

# **SUSTAINABILITY OF COASTAL TOURISM: THE ROLE OF ENVIRONMENTAL CERTIFICATION OF MUNICIPALITIES**

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## **1. The importance of tourisms from economic, social and environmental point of view**

Tourism is an essential element in the local economy for achieving the main objectives of social and economic growth, an adequate degree of occupation for citizens, a satisfactory regional development and a sound management of cultural and natural heritage. The tourism industry is a growing sector and produces social, economic, cultural and environmental impacts able to modify the physical aspect of a territory. The most important pressures exerted by tourism industry on the environment are an increased consumption of its natural resources, such as water, soil and energy, a great and uncontrolled use of territory, a large production of wastes and a diffuse atmospheric and water pollution [i]. The growing consumption of natural resources represents an obstacle for the achievement of sustainable development, particularly in small and coastal areas with fragile ecological environment. The tourism development, without an appropriate planning and management, can create competition for the use of land; it can encourage an intensive exploitation of territory and can cause deforestation, soil erosion and loss of biological diversity, producing as a consequence an irreversible damage to the ecosystems. On the other hand, a quality tourism can contribute to sustainable development of coastal areas by improving the local economy through the meeting of social needs and preserving, at the same time, the cultural and natural environment. Local authorities play an important role in tourism management through their planning activities, policies and programs. It is therefore necessary a comprehensive framework for assuring a systematic and consistent approach to environmental management allowing a systematic, objective and periodic evaluation of the whole authority activities [ii].

In many countries the tourism of coastal areas assumes a high significance. The world coastal areas are in general the most densely inhabited: roughly half of world people live within hundred kilometers from the sea coast. The continuous demographic growth and the incremented population density in the coastal areas, together with the construction of new ports and industrial plants, are the primary reasons of the degraded conditions of many world coastal zones. In the year 2000 the World Resources Institute (WRI) indicated a situation of high environmental risk for 34% of world coasts and for 70% of European coasts. The Mediterranean coastal regions are in fact the main destinations of the International tourism with an extension of only 1.5 million of square kilometres [iii]. Heavy seasonal fluxes of tourists in coastal zones become a further source of environmental impact in areas where the concentration of productive activities and residential citizens is already high. In Italy, every year there are about 73 million of tourists arrivals spending about 299 million of nights in various accommodations against a population of 58 million of residents. The detailed analysis of these data shows 18 million of arrivals registered in summer nearby marine destination [iv].

## 2. Significance and requirements of sustainability

The Brundtland Commission's report defined sustainable development as "development which meets the needs of current generations without compromising the ability of future generations to meet their own needs". The concept supports strong economic and social development, in particular for people with a low standard of living. At the same time it underlines the importance of protecting the natural resources and the environment. Economic and social well-being cannot be improved with measures that destroy the environment.

One of the important condition to promote sustainable development that has gained prominence recently is education. It is already proven that a greater awareness on sustainability enables decision-makers and ordinary citizens to reach better understanding of the different interactions existing between social and environmental aspects.

Before to enter into the analysis of what are the requirements a tourism activity must have to be considered sustainable, it is worth while to examine the most common meanings that are attributed to the concept of sustainability.

An enormous amount of academic, administrative and political effort has been put into trying to find a more precise definition of sustainable development than the one put forward by the Brundtland Commission, but to no avail. In these processes strong disagreements soon crop up. This is the reason why some scholars support the original concept, which has been described as presenting a "constructive ambiguity". In a world with very varied political cultures and priorities the lack of definitional precision of the term 'sustainable development' may represent an important political opportunity. An important conclusion is that ***sustainable development is a process, not an end in itself***. It also implies that participation and genuine dialogue among stakeholders are key prerequisites for sustainable development. In brief, sustainable development needs democratic thinking, but it can also help strengthen democratic institutions through consensus-based public participation. Some might say that this "***constructive ambiguity***" may lead to a certain level of "anarchy" in the practical application of the concept.

The following checklist represents some important requirements for sustainability as it is defined in the Brundtland Report.

- A. **Resource Depletion and Degradation** including loss of biological diversity, land resources (especially soil); water resources; fisheries; forests and timber; energy resources; mineral resources.
- B. **Pollution and wastes** including atmospheric and climate change; air pollution; marine pollution; pollution of inland waterways; land and soil pollution.

C. **Society and the Human Condition** including population growth; food security and hunger; shelter; rapid urbanisation; health and disease.

The achievement of sustainability by the poorest countries requires the continued extraction and transformation of raw materials for primary commodity production without compromising the environment with the production of pollutants and wastes resulting from the industrialised processing of materials and their subsequent use.

The concept of sustainability assumes different meanings depending on the discipline in which it is considered. In **biology**, sustainability is associated with the protection of biodiversity. It concerns itself with the need to save natural capital on behalf of future generations. In **economics** it is advanced by those who favour accounting for natural resources. It examines how markets, as conventionally conceived, fail to protect the environment. In **sociology** it involves the advance of environmental justice in situations where some groups make decisions over the use of natural resources and other groups are affected in their daily lives. In **planning** it is the process of urban revitalization where there is a pursuit of a design science that will integrate urbanization and nature preservation. In **environmental ethics** it means alternatively preservation, conservation or 'sustainable use' of natural resources. This probes the domain where humans ponder whether they are part of, or apart from, nature, and how this should guide moral choice.

The key finding of Brundtland Commission's report is that environmental, economics and social concerns must be integrated if the world's peoples are to advance and develop without jeopardizing the natural environment on which all life depends. Although today we cannot define the needs of future generations, the challenge for today's leaders is to pursue policies that will leave available an array of choices for future generations to meet their own needs.

The main challenges facing the world include: optimizing the benefits obtained from depleting resources; assuring against excessive strains placed on the eco-system; the dynamic growth of the world population; remedying social and economic inequalities.

These are challenges on a global scale. It follows, therefore, that the attainment of Sustainable Development will call for action on the part of the people, governments, businesses and organisations around the world.

After having analysed the concept of sustainability from a general point of view a question may arise: how can we measure the degree of sustainability? To answer to this question we need a set of indicators and a unit able to quantify the degree of sustainability. To do this we can assume that an activity to be sustainable must rely on an accurate risk-benefit analysis giving as a result the maximum benefit with the minimum risk.

A significant example showing how this concept can be applied is the sustainability in energy production and use. In fact some indicators are able to describe the degree of sustainability in the energy sector. One of them is the HDI (Human Development Index) that incorporates three important parameters for the quality of life (health, education, economy). The index HDI is strictly related to the energy availability per capita. The graph in Figure 1 shows that the availability of energy produces an increase in HDI until values of about 5 toe per person per year; beyond this figure an increase in energy availability does not correspond to a higher standard of living.

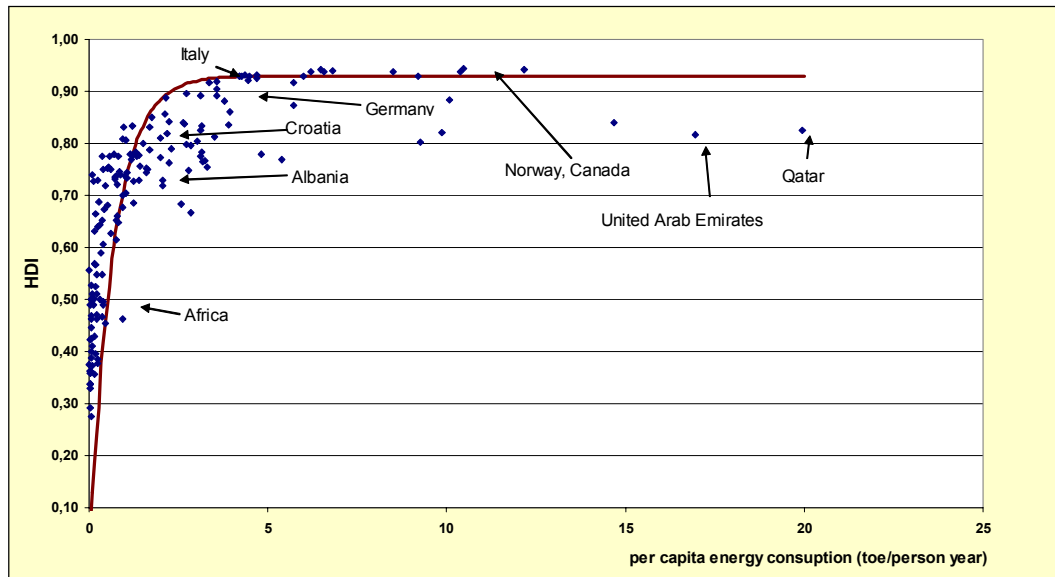


Figure 1. Human development index vs. per capita energy consumption (2001)

Some other considerations dealing with the sustainability are connected to the fact that the energy production relies heavily on the burning of fossil fuels. The picture of the present and of the near future show a continuous increase of fossil fuels consumption producing growing emissions of carbon dioxide and atmospheric pollutants. The more efficient provisions able to reduce pollution and emissions of carbon dioxide are related to the nature of the fuel and to the efficiency of the energy systems. The amount of carbon dioxide produced per energy unit depends on the nature of the fossil fuel: the highest amount is produced by coal (0,38 g/kcal) followed by oil (0,30 g/kcal) and natural gas (0,23 g/kcal). Natural gas is also less polluting.

The second provision relies on the innovation of the systems used to transform one form of energy into another: the engine of a car transforms the heat content of the fuel into motion, the heating boiler delivers the heat content of a fuel (coal, oil, natural gas, biomass etc.) to the space of the house, a windmill transforms the energy of the wind into electricity, a power station transforms the heat content of a fuel (fossil fuel, nuclear material, etc.) into electricity. In all transformations a part of the energy spent is lost due to the physical laws governing the transformation. The efficiencies of transformations have physical limits, but the level of the efficiency achieved has been for long time highly below the theoretical limit.

The better conservation of resources jointly with the limitation of environmental impacts due to highly efficient energy systems is one of the most effective measure for sustainability and therefore represents a challenging task of the modern society.

The sustainability in energy production can be quantified by introducing indicators able to define its level on the basis of the reduction of fuel consumption and of environmental impacts both related to unit service produced represented by kWh for electricity, km for transportation and kJ or kcal for domestic and industrial heat.

If we want to take into account the quantitative conservation of fossil fuels, that are not renewable resources, the sustainability indicators could be expressed by kg of fuel consumed per produced kWh for electricity, kg of fuel consumed per km for transportation and kg of fuel consumed per kcal delivered for domestic and industrial heat.

High sustainability corresponds the low levels of the indicators whose value is determined by the efficiency of the systems using the fossil fuels (power stations, cars, heating systems, etc.).

The second requirement of sustainability refers to the environmental impacts; the appropriate indicator is the ratio between the amount of impact produced (e.g. grams of emitted pollutant) to the unit service obtained (kWh for electricity, km for transportation, kcal for heat).

Similar considerations can be done for power stations fuelled with fossil fuels: the indicators are expressed by the amount of CO<sub>2</sub> emitted per kWh and by the amount of pollutant emitted per

kWh. From afore mentioned considerations appears that the sustainability of energy systems burning fossil fuels requires high efficiency in energy conversion and low emissions per unit service obtained.

### 3. Main requirements for a sustainable tourism

The need for greater sustainability in tourism services and activities is already widely recognized at all levels. Moreover, there are many and varied planning and development methodologies, as well as tourism management techniques that make it possible to attain higher levels of sustainability and to increase them gradually.

It must be remembered that tourism represents not only a pleasant way to manage the vacation time and to improve the cultural level, but also an important activity from the economic point of view. The purpose of a modern approach to the tourism is to reconcile the economic aspect with a satisfactory level of sustainability, such as the conservation of resources and the respect of environment.

To get an idea of the importance of tourism from an economic point of view one can consider some figures related to the Italian situation. In Italy the situation of tourism in 2004 can be represented by the following data:

- People employed directly: 1.137.000 (5,1 % of total)
- People employed (including induced activities): 2.724.000 (12,3 % of total)
- Direct contribution to GDP: 4,9 %
- Contribution to GDP (including induced activities): 11,4 %

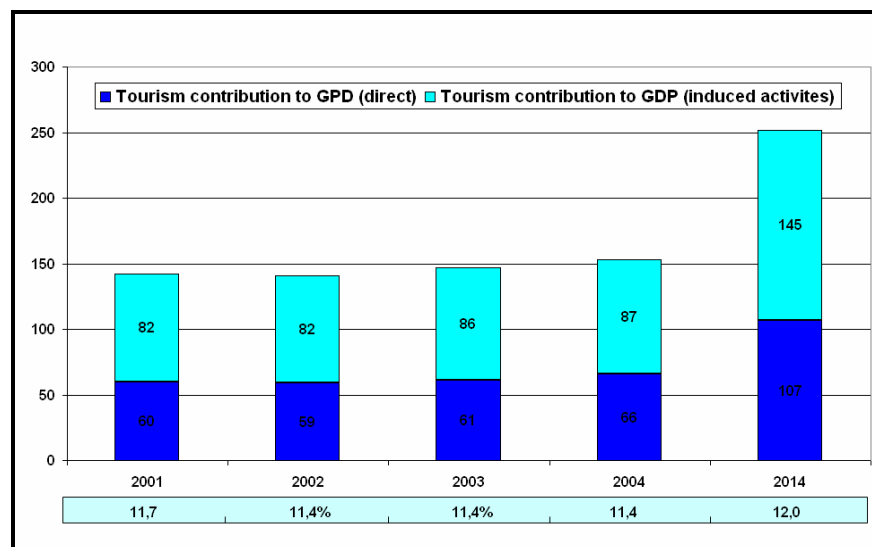


Figure 2. Contribution of tourism to the GDP of Italy

The data in Figure 2 show that the contribution of tourism to the GDP has increased in the last years by about 3%, whereas in other countries the evolution has been even more positive.

The achievement of sustainability in tourism activities requires the awareness of the main threats they exert against qualitative and quantitative conservation of resources. They include not only effects that damage the natural environment, but also consequences able to destroy the cultural context. The first way to protect local resources is to be proactive by means of a policy of prevention; this goal could be achieved by applying the procedure of EIA (Environmental Impact Assessment) and SEA (Strategic Environmental Assessment). The second way is to adopt, for the already existing tourism activities, the EMS (Environmental Management System). The EIA and SEA procedures will avoid a mismanagement of the territory allowing to plan its development in harmony with its specific vocation without introducing perturbation to

the different components of the human and natural environment. EMS are finalized to continuously improve the environmental performances: this way of management reduces the main effects produced by tourism, such as the consumption of resources (especially water and energy), the production of air and acoustic pollution, the production of large amounts of waste waters and solid wastes, taking into account the seasonality of tourism that produces a remarkable increase of population during the vacation time.

The ways to improve the sustainability of tourism require a strong engagement by all organizations involved in the business, such as tour operators, travel agencies, hotels, resort facilities and, last but not least, the municipalities. The methodologies suggested to achieve the goal of sustainability include the mentioned procedures (EIA, EMS, LCA) as well as the local Agenda 21. Such methodologies and techniques should be stimulated in order to convince tourism service providers to introduce improvements in their operations, aimed at greater environmental, economic, and social sustainability, by providing incentives and technical assistance.

The degree of sustainability of tourism can be expressed by specific indicators that measure the level of environmental quality of different aspects. Sustainability of tourism takes into account not only conservation of resources and social and economic development, but also the perception by the tourists of a clean and pleasant environment. The following list (Table 1) contains some indicators able to describe the level of sustainability.

**Table 1. Sustainability indicator set.**

SECTOR	SUB-SECTOR	INDICATOR UNIT
Urban environment	Pedestrian island	m <sup>2</sup> /inhabitant
	Limited traffic areas	m <sup>2</sup> /inhabitant
	Bicycle track	m/inhabitant
	Urban green	m <sup>2</sup> /inhabitant
	Green areas (municipality)	m <sup>2</sup> /inhabitant
Energy conservation	Fuel consumption (vehicle)	kep/inhabitant year
	Electricity consumption	kWh/inhabitant year
Public transportation	Use by citizens	trips/inhabitant year
	Offer of public transportation	km car/inhabitant year
	Impact of public transportation	private cars/100 inhabitant
Solid waste	Production	kg/ inhabitant year
	Selected collection	%
Water quality and management	Potable water quality	mg NO <sub>3</sub> /liter
	Potable water consumption	Litres/ inhabitant day
	Waste water treatment	% inhabitant operating time (days)
	Network losses	% introduced water
Air pollution	Air quality (NO <sub>2</sub> )	µg NO <sub>2</sub> /m <sup>3</sup>
	Air quality (PM10)	µg PM10/m <sup>3</sup>
Tourist density	Municipal territory	Arrival/km <sup>2</sup>
	Municipal beach	Arrival/km <sup>2</sup> beach area

There are many indicators able in principle to define the sustainability degree of tourism activities; the problem is to select the most significant ones and to reach a set of shared indicators that allow to express a relatively objective judgment. In this way it would be possible to compare different activities of a selected typology and to direct themselves toward the same objectives.

Environmental certification of tourism activities to be effective must rely on the principle of sustainability. A consistent part of the effort should be spent for energy systems trying to apply

the mentioned approaches. A further effort should be made in the field of renewable energy sources.

Other aspects of paramount importance refer to water conservation and solid waste management. A significant attention is requested also for the education on sustainability that should produce as a result an increased awareness and a better behaviour of tourists and more generally of all operators involved in tourism activities.

The increasing interest on the application of methodologies aimed at improving the environmental performances and more generally to increase the level of sustainability of tourism activities is strongly supported by UNEP and WTO (World Tourism Organization).

#### **4. Environmental certification: a tool to improve sustainability of tourism activities**

Environmental certification is becoming one of the main tool for application of sustainable development principles. The European Regulation EMAS and the international standard ISO 14001 both rely on an environmental management system with the aim of preventing environmental impacts and to continuously improving environmental performance.

An Environmental Management System is a structured organisational system designed to achieve continuous environmental performance improvement. It provides consistency through the allocation of resources, assignment of responsibilities and ongoing evaluation of practices, procedures and processes. The principles of sustainable development require that environment management policies and practices are not good by themselves but should also integrate with environmental quality objectives and with social and economic development objectives [v]. Environmental Certification provides **environmental credibility** to the stakeholders, including suppliers, customers, shareholders, banks/investors/insurers, community and regulators.

The development of an EMS scheme involves both organization restructuring and performance of specific environmental analysis.

Environmental certification is applied to many activities including, besides tourism, agriculture, business services (i.e. engineering and consulting), construction works, energy systems, food industry, forestry, industrial/manufacturing, mining, transport, utility and waste management.

Environmental Certifications serve to promote and stimulate higher levels of sustainability and quality throughout the tourism sector, aside from enhancing the image of certified companies, with the commercial benefits that such enhancement brings [vi].

Recently the World Tourism Organization (WTO) made an analysis of the effectiveness of certifications in the different branches of tourism activity and published the results of this study. On the basis of the results the WTO prepared recommendations aimed at orienting governments in the field of certification for the purpose of setting up such systems.

For European countries some recommendations emerged:

- To foster permanent dialogue and public-private partnerships among national tourism authorities, officials responsible for certification systems, and tourism service providers and their trade associations, to enable them to act in a coordinated manner in this area.
- To move towards the harmonization of existing certification systems in Europe, at least in terms of basic procedures and criteria.
- To consider the possibility of supporting a regional network of certifications for tourism sustainability in Europe.
- To evaluate the advisability and need of establishing an accreditation system for certification bodies in tourism.

The application of an EMS implies awareness of the need for major investment for the environmental protection [vii]. The total costs for the implementation of an EMS by a public administration can be split into three macro-areas, as shown in Figure 3.

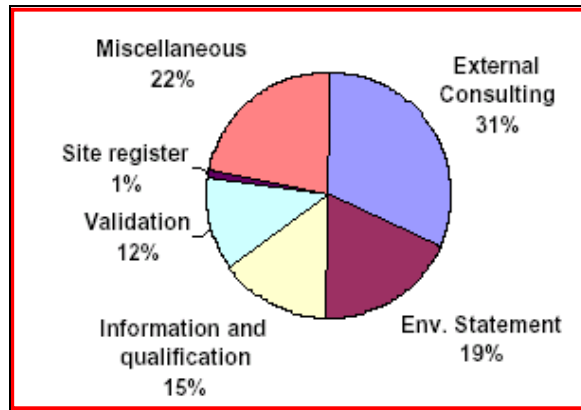


Figure 3. Cost categories for EMAS implementation [BMU/UBA, 2001].

1. External costs of implementing EMS: due mainly to the costs for the external verifier, registration fees and potentially additional external support (e.g. for the initial environmental review, the implementation of the scheme, auditing and training of environmental managers etc.). Verifiers are private consultants and charge therefore the usual market prices for consultancy. Small organizations without complex environmental impacts can be verified in one or a few days only.
2. Registration fees: different from verification costs and can vary from zero to 1500 Euros in case of large companies. Furthermore, the Environmental Statement needs to be made publicly available which may involve additional costs for aggregating data and information, graphical layout, printing and mailing.
3. Internal costs: they are more difficult to quantify and allocate specifically to EMAS. A significant part of internal costs are the internal resources required to implement the scheme. Depending on the Public Administration's size, number of sites and workers, previous experience with management systems and the complexity of environmental impacts; a typical time span to implement EMAS varies from a few person months in a small company in the service sector to several person years in large corporations with many sites.

Once EMAS is implemented and registration attained, system maintenance takes much less resources since many activities required for the first registration are no longer needed (e.g. the initial review, installation of measurement and data management systems, and distribution of responsibilities). The total cost necessary to implement an EMS in a Public Administration is difficult to quantify. A research on Italian Public Administrations with a certified EMS [viii], reveals important correlation between the size of the organization, the number of periodical renewals, and the costs necessary to maintain the certification, as well as to obtain continuous environmental improvements throughout the years, Figure 4.



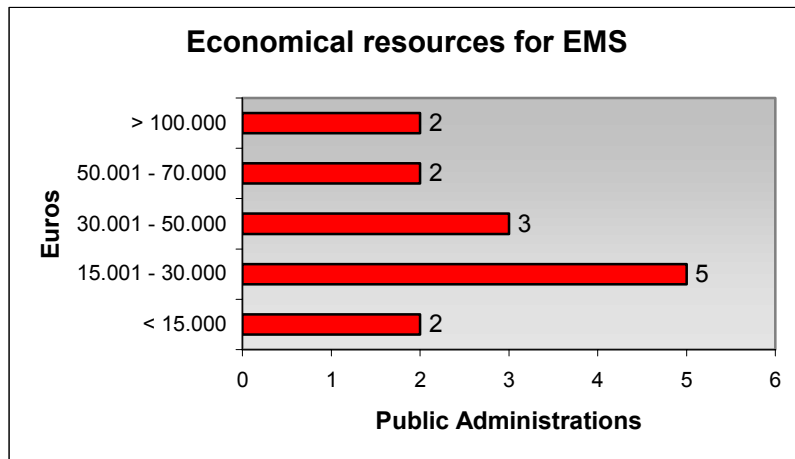


Figure 4. Total costs to implement and maintain an EMS in Italy. [Sancassiani and Rossi, 2003]

It is interesting to examine the most common benefits obtained during the period of EMS implementation by Public Administration both in terms of internal management and of environmental performance [ix].

The main results regarding environmental performance reached by Public Administrations are showed in Figure 5:

- reduced costs on input from a reduction of the consumption of energy and resources;
- reduction in waste production by recycling;
- increase in separate waste collection;
- reduction in water consumption;
- better land planning;
- more efficient use of energy;
- larger use of ecological products (Green Public Procurement);
- larger use of energy saving computer systems;
- sustainable mobility by adopting public transportation, car-pooling and sharing.

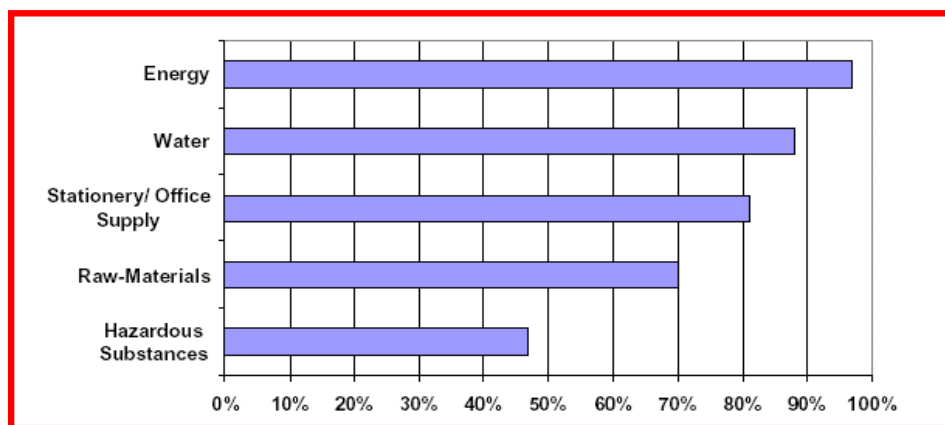
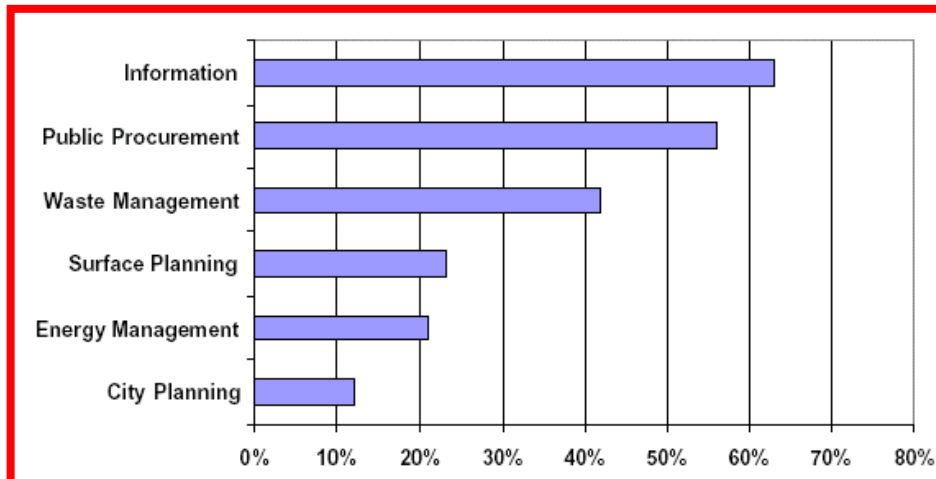


Figure 5. Environmental target for a Public Administration [Clausen, 2002]

Management activities have shown improvements regarding:

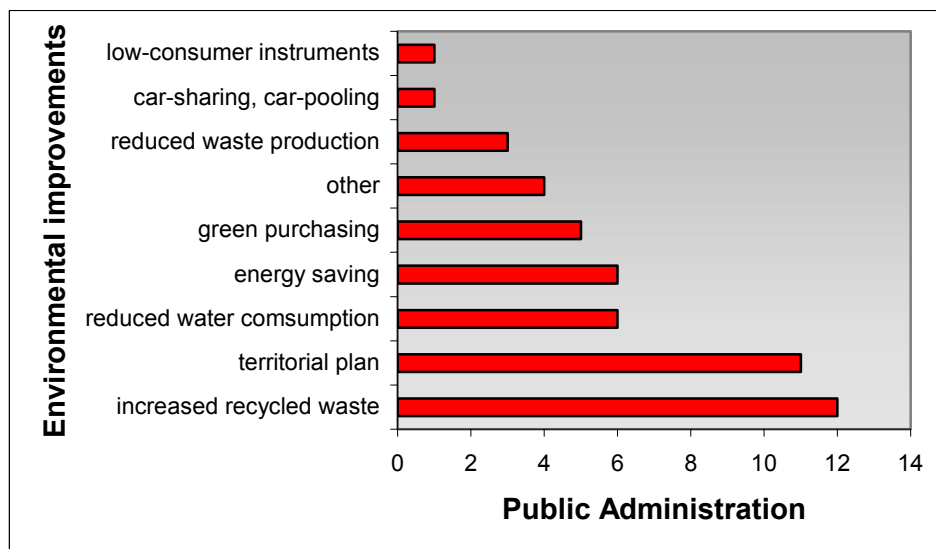
- clearer objectives and targets of environmental policy;
- improved involvement and awareness of personnel toward environmental problems;
- larger interaction and communication with external operators of the territory.

Another advantage connected to the above-mentioned aspects is refined visibility of the organization's image. Figure 6 shows the management target that is to be reached by public administrations.



**Figure 6. Management target for public administration [Clausen, 2002]**

Figure 7 describes the outcomes of a specific research on environmental improvements achieved by Italian public administrations. Through the implementation of an EMS, all the Municipalities obtained improvements in waste management and in environmental planning; other evident improvements are general reduction of water and energy consumption, plus an expanding recourse of green purchasing.



**Figure 7. EMS implementation and environmental improvements of Public Administrations. [Sancassiani and Rossi, 2003]**

Other interesting data about public administration regard the time required to reach the first EMAS certification: implementation time-scale depends on the size of public administration (Municipality, Province, etc.), on number and engagement of employees and stakeholders, on number of direct or indirect activities affecting environmental aspects, Figure 8.

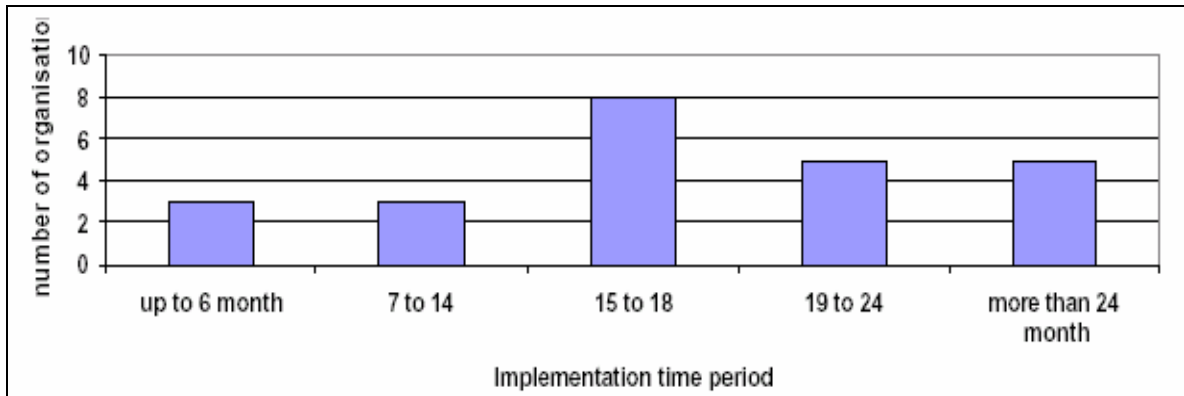


Figure 8. Time-scale for EMAS implementation in Public Administration. [Clausen, 2002].

### 5. Environmental Management System in European and Italian context

In European Member States legal instruments such as Regulations and Directives are the main reference rules to comply with environmental requirements. Private and public enterprises have realized that some voluntary tools, such as the Environmental Management Systems, could be extremely useful in facilitating the achievement of the objectives of sustainable development by increasing performance, transparency and credibility.

The EMS's can be developed through the application of two similar procedures: the UNI EN ISO 14001:2004 and the EMAS Scheme; the former has an international field application, the latter can be applied by European Member states. The updating of the EMAS Scheme in 2001 with the Regulation EC n° 761/2001 (EMAS II) supersedes the old Regulation published in 1993 and extends the scope of application to all sector of economic activities, including public and private organizations and local authorities as well.

Table 2. EMAS and ISO 14001: peculiar elements [x].

	EMAS	ISO 14001
<b>Preliminary Environmental Review</b>	Required	Recommended
<b>Transparency</b>	Requires a public Environmental Statement	Recommends a communication strategy
<b>Effectiveness</b>	European	International
<b>Registration</b>	Confirmed by a public national authority	Confirmed by a private company

The very recent updating of Standard UNI EN ISO 14001 in November 2004 (UNI EN ISO 14001:2004) supersedes the 1996 version and gives specific information for a more correct interpretation and application of the International Standard to Public Authorities. In Table 2 are summarized the main differences between the two schemes. The two systems have similar implementation programs but EMAS has wider scopes and objectives as shown in. The EMAS Scheme goes further the International Standard ISO 14001 by enhancing all the objectives of performance, legal compliance, employees involvement, transparency and continuous improvement [xi].



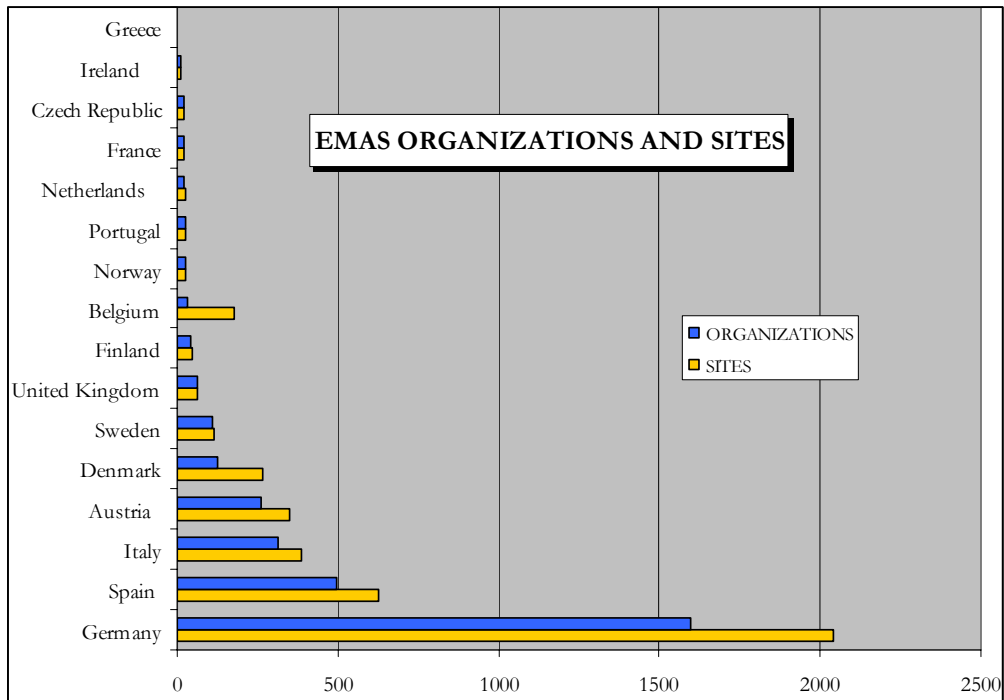
**Figure 9. International Standard ISO 14001 and European EMAS: main characteristic [xii]**

The participation in the EMAS Scheme and in the International Standard is now open to organizations operating in all economic sector; the different types of economic activity areas are identified by using the “Statistical Classification of Economic Activity – NACE – Codes”. Table 3 reports some example of relationship between the NACE code and the economic area with the indication of the number of organizations submitted to the EMAS procedure at the end 2002 in Europe.

**Table 3. Development of EMAS-Participation and NACE codes.[Clausen, 2002].**

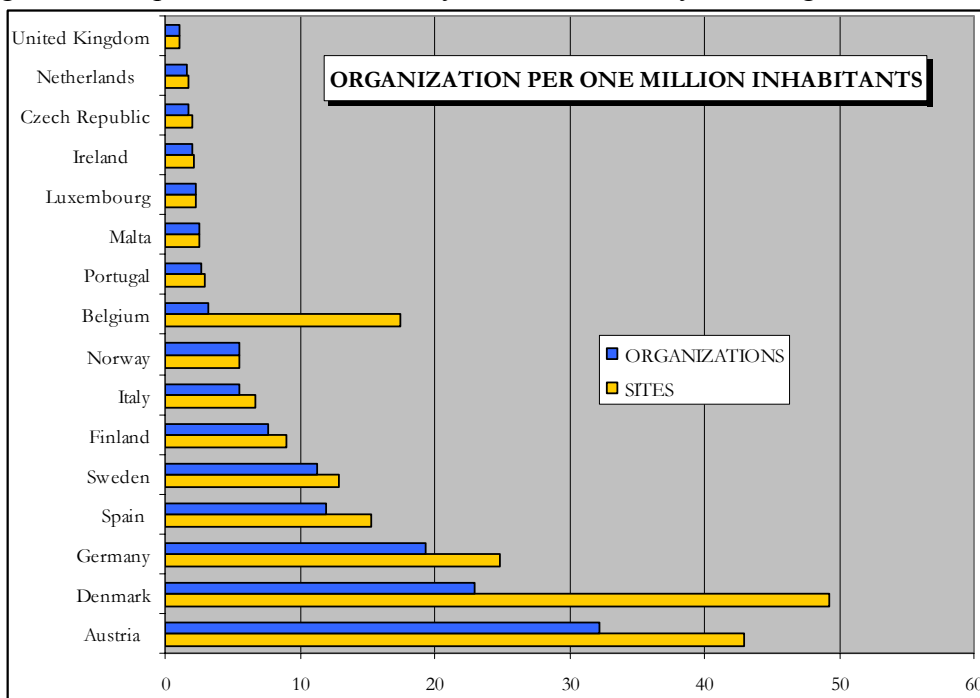
SECTOR	NACE code	Participants number
		31/12/2002
Electricity, gas, steam, hot water supply	40	126
Sewage and refuse disposal, sanitation	90	87
Public administration	75	85
Hotels and restaurants	55	72
Health and social work	85	63
Sale, maintenance and repair of motor vehicles	51	61
Supporting and auxiliary transport activities	63	44
Education	80	37

An important aspect of the new EMAS is the possibility for *Public Authorities* and institutions to implement the scheme [xiii]; Figure 10 shows the number of European local authorities that have already started the EMAS procedure in June 2005. Germany is the leading country with a number of EMAS total registrations of sites more than 2000, whereas the number of registered organizations is about 1500; in Italy the difference between the two groups is much lower.



**Figure 10. Number of EMAS Organizations and Sites [EMAS Helpdesk, June 2005]**

Figure 11 shows the number of registration related to inhabitants and subdivided in private sites and public organizations. Denmark shows the largest number of registered sites with almost 50 private organizations per million inhabitants followed by Austria, Germany and Belgium.



**Figure 11. Organizations by country per 1 million inhabitants [EMAS Helpdesk, June 2005]**

The Figure 12 shows the number of Local Authorities that obtained the EMAS Registration at June 2005: Germany, with 96 organizations, has the largest number of registrations followed by Italy (18), United Kingdom (16) and Spain (10).

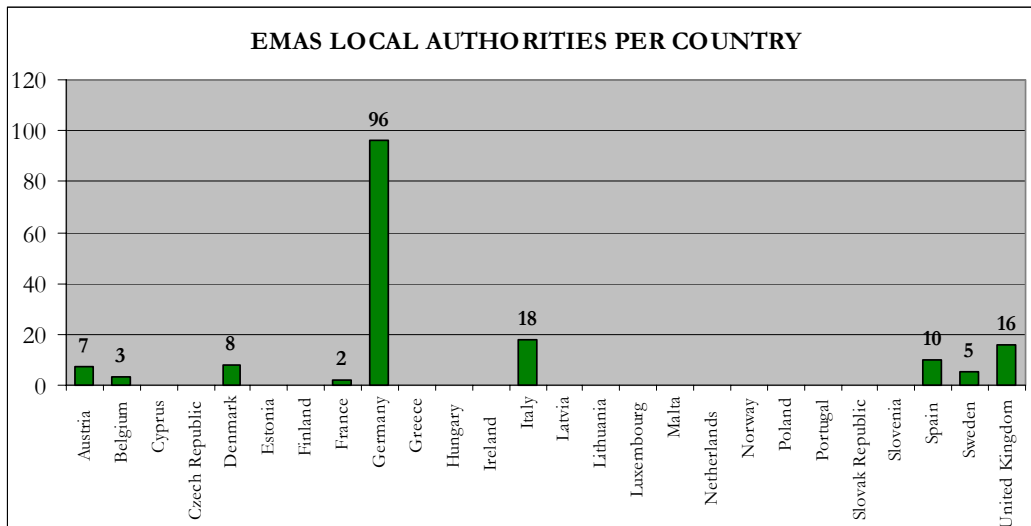


Figure 12. EMAS Local Authorities Registration per EU Member State [EMAS Helpdesk, June 2005]

Starting from the year 2001, date of the application of the new EMAS Scheme to all organizations, the EMAS registration uptake by Local Authorities is continuously increasing, as shown in Figure 13; the number of these registrations doubled in three and an half year.

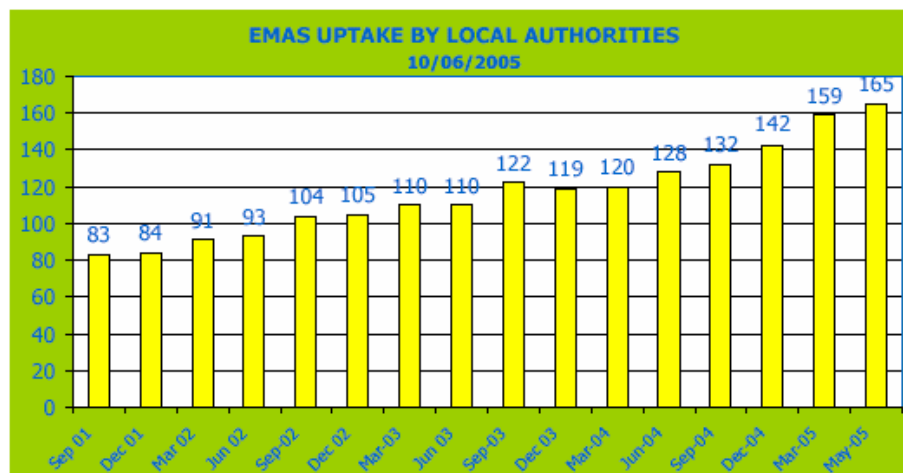


Figure 13. EMAS Registration evolution in Europe by Local Authorities [EMAS Helpdesk, June 2005]

From a study performed by Sincert and ISO on the number of ISO 14001 Environmental Certificates delivered in Italy by the end of 2004 it appears that the real diffusion of the EMS focus on the Public Administrations; Table 4 shows that 77 Public Administrations were already registered by the end of 2004.

Table 4. Local authorities and ISO 14001 in Italy [Sincert, 2004]

LOCAL AUTHORITIES	ISO 14001	NOTE
Municipalities	58	10 in partial sectors or specific activities
Provinces	6	4 in partial sectors or specific activities
Regions	2	2 in partial sectors
Parks	6	1 urban park, 3 regional and 2 national
Mountain Community	3	
Port Authority	2	
<b>TOTAL</b>	<b>77</b>	

The Figure 14 shows the geographical distribution of certified ISO 14001 for Italian Local Authorities.

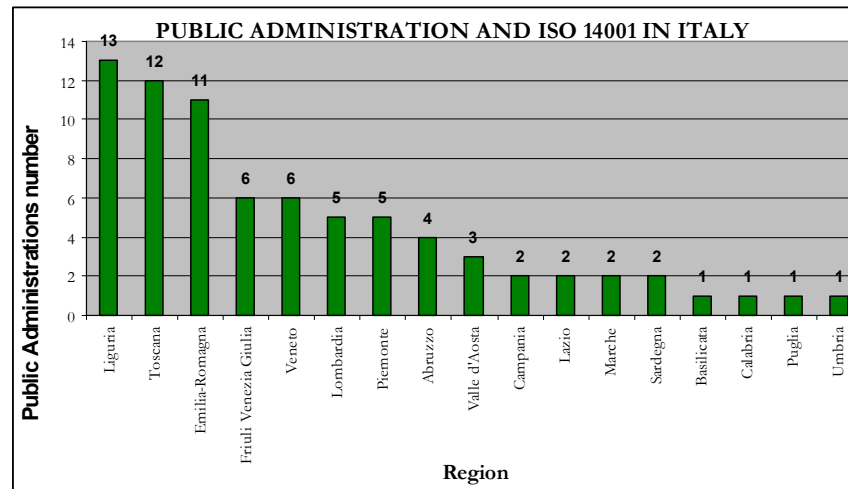


Figure 14. Distribution of certified ISO 14001 Italian Public Authorities [Sincert, 2004].

## 6. Environmental Certification in a costal area: Cervia’s Municipality case. [xiv]

Cervia municipality is located on the southern coastal area of Region Emilia-Romagna, in the middle of the so called “Riviera Adriatica”, as shows the [Figure 15](#).

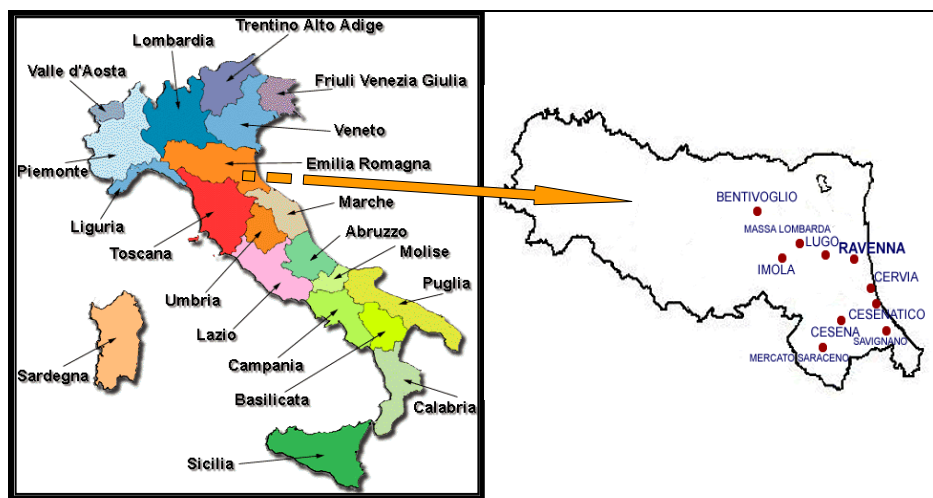


Figure 15. Location of Emilia-Romagna Region and Cervia’s territory

Cervia is about 20 km south from Ravenna and its 9 km shore of characteristic fine sandy beaches, shallow water, salt marshes and pinewoods provides the setting for the holiday resorts of Cervia, Milano Marittima, Pinarella and Tagliata. Cervia covers a surface of about 82 km<sup>2</sup> subject to high antropic pressure but it is completely surrounded by green areas and offers numerous facilities for tourists: beach services, hotels and other accommodation, cycle paths, colourful gardens, the sea and a tourist harbour. The major peculiarities of Cervia’s territory and population are: (1) a number of naturalistic protected areas now managed by a specific Institution named National Park of the Po river delta; (2) a significant flux of national and international tourisms; (3) a consistent amount of resident population; (4) a positive sensitivity of the citizens and public administration to environmental issues; (5) a high degree of interest and experience on projects dealing with a sound management of environmental issues such as an integrated management of coastal area, environmental education, etc. The actual land characteristics are strictly related to the ancient alluvial origin of Cervia territory, to the presence

of the sea and to the quality of natural and protected areas; Figure 16 represents a schematic map of Cervia's territory.

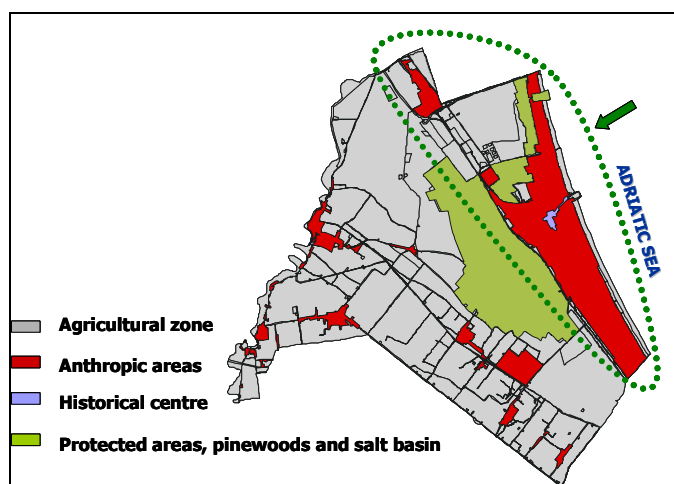


Figure 16. Map of Cervia land use

Along the sea coast the mentioned four summer resorts are located in an area already intensely urbanized with the highest concentration of human activities, private houses and hotels. The internal zone is characterized by rural activities: the main products are cereals, fruit and grapes. Table 5 shows the total surface of Cervia's territory and the distribution of the land destination. The Cervia territory includes natural and protected areas such as the typical pinewoods and an ancient saltwork. Cervia can boast an exceptional heritage of parkland: Cervia's centuries old pinewood, a southern part of the Po Delta Regional Park; a Natural Park; a recent pinewood; the ancient salt pans of Cervia, included in the Southern Station of the Po Delta Park. In Table 6 are outlined the typical green areas of Cervia's territory.

Table 5. Cervia land use.

LAND USE	Surface, km <sup>2</sup>	%
Agricultural	47,4	58
Urban	13,3	16
Other - Saltpan	21,8	26
Cervia territory	82,5 km <sup>2</sup>	100

Table 6. Sizes of Cervia green areas

GREEN AREAS	Area, ha
Pinewood of Cervia-Milano Marittima	210
Natural Park	27
Pinewood of Pinarella-Tagliata	24
Saltpan	800
Public green	51
<b>TOTAL GREEN AREA</b>	<b>1.112</b>

The totality of Cervia hotels are located along the narrow area between the Adriatic sea and the Saltpan. In a territory of only 18 km<sup>2</sup> are concentrated a wide range of tourist and commercial services: almost 400 hotels, 181 restaurants and pizzerias, 199 bars, discos and dance halls, several shops and boutiques and over 236 beach front concessions. In Table 7 the details related to number of inhabitants and hotels located on the sea coast in Cervia and in the other internal small villages are shown. The highest dwelling density in Cervia is observed on the sea coast where are located too all the accommodation structures.

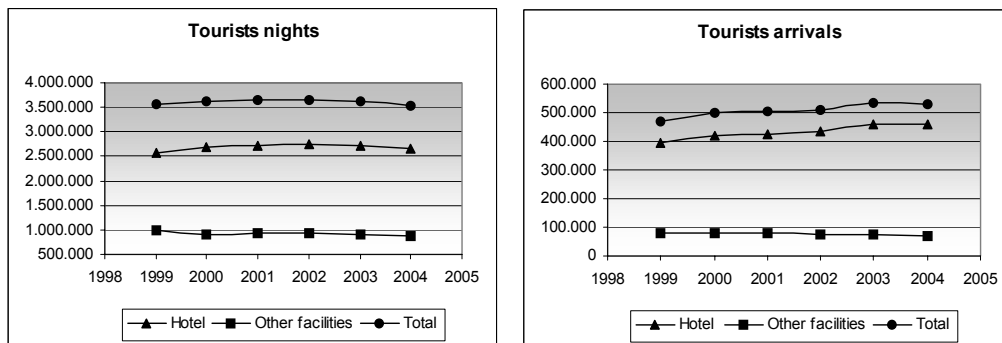
In 17??? the number of tourists nights (arrivals per staying days) and arrivals in Cervia divided into the various accommodation structures (hotel, bed & breakfast, campsites, holiday home, private home) are represented.

Table 7. Distribution of inhabitants and hotels on Cervia's territory

HAMLETS	INHABITANTS	%	km <sup>2</sup>	Inhab/km <sup>2</sup>	HOTEL	BEDS
CERVIA COAST	19.250	73	17,71	1087	392	26.391



INTERNAL HAMLETS	7.140	27	64,48	111	-	-
<b>TOTAL</b>	<b>26.390</b>	<b>100</b>	<b>82,19</b>	<b>321</b>	<b>392</b>	<b>26.391</b>



**Figure 17. Number of tourists nights in accommodations and arrivals in Cervia from 1999 to 2004 [xv].**

To face the increase of tourists fluxes and the consequent pollution, Cervia Municipality in the '60s started to deal with the issue of waste water and the eutrophication of the coastal waters. A new combined sewer net for storm run off and domestic wastewaters together with a waste water treatment plant were built and are now operating. Since 1999 the Municipality has been awarded by the "Blu Flag of Europe", the European symbol of high environmental standard for coastal waters as well as high quality of services.

Despite these signals, the progressive increase of tourists since the '60s has produced a growing pressure on the whole coastal area posing at risk its environmental health. The decision by Cervia Municipality to apply for an EMS, taken at the end of 2002, represents the willingness to improve the environmental quality of the Cervia territory and particularly to develop a sound coastal tourism.

In May 2005 Cervia Municipality obtained the certification of its Environmental Management System in compliance with the standard ISO 14001:96 for the following fields of activities: planning, management and control of the municipal district, pertinent services and infrastructures.

The advantages for Cervia's municipality, deriving from the implementation of the EMS, are the followings:

- ✓ an improved environmental management system including land planning, and conservation of natural resources and cultural heritage;
- ✓ a higher quality, reliability and efficiency of environmental activities and services performed by the municipality;
- ✓ an improved preservation of health and safety for citizens and workers;
- ✓ a reliable compliance of legislation;
- ✓ a significant support to economic development;
- ✓ a sound management of resources (energy conservation, waste management, reduction of resource consumption);
- ✓ an efficiency improvement of the organization;
- ✓ a reduction of the costs due to wasting of resources;
- ✓ an improvement in the external relations;
- ✓ a better incentive of tourism.

The EMS procedure is based on the methodology known as "Plan – Do – Check – Act" that integrates the environment into everyday business operations; in such a way environmental stewardship becomes part of the daily responsibilities for employees across the entire organization. The 18?? represents the methodology can be briefly described as follows:

- ✓ PLAN: establish the objectives and processes necessary to deliver results in accordance with the organization's environmental policy.
- ✓ DO: implement the processes.
- ✓ CHECK: monitor and measure processes against environmental policy, objectives, targets, legal and other requirements, and report the results.
- ✓ ACT: take actions to continually improve performance of the environmental management system.

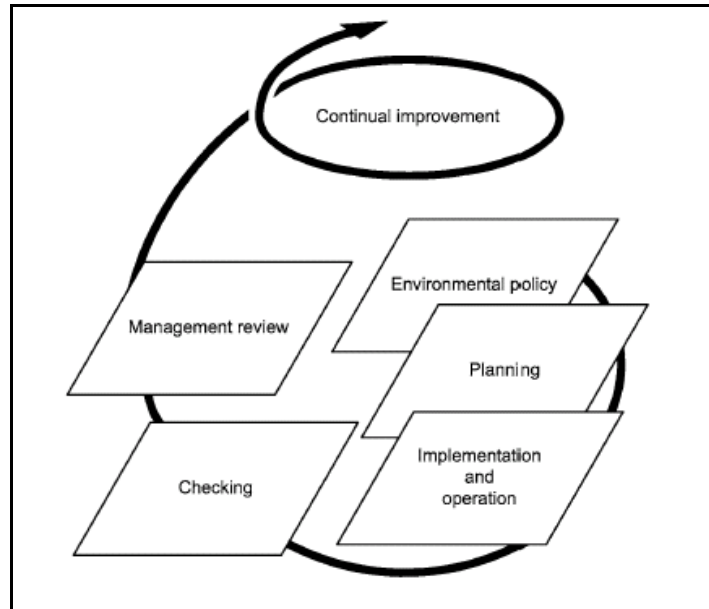


Figure 18. Environmental Management System model for Standard ISO 14001:2004 [xvi].

The EMS procedure includes the following specific phases:

- ✓ Initial Environmental Review (IER): identifies the aspects of the organization's activities, products, and services that could have a significant impact on the environment;
- ✓ definition of the Environmental Policy: contains commitments to comply with all relevant and statutory environmental legislation, and also to achieve continuous improvements in environmental performance;
- ✓ implementation of Environmental Management System (EMS): improves the environmental performance of the organization through the establishment of an environmental program with appropriate objectives and targets, according to the environmental policy and periodically checked by internal environmental audits. The implementation of the EMS includes also activities like training of employees, establishing work instructions and practices, selecting the methods for assessing the achievement of objectives and targets;
- ✓ Environmental Statement: a public document that includes a description of the organization with its structure and its activities, an assessment of all the significant direct and indirect environmental issues, a presentation of the organization's environmental policy, the programs of EMS, the deadline for the next statement, the name and accreditation number of the environmental verifier and the date of validation.

In [19???](#) the relation between the various phases of EMAS process and the organization of a Public Administration is shown. Political choices, such as the environmental policy and target definition, are located in the upper part of diagram whereas in the lower one, operational actions are represented as a duty of the technical staff.

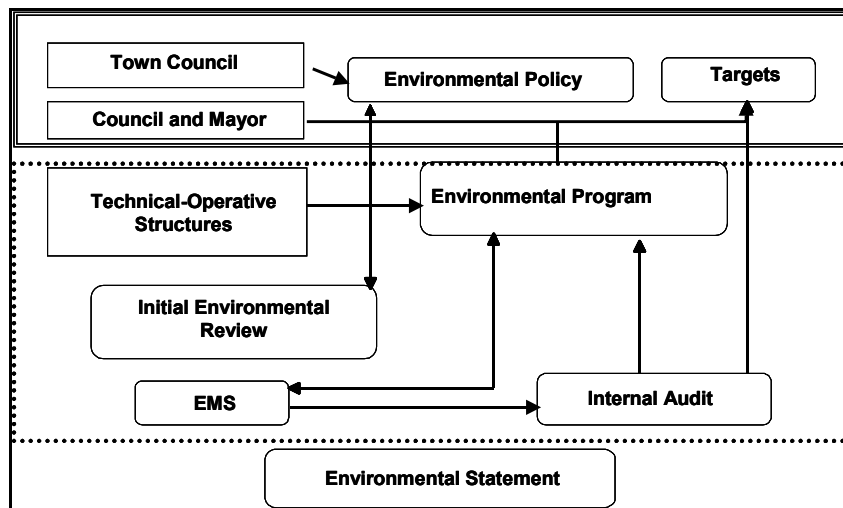


Figure 19. Application of EMS Scheme to Cervia Municipality.

The Cervia Initial Environmental Review, edited by Bologna University, involved both technical and administrative sectors of Cervia Municipality in the collection, reorganization and evaluation of the environmental data. The collection phase of environmental data has requested a complex analysis due to the great quantity of information to be structured and to the spreading of environmental information among the various municipal sectors.

The document focus on four priority objectives (land planning, sustainable mobility, protected areas, resource management) that disclose the 12 goals of Cervia Environmental Policy, adopted by the City Council and summarizing as follows:

- ✓ to implement an Environmental Management System in accordance with the International Standard ISO 14001;
- ✓ to promote the awareness of employees on the possible environmental impacts of their daily activities;
- ✓ to upgrade the Initial Environmental Review in order to define appropriate objectives and targets for improving the environmental performance;
- ✓ to inform citizens and stakeholder on environmental effects of activities and services;
- ✓ to carry out a sustainable land planning;
- ✓ to favorite a urban sustainable mobility;
- ✓ to take care of green areas;
- ✓ to improve the waste management integrated system;
- ✓ to manage the energy and water consumption;
- ✓ to monitor the quality of coastal water;
- ✓ to monitor the atmospheric and acoustic pollution and to guarantee the efficiency of internal car-park;
- ✓ to monitor the activities of suppliers, contractors, stakeholders.

The Cervia Town Council, to ensure the resources essential to establish, implement, maintain and improve the environmental management system, identified two specific management representatives defining their roles and responsibilities; they will ensure the compliance with the requirements of the EMS Standard and report to the Top management all the information dealing with the performance of the Environmental Management System.

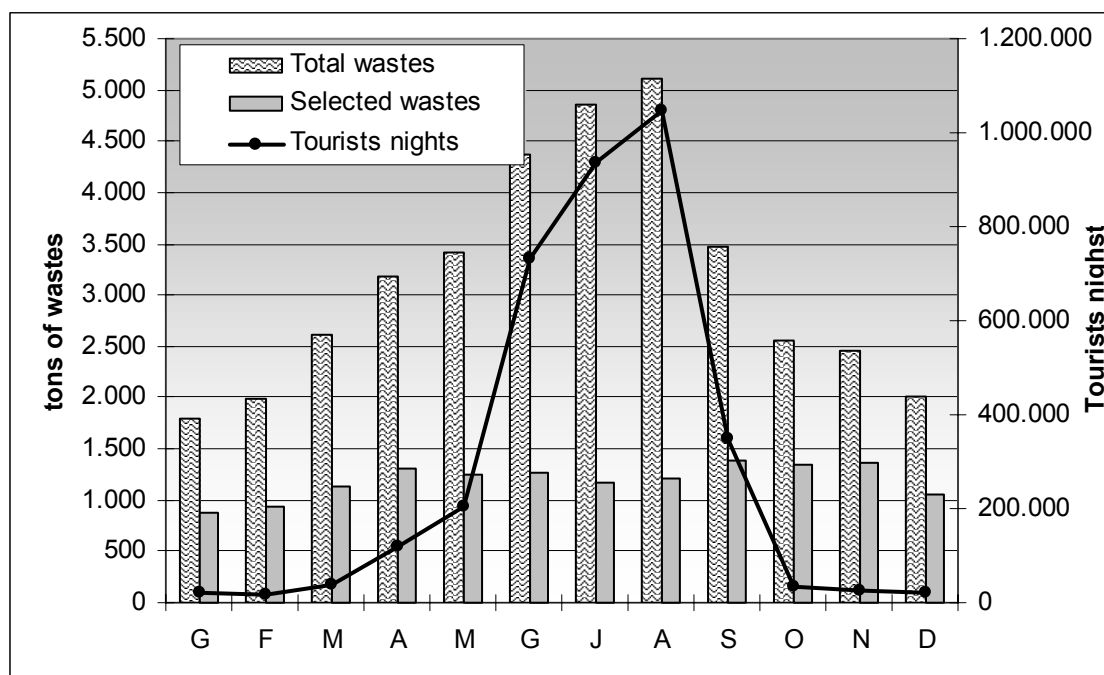
The Initial Environmental Review take into account the impacts and performance of Cervia Municipality with specifics attention to its activities and services; the analyses in carried out by means of environmental sustainability indicators selected in such a way as to be representative of the cause-effect relationship between the natural environment and the anthropic and tourist activities. Some of the specific indicators, with the related values, used to describe the

environmental quality of Cervia territory and to verify the achievement of a sound environmental management of activities and performances are showed in Table 8.

**Table 8. Sustainability indicators for Cervia Initial Environmental Review.**

ENVIRONMENTAL INDICATORS	UNITS	CERVIA VALUE	ITALIAN VALUE
Pedestrian area	m <sup>2</sup> /inhabitant	2,1	0,18
Limited traffic zone	m <sup>2</sup> /inhabitant	16,1	2,5
Bicycle track	m/inhabitant	0,5	0,1
Available green area	m <sup>2</sup> /inhabitant	110	10
Motorization rate	car/inhabitant	0,62	0,56
Ecological municipality vehicles	% on total	29 %	--
Parking place	place/inhabitant	0,15	--
Natural gas consumption	m <sup>3</sup> /inh. year	1384	--
Water consumption	litres/inh. die	450	325
Waste collected	kg/inh. year	1000	500
Selected waste collection	% on total	38 %	20 %

Figures indicated in table 8 shows clearly a degree of sustainability indicators much higher than the mean national average value. The significant environmental aspects, described in the IER, are identified by using a set of criteria, defined by Cervia Municipality, to assess the significance of its environmental impacts. This is the basis for defining appropriate objectives and targets for improving the environmental performance and for defining environmental programme. Significant results were obtained, both for the environmental situation of the municipality and for the activities directly related to tourism. As far as waste production and selected collection are concerned, 20?? shows the monthly value along the year 2004: the graph shows clearly a close connection between the number of tourist nights spent in Cervia and the waste production.



**Figure 20. Monthly trend of solid wastes production and separately collected fractions in 2004.**

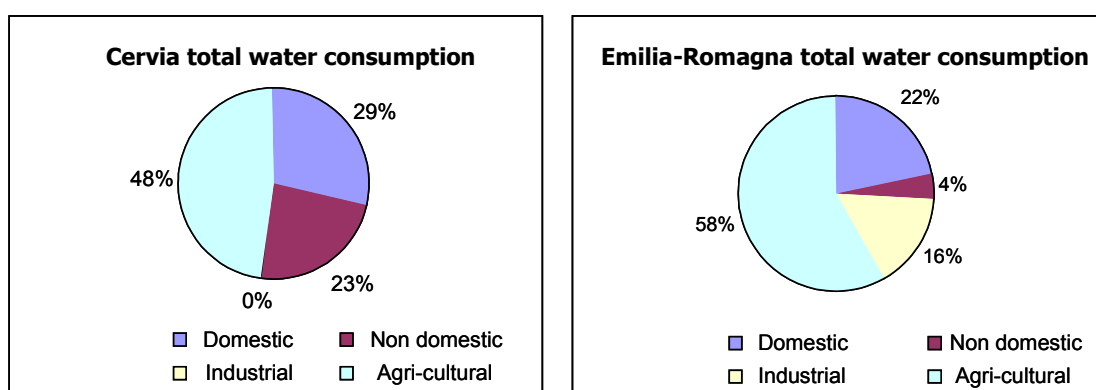
The Environmental Programme in which Cervia Municipality is now engaged, describes the objectives and targets and set the pathway to achieve a better waste management integrated system aimed at improving the waste collected fraction in the whole territory. The Environmental Programme includes the designation of specific responsibility for achieving the intermediate and final objectives (measured through the waste collection indicators) by defining the relevant function of the human resources involved and the relate time schedule. The implementation and operation phases put the environmental programme into action and its progress is periodically checked by internal environmental audits. Corrective actions are eventually carried out, following periodic management reviews.

Concerning the green areas distribution, Table 9 shows the presence of open spaces mostly along the sea coast. The public and protected areas, such as the Natural Park and the Pinewoods of Cervia and Tagliata, located on the coastline of Cervia and directly accessible by citizens and tourists, are called “available green area” and represent almost the 30% of the whole green areas. Every inhabitant can therefore enjoy about 110 square meters of it; this area decreases until 80 square meters when adding the tourists nights to the resident number.

**Table 9. Distribution of Cervia green public spaces.**

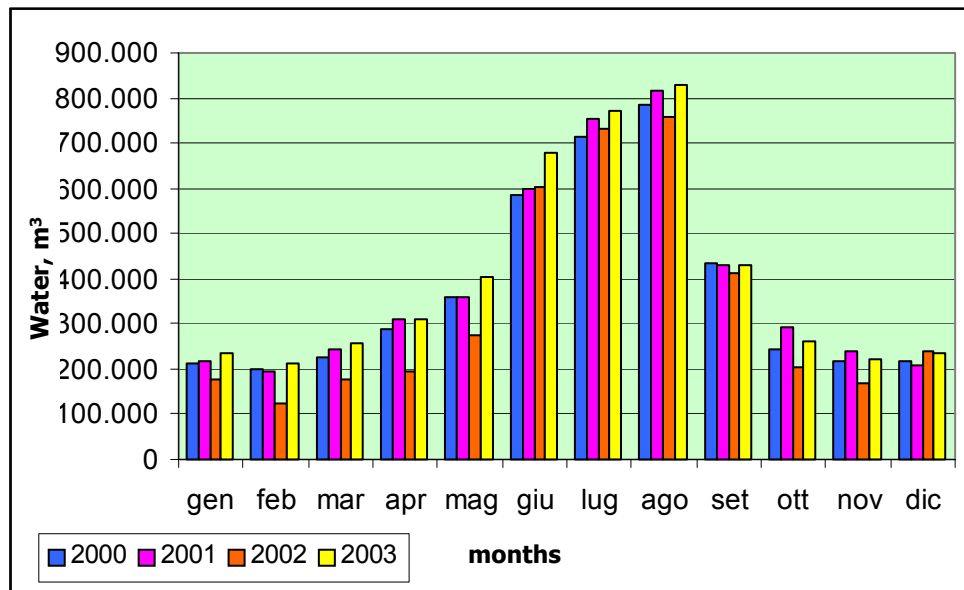
GREEN PUBLIC	TOTAL SURFACE, m <sup>2</sup>	SEA COST, m <sup>2</sup>	GREEN FRACTIONS ON SEA COST
Parks	196.290	168.790	86%
School park	46.150	38.100	83%
Flowerbeds	13.870	13.870	100%
Road green	187.479	53.940	29%
Uncultivated areas	55.250	42.350	77%
Small Pinewood	15.500	4.000	26%
<b>TOTAL</b>	<b>514.540 m<sup>2</sup></b>	<b>321.050 m<sup>2</sup></b>	<b>62%</b>

Concerning the utilization of water, Figure 21 shows the estimated consumption in Cervia and in Emilia Romagna Region divided into the primary sector of use. The agricultural use represents the most important supply of water in Region and in Cervia, followed by the domestic and a non-domestic use. In particular the rate of water used for non-domestic activities in Cervia (including services and tourist activities) is similar to domestic use while is completely absent the industrial use of water.



**Figure 21. Water consumption in Cervia and Emilia Romagna Region.**

The following graph, Figure 22, represents the monthly values, from the year 2000 to 2003, for the total water consumption in Cervia: it is clear that exists a close connection between the increase in the water consumption during the summer months with the number of tourist.



**Figure 22. Monthly water consumption in Cervia.**

The experience and the results of the Initial Environmental Review of Cervia municipality confirmed the potential of the EMS scheme for improving the environmental quality through a systematic review of the organization activities and an in-depth analysis of the environmental situation. Despite some problems in finding the necessary data, the scheme allowed to identify significant environmental aspects, strictly related to a correct management of the territory and of Cervia's Municipality activities and services. The full cooperation of the Administration staff at management and technical level has been a condition for a successful fulfillment of the environmental analysis. The IER of Cervia showed the necessity for the City Council to undertake specific actions to improve the general environmental conditions of the territory. In the pinewoods it is necessary to increase the re-qualification activities such as selective thinning, reforestation and remedial treatments. The Saltpan analysis identified the most important measures to preserve the biodiversity increasing at the same time the recreational value for the tourists. In sum, the tourism in Cervia plays an important role in the environmental quality of coastal area exerting a significant pressure on ecologically fragile environmental components such as sea and fresh water, land use and biotic resources. Local air and noise pollution related to heavy urban traffic can also discourage tourists from visiting the area. Treatment and disposal of liquid and solid wastes produced by tourism activities are other serious environmental issues. However, if correctly planned and managed, tourism can also contribute to the environmental protection, to the conservation of biodiversity and to a sustainable use of natural resources. An informed and conscious tourist can help the competent authority to protect and rehabilitate the natural positive features of parks, protected areas and wetlands, and to improve the environmental management by financial contributions and provision for infrastructures. Tourism can also help the local population to raise the awareness of the economic and intrinsic value of their natural and cultural heritage and of the needs to preserve it.

At present, Cervia's municipality is engaged, with the support of Bologna University (Ravenna, Environmental Sciences), in specific activities to implement, maintain and continually improve the Environmental Management System. In the time of a year the public Environmental Statement will be prepared, with an involvement more and more careful of the various stakeholders and by a deeper analysis of direct and indirect environmental aspects; this is an unavailable step to reach finally the European EMAS Registration.

## References

- [i] European Commission Enterprise Directorate-General — Tourism Unit, 2000. Towards quality coastal tourism – Integrated quality management (IQM) of coastal tourist destinations, Brussels.
- [ii] Department of Economic and Social Affairs of the United Nations Secretariat, 1999. Tourism and sustainable development. Commission on sustainable development, 17th session, New York 19-30 April 1999.
- [iii] Centro Studi del Touring Club Italiano, 1997. Il patrimonio costiero in Italia – una risorsa in pericolo. (In): *I libri Bianchi del Tci, dossier 1*, Milano.
- [iv] Ministero dell'ambiente italiano, 2001. Il turismo. (In): Relazione sullo Stato dell'Ambiente 2001, Italy. Pp 59-68.
- [v] Maghiar T., Tomescu A. M., Antal C., Sept. 2003. Aspects of the quality - Environmental management system and cleaner production. In: International Geothermal Conference, Reykjavík, Sept. 2003.
- [vi] European Commission. Environment Directorate-General. "Implementation of EMAS in Public Sector Authorities", [http://europa.eu.int/comm/environment/emas/pdf/factsheet/fs\\_public\\_en.pdf](http://europa.eu.int/comm/environment/emas/pdf/factsheet/fs_public_en.pdf), May 2001.
- [vii] Bundesumweltministerium/ Umweltbundesamt (BMU/UBA). Handbuch Umweltcontrolling für die öffentliche Hand. München, Verlag Vahlen., 2001.
- [viii] W. Sancassiani, E. Rossi. Territori Eco-Certificati: 1° indagine sulla certificazione ambientale EMAS-ISO 14001 negli enti pubblici in Italia. Focus-Lab, gennaio 2003, [www.focus-lab.it](http://www.focus-lab.it).
- [ix] J. Clausen. The State of EMAS in EU – Eco-Management as a tool for sustainable development. Literature Study in the European conference "The EU Eco-Management and Audit Scheme - Benefits and challenges of EMAS II", Brussels 26/27 June 2002.
- [x] European Commission. Environment Directorate-General. "From ISO 14001 to EMAS", [http://europa.eu.int/comm/environment/emas/pdf/factsheet/fs\\_iso\\_en.pdf](http://europa.eu.int/comm/environment/emas/pdf/factsheet/fs_iso_en.pdf), April 2001.
- [xi] European Parliament. Regulation (EC) N. 761/2001 of 19 March 2001 allowing voluntary participation by organizations in a Community eco-management and audit scheme (EMAS). Official Journal L 114 , 24/04/2001 Pagg. 0001 - 0029.
- [xii] <http://europa.eu.int/comm/environment/emas>
- [xiii] [http://europa.eu.int/comm/environment/emas/pdf/5\\_5articles.pdf](http://europa.eu.int/comm/environment/emas/pdf/5_5articles.pdf)
- [xiv] Bruzzi L., Boragno V., Dominici G., Feb. 2005. Analisi Ambientale Iniziale del Comune di Cervia per il conseguimento della certificazione ambientale EMAS. Study assigned by Cervia Municipality, Italy.
- [xv] Tourism Office of the Municipality of Cervia, 2004. Cervia Natura, Itineraries. [www.comunecervia.it/turismo](http://www.comunecervia.it/turismo).
- [xvi] International Organization for Standardization. EN ISO 14001: 2004, Environmental Management Standard.
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