



THE PLACE OF PERIURBAN NATURAL SPACES FOR A SUSTAINABLE CITY



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Summary

This report has been drawn up at the request of the European Commission by FEDENATUR, Fédération Européenne des Espaces Naturels et Ruraux Métropolitains et Périurbains. It is about natural spaces in Urban areas.

• DEFINITIONS, TYPOLOGY

The **definitions** are proposed in order to distinguish “free spaces” (non-urbanised parts of urban areas), “peri-urban natural spaces” PNS (land partially occupied by spontaneous vegetation). Certain free or natural spaces may constitute “parks”, protected land, exploited in very diverse ways.

The **typology** of the peri-urban natural spaces stems from crossing two major factors, the importance of the urban pressure and the physical characteristics of the places (mountains, alluvial plains, small valleys...)

Several types of park can be distinguished: some are mono-functional (leisure, nature protection...) while others are pluri-functional (large spaces of agreed and global management)

• THE FUNCTIONS OF PERI-URBAN NATURAL SPACES

A study has been carried out on 23 parks in 7 countries; this has allowed us to show the diversity and importance of the functions which the natural spaces guarantee. 37 functions have been identified; they can be regrouped into four families:

- **Natural functions:** biodiversity, regulation of discharges, stabilisation of microclimate...
- **Social functions:** leisure, sport, landscape...
- **Economic functions:** agriculture, drinking water, mining, forestry, fishing...
- **“Receptor environment” functions:** electric lines, telecommunications, transport infrastructures...

Cities are greatly benefit greatly from these functions, which are sometimes vital for them (leisure, nature, provision of drinking water, regulation of discharges...)

Peri-urban natural spaces appear as multi-functional, as each site ensures over 22 functions. Their management must then be global.

Numerous functions are compatible between them, as they have the same needs (a good quality natural environment): biodiversity and other natural functions, leisure, drinking water... On the contrary, certain functions do not value the natural environments, but use the “empty” spaces within the urban fabric (telecommunications, transport, dumps...) These generally cause the deterioration of the natural space and its functions.

In general terms, peri-urban natural spaces are threatened (urbanisation, deterioration of the eco-systems, fragmentation of habitats...); their management is made difficult by their peri-urban context (high cost of land, so many people involved...)

• RECOMMENDATIONS

From our findings, FEDENATUR has formulated some propositions in order to better protect and exploit these spaces.

ON THE EUROPEAN UNION AND STATE LEVEL

To accelerate taking the PNS into account in public policies, in particular through actions which stem from the thematic strategy of the urban environment.

- Setting up policies in favour of PNS: regulatory actions, making public policies coherent...
- Increase of means in favour of these spaces.
- Exchanges between parks and diffusion of experiences.

ON THE URBAN AREA LEVEL

To develop the initiatives of the collectives in putting into practice a global and coordinated policy for the PNS.

- Inclusion of PNS on the urban area scale, eventually covering several political bodies (states, regions, communities...)
- Setting up agglomeration policies in favour of PNS
- Organisation of PNS within the space: setting up site networks, differentiated treatment of the spaces according to their location.
- Use of diversified means for protecting the sites: regulatory protection (natural reserves and parks), town planning (control of building, taking into account PNS in the conception and implantation of public amenities), land action...
- Follow-up and coordination of local projects: direct management of the sites by the collective or delegation to the local people involved, coordination of local actions on the agglomeration level.

ON THE SITE LEVEL

To favour the emergence and putting into practice of protection and exploitation projects.

- Setting up evaluation projects for the sites, based on the mixture of uses, respect for the natural environment and more generally for sustainable development.
- Restoration of the sites: cleaning, restoring-nature in deteriorated spaces, hydraulic and ecological restoration, management of the fauna and flora, restoration of the historic and cultural heritage...
- Improvement of the conditions for receiving the public: access to the sites, sign posting, reception facilities in situ...
- Development of educational activities about the environment, and particularly participative approaches (festivals for example)
- Reinforcement of partner approaches with all the site users (NGO, farmers, waterside residents...) agreement, conventions, communication...
- Setting up sustainable management of the natural spaces, drawing up adapted and respectful management rules, taking into consideration the needs for the users' safety, follow-up and evaluation of the sites and business actions...



Amsterdam Woods

1 Introduction

All European agglomerations have natural spaces, in the heart or on the limits of the urban fabric: woods, water plains, wetlands... A study commissioned by FEDENATUR on 19 European cities has allowed us to identify 149 natural spaces of over 100 hectares, representing, according to the city, between 5 and 60% of the area of urban influence.

Despite their spatial importance, these spaces remain largely forgotten, and there is therefore a need to gain a better knowledge of their functions, their evolution and their potential.

Within the framework of reflections in course about the thematic strategy about the urban environment, the European Commission (Directorate General for the Environment) has commissioned FEDENATUR to draw up a report on the role of natural spaces for the sustainable city.

Grouping together the management organisms, FEDENATUR has specific knowledge about peri-urban spaces; its members have gained experience over years of innovative approaches to protection, evaluation and management of these spaces.

From this experience, this report has two main objectives:

- To make a table of values for peri-urban natural spaces and classify their typology.
- To formulate recommendations for an improved evaluation of these spaces.
- The aim of this work remains a modest one; It is a first contribution to the subject, based on a study with numerous parks and exchanges between the members of this network. It is not its aim to deal with all the aspects of this particularly complex subject.

Location of the sites studied



2 Presentation of the work

An electronic and telephone study has been held with over 46 organisms in charge of the management of peri-urban spaces in Europe, representing the diversity of the situations in existence. 23 responses, coming from 7 countries in the European Community have been obtained. (See table below)

The sites studied are mainly parks, managed and exploited by a collective or an association. Apart from this point in common, our sample shows a great diversity:

- Surface areas of 500 ha to 100,000 ha.
- Varying locations: coastal, riverbanks, hills, plains...
- Contrasting sizes of city, from medium-sized towns to large metropolises.

Espace	Location	State	Simplified name used in the report
Amsterdamse Bos	Amstelveen / Amsterdam	Netherlands	AMSTERDAM
Anillo Verde de Vitoria-Gasteiz	Vitoria	Spain	VITORIA
Arche de la Nature	Le Mans	France	LE MANS
Base Loisirs Saint-Quentin-en-Yvelines	Trappes (Paris)	France	SAINT QUENTIN
Espai Rural de Gallecs	Mollet del Vallès (Barcelone)	Spain	GALLECS
City of Frankfurt	Frankfurt	Germany	FRANKFURT
Kommunalverband Ruhrgebiet	Essen	Germany	ESSEN
Parc de Collserola	Barcelone	Spain	COLLSEROLA
Parc de la Deûle	Lille	France	LILLE
Parc de la Gloriette	Tours	France	TOURS
Parc de Lery-Poses	Lery-Poses (Rouen)	France	LERY-POSES
Protected spaces of the city of Sant Boi de Llobregat	Sant Boi de Llobregat (Barcelone)	Spain	LLOBREGAT
Parc Nature de Miribel-Jonage	Lyon	France	MIRIBEL-JONAGE
Parc Serralada Litoral	Mataró (Barcelone)	Spain	SERRALADA LITORAL
Parco Agricolo Sud Milano	Milan	Italy	SOUTH PARK OF MILAN
Parco di Portofino	Portofino	Italy	PORTOFINO
Parco Fluviale del Po tratto Torinese	Turin	Italy	TURIN
Parco Naturale del Conero	Sirolo (Ancona)	Italy	CONERO
Parco Nord Milano	Milan	Italy	NORTH PARK OF MILAN
Parque Florestal de Monsanto	Lisbonne	Portugal	LISBONNE
RomaNatura	Rome	Italy	ROME
Tees Valley Wildlife Trust	Redcar and Cleveland	United Kingdom	TEES VALLEY
Xarxa Parcs Naturals de la Diputació de Barcelona	Barcelone	Spain	XARXA

The experience of numerous other sites has been evaluated in this report, in particular in drawing up the propositions.

3 Peri-urban natural spaces:

3.1 Définitions

Our work deals with several types of space which partly overlap:

- **Peri-urban free spaces** are non-urbanised spaces located within the area of urban influence; they are covered by agricultural or natural land, sometimes damaged but which can be restored. These spaces can be speckled with localised built-up areas.

- **Peri-urban natural spaces (PNS)** are non-urbanised spaces within the area of urban influence, mainly occupied by spontaneous vegetation or other natural environments (water, rock), sometimes in combination with agricultural land. Urbanised land, if it exists, only occupies a small part of the land.

- **Peri-urban natural parks** are spaces protected from urbanisation, and dedicated to the preservation of the biodiversity and receiving public, in particular with an educational objective. They are managed by a non-profit making organisation which is in charge of the conservation, maintenance and exploitation. The land may be held by private owners, public organisms (local collective, state...) or associations.

Our study has dealt with peri-urban natural parks, this report shows the situation of these managed spaces, but deals more generally with Peri-urban Natural Spaces. On the other hand, free spaces, and in particular the large peri-urban agricultural regions have been analysed in the course of our work.

3.2 Typology

3.2.1 Typology of the ENP

A typology of Peri-urban Natural Spaces may be outlined from a study which we have carried out earlier (Balandras, et al., 2001) within the framework of an Interreg IIc Project: "Setting up a framework of poles of transnational competences on metropolitanisation – Pole Rhône-Aples – Switzerland. Approach to PNS"

It appears that two factors allow us to characterise these spaces to a large extent: the urban pressure and the physical framework.

The degree of urban pressure has serious consequences for urban and peri-urban spaces.

Next to the city, the pressure of urbanisation is often very strong; residual natural spaces are little understood, visits by the public are frequent. On the other hand, these spaces were often the object of attention sustained by collectives: care, management as a park...

In a second ring, the pressure is even stronger and less controlled. The spaces can suffer heavy deterioration because of urbanisation, mineral extraction, mechanised sports, dumping waste...

The third ring corresponds to rural or forest spaces which have still been preserved, but are heavily frequented for leisure use (walking, cycling...)

The physical framework constitutes a particularly important parameter as it conditions the types of natural environment, as well as the human activities carried out there. The persistence of natural spaces next to cities is explained elsewhere almost always due to the existence of

strong physical constraints, which stop urbanisation (floods, relief...)

• **Mountains and hills**

Examples: Collserola in Barcelona, Le Salève in Geneva, La Chartreuse in Grenoble, Monsanto in Lisbon

Certain mountain ranges come into direct contact with urban centres; they are able to preserve a very natural character. Human activities are often limited to leisure.

The contact between the city and nature is less clear-cut when the relief is more gentle (hills). Urbanisation and agricultural activities then constitute a mosaic with natural spaces.



Montnegre Park (Xarxa)

• **Coastal**

Examples: Calanques in Marseilles, Portofino in Geneva

The coasts sometimes have vast peri-urban natural spaces, generally preserved because of the rough relief. Flat coastlines are poorer in natural environments, but they often shelter non-urbanised areas: lagoons (Venise, Montpellier), beaches... The most frequent uses are generally tourism and fishing.

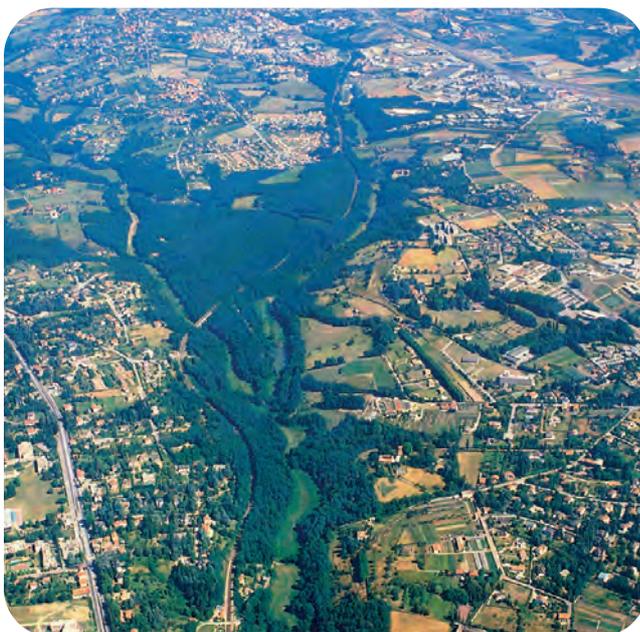


Conero Park near Ancone

• **Small valleys, hills**

Examples: Rhône Valley in Geneva, small valleys of Lausanne

Numerous valleys have very enclosed small watercourses that have created wooded corridors in urban centres. Certain hills also constitute linear natural spaces. These small spaces inside the urban tissue are under strong pressure: urbanisation, leisure...



The valleys to the west of Lyon

• **Alluvial plains and wetlands**

Examples: Po Valley, Miribel-Jonage in Lyon

Flooding and wetlands have constituted an important barrier for urbanisation for a long time. Numerous urban areas have alluvial plains, often occupied by mosaics of natural environments and agricultural areas. The presence of water allows the presence of numerous human activities and natural functions.



The Loire Valley at Roanne

• **Plains**

Examples: Agricultural Park South of Milan, Amsterdam Woods, Fontainebleau Forest in Paris

Natural spaces are little understood within urban areas on plains or plateaux, intensely occupied by the city and agricultural areas. The natural areas subsist within infertile areas, large aristocratic estates, or others have been created recently by certain cities (Deûle Park in Lille, Green Ring of Vitoria).



South Milan Park

The sites studied within the PNS typology

Type of space	Urban pressure		
	Strong	Medium	Moderate
Mountains and hills	Lisbonne	Collserola	Serralada Litoral
Coastal	Portofino	Tees Valley	Conero
Small valleys and hills	Present in different sites: Collserola, Serralada Litoral...		
Alluvial valleys, wetlands	Saint-Quentin-en-Yvelines	Miribel-Jonage Tours Llobregat	Léry-Poses
Plains	Bois d'Amsterdam Essen Frankfurt Park North Milan Lille	Vitoria Parc Agricole Sud de Milan	Le Mans

Certain parks are not mentioned as they are too heterogeneous: Xarxa, Rome...

3.2.2 Typology of the parks

The parks in metropolitan areas have a great diversity:

• Urban parks

Examples: Amsterdam woods, Vincennes woods in Paris

These act as spaces with a small surface area (a few dozen or hundred hectares), located within the urban centre. The vegetation is very artificial; the main use corresponds to leisure, as well as other functions which may be present (biodiversity...)

• Leisure parks

Examples: Lery-Poses in Rouen, Jablines in Paris

On the periphery of the cities, vast spaces (sometimes hundreds of hectares) they may be used for sports and leisure. After some years, the biodiversity is often taken into account, but in a relatively marginal way.



The green areas in the city centre of Turin



Léry-Poses Park near Rouen

- **Sanctuaries**

Examples: Crépieux_Charmy in Lyon, île de Saint-Pyvé Orleans

These, generally small spaces may be strictly protected (limited access for the public), generally because of the biodiversity or other functions (supply of drinking water, military activities).

- **Agreed management space**

Examples: Agricultural Park South of Milan, Collserola in Barcelona

Sometimes near the urban centres, very often on the limits of the urban area, there are vast natural and agricultural spaces (some hundreds to dozens of thousands of hectares). Unlike the three earlier types, the land of these "parks" often belongs to private owners. The park is often governed by a specific set of regulations, depending on the national legislation. The actions of the collective in charge of promoting the balanced development of these lands, between the preservation of the biodiversity, evaluation of the spaces for the public and maintaining traditional activities. This type of park corresponds in the most part to sites which are members of Fedenatur.



Crépieux-Charmy (Lyon), drinking water catchment's area and natural reserve



Two views of the Mitibel-Jonage Park





Saint-Quentin-en-Yvelines

4 Important spaces for urban areas

We can qualify all the services that peri-urban natural spaces provide for the community into “functions”. These functions can be of a very diverse nature; they may be linked to human activity or not, they may represent an economic influence, a social role or a symbolic value.

4.1 Presentation of the functions

We have listed 37 functions present in the peri-urban natural spaces:

- 9 natural functions*
- 13 social functions*
- 8 economic uses of the natural spaces*
- 5 activities using the non-urbanised space as a “receptor environment”*

The data collected for each one of these functions in the different sites studied have been gathered together in a publication available from FEDENATUR.

A summary of some of the elements may be presented here.

All the services that peri-urban natural spaces provide to the community can be termed “functions”. These functions can be of a very diverse nature; they may, or may not, be linked to human activity possess an economic character, a social role or a symbolic value

4.1.1 Natural functions

Natural spaces provide important services to the community, which, although they do not represent productive activities, in certain cases, of important economic value.

4.1.1.1 Regulation of discharges

Number of sites concerned: 15/23

Natural spaces near cities can constitute very important areas for the expansion of untreated water (plains of the Seine above Paris or the Rhône in Lyon, the Main in Frankfurt...). In certain sites artificial untreated reservoirs have been built. They can present a landscape of ecological interest (Vitoria).

Certain large wetlands can sustain low water marks of watercourses; this function is equally ensured by artificial management (barrages). Certain spaces are rich in important sources for ecology and human activity (Portofino).

4.1.1.2 Regulation of pollution or nutrients

Number of sites concerned: 9/23

Wetlands play an important positive role in keeping controlling of the nutrients and pollutants, in water the very water of the watercourse; the through the effects of natural self-purification has the same effect. This role can be particularly beneficial near cities, in protecting certain demanding uses (drinking water, bathing). So in this manner, the water plains of Miribel-Jonage allow the passing reduction of the nitrate content (NO₃) of the water. (NO₃) from 50 to 10 mg/l environ.

In certain cases, the management of the space can favour enhance this function. In Saint Quentin, the used water is directed voluntarily to a system of lagoons which make up a natural reserve. In the Tees Valley plants are used to purify the land.

4.1.1.3 Trapping of carbon in the land or organic material

Number of sites concerned: not evaluated (a priori: all)

The vegetation and the land retain carbon, and therefore limit the content in CO₂, contributing on their scale to limiting the greenhouse effect.

4.1.1.4 Production of oxygen

Number of sites concerned: function mentioned in 14/23 sites; present a priori in all

This function is linked to the above; it makes the peri-urban natural spaces into the "green lungs" of the agglomerations.

4.1.1.5 Stabilisation of microclimate

Number of sites concerned: function mentioned in 14/23 sites; present a priori in all

Large agglomerations transform their climate in a very sensitive way, by increasing the temperature and de-

creasing the environmental humidity. The conservation of large natural spaces allows this impact to be partially compensated for.

On the other hand, peri-urban natural spaces often have a high diversity of microclimates which have an ecological interest and merit preservation.

4.1.1.6 Protection of land against erosion

Number of sites concerned: 14/23

The presence of abundant vegetation limits the risk of land erosion, and landslides; this effect is particularly strong in mountainous Mediterranean regions where thunderstorms can cause considerable damage. Also in the plains regions, vegetation limits landslides during floods.

Certain park managers improve the situation by reinforcing the vegetation in the areas most susceptible to erosion (riverbanks for example).

4.1.1.7 Noise reduction

Number of sites concerned: function mentioned in 14/23 sites; present a priori in all

The presence of large wooded areas allows for the reduction of environmental noise in urban areas. Numerous parks have taken measures to reinforce the peace and quiet of their spaces: reduction in the speed of vehicles, creation of anti-noise walls, plantation of wooded lines.

4.1.1.8 Ecological and geological heritage

General biodiversity: Number of sites concerned: 23/23

Habitats, outstanding fauna and flora: Number of sites concerned: 15/23

Urban and peri-urban areas can have large natural surface areas, sometimes very diversified and in a good state of conservation. Peri-urban natural spaces can then have a biological diversity comparable to the most distant places from the city (1100 species of plants in Conero, 272 species of birds in Lery-Poses...).

Certain spaces have different natural habitats and animal or plant species of European interest. In this sense, numerous sites are included in the European network Natura 2000.

In certain cases, the city is partially the origin of this wealth, due to the creation of artificial environments which are progressively colonised by the fauna and flora; water feeder pond of Versailles Palace (Saint Quentin-en-Yvelines), flood expansion tanks (Vitoria), material extraction (Lery-Poses)... These sites can also have a geological or paleontological heritage: geological reference site of Conero, springs in the South Park of Milan, deposit of dinosaur eggs in the Sainte-Victoire mountain (Aix-en-Provence).

4.1.2 Social functions



Tees Valley

4.1.2.1 Relaxation and sport

Relaxation: Number of sites concerned: 23/23

Sport: Number of sites concerned: 20/30 (function a priori present in all)

Relaxation activities constitute without doubt the main function of peri-urban natural spaces: walking, cycling, picnicking, horse riding, contemplation, canoeing, sailing... The public concerned can be considerable: 4.5 million visitors per year in the Amsterdam woods, over 3 million visitors per year (60,000 per day in the high season) at Miribel-Jonage.

This frequentation is generally free of charge and the parks constitute, in a way, the garden of certain cities (picnics, relaxing...).

Sports activities represent a notable part of the total frequentation (25% in the North Park of Milan); this can be free (cycling, sail board) or organised (paying activities: golf, tennis...; activities in a framework).

4.1.2.2 Leisure fishing

Number of sites concerned: 12/23

Fishing is an activity noted in all the peri-urban sites where the natural environment allows for it; water course, lakes, seaside. It can involve a numerous public (in Rome, 1200 permits are given out).

This activity is largely compatible with the other uses of the space; the park managers note certain difficulties linked with the deposits of detritus or the consequences of fish introductions ..

4.1.2.3 Hunting

Number of sites concerned: 9/23

Hunting is forbidden in the majority of peri-urban parks; it still subsists in the big, largely rural territories, but also in those sectors near urban areas (Turin, Miribel-Jonage, Collserola). Among the most prized game are wild boar and migratory birds. The people surveyed generally consider that this activity is incompatible with the other uses of the parks (leisure, biodiversity). In some cases, it has

been possible to adapt this activity to other functions of the space (choice of dates and place of hunting).

4.1.2.4 Nature watching

Number of sites concerned: 20/23

Natural spaces near cities are increasingly becoming places for the public to discover nature. The main motivation for visitors is to watch migratory birds which fly over the parks (Collserola, Ancone) or seasonally (Miribel-Jonage).

This activity only involves a relatively small public, but it is largely shared among the sites studied.

The parks have often carried out actions in order to favour this practice: creation of hides, management of favourable places for birds...

4.1.2.5 Educational activities

Number of sites concerned: 23/23

All the parks studied have put actions into practice aimed at presenting the natural environment to the visitors: pedagogical routes, guided tours, interpretation centres... The activities organised can reach an important amount of public: 34,000 schoolchildren per year in Collserola, 25,000 in Lisbon or Vitoria...

Beyond the purely pedagogical approach often projects are also carried out to bring people closer to nature through sensorial and interactive steps: festivals (Le Mans, Tours, Gallecs), spaces for natural games, participative approaches...

4.1.2.6 Participation in the City's balance

Number of sites concerned: 18/23

Natural spaces participate in the landscape, social, ecological or town planning balance of the agglomerations. Numerous municipalities have protected these spaces to offer the citizens easy access to nature.

The role of these spaces in the sense of social balance is important. Certain natural areas near difficult neighbourhoods ensure a very important role in offering the area an expression of freedom. One can quote the Miribel-Jonage park at Vaulx-en-Valin, and the neighbourhood of the Neuhof fort in Strasbourg.

These spaces often receive, generally involuntarily, populations who have difficulty finding places suitable for their activities in the rest of the urban area: ethnic rallies, places for sexual rendezvous, stopping-off points for travelling people, mechanised sports... These activities often pose management problems, but one cannot deny that they meet a need for certain people.

In these large spaces of controlled freedom, with very little intensity of public, illegal activities can also be carried out: drugs, prostitution, illegal gambling, car races... The managers often experience difficulties in resolving these practices which perturb the image and very functioning of certain sites.

4.1.2.7 Effect of a green barrier in the urban fabric

Number of sites concerned: 15/23

Natural spaces are very important in the geographical structure of the city, in constituting a limit for urban spread, in diversifying the territory and its landscape, in creating continuities... Numerous collectives have set up global policies on this subject.

4.1.2.8 Citizen identity effect

Number of sites concerned: 16/23

Natural spaces can help the population to feel like responsible citizens in the city and its environment. Numerous examples can be quoted:

- Collserola Park carries out an important task with benevolent associations in the management of the park.
- In Vitoria, family gardens constitute places of education and awareness.
- In Le Mans, the animals on the educational farm are adopted by schools in the area.
- In the Serralada Litoral, "municipal seminars" bring together all the local partners (population, visitors, schools, institutions...) responsible for the park project.

4.1.2.9 Effect of way of life on health

Number of sites concerned: 14/23

Different epidemiological studies have shown that a framework of a pleasant life, including green areas, is very favourable for good health. Certain parks receive patients from specialised health centres (for example, at Collserola, psychiatric, geriatric patients). All the sports and relaxation activities are interesting in terms of public health, in particular for certain publics (pensioners...)

This function brings together certain natural functions described earlier: sports activities, noise reduction, stabilisation of microclimates, entrapment of pollutants.

4.1.2.10 Landscape

Number of sites concerned: 21/23 function present a priori in all

The landscape constitutes a remarkable heritage in numerous sites (examples):

- Large spectacular landscape: Portofino, Sainte-Victoire mountain, Calanques in Marseille.
- Exceptional trees: Strasbourg, Le Mans.
- Landscape valued by painters: Fontainebleau.
- "Intimate" landscapes: fountains in Collserola Park, undergrowth...

4.1.2.11 Cultural and historical heritage

Number of sites concerned: 20/23

Numerous interesting elements in a historical or cultural sense may be present in the peri-urban natural spaces:

menhirs (Serralada Litoral park, Barcelona), rural architecture (Milan), fountains...

Certain sites have interesting elements as regards industrial archaeology (fluvial managements from the 19th century along the Rhône or Rhine) or historic or contemporary architecture (Foster Tower, Collserola)...

Peri-urban parks can contribute to the preservation of heritage linked to the surrounding agricultural spaces: conservation of ancient plant or animal breeds (Le Mans, Lille), collection of rural traditions, sources of agricultural origins (Milan, south park)...

Also, the spiritual dimension is not absent: churches, places of pilgrimage (Xarxa)...



Monastery, Xarxa

4.1.2.12 Scientific research

Number of sites concerned: 16/23

Thanks to their ecological diversity and their proximity through links to the city and universities, peri-urban natural spaces often constitute privileged sites for scientific research. We can quote in this sense Collserola park on the biology of the wild fauna, Monsanto park in Lisbon for Mediterranean ecology, or the Islands on the Rhône downstream from Lyon as regards hydrobiology.

Ecology is without doubt the most studied subject, but researchers are working on other problems in certain sites: sociology, ethnology, hydraulics...

Research constitutes an important activity for certain parks. So, the network of parks of Xarxa has two centres at the disposal of researchers; it organises seminars every four years which allow the data obtained to be presented.

4.1.3. Economic activities

4.1.3.1 Production and storage of drinking water

Number of sites concerned: 11/23

Numerous sites ensure the protection of water resources (groundwater), the collection (catchment) or storage (reservoirs) of drinking water. This resource is generally used for domestic consumption by the population, but locally it is the object of use as mineral water (Rome, Xarxa).

4.1.3.2 Agriculture - Breeding

Number of sites concerned: 16/23

Agriculture plays an important role in numerous urban areas. It can be an economic activity entirely (market gardening or growing cereals, for example) or an activity assisted by the collective, in a follow-up of the balance of the city and its landscapes. The Agricultural Park South Milan is an example of management and evaluation on a large scale (50,000 ha, 910 exploitations) of peri-urban agricultural activity.

Certain forms of agriculture are linked to urban influence: educational activities, production of fertilizer, experimentation plots (Saint-Quentin-en-Yvelines), preservation of domestic breeds in danger of disappearing (Le Mans).



Rice growing in the South of Milan agricultural park

4.1.3.3 Forestry – exploitation of the woodlands

Number of sites concerned: 10/23

Forestry has relatively little repercussion in our sample, and of them numerous peri-urban forests are not very productive; certain ones are still managed as economic production spaces, but the majority equally ensure the function of receiving the public, which is becoming largely dominant. The peri-urban forests of Strasbourg illustrate this search for a balance between the forestry cycle and the landscape/ecological management.

In the Mediterranean region, the forest is not very productive, its management is founded on other motivations, such protection against fires.

4.1.3.4 Professional fishing

Number of sites concerned: 10/23

Fishing can constitute an economic activity next to the city, eventually directly linked to the urban market (in Lyon, the sale of certain species to ethnic minorities). This activity is above all present in the coastal sites (Portofino, Rome). In Xarxa, we note the presence of some fish factories.

In Portofino this activity is declining in favour of commercial and tourist activities; it has been modified in order to better take into account the needs for protecting the environment (creation of a reserve).

4.1.3.5 Tourism

Number of sites concerned: 21/23

Peri-urban natural spaces play a fundamental role in leisure. (see above: social functions). The economic dimension of this activity is variable according to the case. Numerous sites near the city receive the nearby public, with modest results in financial terms (drink sellers, employment of guides...) Other sites (Portofino, Calanques de Cassis in Marseilles, Lake Lemman in Geneva) have a greater tourist dimension, with strong activity: hotels, restaurants, tour-operators...

We have also noted that the natural spaces can constitute interesting complements for tourists visiting the cities, looking for fresh air during their stay (Rome).

4.1.3.6 Quarries, mines

Number of sites concerned: 10/23

Quarries exist on the peripheries of different cities; they can be quarries of massive rocks (Collserola...) or for gravel extraction (Lery-Poses, Llobregat, Miribel-Jonage...) Mines are very scarcely represented in our sample (Rome). Peri-urban natural spaces can represent an important part in supplying gravel to agglomerations.

This activity can cause very negative impacts on the environment: destruction of natural environments, perturbation of fluvial systems, emission of dust...

This activity could be modified; see control for the parks for an improvement taking into account other functions of the space.

4.1.3.7 Energy production (Hydro-electricity...)

Number of sites concerned: 7/23

Hydro-electric stations or wind generators are installed in certain peri-urban areas.

Elsewhere, several parks have tried to produce the energy needed in certain of their activities: solar power or heating, water pumping by windmills...

4.1.3.8 Brand image for the agglomerations and companies

Number of sites concerned: Beautiful countryside on the edge of the cities: 17/23

Brand image of the agglomerations or companies: 16/23

For the future, the environment constitutes an important element in the image of cities, susceptible to favouring the implantation of companies or neighbourhoods. Nature is used as an advertising slogan in certain products like mineral waters (Xarxa).

Certain collectives use environmental policies to give the city the image of a more natural character and to participate in the very identity of the agglomeration. In this sense, we can note that the slogan of the city of Le Mans is "Le Mans, sacred Nature!", it is directly based on the existence of the Arche de la Nature park.

Films, whether artistic or advertising, are sometimes shot in these spaces. No less than 300 advertising films have been shot in the Amsterdam woods!



Plantation of poplars in the fluvial park of Po in Turin

4.1.4 Peri-urban natural spaces, receptor environments

Peri-urban natural spaces are the home to numerous human activities which do not value the natural character of the land, but use these spaces which are free of urbanisation at the gates to the city.

4.1.4.1 Discharge and dumps

Number of sites concerned: 14/23

Free spaces in the urban fabric have often constituted areas for dumping used water or waste. This activity can have a great importance: dumping at Turin is for example located in the heart of the protected site of the fluvial park of Po. Very negative impact results on the environment and landscape.

In some cases, this function can be evaluated by the biodiversity or the landscape (decantation deposits of rain-water from industrial areas to the east of Lyon).

Certain parks have been able to carry out actions to limit pollutant waste (water purification, waste fermentation), and above all to control the dumping of rubbish by visitors (cleaning, public information, selective collection...)

4.1.4.2 Transport lines

Number of sites concerned: 17/23

Certain natural areas constitute transport lines, fluvial or maritime routes in particular. Numerous others are crossed by roads or motorways: others still are situated in the immediate vicinity of international airports (Amsterdam). This situation can easily mean natural spaces are deserted, but this is accompanied by considerable negative impact: noise, pollution, accidents, cut off effect for people and wild animals...

The parks do not generally have the possibility of acting against this major function; they try to control the local traffic conditions (speed reduction, closing secondary roads) and to favour gentle ways of transport (cycling, pedestrians).

4.1.4.3 Energy and fluids transport

Number of sites concerned: 13/23

Peri-urban natural areas frequently receive energy transportation facilities: electric lines, gas pipes, drinking water canals... This use can represent a considerable importance: Collserola park has 300 kilometres of electric lines!

The impact of this use on the environment is great: deterioration of the landscape, constraints on the management of vegetation, death rate of birds due to collisions...

Certain parks (Xarxa, Miribel-Jonage) are working to control the rationalisation of these networks; burying certain lines, dismantling unimportant lines, negotiations about regulations in vegetation management...

4.1.4.4 Telecommunications

Number of sites concerned: 13/23

Certain sites receive local or national telecommunications installations: antennas (mobile phone, television, army) fibre optics... These uses are carried out sometimes in a very important way (over 20 antennas in the Monsanto park in Lisbon), with a negative impact on the environment or landscape.



Antenna, Frankfurt

4.1.4.5 Strategic and military activities

Number of sites concerned: 6/23

Several sites house military activities: training grounds, telecommunications installations. This use can have a major importance: so, Monsanto park in Lisbon houses the general command of the Portuguese Army.

This activity is localised but presents a strong impact on the landscape or for the opening of the spaces to the public.

4.2 Some synthesis elements

4.2.1 Multifunctional spaces

Peri-urban natural spaces ensure particularly varied functions. On average, 22 functions have been quoted per site (minimum 16, maximum 35 out of a total of 37), although different functions which are difficult to evaluate are always present, but have not been quoted systematically (oxygen production, noise reduction...)

There are no specialised sites "all leisure" or "all nature".

The most specialised sites are the parks with a relatively small area, near the urban centre. They resemble large urban parks, where the ecological dimension or other functions are very much present, but where certain activities, in particular economic activities, are absent (Amsterdam, North Park Milan, Saint-Quentin-en-Yvelines...)

To the contrary, the parks with the largest number of functions are the very large territories located at the interface between the urban territory and the rural environment (Xarxa, Miribel-Jonage, Collserola).

4.2.2 Very widely distributed functions

Each function is present on average in 14 out of 23 sites in our sample.

Only three functions are present in all the sites:

- leisure (walking, relaxation),
- biodiversity
- educational activities

On the other hand, there are some "rare" functions only present in a few sites:

- professional fishing
- energy production
- military activities

etc.

4.2.3 Different relationships with the city

All the functions do not have the same relationship to the city, although it is possible to propose a simple typology in this sense.

- The urban functions of natural spaces

Certain functions could be considered as typically urban: folk rallies, mass leisure... To a certain extent, one could consider the places where they are held as truly urban.

- The use of empty spaces in the urban fabric

As we have already said earlier, certain functions do not use the natural space as such, but the empty space near the city; dumping, electric lines, transport routes.

- Functions of a general interest

The majority of the functions of peri-urban natural spaces are of a general interest; they are present in a very large number of urban or rural sites. Their interest is always particularly important in the peri-urban area, as the number of people concerned reinforces the stakes considerably: production of drinking water, environmental education, regulation of waste...

- Residual rural functions

Finally, one can consider some uses as typically rural: agriculture, hunting, forestry... These activities are generally modified by the proximity of the city; they could be located in a defensive logic (attempt to limit the disadvantages of the urban pressure) or on the other hand, in a partnership logic (taking on and evaluating the proximity of the city: re-ception of public, direct sale...)

The functions of the parks studied

Natural functions																										
	Amsterdam	Collserola	Conero	Essen	Frankfurt	Gallecs	Le Mans	Léry-Poses	Lille	Lisbonne	Llobregat	North Park Milan	South Park Milan	Miribel-Jonage	Portofino	Rome	Saint-Quentin	Serralada Litoral	Tees Valley	Tours	Turin	Vitoria	Xarxa	Nombre de parcs		
Regulation of discharges																									15	
Regulation of pollution or nutrients																										9
Production of oxygen																										15
Stabilisation of microclimate																										14
Protection of land against erosion																										14
Reduction of noise																										14
Biodiversity																										23
Outstanding fauna and flora																										15
8 functions	3	6	5	3	8	2	4	4	5	5	4	5	3	7	7	6	7	5	6	4	4	8	8			

Social Functions																										
	Amsterdam	Collserola	Conero	Essen	Frankfurt	Gallecs	Le Mans	Léry-Poses	Lille	Lisbonne	Llobregat	North Park of Milan	South Park of Milan	Miribel-Jonage	Portofino	Rome	Saint-Quentin	Serralada Litoral	Tees Valley	Tours	Turin	Vitoria	Xarxa	Nombre de parcs		
Relaxation																										23
Sport																										20
Leisure fishing																										12
Hunting																										9
Nature watching																										20
Educational activities																										23
City balance																										18
Barrier effect																										15
Citizen identity effect																										16
Way of life effect on health																										14
Landscape quality																										21
Cultural or historical heritage																										20
Scientific research																										16
13 functions	9	12	8	11	7	11	11	9	10	10	10	8	8	13	10	8	5	12	10	10	11	11	13			

Economic functions																								
	Amsterdam	Colislerola	Conero	Essen	Frankfurt	Gallecs	Le Mans	Léry-Poses	Lille	Lisbonne	Liobregat	North Park of Milan	South Park of Milan	Miribel - Jonage	Portofino	Rome	Saint Quentin	Serralada Litoral	Tees Valley	Tours	Turin	Vitoria	Xarxa	Nombre de parcs
Drinking water																								11
Agriculture																								16
Forestry																								10
Professional fishing																								4
Tourism																								21
Quarries, mines																								10
Energy production																								7
Brand image																								16
Advertising films																								17
9 functions	3	7	3	6	3	4	4	2	6	3	5	2	6	9	6	8	3	6	4	5	7	2	8	

"Receptor environment" functions																								
	Amsterdam	Colislerola	Conero	Essen	Frankfurt	Gallecs	Le Mans	Léry-Poses	Lille	Lisbonne	Liobregat	North Park of Milan	South Park of Milan	Miribel - Jonage	Portofino	Rome	Saint Quentin	Serralada Litoral	Tees Valley	Tours	Turin	Vitoria	Xarxa	Nombre de parcs
Discharge																								14
Transport lines																								17
Energy transport																								13
Télécommunications																								13
Strategic activities																								5
5 functions	2	4	4	3	0	3	2	0	4	3	4	1	2	4	3	2	1	4	3	2	5	1	5	

Number of functions present per park																								
	Amsterdam	Colislerola	Conero	Essen	Frankfurt	Gallecs	Le Mans	Léry-Poses	Lille	Lisbonne	Liobregat	North Park of Milan	South Park of Milan	Miribel - Jonage	Portofino	Rome	Saint Quentin	Serralada Litoral	Tees Valley	Tours	Turin	Vitoria	Xarxa	Nombre de parcs
Natural functions	3	6	5	3	8	2	4	4	5	5	4	5	3	7	7	6	7	5	6	4	4	8	8	8
Social functions	9	12	8	11	7	11	11	9	10	10	10	8	8	13	10	8	5	12	10	10	11	11	13	13
Economic functions	3	7	3	6	3	4	4	2	6	3	5	2	6	9	6	8	3	6	4	5	7	2	8	9
"Receptor environment" functions	2	4	4	3	0	3	2	0	4	3	4	1	2	4	3	2	1	4	3	2	5	1	5	5
	17	29	16	23	18	20	21	15	25	21	23	16	19	33	26	24	16	27	23	21	27	22	34	35

Natural functions	
Number of parks concerned	
Regulation of discharges	15
Regulation of pollution or nutrients	9
Production of oxygen	15
Stabilisation of microclimate	14
Protection of land against erosion	14
Reduction of noise	14
Biodiversity	23
Outstanding fauna and flora	15

Social Functions	
Number of parks concerned	
Relaxation	23
Sport	20
Leisure fishing	12
Hunting	9
Nature watching	20
Educational activities	23
City balance	18
Barrier effect	15
Citizen identity effect	16
Way of life effect on health	14
Landscape quality	21
Cultural or historical heritage	20

Economic functions	
Number of parks concerned	
Drinking water	11
Agriculture	16
Forestry	10
Professional fishing	4
Tourism	21
Quarries, mines	10
Energy production	7
Brand image	16
Advertising films	17

"Receptor environment" functions	
Number of parks concerned	
Discharge	14
Transport lines	17
Energy transport	13
Télécommunications	13
Strategic activities	5



Green areas near cities... but often deteriorated (Collserola, Barcelona)

5 Strong Stakes For The City

5.1 Fundamental functions

Peri-urban natural spaces offer some really vital functions to cities. For example, all the drinking water of Lyon (1.2 million inhabitants) is supplied by the Miribel-Jonage sector. Great importance can also be given to leisure activities, as the sites provide a unique and free access to nature for a large part of the urban population.

Economic evaluations show the importance of certain non-market functions of natural spaces. For example, the Bassée sector (Seine valley, upstream from Paris) ensures a considerable role in the natural purification of water (of around 15 million euros per annum) and in protecting urban areas from flooding (a role equivalent to that of a barrage costing 100 to 300 million euros). (Laurens et al., 1996).

PNS often act as a fundamental facet of the urban identity. In certain cases, nature imposes itself; Grenoble mountain, the sea and Portofino-Genes... In other cases, the local community has modelled the territory in order to give the natural space a strategic role for the city: Arche de la Nature au Mans, the green area of Vitoria.



Fluvial Park of Po in Turin

QUANTIFYING THE ROLE OF PNS: REFERRING TO THE INDICATORS

Our study has shown that the functions of PNS are insufficiently quantified in most of the parks, which makes it difficult to appreciate their role to the correct extent. The leisure function is the best quantified, through the counting of visitors, where the results speak for themselves: 4.5 million visitors to Bois d'Amsterdam, 3 million to Miribel-Jonage.

It is desirable for cities and the managers of these parks to evaluate their functions using reliable and reproducible indicators. We present propositions in this area in the annexe (good practice files no. 23 and 24).

5.2 Threatened and constrained spaces

Their wealth, as regards the durability of the PNS, is often threatened by different aggressions, generally linked to urban pressure.

A quick typology of the threats may be proposed:

Types of threat	Threat	Examples, comments
Threat to the integrity of the natural areas	Physical destruction of the sites: urbanisation, quarries, roads...	At Mirabel-Jonage or Léry-Poses, hundreds of hectares of natural spaces have been destroyed by quarrying
Threats to the natural balance	Overcrowding: displacement of the fauna, destruction of the vegetation	The density of nesting water fowl is much lower on water plains open to leisure, like those of Mirabel-Jonge, than in protected ponds
	Over-exploitation of the natural resources: fishing, hunting	In the peri-urban area, submarine hunting may represent excessive pressure for certain species (Portofino)
	Cutting off ecological connections by roads and urbanisation	Certain animal populations are from now on condemned to being too isolated: certain amphibians in Geneva
	Fragmentation of the natural spaces	Residual natural sites are often too small to conserve a notable biodiversity in the long term
	Fires	The strong frequentation of PNS can cause a risk of fires: Collserola, Siente-Victoire maountain in Ais-en-Provence
	Artificialisation of the vegetation: intensification of agriculture or forestry	This threat is particularly linked to urban influence: we note in particular the excessive management of peri-urban woods ("cleaning" of undergrowth)
	Decrease of the water feed of the natural environments: sinking of water courses, drainage of wetlands	Miribel-Jonage: enforcements of the Rhône 5 metres in 150 years, with drop equivalent to the groundwater level
	Perturbation of the flood regime	Certain PNS protected from floods, are perturbed ecologically, as the floods can be more serious in urbanised sectors
	Pollution of water and air, sound and smell pollution	Numerous PNS are crossed by motorways: Milan South, Collserola, Miribel-Jonage
	Vegetation dynamics: overgrowth of meadow environments	In the peri-urban zone, agriculture can be in decline, leading to its abandonment in certain natural spaces
	Proliferation of exotic species: ambrosia, etc.	Alien species are an important ecological threat. Ambrosia is a problem for public health in the regions of Lyon and Milan
Social dis-functioning	Conflicts of use	All, or almost all the parks are concerned. The juxtaposition of certain uses may be the source of conflicts: fishing and water activities, hunting and walking
	Degradation of the landscape: electric lines, roads, quarries, oil pipelines	All, or almost all the parks are concerned
	Problem uses: drugs, prostitution, mechanical sports, refuse dumps...	All, or almost all the parks are concerned

5 Strong Stakes For The City

The majority of these threats have equal influence on the urban air but their intensity is incomparably stronger in the peri-urban sectors.

In other places, the contestants considerably complicate the management of these spaces:

- Land often dominated by private ownership.
- Very high cost of the land.

- Very heavy human presence.
- Large number of actors with, at times, divergent interests.
- Superimposition of regulations.
- Large surface areas (in comparison with urban parks), leading to high management costs.
- Often degraded state of the land, needing extensive rehabilitation.



Uncontrolled urbanisation



Gravel pits (Turin)



Impact of motorbikes on the land (Mirabel.-Jonage)



Motorway in the park of Monsanto, Lisbon

5.3 Insufficiency of actions carried out

After some years the public powers progressively gained awareness of the importance of peri-urban spaces; they have sometimes set up management and evaluation programmes for these territories.

This evolution is encouraging, but is not sufficiently generalised nor pushed.

• **On a European Level**, peri-urban natural spaces are not the object of any specific policy, but they can benefit from diverse measures existing elsewhere (Enviropea, 2003).

• **On a national level**, the situation is very similar; PNS are managed within the framework of provisions which are not envisaged specifically to this effect: natural reserves, natural parks... Certain states are starting to imagine particular policies (work in course in France in the framework of decentralisation).

• **On a regional level** (regions, provinces, länder...) territorial planning measures can organise urban development, large public facilities or the creation of natural parks. These policies can contribute to the maintenance of large natural regions around metropolitan areas.

• **On a city level**, taking into account PNS is much more generalised. Numerous agglomerations have set up programmes of protection and evaluation of natural spaces, often in search of spatial coherence. Local communities above all are aiming at protecting and evaluating the existing spaces, but certain ones go further, setting up operations to create natural spaces.

The means of action can be in different orders:

- Regulations: control of urbanisation.
- Land: acquisition of strategic land
- Technical: study, placing staff at their disposal
- "Political": agreements, communication...,
- Financial: financing studies, management.

It is difficult to appreciate the different approaches taken by the local communities. In view of the evidence, certain cities are more interested than others in natural spaces, but the main divergences are found, above all, in policy objectives; for example, numerous cities intervene strongly for leisure and less for biodiversity.

The strategies of the actions also vary according to the agglomerations. Certain cities carry out really willing action with the acquisition of spaces, constitution of technical teams, specialised in the direct management of the parks created. Other agglomerations finance actions carried out locally by local collectives, or non-governmental organisations.

• **On a local level**, numerous initiatives are carried out by collectives or NGO: evaluation of certain sites, cleaning operations, educational activities...

We can frequently see that there are problems in interlocking the different geographical levels of the actions. Certain actions set up on a global level (region, agglomeration) are not carried out in the specific place because of those responsible locally. And the opposite is true, local actions are not always subscribed to in a coherent project on the agglomeration level, and they lack coordination structures on the urban area level.

The political organisation of the territories determines the degree of difficulty of the management. In certain cases, just one superior body covers all the space and has the means for sufficient actions. In other cases, the spaces are cut up between several communities which are not very well organised; global management then becomes very difficult (for example, the majority of peri-urban spaces in Geneva are located in French territory).

In summary, it appears that PNS today are the object of numerous measures of protection, restoration or management. Therefore, these actions remain very insufficient, for different reasons:

- They do not involve all the cities with PNS
- Numerous actions are specific in time (subsidised programmes...)
- Numerous actions are specific in space, they do not generalise networks of natural spaces;
- Certain actions started at superior levels (state, agglomerations..) are not sufficiently appropriate to the local populations;
- The means put into practice are not sufficient for the ambitious evaluation of these spaces.



6 Recommendations

Periurban natural spaces represent a considerable stake for the collective population in general and for cities in particular. They are home to important economic activities, play an important role in the social balance of the city and constitute places of “oxygenation” and opening for citizens to have contact with nature or the rural world.

These spaces, often deteriorated and threatened, deserve to be valued more.

FEDENATUR and its members’ experience allows propositions to be drawn up in this sense: putting them into practice is the responsibility of all those responsible, from the local partners to the European authorities.

Some of these propositions have already been experienced within the FEDENATUR network; they are present in the annexe to this report in the shape of the “good practice files”.

6.1 Two objectives

The action regarding PNS must cover two undivided objectives: to protect and exploit.

6.1.1 Protection

Subject to considerable pressure, peri-urban natural spaces often experience a quick regression (urbanisation, transport infrastructures...) and even more, an important deterioration.

These deteriorations are particularly difficult to solve. The restoration of natural spaces in sectors where they have disappeared is sometimes possible, but with a very high cost and random result.

It is therefore essential to preserve natural spaces, where they still exist. These protected spaces must be spread out throughout the urban area, in order to be easily accessible for citizens. They must be connected between each other in the form of a network.

6.1.2 Exploitation

These spaces deserve to see their great potential being exploited to the full. Generally, all the functions of the sites compatible with the maintenance of their quality should be valued .

PNS constitute laces with mixed uses and functions, as it is very rare for peri-urban spaces to have exclusive uses. This diversity contributes to the wealth of the territories, which are home at the same time to rural functions (agriculture) and urban functions (leisure), natural functions (absorption of flood waters) and cultural functions (landscape, historic heritage...)

This diversity is particularly interesting socially: it contributes to the protection of the space, reinforcing its value. It can always be the source of antagonism, see conflicts in uses. It is necessary to put a planned management of the ter-

territories into practice, trying to define the conditions for the coexistence of the functions.

The mixture of uses does not mean that “everything is possible”; these spaces must not be considered as empty within the urban fabric, destined to house functions which value the natural character of the places. Major functions which cannot be disassociated are without doubt the preservation of the biodiversity and the reception of the public.

Certain activities must be strongly controlled, or excluded, as they use non-renewable resources (mineral extraction), which represent a deterioration of the environment which is difficult to reverse (urbanisation, electric lines, dumping, waste), or which are incompatible with numerous functions (hunting, mechanised sports...). Certain activities are always of strong general interest (transport infrastructures, public amenities...) and must sometimes be implanted in peri-urban natural spaces; they must then be integrated as best as possible into the sites, in particular in the ecological and landscape sense.

The question of agriculture constitutes an important subject in the management of peri-urban territories: It seems suitable to conserve a dynamic agriculture next to the cities, with preservation against the effects of urban pressure (in particular rises in land prices). Agriculture must become one of the facets of multi-functional spaces. In this sense, it must take into account other functions of the space, like receiving the public or biodiversity.

6.2 Actions proposed

In order to meet these objectives, it is desirable to conceive and put ambitious and varied actions into practice in favour of peri-urban natural spaces. These actions must be carried out on different political and technical levels.

6.2.1 À l'échelle de l'union européenne et des états

The community or national levels allow a very global, incentive or regulatory approach.

6.2.1.1 Placing policies in favour of PNS

It appears necessary to put peri-urban natural spaces and free peri-urban spaces at the heart of reflections and strategic actions about the sustainable city, both on a community as well as a national level.

Periurban natural spaces have strong specifics which distinguish green urban spaces and natural rural spaces. National or community policies in the city or natural environment fields are little adapted to these specifics.

In these conditions, it would be very suitable that European and national policies take the specific nature of these particular spaces into account. Different measures can be taken in this sense:

- clear identification within the framework of the thematic strategy for the sustainable city.
- Clarification of the terminology used (natural, agricultural, metropolitan, free spaces..)
- Planning of the management of the territory on a national and supra-national level.
- Reinforcement of regulatory means of protection of peri-urban natural spaces.
- Publication by the Commission of documents of awareness about this problem
- Adoption and diffusion by the Commission of recommendations about this subject.

In the perspective of enlarging European awareness, it is desirable that the consideration of peri-urban natural spaces be favoured within the new member states in the union. The cities of these countries often suffer important environmental problems, and the period which is beginning can envisage a very uncontrolled development of agglomerations: it is therefore necessary to put actions in place quickly to restore planning.

6.2.1.2 Increase of measures in favour of these spaces

The restoration and exploitation of peri-urban natural spaces requires important resources, because of the pressure they suffer: particularly the high cost of land, the need to redress errors, need to receive such a numerous public, high costs of managing such vast surface areas...

Very often, states and local collectives have (still?) not furnished the financial tools that will allow these spaces to be managed and valued in good conditions. From now on it is essential to improve this situation.

On the community level, it is desirable that the peri-urban natural spaces benefit from specific financial measures, or from privileged access to the existing mechanisms (FEDER, LIFE...)

On a national level, the states must provide adapted financial tools. In France, an interesting example is that of the Departmental Tax on Sensitive natural Spaces, levied on new buildings.

6.2.1.3 Exchanges and diffusion of experiences

The managers of peri-urban natural spaces still appear to be too isolated. They must be able to take advantage of experiences carried out at other sites. Also, European or national policies must be based on the knowledge of those acting in this field..

• REINFORCEMENT OF EXCHANGES

In this period of experimentation, it is very important to multiply the exchanges between all those concerned in this subject.

FEDENATUR can make a notable contribution to these dynamics.

Since 1995, this network ensures deep exchanges between its members and correspondents (see publications in the bibliography); its vocation is to develop this over the coming years.

FEDENATUR is ready to place its experiences at the service of thematic strategies about the urban environment. This contribution can have effects in multiple ways:

- participation, organisation and promotion of seminars and working groups on the subject of peri-urban natural spaces.
- Publication of documents on, for example, planning techniques, management or restoration of peri-urban natural spaces

- Collection and diffusion of good environmental practices
- Consolidation and promotion of a vast network of natural peri-urban parks, including the new countries in the union.
- Advice to the managers of newly created parks
- Etc.

• DIFFUSION OF GOOD PRACTICES

The good management of these spaces requires new knowledge, still little diffused. In these conditions, it is very important to spread among local collectives and other managers of spaces, all the remarkable experiences in the matter of good practices in planning and managing of these sites.

Certain interesting examples from the FEDENATUR network have been presented in the annexe to this report in the form of "good practice files". It will be possible and suitable to pursue and organise this collection of experiences so as to ensure their diffusion.

Les bonnes pratiques présentées en annexe

n° de fiche	Good practice	Exemple
1	Managing urban development for nature conservation	The protection of Can Carreres (Llobregat Park, Barcelona)
2	Creation of a network of protected areas	The network of protected areas in Barcelona Province
3	The introduction of biological conservation corridors	Liaison corridor between Collserola Park and its North-West
4	Elaboration of a Park Reference Document	The Po River Park and Turin's metropolitan parks
5	The promotion of multiple uses and functions for parks	Rehabilitation of the Salburúa wetlands (Vitoria-Gasteiz, Basque country, Spain)
6	Rehabilitation of old gravel pits	The ponds of Miribel-Jonage (Lyon, France)
7	Rehabilitation of a river	Riera de Sant Cugat (Collserola Park, Barcelona)
8	Rehabilitation of degraded areas	Can Cuyàs (Collserola Parc)
9	Collaboration on the rehabilitation of a waste tip	Turin's Po River Park – the Lanzo estuary protection zone.
10	Forest Park	Montbaig Forest Park (Llobregat Park)
11	Reforestation	Reforestation in Milan's Parco Nord
12	Animal réintroductions	The White-clawed crayfish in Milan's Parco Agricolo Sud
13	Modifications to the network of transmission câbles	Miribel-Jonage Park (Lyon, France)
14	Collaborative lake management	The lake at Saint-Quentin-en-Yvelines, France
15	Public access to natural areas	Collserola Park, Barcelona
16	Integrated management of services offered to the public	Rome's RomaNatura Parks
17	Casa del Parco - Park visitor centres	The RomaNatura "Casa del parco"
18	Demonstration farms	The RomaNatura network of demonstration farms
19	Temporary open-air exhibitions	Tours' Gloriette Plain, France
20	Cultural and educational festivals	Le Mans' Forest festival of the Arche de la Nature, France
21	Using organised events to raise public awareness	The Turin Stretch of the Po River Park
22	Parks as centres of information on sustainable development	The Ecosustainability laboratories in the RomaNatura Parks (Pa.Ro.L.E. project)
23	Ecological monitoring programmes	Ecological monitoring in Barcelona's network of nature parks
24	Monitoring and evaluation	All the parcs
25	Sharing management experience of periurban natural spaces	FEDENATUR

6.2.2 On the Urban area level

The urban area constitutes a major level for the preservation and valuing of PNS.

We have to think in a global way about the relationship between urban expansion relations between neighbourhoods and natural environments, management tools for the sites.

6.2.2.1 Agglomeration policies in favour of PNS

• A NECESSARY REFLECTION ON AN URBAN AREA ENSEMBLE LEVEL

The areas of urban influence very often pass the limits of the urban communities of their city centre. It is important for those responsible for all these territories to work together to define a specific policy in favour of PNS.

This global approach can be translated into drawing up planning documents, to make the local actions coherent, or for adopting measures which surpass the agglomeration level (creation of natural parks, for example).

The urban regions can be spread over several states, it is then suitable to set up coordination structures in order to draw up global and agreed policies in favour of PNS.

- *In France, the SCOT are a coherent scheme of planning on an infra-departmental level (several sets of communes), they can define periurban and agricultural spaces to protect. These schemes are imposed on local town planning documents.*
- *The Regional Natural Park of Pilot participates in the preservation of a vast territory, including the periurban spaces of several agglomerations (Lyon, Siant-Etienne).*
- *The Rhine Valley at Bale constitutes a very urbanised region, between Switzerland, France and Germany. Bringing 50 public and private organisms together, the Centre of Tri-National Ecology is working for the creation of a "green croissant". This network of protected sites is being constituted progressively, it is the object of numerous actions of nature protection, environmental education and improvement in the management of energy or dumping.*

• AGGLOMERATION POLICIES

It is desirable for agglomerations to take PNS into account for specific programmes, but also in a transversal, integrated approach, for example in town planning, transport or agricultural policies.

The areas of action are numerous:

- right of town planning (control of urban spread).
- spatial organisation of the spaces.
- location and character of public facilities which may affect the PNS.
- improvement of access to spaces for the public (development of transport in common).
- financing and coherence of local projects.
- land policies.
- communication about PNS on the agglomeration level.

6.2.2.2 Organisation of PNS into the metropolitan space

Agglomeration projects must favour a coherent organisation of natural spaces in urban areas. The classical vision of a "green belt" surrounding the city responds to a need to control urban spread, it must from now on be enriched in order to integrate new needs.

Natural spaces must not be pushed to the periphery of cities, the sites studied and with a high ecological value can also be preserved and exploited in the city centre. The citizens can also have places for natural relaxation near their place of residence.

- *Amsterdam woods (Netherlands) or the Woluwé Park (Brussels) are urban parks where the ecological dimension is in place (existence of natural areas within the park)*
- *Kristall Valley park in Leeds (United Kingdom) is a linear park which crosses the city centre, and linked to urban green areas in the green belt are peri-urban areas.*

Natural spaces must be integrated into a coherent network defined on an urban area level.

The objectives of this networking are multiple:

- to create ecological connections (axes for exchanges for fauna and flora)
- to allow pedestrians and cyclists to move pleasantly between the sites and the city centre
- to constitute limits to urban spread

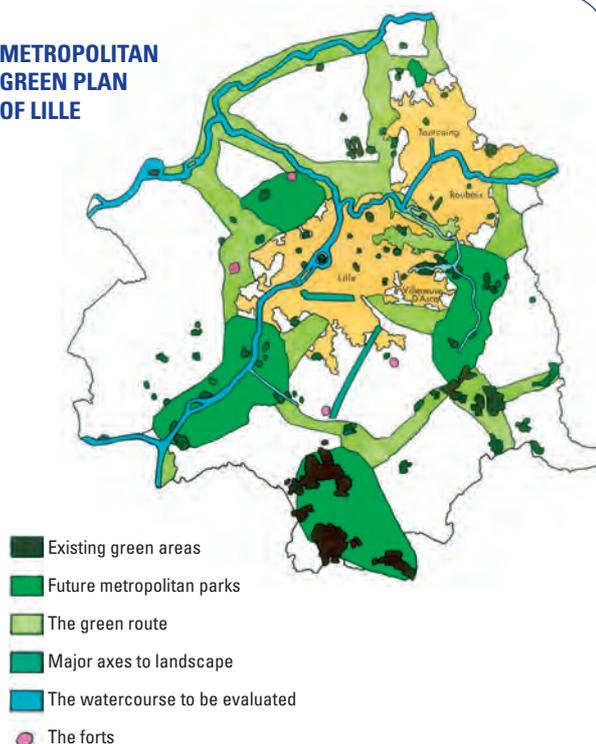
Major natural sites must be protected and exploited, generally in the form of parks. They must be linked by corridors, which can be ordinary nature spaces, also entirely newly created spaces. The obstacles to human and ecological exchanges between sites must be suppressed (management of the pedestrian paths...)

- The cities of Vitoria and Barcelona have ambitious, structured policies in matters of networking natural sites (cf files no 2 & 3).

- In Brussels, a framework plan organises a strategy on the regional level. The "Green network" brings the green spaces together: parks, linking spaces, green areas to be created... The "Blue network" refers to the value of the water in wet areas: re-opening of buried streams, valuing of riverbanks...

- In Lille, the metropolitan green plan (see figure above) places the existing park into an agglomeration logic and envisages their linking into a "green stretch".

METROPOLITAN GREEN PLAN OF LILLE



Within these networks, the treatment of these spaces must be adapted to the local conditions (urban pressure, social factors, ecological characteristics of the sites...)

In a very systematic way, the management must be graduated between the city centre (small and highly frequented spaces, necessarily maintained between them) and peripheral spaces (large natural parks which are little managed). The city centres can always conserve very natural spaces.

The Danube Valley in Vienna (Austria) has a strong gradient of management between leisure spaces and natural spaces which are strictly conserved.

6.2.2.3 Several ways of possible action

The preservation and development of networks of green spaces in urban areas can be based on different tools.

• REGULATORY PROTECTION

The protection of peri-urban natural spaces must not rest on "discount protection measures" where all human activities are permitted. It can on the contrary be the object of strong measures, like natural parks or natural reserves, which guarantee the durability of the sites.

In Saint-Quentin-en-Yvelines in the forests of Strasbourg or the PNS of Rome, national natural reserves have been created. These strong measures have allowed better protection of the sites and control of leisure activities.

• TOWN PLANNING

Town planning constitutes a fundamental measure for the preservation of natural spaces.

Buildings must be forbidden in the major sites and linking spaces. This firm policy also responds to a preoccupation for public safety, as natural spaces are very often subject to natural risks (floods, landslides, fires).

Elsewhere, it is suitable to envisage the coherence of public policies. So, large public amenities must not be implanted within natural sites, except in the case of absolute necessity, after a strong agreement and ambitious compensation measures.

On the edge of the Llobregat park (Barcelona), the Can Carreres Sector has been protected thanks to the important work of town planning (cf. file no. 1).

• LAND ACTION

The land approach is particularly important, and it is desirable that the most strategic sites in the middle of peri-urban natural spaces be acquired by collectives. Structures like Land Agencies can provide important help in this sense.

- *In the land area, the strategies of those involved are variable: the land of the Miribel-Jonage park (2200 hectares) has been entirely bought by the local community; in Collserola (8000 hectares) the park has bought strategic plots, necessary for public facilities for example.*
- *Every year the Agency of Green Spaces of the Ile de France buys 400 to 500 hectares of natural or agricultural land with the aim of protecting and exploiting it.*
- *The Province of Brussels has a planning document from which IBGE (Brussels Institute of Environmental Management) intervenes to prepare the decision to purchase or not for the Region and then to ensure the exploitation, protection and permanent management of the spaces.*

6.2.2.4 Support and coordination of local projects

Numerous sites can be qualified as "orphans" as they are not the objective of any measure of protection, management or exploitation. These sites are particularly sensitive to all aggressions.

Faced with this situation, agglomerations must try to set up local dynamics. According to the case, they can opt for several approaches:

- Direct management of the site by the agglomeration or by a local body.
- Delegation of management to local partners: farmers, NGO, private companies...
- Support those responsible locally for preserving and valuing PNS

Local promotion towards making this type of responsibility emerge, or if there is none (public meetings, demonstrations, information)

In all these cases, the management structures of the sites must not have sectorial powers (reception of public for example) but they must, on the contrary, have means of intervening in all the activities and functions. Lastly, it is desirable to create structures which manage the natural parks in the whole of each urban area, or all in coordinating the action and planning the development.

In 2002 the Urban commune of Lille created the "Agency of Metropolitan Natural Spaces", bringing together the existing parks, joining the groups concerned and organising the development of a vast green stretch.

6.2.3 On the sites level

On the level of each site, it is desirable to define and put into practice a valuation and management project

6.2.3.1 Placing evaluation projects

• THE PROJECT STEPS

Natural spaces must be protected against aggressions which they are subject to, but this defensive approach is not sufficient, in particular because it does not necessarily mean social cohesion. A site which is protected but forgotten is not appropriate for the population, risking deterioration in the medium or long term; to sum up, its preservation can be stopped at the beginning.

In these conditions, it is suitable to create dynamics which will lead to joint projects among those responsible, public and private, for the territory. Such a step may lead to good social cohesion, which is key to the result of the projects.

These projects take the form of planning documents which allow their restructuring and their management to be organised. These framework documents must identify the project objectives and modes of putting them into practice.

It is desirable that the conception of these documents be drawn up within a participative step, associating the representatives, technicians, NGOs and other users.

- *In 1993 the urban community of Lyon classed all the sector of Miribel-Jonage as an "unalterable zone" within its director plan for town planning. This measure of protection constitutes the basis on which it was possible to set up a global evaluation project of this site, by setting up a "charter of objectives" negotiated between the partners concerned.*
- *The Po Valley in Turin was the object of a reference document (cf. file no. 4)*

• THE CONTENT

Each evaluation project is naturally specific, so as to take local peculiarities into account. Some principles are always valuable for all:

- The Mixture of uses

As we have already stated, PNS must be dealt with as multi-functional spaces, their evaluation must allow the exploitation of a large diversity of functions and uses.

Technical reflections and negotiations between those responsible must allow modes of management to be drawn up which respond to the needs of the majority of functions.

In Vitoria, the Salburua lagoon has been conceived at the same time for the regulation of floods, biodiversity and environmental education (cf. file no. 5).

In Saint-Quentin-en-Yvelines, negotiations have allowed management rules to be drawn up for the water plain which satisfy the needs of different users (cf. file no. 14).

- Sustainable development

Peri-urban natural spaces are adapted to constantly taking into account the principles of sustainable development. Several parks have put Agenda 21 into practice.

Some areas of application of this recommendation can be mentioned:

- Energy: give privilege to soft modes of transport (bicycle, pedestrians) renewable energies (solar, wind)
- Building: favour High Quality Environmental architecture
- Dumping: favour selection and recycling of waste, purification of used water by natural processes (lagoons)
- Agriculture: give privilege to biological or reasoned agricultural techniques
- Governance: develop the participation of those locally responsible
- Etc.

Due to their high frequentation, these parks can become reference sites, where the general public, and indeed professionals, can discover new technical approaches.

- *In Rome, the parks constitute places of experimentation and diffusion of sustainable development subjects (cf. file no. 22).*
- *This theme can rest on specific actions:*
- *In the parks in Brussels, waste from tree clippings are deposited in piles to be used on the paths. This simple measure allows an important financial and energy saving.*
- *In Strasbourg, the trunks of exploited trees are removed by horsepower.*

6.2.3.2 Ecological restoration and landscaping of the sites

• RE-NATURATION OF DETERIORATED SPACES

The PNS are often very deteriorated: dumping of waste, quarries, and pollutants... These deteriorations are an attack on all the functions of the sites. It is therefore very important to put rehabilitation actions into practice which may need important resources. This effort must be followed up by regular maintenance and valuing of restored sites.

Cleaning the sites (removing waste) constitutes a way of rehabilitation, albeit modest, but which has important positive effects (improvement of the image, and social appropriation of the sites).

The members of FEDENATUR have put important programmes of restoration of deteriorated sites into practice: certain ones are presented in the good practice files:

- *no. 6 restoration of ancient quarries (Miribel-Jonage)*
- *no. 7 restoration of a tower (Riera de Sant Cugat, Barcelona)*
- *no. 8 restoration of a deteriorated area (Can Cuyas, Barcelona)*
- *no. 9 restoration of a dump (Turin)*

• RESTORATION OF NATURAL BALANCE

The functioning of natural environments often deserves to be restored, both because of the biodiversity as well as for other functions. Some examples of actions put into practice in FEDENATUR parks can be quoted:

- Restoration actions of the hydraulic system (relief of the groundwater level, fight against erosion, improvement of water quality).
- Restoring trees
- Re-creation of ecological corridors (creation of natural areas linking the main sites, suppression of obstacles to the circulation of fauna)
- Control of the dynamics of the vegetation, control of waste, fight against invading exotic plants
- Control of frequentation (limitation of certain access, public information...)
- Etc.

- *In Brittany, the harbour of Brest is influenced by a nearby watershed of 2,800 square kilometres, including 137 communes and 360,000 inhabitants. This site has been the object of a "bay contract" piloted by the state and by the committee made up of all those concerned (180 members).*
- *An important programme of pluriannual actions to protect natural environments (restoration of water courses, fish stock management...) and to restore water quality (improvement of cleaning, limitation of urban or agricultural pollutants...).*
- *In Bavaria, numerous urban and peri-urban watercourses have been the object of re-naturing destined to improving their ecosystem, their landscape and their social and hydraulic functions.*

• ACTIONS IN FAVOUR OF WILD FAUNA

Wild fauna constitutes an element of biodiversity and a bio-indicator of the quality of the ecosystems, it also presents an important role in terms of the image of the site or education. Therefore, it is desirable to carry out actions to preserve and diversify the fauna.

- protection and management of fauna habitats
- control of human activities (hunting, fishing...)
- increase in capacity of reception for fauna (niches, food troughs...)
- reintroduction of extinct species.

- *The South Park of Milan has carried out several reintroductions of animals which had disappeared from its territory, like the crayfish. (cf. file no. 12)*

• RESTORATION OF THE CULTURAL HERITAGE

The cultural, architectural and historic heritage generally needs measures of preservation, maintenance and exploitation. These actions most often are put into practice through the administrations or specialised NGO's.

Portofino park carries out important actions in recovering and exploiting local traditions; it has also restored abandoned olive groves and dry stonewalls.

6.2.3.3 At the heart of the projects, the public

Peri-urban natural spaces have a major social function which should be valued and developed.

• RECEPTION

Access to natural spaces should be facilitated, in particular in the improvement of transport and information, and in the management of leisure facilities.

In the parks, simple measures can allow visitors to take advantage of the space easily: management of signposting, bollards and car parks... Such important operations like park buildings, interpretation centres, educational farms can be set up.

The services offered to the public must be developed, but also organised. They must respect the different functions of the park. If the services are delegated to organisms external to the park (private companies in particular), it is important to take care of their coherence (image, impact on the environment, absence of competition between delegations and the park...)

• Collserola Park carries out an affirmed policy to facilitate public access to the natural environment (cf. file no. 15).

• The parks of RomaNatura have numerous park buildings and educational farms (cf. files no. 17)

In Rome, the services to the public, largely delegated (NGO...) were the object of a global organisation to ensure coherence. (cf. files no. 16)

• EDUCATION

Environmental education constitutes a major vocation for peri-urban natural parks. This activity must be developed: creation of reception facilities, diversified offer to different types of public, financial set-ups limiting the costs for the users...

The themes of this education must be as wide as possible (ecology, geography, sustainable development, history...) The educational methods also deserve to be diversified.

Very numerous new educational experiences are carried out in the parks in the FEDENATUR network. Some examples can be quoted:

- scientific educational centre coupled with a reference herb garden (South Park Milan)*
- discovery of the natural environment in canoe-kayak (Miribel-Jonage)*
- observation of fish in the viewing chamber located in a barrage (Lery-Poses)*

• NEW SOCIAL AND CULTURAL PRACTICES

After some years, new forms of activities appear in the parks, these are often based on participative approaches:

- demonstrations
- open air exhibitions
- sensorial activities (Land Art)
- placing vegetable gardens at the disposal of the public in an educational and public citizen's participation step (social insertion, conviviality...)

These kinds of activities must be favoured because they reach a public that is not very involved in classic educational activities, and because they favour the social appropriation of the parks.

• The fluvial park of the Po in Turin organises important demonstrations of educational games (cf. files no. 21)

• In Le Mans, the evaluation of the Arche de la Nature passes through the organisation of numerous thematic festivals, these demonstrations make the park known, including a strong educational will and present an obvious social interest (see file no. 20)

• At Siant-Quentin-en-Yvelines, "Land Art" constitutes a new educational support, as it passes through the emotions and not through the rational approach of classical educational activities.

• In Tours, the Gloriette Park progressively sets up renewed exhibitions every summer. (cf files no. 19).

6.2.3.4 Reinforcement of partnership steps

A very large number of people and organisms are interested in these spaces: representatives, administrations, users, associations... The implication of these people must be improved on different levels.

• CARRYING OUT A STRONG AND DIVERSIFIED COMMUNICATION

The interest of peri-urban natural spaces is often badly known by the public, beyond the only function as a leisure area. Peri-urban parks are also often badly understood by their residents, because they are not intensely managed.

It is important to put ambitious communication actions into practice, with different targets: general public, representatives, technicians, users...

These communication actions can take diverse forms: documents, meetings, visits, demonstrations...

- In the Serralada Litoral park, "communal seminars" have been organised for four groups (representatives, environmental technicians, employment technicians, environmental teachers). These seminars have allowed the park to become known by people who could constitute transmitters of opinion to the users and the general public.*
- The South Park Milan has published a work which presents the site through photographs in black and white;*

this artistic approach allows the park to become known through an emotional dimension which is absent in more educational documents.

• *Miribel-Jonage has published an atlas which presents all the facets and functions of the park. This simple tool has been very efficient in explaining all the site's diversity to those concerned, as it was often perceived only as a place for leisure.*

• IMPLICATION OF USERS IN THE PROJECTS

The users and residents must be involved in drawing up the exploitation projects as well as in the management of the promotion of the sites.

This follow-up of agreement and good governance can give the sites a strong social standing, guaranteeing the preservation of the spaces against external aggressions.

• *In Milan, the Boscoincittà park was founded in 1974 at the initiative of an association (Italia Nostra). This 35-hectare wood has been planted by volunteers. The project is being developed progressively and the park stands today on 200 hectares, integrated into the Agricultural Park South of Milan. The park is always managed by Italia Nostra and volunteers, with recourse to professional technicians and help from the collective.*

• *In Le Mans, the promotion of numerous festive demonstrations is possible thanks to the strong implication of local and regional associations*

• ADAPTATION OF THE ACTIVITIES

All peri-urban parks house numerous human activities. It is essential to carry out constant agreement with users for them to adhere to the park project. Negotiations generally need to be carried out to make these practices more respectful with the other functions of the site.

In Miribel-Jonage, years of negotiation have been required to achieve an important modification of the network of electrical lines, to the benefit of the landscape and birds (cf files no. 13).

In particular, the partnership with farmers must be strengthened, because it may have major landscape or ecological consequences. We have to guarantee the durability of agricultural activities and the inscription of this activity within the park project. Practices can be made more respectful with the environment, the exploiters can participate in the promotion and maintenance of the parks...

The Metropolitan Agency of Lille is working with the farmers in the park of Deûle (300 ha – 30 farmers) and with professional organisms (Chamber of Agriculture) in order to comfort the peri-urban farmer and associate this profession with the exploitation project of the space.

Numerous actions are put into practice:

- a study trip and exchanges abroad

- setting up direct sales spots

service contracts for the maintenance of meadows, cutting down dead trees, etc.

• MAKING PERI-URBAN PARKS INTO SITES FOR RESEARCH AND EXPERIMENTATION

Located near universities, peri-urban natural parks can become sites for privileged research. Fundamental research naturally has its place here, but it is particularly suitable for favouring applied research. Collaborations between managers of the spaces and researchers can allow the appearance of innovative methods to restore and manage the spaces, susceptible to being widely applied in the follow-up.

In 1998 Collserola park organised a talk presenting all the research enterprises carried out in its territory. This work, principally carried out in ecology, is considered to be an aid to the park management.

6.2.3.5 Sustainable management of the natural spaces

Peri-urban natural spaces must be the object of long term management: upkeep of the vegetation, control of the public and human activities, cleaning... only this every day care will allow the long term conservation of the functions of these spaces.

• CONCEPTION AND PUTTING THE ADAPTED MANAGEMENT MODES INTO PRACTICE

The modes of management must be defined in a precise way, bearing in mind all the facets of each plot: natural environment, privileged functions, type of frequentation... management must not then be uniform on the site level; it can be intensive in highly frequented areas (grass cut frequently, for example) but it must generally be as extensive as possible so as to reduce costs and respect the best biodiversity (notion of differentiated management).

Management of the spaces can be carried out by diverse persons responsible: collectives' or park staff, non-governmental organisations, private organisms (companies, farmers...). In all cases, training efforts are suitable in order to provide new adapted knowledge.

- *Over several years the North park of Milan has carried out an important programme of planting green areas. These woods are defined in each case, according to the character of each plot: nature of the terrain, functional destination (objectives). Different types of woods are created: urban woods, forest barriers, massifs of natural bush, decorative borders... (cf. file no. 11).*
- *In the South of Paris, the Syndicat Intercommunal of the Valley of Orge Aval has drawn up a chart upkeep of wet environments. This document gives all those responsible locally the technical elements for the ecological management of the banks of watercourses.*

• IMPROVEMENT OF SITE SAFETY

Peri-urban natural spaces often suffer safety problems which may be real or just perceived. These large natural spaces with a limited staff, are liable to uncontrolled activities susceptible to posing problems for other users: drugs, prostitution, rendezvous of a sexual nature...

Park managers must control this situation, rather than make these activities disappear. They should distance them from the sectors frequented by families, and stop overflow.

The action involves management of access and above all the development of human activity on the terrain (surveillance, dialogue...)

Numerous parks have set up surveillance teams on horseback (Le Mans, Strasbourg, Miribel-Jonage...) This way of moving about is efficient in the natural environment, and much more appreciated by visitors than motor vehicles.

• FOLLOW-UP AND EVALUATION

The concerned collectives and managers of the parks must provide themselves with technical tools which will allow them to evaluate the spaces under their management.

- quantification of the functions carried out by these spaces
- identification of the needs for gaining knowledge
- about the evolution of the sites
- quantification of the management and restoration objectives
- evaluation of the results of the actions carried out

This preoccupation can be translated into setting up observatories, GIS systems, data bases, follow-up protocols...

These kind of tools can help the manager to be able to adapt the actions carried out according to the evolution of the site or the results of actions put into practice.

Certain communities have developed observations about the environment, including the follow-up of peri-urban natural spaces.

In Barcelona, the natural parks of Xarxa were the objective of a coherent and global follow-up programme (cf. file no. 23).

File no. 24 proposes a very partial list of indicators which can be put into practice in this type of space.

Conclusion

Widespread diversified natural spaces exist in all urban areas. These spaces have often been neglected by public policies, without doubt because they are less prestigious than the "natural monuments" of mountains or coastlines, and because their exploitation is less extensive than that of the urban centres. For a long time, they have been considered as land reserves which the cities can use to spread.

Therefore, these undeveloped areas are not simply "empty" within the urban fabric. They are useful territories which house numerous human and important economic and social activities marking the meeting between the city and the country: landscape, leisure, agriculture, drinking water production... Also, natural spaces ensure functions of a general interest, which are particularly positive for the city: regulation of water, pollutants and climate. They have a heritage whose value is increasingly recognised by society: biodiversity, cultural or architectural heritage.

Indeed, the durability and very identity of the cities are largely linked to these natural spaces.

From now on society must be aware of the importance of these spaces, and also of their fragility. Thousands of hectares of natural or agricultural land are disappearing, in effect, they are taken up by the cities for urbanisation and infrastructures. Also their quality is often deeply deteriorated by activities without sufficient control.

Natural spaces in the peri-urban and metropolitan environment must be taken into account in the right measure into urban planning. Its is largely in the "free" spaces that the future of the cities is being played out, as these vast territories are susceptible to evolve in very contrasted ways according to the choice of management, systematic and uncontrolled urbanisation or absolute preservation.

FEDENATUR benefits from a specific knowledge of these spaces, based on the day-to-day management of thousands of hectares. This experience has allowed it to formulate a set of recommendations for sustainable evaluation of these territories.

Natural spaces must be protected strongly in order to guarantee the preservation of their different natural functions, thanks to regulatory and adapted land actions. They must also be valued, permitting the expression of all the activities and functions which need a high quality environment. On the other hand, urbanisation, infrastructures and other activities which use the natural spaces as "receptor environments" must be, if not removed, at least strictly controlled.

In order to preserve biodiversity and harmonious social functioning, it is essential for natural sites to be integrated into territorial networks on the agglomeration level; they must be the object of rehabilitation, then long term management. Citizens must be at the heart of the steps for valuing the sites, to the benefit of attractive facilities, but also in becoming those partly responsible for the projects. So, urban and peri-urban natural spaces will be able to become fundamental elements at the service of a sustainable city.

The exploitation of these territories means the mobilisation of all those concerned, at all geographical and political levels.

On the European level, drawing up the thematic strategy about the urban environment constitutes an exceptional opportunity for acknowledging the role of these spaces and make an ambitions policy in their favour.

FEDENATUR is ready to take part in these dynamics, in particular in carrying out exchanges between parks and the diffusion of local experiences.



Agricultural park South of Milan

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