naturalistic tourism/reception capacity (%)
- farm tourism (n°)
- daily place setting to farm tourism (n°)
- holiday village and camping (n°)
- accommodation (beds) in holiday village and camping
- hostels (n°)
- alpine shelter (n°)
- accommodation (bed) in alpine shelter (n°)
- Hotel (n°)
- accommodation (bed) in hotel (n°)

### **24. Production of urban solid waste**

- production of urban solid waste (kg/per capita)

### **25. Proximity of sites at risk of incident**

- presence/absence of sites at risk in the vicinity of park(yes/no)
- sites at risk in the vicinity of park (n°, typology)
- perception of the risk

### **26. Consumption of energy**

- energy consumption in the town and village of the park (kw for sources)

### **27. Sustainable mobility**

- eco-friendly transport (n°)
- distance covered from cycling track (km)
- distance covered from paths managed by the Park (km)
- distance covered from different eco-friendly means of transport (n°, %)

### **28. Pressure from road infrastructure**

- distance covered from local roads (km, %)
- distance covered from railway (km, %)
- public transport lines (n°)
- distance covered from different means of transport (n°, %)

### **29. Intensity of water exploitation**

- water consumption in zootechnics
- civilian water consumption
- water consumption in irrigation
- area of irrigation for irrigation method (ha for typology)
- area of irrigation for sources of watering (ha for typology)

-water drawn out from aquifer and surface water

### **30. Local products**

- products with registered designation of origin DOP (n°)
- products with registered designation of origin IGP (n°)
- products DOP -IGP waiting to be registered (n°)
- products DOCG-DOC-IGT (n°)
- local products (n°)

### **31. Separate collection of household waste**

- recycled waste for material (tot kg and per capita)

### **32. Farms and zootechnical enterprises agreeing to environmentally friendly measures and which practise organic farming**

- hectare of SAU (ha, %)
- farms /n°)
- animals (n°, %)

### **33. Energy production through alternative energy resources**

- alternative energy projects developed (n°, typology)
- cost and energetic value of the project

### **34. Enterprises related with the park respect the total of enterprises**

- employees ( n°)
- enterprises producing environmental services and goods (%)

### **35. Production of services and goods with a low intensity of material**

- employees ( n°)
- creation of new enterprises with a low intensity of material (n°)

### **36. Energetic intensity**

- pil /tep spent

### **37. Water Balance**

- surface waters outflow plus groundwater outflow minus capitation

### **38. Sustainable management from local authorities and local enterprise**

- authorities and enterprises with the environmental certifications like ISO14001, EMAS, - Agenda 21 (n°)
- tourist enterprises with environmental certifications (n°)

### **39. Presence of trademark**

- n° of marks related with the park

### **40. Sustainable wooden production**

- wooden makers (yes/no)
- wood with FSCN mark

### **41. Economic welfare**

- PIL (€)
- PIL per capita (€/per capita)

### **42. Absorption capacity**

- carbon quantity absorbed from forest biomass

## **Society:**

### **43. Growth and population density**

- resident population (n°)
- population density

- composition for year class
- population variation
- old age index
- feminization index

#### **44.Social capital quality**

- couple with children (n°)
- couple without children (n°)
- fathers with children (n°)
- mothers with children (n°)
- religious organizations (n°)
- other social associations (n°)

#### **45.Quality of life**

- standard of education
- employment
- services (hospitals, schools, waterworks, mail service, bank counter)
- family income

#### **46.Stakeholders' perception of benefits**

- questionnaire

#### **47.Local residents' perception of benefits**

- questionnaire

#### **48.Visitors' satisfaction**

- questionnaire

#### **49.Environmental education**

- class and students (n°)
- voluntary camp (n°)
- visitors of visit centres (n°)
- scientific projects (n°, typology, cost)
- doctoral thesis, dissertations (n°)
- environmental education centres (n°)

### **Governance:**

#### **50.Environmental planning capacity**

- Emas (presence/absence)
- Agenda 21 (presence/absence)
- other (presence/absence)

#### **51.Administration complexity**

- different local authorities involved in park management (n°)
- residents in village and town's (n°)
- population density

#### **52.Functioning of Park board**

- meeting (n°)
- advices (n°)
- administrative board
- Council
- resolution adoption (n°)

#### **53.National and international co-operation activities**

- national activities like twinning, partnership, etc. (typology, cost, timing)
- international activities like INTERREG, Life, twinning, etc. (typology, cost, timing)

#### **54.Funding through planning activities**

- projects funded by European Commission, Local authorities, partnership, Life, Ministries, etc.(n°, €)
- funding capacity (€ funded/€ funded total revenue/ordinary contribution)
- expenditure capacity (€ spend/ € funded)

#### **55.Management and planning instruments**

- different management instruments.Presence/ absence, date of implementation.

#### **56.Staff**

- relation between actual staff and planned staff
- staff, definition of positions

#### **57.Balance indicators about revenue**

- self-funding %
- financial resources list
- external funding (%)
- Eu's contributions

#### **58.Indicators on budgetary expenditure**

- expenditure capacity
- payment capacity
- staff expenditure
- other

#### **59.Indicators on fulfilment of legal obligations**

- observance of legislation and administrative dispositions.

#### **60.Management of AIB service (Anti-fire wooded plan)**

- anti-fire wooded plan presence/absence
- anti-fire activities effectiveness. Relation among sighting, intervention, the putting out of a fire
- type of fire: arson, culpable fire, natural fire (n°, %)

#### **61.Management of forest resources**

- woody species managed/total woody area (%)

#### **62.Management of fauna**

- list of introduced species
- list of re-populated species
- list of checked species
- list natural introduction of animals

#### **63.Activity of environment recovery**

- reclaimed sites (n°,%)
- quarry reutilization (n°,%)
- mine reutilization (n°,%)
- phytodepuration system (n°)
- naturalistic engineering interventions (n°, typology)
- reutilization of other sites (n°, typology)

#### **64.Reforestation**

- reforested area (ha)
- relation between reforested area and total area (ha)
- list of species exploited
- arboriculture systems (n°)
- biomass production system (n°, typology)

#### **65.Surveillance and sanction activities**

- poaching
- unauthorized building
- unauthorized dumping
- unauthorized water dumping
- injured animals

#### **66. Indemnification**

- indemnification for missed reaping and pasture (€)
- indemnification for fauna damages (€)

#### **67. Cost to prevent damages from hydrogeological upheaval**

- cost of activities to prevent damages from hydrogeological upheaval (€)

#### **68. Cost to restore damages from hydrogeological upheaval**

- cost of activities to restore damages from hydrogeological upheaval (€)

#### **69. Intervention plan**

- incidence's assessment in plans and programmes (n° advices)

#### **70. Bio-ecological architecture**

- presence/absence of Bio-ecological architecture projects
- presence/absence of rule on Bio-ecological architecture in local