



INTERREG IIC · METROPOLISATION · PÔLE "RHÔNE - ALPES - SUISSE"

Les espaces naturels périurbains dans les politiques urbaines et métropolitaines.
Periurban natural spaces in urban and metropolitan planning policies.

Approche sur les Espaces Naturels Périurbains coordonnée par Fedenatur



Periurban Natural Spaces Approach co-ordinated by Fedenatur

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Fédération Européenne des Espaces Naturels et Ruraux
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Introductory Words

Ramón López Lozano- President of Fedenatur

This document, which contains the proceedings of the Barcelona seminar, represents the culmination of all the work carried out within the framework of the Interreg II-C (UE) program in the 2000-2001 period.

I consider the development of this meeting as particularly relevant due to the fact that it tackled as important a theme as the defence and conservation of the natural and rural patrimony of our cities which, in the last decades, have been submitted to expansive urbanisation and a rapacious occupation of the land. In this process, these natural and rural environments have not played a role accordant to the importance they deserve within the framework of sustainable development and of the city's compromise with the defence of its biodiversity.

We do not agree with the restriction of the concept of nature protection in the metropolitan areas to the preservation of a collection of residual, isolated and disconnected spaces. In fact, we believe the opposite, that there is a serious need to create a network of free and open areas that guarantee the true connectivity of the land and that allow for the prevalence of animal and vegetable life forms, as well as agricultural and cattle-raising activities. This would articulate the urban, industrial and infrastructure sections into an harmonious mosaic, what is the real challenge in turning European cities into liveable spaces.

It is for this very reason that, on a European level, it becomes necessary to develop and define the criteria and characteristics that make up the Natural Spaces on the Urban Peripheries. This would help to establish a standard definition which, in turn would allow for the creation of an internationally accepted level of protection, added to the traditional natural protection labels such as natural park, regional park, national park, etc. These last are very useful tools, but cannot resolve our problem in terms of the metropolitan area. This is a petition that Fedenatur handed to the Directorate General Environment of the European Commission and which has been favourably considered.

Throughout the development of this Interreg II-C programme, we have dealt with different aspects of the complicated dialectic between the cities and natural areas on the peripheries, on a small to large scale. In October last year, in the city of Mataró here in Catalonia, we had a discussion on facilities for public use in the Natural Spaces on the Urban Peripheries. Last April, in Milan, we tackled the problems, perspectives and solutions to the border areas between the city and the countryside. Furthermore, in this last seminar we studied town and city planning policies in depth, taking into account the important role of nature surrounding and penetrating our cities.

The examples presented in this meeting by the diverse European cities, show that it is a subject that concerns us all, and that it is already in the process of development with more or less emphasis. They are also a major exponent to urge other European cities to face the challenge.

One of the objectives of our Federation is to enable an exchange of experiences within the framework of the protection of natural and rural areas on the urban peripheries, which become the recipients of a strong urban pressure, due to the growth and expansion of our cities. However, it is necessary to highlight that another of the Fedenatur objectives, equally important, is to urge European cities which have not yet taken part in these dynamics, to include the protection of these residual and neighbouring natural areas into their town planning and environmental policies. This constitutes an aim for the quality of life of their inhabitants and a necessary condition for sustainable development.

We understand that, within the European Union, this line of argument can constitute a good aim to implement in our cities through land policies concerned with environmental high quality and the preservation of natural resources.

I would like to express my gratitude to the Consorci de la Serralada Litoral for its implication in the celebration of the Mataró seminar, to the Parco Agricolo Sud Milano for its intensive work towards making the Milan seminar possible and to the team from the Consorci del Parc de Collserola for its effort in celebrating the seminar here presented.

Finally, I would specially like to thank the Rhône-Alpes Region, the Urbanism Institute of Grenoble (UPMF), the Parc-Nature des îles de Miribel-Jonage (Lyon) and the Urban Community of Lyon, for their particular political, intellectual and economic implication in the development and attainment of the aims laid out in this program.

Natural Spaces on the Urban Peripheries(ENP): Metropolitan Typology and Policy.

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I. Natural spaces on the Urban Peripheries: An inventory of fixtures

Before presenting the results of this study, it would be interesting to remember the main conclusions reached in the first Interreg IIC study, conducted by SEGAPAL, on the census and the typology of Natural Spaces on the Urban Peripheries.

1.1. Presentation of the study.

This first study was carried out on a sample of 19 towns, of over 100 000 inhabitants (urban areas of up to 1,6 million inhabitants), in the French Southeast and French speaking Switzerland.

This systematic analysis has been enriched by our knowledge of other European agglomerations.

• Identification of Natural Spaces on the Urban Peripheries (ENP in its French acronym)



- Dominant spontaneous vegetation (agricultural land is excluded).
- Surfaces of over 100 hectares.
- Location of the area of urban influence: a radius of 5 to 20 kilometres from the centre, considered in relation to the size of the city.

The areas which matched this criteria were identified from IGN maps (National Geographical Institute) and from CORINE LAND COVER, established via the interpretation of satellite images from IFEN (French Environment Institute).

• Description of the ENP

Each identified space led to the collection of information, from cartography analysis to surveys, relative to the concerned Local Collectives.

The collected elements concern the different characteristics of

the site: the surface, the physical surroundings, fundamental statutes, functions and management methods.

1.2. A general problem, varied situations

From a total of 149 identified sites, all the built-up areas on our sample study have Natural Spaces on the Urban Peripheries. This observation shows the pertinence of the Fedenatur approach, later confirmed by our contacts with the Communities questioned. Beyond this unity, three important variations appear between the situations of each given town.

The occupation of space in the ENP is largely dominated by afforestation (present in 90 % of the sites). However, many other kinds of landscapes exist: water courses (65%), stretches of water (23%), shrub or herbaceous vegetation (49%) and agriculture (17%).

There is no real uniformity in the spatial importance of the ENP within the urban area.

Contrary to what may be believed, the urban areas of the Mediterranean coastal have over 50 % of ENP (up to 60% in Toulon, excluding the sea). This is thanks to the existence of vast uncultivated and non-urbanised mountain ranges.

On the other hand, the towns on the plain are a lot poorer in natural areas. Less than 20 % of the urban area of Strasbourg has been protected, while the Mans or Perpignan has remained natural. At Béziers, there is not a single natural site within the study radius, so much so that the most distanced natural spaces have experienced very strong urban influence.

Some mountain towns (Saint-Etienne, Geneva) have suffered very dense urbanisation, with hardly any ENP space left (10-15%). Many towns experience an intermediary situation, with vast zones of built-up plains, while also having flood and mountain sectors that remain natural (Grenoble, Lyon, Chambéry).

Equally very variable are the number of ENP and their standard size. In Lyon, the relief complex (hills, rivers and small valleys) explains the presence of 29 distinct spaces in a generally reduced surface area. On the contrary, those towns attached to strong reliefs (Aix-Marseille and Grenoble) have vaster though a smaller number of ENP.

In total, 52% of the ENP identified extend over 100 to 500 hectares, with only 9% stretching over 1000 hectares.

The statute of spaces, as much in terms of property as of management, is variable within each site. In the mountain massif of the same alluvial plain, the sites managed by the Community and by private spaces are very often juxtaposed. One aspect therefore seems to characterise the ENP: diversity.

1.3. The physical environment, an important typology element.

The physical environment appears to be the main factor in largely determining the abundance of natural spaces, their character and their functions.
The natural spaces generally only exist within the sites where the urban extension has been limited by physical constraints: relief and overabundance of water.



• The main types of spaces

Five particular situations can be defined:

- Mountains (27 sites / 149)

Many large agglomerations have been able to develop in direct contact with the mountain massifs: Grenoble (Vercors, Chartreuse, Belledonne), Aix-Marseille (Sainte-Victoire) and Geneva (Salève). The mountains however, have been allowed to remain particularly wild while being right beside the city-centres. These very wooded areas are used for leisure activities.

- Hills (22)

Where the relief is softer contact between nature and the city is less severed, the urbanisation has been able to progress much less and agricultural activity is shown under the form of mosaic, with its wooded areas. This kind of situation can be found in Lyon (Monts D'Or) and Saint-Etienne (foothills of Pilat).

- Small valleys (26), Hills (6)

Many cities have small watercourses with steep banks, and in so doing create wooded corridors which stretch right up to the city centres: Lausanne, Lyon.

Some hills present the same linear configuration. These spaces are subjected to a strong pressure from urbanisation and leisure activities.

- Alluvial Plains (27), Marshland (7)

Flooding has limited the urbanisation of certain plains: the Rhône in Lyon, Avignon or Montélimar, the Isère in Grenoble, the Rhine in Strasbourg. In the same way as with the hills, these plains generally appear as some kind of mosaic of natural spaces and artificial spaces (agriculture, metal extraction). Development of the rivers diminishes the constraint of flooding, although urbanisation and infrastructure often threaten these spaces.

- Plains (22)

Natural spaces are few enough in number in the non flooding plains and plateaux, but they can exist in favour of local particularities: large aristocratic estates and less fertile lands.

These natural spaces of generally poor surfaces are widely included in the urban fabric, thus explaining why they are so visited by the public.

• The urban pressure

The location of sites within the city constitutes a key element at several levels:

- Urban pressure: visits and urbanisation.
- Location within the urban fabric (sites included in the built-up areas or open to the outside).



These elements are largely linked to the physical surroundings of the site.

The afforestation plains, those sites often most marked by the city influence, have slowly been transformed into city parks. On the contrary, even those mountain massifs that penetrate into the heart of the cities, often experience a limited pressure. Furthermore, these spaces are not suffocated by the urban fabric, but instead extend outwards.

The small valleys, alluvial plains and hills all are intermediary situations. They can be found included within the built-up areas and are put under a very strong pressure, but are nevertheless often in contact with the most distant natural spaces.

1.4. Vital functions of an agglomeration

Natural spaces on the urban peripheries offer a particularly important service to the community in general and especially to the agglomerations.

function, and are present in almost all the sites (82%). Only some alluvial or mountain plains are less frequented.

This frequentation is often very intense. This is easily explained by the attraction of the surroundings (forests, lakes, sea and riverbanks), the nearness of the city and good accessibility for light vehicles (all are accessible by car; 48% are located near a motorway interchange).

The most common activities are walking (29%), discovery of nature (29%), sport (26%) and fishing. Hunting is still practised in 20% of the sites.

Aside from what can be termed as strictly leisure activity, these spaces often play a social and cultural role. They constitute a strong feature of the urban landscape, thus contributing towards a social balance in difficult quarters, and can participate in the cultural identity of the cities (the rocky inlets at Marseille, the lakes in Annecy and Geneva, the Saint-Victoire in Aix...).

On the other hand, it is interesting to note that these spaces are barely interested in tourism (only 12% of sites).

The natural heritage represents a non-negligible wealth on the city margins; this can be seen in 35% of the sites. Natural sites of European interest (Natura 2000 network) are present in the urban area of many cities: Nice, Montpellier, Lyon and Marseille.

Hydraulic services exist in the majority of the alluvial plains, but also in certain valleys, plains and mountain massifs. It is a question of the role of drinking water resources, the extension of the vineyards and hydroelectricity production.

Exploitation of natural resources is originally a rural function, which can be found near built-up areas: agriculture, forestry and professional fishing.

These multiple functions, along with the proximity of the urban fabric, push the communities towards taking care of these spaces and integrating them into their urban politics. This evolution is favoured by the context, which puts forward the notion of sustainable development within their town planning policies.



II. Study of the ENP within Metropolitan Politics, and usage.

2.1 Presentation of the study

The aim of this study is to present and analyse the agglomeration policies concerned with natural spaces on the urban peripheries (ENP) and the terms of implementation at an operational level.

The objective is to draw up a state of play of the actual application of the documents of aims (local management plans, green belts and nature projects), that take the ENP into account, by way of willing actions.

- Regulation measures (bans and protection measures).
- Land and property tax policies (buying, sales and expropriation).
- Financial means.
- Management measures (specific administration, management plan and charter).
- The existence of projects on these spaces guaranteeing sustainability.
- The stimulation of these projects.
- Partnerships and exchange network

These interesting experiences will thus be put into evidence, alongside the shortcomings of setting up agglomeration policies, the existence or not of global and/or sector policies and finally the coherence of public policies and their consequent setting up.

2.2 Methodology

The study of the intergration of natural spaces within the urban policies was carried out from interviews, site visits and document and survey analysis, in four agglomerations Communities in Rhone-Alps/ Switzerland.

- Lyon,
- Grenoble
- Geneva
- Chambéry

The interest shown by these cities for the natural spaces on the urban peripheries, of which a census was taken, greatly motivated our choice

What clearly orientated our choice however, was the quality of the responses received from local dignitaries to our questionnaire sent out for the first study, and their presence at the technical Interreg meeting organised on the 22 of March.

This systematic analysis has been further enriched by our knowledge of other European cities and by the Fedenatur members, European Federation of Natural and Rural Metropolitan and Periurban Spaces.

At an initial stage, a test-study was carried out on the city of Lyon (in partnership with Greater Lyon and the Town planning Agency). This was done in order to refine the methodology and to determine what difficulties could crop up throughout the study.

This test-study has permitted the following:

- To collect data and documentation on global agglomeration policies concerning ENP (SDAU, green belts and nature projects), and to create a bibliography.
- To define the implementation measures needed to set up these policies: administration, management plan, financial means and concrete actions (rehabilitation and management of the area, tree plantation, and a public consciousness-raising campaign). This is done for 5 natural spaces of very particular interest for their physical surroundings and the type of visits they receive.

Once the general methodology had been approved, an interview grid (annex 1) could be drawn up. This document has been sent to those people who met up in the cities (Grenoble, Geneva and Chambéry), as a preliminary to the interviews carried out in May and June 2001.

2.3 Study progress

Our first interview took place in April 2001 with Céline CALPENA, the official representative of the Greater Lyon Ecology Mission, and it concerned the general policies of Greater Lyon on natural spaces in urban peripheries.

A second interview was carried out in April with Jean VILLIEN, Director of Urban Ecology. This allowed us to elaborate these policies and their launching in certain sites.

From these two exchanges the interview grid represented in annex 1 was elaborated and posted to our contacts in Chambéry, Grenoble and Geneva.

In May we met up with Sylvie CASTILLAN, representative of the Chambéry Environmental Service.

Later on, Jacques HENRY, official representative (development) at la Métro, and Murielle KUHN and Florence B. JOURDAIN from the Town-Planning Agency (AURG), explained the agglomeration policies concerning natural spaces on urban peripheries of Grenoble.

Finally, Bruno BEURRET, developer for the master plan in the Geneva Canton, who visited the Park on the 18th of May, received us in Geneva in June. After having tackled all the elements on the interview grid, we visited the Teppes de Verbois, a perfect example of a restored natural space on the urban periphery.

All these interviews were the object of a report represented in annex 2 of the current report.

III. Taking the ENP into account in Metropolitan Policies.

3.1. A shared problem

Whatever their intervention perimeter may be, the problematic of Natural Spaces on the Urban Peripheries interests all Communities. The European Commission advocates a sustainable polycentric development within the orientations of its Community Space Development Scheme (SDEC). This implies a co-ordinated approach to metropolitan projects integrating economic, environmental and social dimensions.

The DG XI considers the quality of life of those inhabitants of periurban areas to be a major preoccupation, thus taking into account not only economic and social aspects but also environmental (CF communication in 1998 on urban sustainable development in the European Union).

The State DTA programming and regulation documents aim to favour a more economical management of rare areas, a coherent organisation of urban spaces within the objectives of sustainable development and a network of natural, agricultural and landscape spaces.

Within the framework of their town planning and development scheme, the Regions advocate landscape and natural space policies in order to preserve them from the aggressions of housing, infrastructure and tourism.

The main objective of the environment policies of the Departments are generally the protection, restoration and opening to the public of its most sensitive natural spaces, particularly those areas on the urban peripheries.

The agglomerations also take the ENP into account by way of orientation and regulation documents.

Lastly, the recent increase in meetings and colloquiums on both a national and international level and the creation of parliamentary missions has led to a growing interest shown in the peripheries. This in turn has led to the growing importance of the peripheries in land development strategy policies.

3.2. The aims of the metropolis

All the Communities encountered announced two main objectives.

- To maintain and preserve the residual natural spaces at the doors of their cities in order to offer their citizens a quality of life and to favour the balanced development of the city.
- To develop these spaces for public usage.

These spaces which have long been ignored for their natural value, as well as the agricultural land on the urban peripheries, are today completely integrated within the urban policies.

Increasingly, we see novel concepts appear. Examples of these are the coherent natural network in Grenoble, a system of green areas, conservation and reconstitution of large natural interconnected spaces in Geneva, and the green belt in Lyon. The policy of Lille, based on a "green metropolis" strategy, is certainly one of the most successful at this level.

• To maintain and preserve residual natural spaces.

This aim covers several aspects:

• The limitations of the urban sprawl

The phenomenon of the metropolis in progress is marked amongst other things by a great fluidity in the physical and virtual exchanges, which brings about a spatial urban sprawl and a decline of some spaces.

There is a strong Community interest in controlling the sprawl and an aim towards:

- Maintaining the surroundings and a high quality of life.
- Research into the balance between built-up and natural territories.
- The creation of a rupture between the first and second urban periphery belt.
- A stop to the city contours.

• Maintenance of biodiversity at the heart of the metropolis

The natural spaces on the urban peripheries are generally marked by great biological diversity.

Relatively gentle human interventions in these spaces have allowed many vegetable and animal species that were pushed aside by agriculture and urbanisation to find a refuge and ecological niche in these semi-natural surroundings.

This reality has been taken into account in all the cities we have visited (Barcelona, Lille).

To keep and preserve residual natural spaces

- Prevention of the urban spread
- Conservation of the Biodiversity
- Vital natural functions



• The protection of vital natural functions

Natural spaces on the urban peripheries often fulfil basic functions for the city.

In this way, The Miribel-Jonage Park in Lyon acts as both a protective barrier against floods, a drinking water resource for the city of Lyon and a hydroelectricity production area.

Such vital natural functions forced the Communities to take these spaces into account in their planning documents and to attempt to preserve them.

• The development of these spaces

Public development of the ENP aims towards economic, cultural and social objectives.

• Close-by leisure and relaxation activities for short periods throughout the year

The reduction of working hours leads to a growing interest shown in close-by leisure activities (end of day and weekends) for short periods throughout the year.

The Collectives must respond to this new demand by offering the public natural spaces for leisure activities.

These spaces thus become the battlefield for conflicts of interests that notably concern the necessary awareness of the environment. The social role of the ENP is very accentuated.

Besides the traditional functions of the city that overflow into these areas, these last become a receptacle for needs such as the practice of leisure sports, walking and ethnic meeting points.

In this way they acquire a social value linked to what they represent to the public.

• Awareness, public environmental education and cultural displays for the general public

L'Arche de la Nature (The Nature Ark) at Mans, a natural green area of 450 hectares, is a very interesting example of an area that plays an important role in terms of:

- Environmental education for school children and the general public;
- Organisation of demonstrations.

In fact, the Nature Ark has a yearlong programme of rich and varied activities: the honey festival, the jam day, fox nights, Easter egg hunt, a rambling party and a painter's day.

In Lyon, these nature projects have allowed environmental educational methods to develop in local schools by way of thematic school activities (the treasures of nature, water and landscape reading) which, have been proposed by different associations (CORA, FRAPNA).

• Agriculture on the urban peripheries

The Collectives are systematically taking agricultural activity into consideration at the same time as the natural spaces. The objectives of this awareness are:

- To preserve and maintain agricultural areas threatened by urbanisation and tackle the absence of signs of recovery in the farms.
- To direct farming activity towards short crop cycles and welcoming the public, in order to take advantage of the proximity of the urban population.

IV. The tools needed to set up

There is no lack of regulation and planning documents that direct city policy-making in terms of Natural Spaces in the Urban Peripheries (Master Plan, Land occupation Plan). They are mostly reference documents adapted to a more specific analysis of the area and they determine which land projects are flawed.

4.1. Orientation and planning documentation.

These orientation and planning documents are currently and systematically taking the ENP into consideration.

It is mainly the Land Development Directives and the Director Plan (SD) that establish the main orientations for the development of particular territories and find the balance between the urban sprawl, farming activities and the conservation of sites.

In this way in 1997 the SD of Lille showed its willingness to reach 10,000 hectares of green zone for leisure and landscape purposes by 2015. The Green Metropolis Aim Charter clarifies this strategy with a cartography project and a commitment charter and in so doing, brings the main players together (State, Region, CG of the North, Urban Community).

The Master Plan assigns specific purposes to certain areas in the Lyon agglomeration: drinking water and food supply, a leisure activities base, quality area reserve and an untouchable natural site.

In Annecy, the SD identifies the forests, sensitive natural spaces and structured areas (agriculture, unalterable natural sites, green areas and those of landscape interest), and develops the idea of the amphitheatre hills and green or landscape flows.

In Grenoble, the SD shows the particularity of indicating cartographically two types of limits:

- Limitations of principle, indicative to the POS that can make a certain interpretation on the scale of the land plot (orientation character).
- Strategy limitations with which the POS must be compatible (regulation notion).

Complementary to these SD, a Local Area Management Plan (LAMP) on the scale of the Metro defines the main development orientations in the long term. This particularly concerns natural spaces and aims to create links for a natural network.

Lastly, the Master Plan for the Canton of Geneva establishes the main development lines and principles in four large domains, amongst which there are rural spaces and natural surroundings. In these last, any action that risks starting a process of decline in the large areas of medium to strong levels of biodiversity, must be prevented. On the other hand, the conservation and reconstruction of a land and water network in the natural surroundings must be promoted.

The Master Plan retains the concept of a network of green spaces, green urban routes and large parks. These routes (which can be farming areas) are not imposed legally but can direct the projects and Community Master Plans.

All these general documents are certainly theoretical but they serve to determine political intentions.

4.2. Regulation documentation

The regulation documents must take the developments set out in the planning documents into account, notably in terms of ENP conservation.

Land Occupation Plans (POS), the main regulation documents, make an inventory on their maps of those agricultural and natural

zones (ND and NC) under regulation. This concerns protected areas in terms of the quality of the sites, natural surroundings, the richness of the soil, sub-soils and of the landscape. Construction in these areas is extremely limited and regulated. The POS of Chambéry for example, elaborated on the scale of the town, only take a census of wooded areas, but do not consider any natural or agricultural spaces.

In Geneva, the Canton laws set out the general principles of protection (construction, even agricultural, banned in three ENP) and specify the directives of the Canton Master Plan.

In Lille, the Urban Community experienced new forms of ND conservation regulations authorising a certain limited construction by taking public reception of the natural surroundings into account.

All these regulation documents vouch for an increased protectionism with for example, the growth of ND protected zones (plus 1000 hectares in Lyon).

However, these documents cannot serve as protection tools unless they are stable and taken at a sufficient scale. In the long term this depends on the continuity of these documents.

At the moment, the POS are too often modified and rarely intercommunitary.

The Collectives are also brought about to favour or approve the setting up of stricter management measures: natural reserve and Natura 2000 networks.

As a general rule, we can say that these tools are necessary to engage the protection measures for the area, but that they are largely inoperative in controlling public visits.

4.3. Land control of the ENP

The level of public land control varies from one Community to another.

Certain agglomerations have no control over their natural spaces on the urban peripheries and moreover do not feel the need to acquire it.

Their actions take place by regulation and legal means.

This is particularly the case for Chambéry, Toulouse and Grenoble.

In the past, other Communities acquired vast natural domains at the time located within the rural sectors.

This is the case for Lyon (departmental domains, ad hoc mixed syndicates), Strasbourg (municipal Rhine forests) and the Mans. These Collectives have since interrupted their acquisitions.

Lastly, we have found the case of Collectivities that direct new projects and hope to strategically control the land. Lille can be mentioned with its creation of the Metropolitan Natural Spaces Agency or even Bordeaux and its Jallies Park project.

Public land acquisitions are thus carried out according to ecological sensitivity and to the urban pressure exerted.

In the same way, certain Communities set up usage conventions and management partnerships with private owners.

This is the case of Lyon where several conventions have been signed by the mixed syndicate of Monts D'Or and the farmers, for the maintenance of the land.

The Urban Community of Brest also signed conventions with the landowners of ND classed zones in POS. These conventions require the commitment of two parties (managed by the farmers or in part by the collective).

Land control is in fact still necessary today, at least in part, in order to allow the development of a conservation and public usage development project.

4.4. Development projects

If regulation allows for the protection of Natural Spaces on the urban peripheries, it cannot on the other hand play on how visited these spaces are. It must therefore override such regulations in order to reach an operational stage of projects.

Without a project, the ENP can rapidly become abandoned spaces or adopt marginal activities rejected by the city: temporary camping sites, rubbish tips.

The approach to a given project goes through a process of site analysis, inventory of the patrimony and a diagnosis of usage and protection measures of natural areas.

The clarification of local stakes and the definition of agglomeration objectives progressively allow for the emergence of a project and an identified control of works.

The setting up of a project, which associates protection measures for the natural surroundings as well as development facilities, permits the mobilisation of partners, progressive adhesion of the public to the project and the definition of a management policy.

The nature projects of Greater Lyon go partly towards this in this sense, since they define the location of these areas through different themes: agriculture, areas of public access, environmental education and protection of the sites.

In Chambéry, the aim is to favour the development and liaison between the two regional parks located at the city gates, in order to favour the rebalance of city-countryside.

In Mans, the activities of the Nature Ark have been developed around three central themes: water (The Water House), the grove (the farm of the prairie) and the forest.

The natural urban park of Feyssine in Villeurbanne (Lyon) has in turn seen itself adopt the role of reintroducing nature into the city. In the Deule Park in Lille, the local players have attempted to develop an image around agriculture and tourism.

Lastly, in Bordeaux, the aim of the Jallies Park is to federate failed projects since the inter-communal park links up about fifteen centres of varied interests and is open to the general public.

The control of works of the projects is still public and assured by:

- A District or a Community of Districts;
- An inter-district syndicate (Rhône Aval, Syndicate of Mont d'Or in Lyon);

- A mixed syndicate (SYMALIM in the Miribel-Jonage Park in Lyon);
- An agglomeration Community (METRO in Grenoble), Urban Community or an Urban District.

This Master of Works can appeal to a delegated Control of Works.

4.5. Management of the sites

• Institutional management of the sites

As soon as the first constituent elements of the project are set up, there is a need to insure lasting management. Management of the site covers a series of multi-faceted actions concerning the environment (cleaning, protection, maintenance of the spaces), facilities (caretaking, maintenance, large repairs) and public reception (surveillance, information-reception, paying and free services).

As time goes by, management preoccupations take on an ever-increasing importance.

The study was conducted in order to identify three forms of organisation within public management of the ENP:

Management of Community Master of Works by specialised services:

Refuse collection services, urban cleaning, municipal police, water and sanitation, environmental services, urban ecology and communication services.

This kind of management still leads towards a dispersion of responsibilities and operational co-ordination difficulties, and indeed conflicts between services. This constitutes in our opinion what can only be a provisional solution, as it does not help management and optimal development of projects.

This type of management can be found in Geneva where the Canton personnel maintain the wooded areas while the Community Services manage the green spaces.

Integrated management of each site:

In this case, the Master of Works sets up an ad hoc structure to insure the unity of exploitation missions.

A day to day unique direction co-ordinates specific interventions (natural environment, public management, and infrastructures) which are always interactive with each other.

The advantages and inconveniences have been identified in several cases:

- Management under direct Community control (Nature Ark/ Urban Community of Mans, the Deûle Park in Lille/ Mixed Syndicate, Rhône Aval Park in Lyon/ Mixed Syndicate).
- Management delegated totally to an external organism (Miribel-Jonage Park in Lyon managed by a mixed economy private law society, forests in the Paris Region managed by the National Office of Forests).

Management of all metropolitan sites by a unique organism:

We have identified two separate cases:

- Brussels, with the Environmental Management Institute of Brussels (IBGE).
- Lille, with the creation in process of the Metropolitan Natural Spaces Agency.

In this case, coherent and complementary development and management of spaces must be insured on a metropolitan scale.

• The life of the site: activities and events

Actions and events organised in the natural spaces on the urban peripheries relate most often to:

- Nature (environmental studies in schools and in discovery centres, organisation of parties, discovery days)
- Sport (organisation of marathons)

Public implication in site activities (as in management and protection), when it exists, relies on a partnership with the associations (nature protection associations, sports associations, professional associations).

In this way, in Mans, about thirty associations and organisations (LPO, the horticulture Society...) contribute their passion and knowledge of nature while the Nature Ark offers a favourable framework for this. This is done taking into account material and financial aspects of activities and development. These associations meet up regularly in order to study and swap ideas on site development. Once a year, all the partners get together to assess the yearly balance.

In Collserola, public participation passes through a voluntary organisation with recognised rights (training, advantages in Park products and services).

Institutional management and the notion of the life of the site are therefore two indispensable components to guarantee site visits and public interest.

- **The economic and financial balance and resources.**

Projects that are carried out on natural spaces on the urban peripheries are almost always the subject of public co-financing. The Greater Lyon nature projects are for example co-financed by Greater Lyon and the Rhone Department (80%) and by the Councils (20%).

In Grenoble, the Rhône-Alps Region co-finances the setting up of the Local Management Plan of Spaces with the Community of Councils of the Grenoble agglomeration.

These financial aid is necessary because there cannot be a financial balance within the management of these spaces with a strong social vocation in which, in response to the willingness of the Collectives, free access must be preserved.

Only the commercial services offered on the sites (delegated or not) can attain a financial balance.

4.6. Coherence on a metropolitan scale

All these metropolitan areas aim to set up a network and co-ordinate the management of their Natural Spaces. However, this approach is still often embryonic.

Only a few cities have set up operational tools:

- **Town planning documents of the agglomerations generally show their willingness for coherence in their ENP:**

- Green and blue networks in Brussels,
- Green belt and blue plan in Lyon,
- Natural coherent network in Grenoble,
- Green belt in Vitoria and Barcelona...

- **We have found only few cases of agglomerations which have set up totally co-ordinated operational policies.**

There is no unique instance of real co-ordination, on a grand scale, in order to insure the necessary links between spaces. One approach is taken on by Greater Lyon in order to set up nature projects. However, this does not apply to all the spaces or all the parks (notably the departmental ones).

- **For the moment, only Brussels and Lille have created a unique management body.**

The Brussels-Capital Region created the IBGE (Environmental Management Institute of Brussels). It's assignments are multiple: granting environmental permits and of several categories of agreements and certificates, control and surveillance for the respect of environmental legislation, monitoring of the state of the environment, management and development of regional green areas and finally, public and business environmental awareness.

The Urban Community of Lille has taken control of Natural Spaces and has created the Metropolitan Natural Spaces Agency, which includes a certain number of syndicates (all of which have not yet joined the Agency). This agency makes global decisions on the whole collection of spaces though it is still managed from the sites.

- **Some agglomerations have set up global communications that do not necessarily translate as global management.**

This is the case for Greater Lyon that informs on all the Nature Projects.

This is also the case for the Urban Community of Montreal where the dynamic communication strategy concerns all nine of the Nature Parks of Montreal.

Conclusion

The study carried out by the Miribel-Jonage Nature Park, on behalf of Fedenatur, within the context of the metropolis phenomenon, demonstrates the growing importance of natural spaces on the urban peripheries within public policies.

From varied geographical and physical situations, it emerges that the ENP occupy an important surface and that they fulfil vital city functions.

The urban sprawl of the cities entails a loss of natural heritage and a risk for future roles, notably agricultural and hydraulic functions, fulfilled by these spaces.

This is why town planning policies aim to protect these spaces at all levels: European, State, Regional, Departmental and local Services. We have stated that, in France, there has been a recent reinforcement of protection regulation measures.

On the other hand, the public increasingly visits these near-by natural spaces, considered important for the quality of life (leisure, relaxation, hobbies and contact with nature). This therefore strongly incites a social development policy and a controlled opening of these spaces.

The urbanism regulations, whose lasting effects have not always been agreed on, cannot alone insure this double guaranty of environmental protection and public access.

This is why it is important and also urgent to set up a policy for development projects on a metropolitan scale that requires an operational phase.

The emergence of projects always means a minimum of Land Control and an identified public Works Master.

Meanwhile, Fedenatur considers that from the experience of its members these necessary conditions become insufficient to

guarantee the sustainable development of sensitive natural spaces.

A quality project development approach is needed:

- Professional conception (ecological balance, usage diagnosis, impact of measures on the human component and on the protection of natural spaces)
- Operational management to be taken into account from the launching.
- Partnership with local economic and association actors spread throughout a long maturing period of the project.

The Fedenatur study has highlighted the fact that only some agglomerations have truly entered into this project logic. There is often a lack of clear-sightedness, anticipation and political motivation for the emergence of Community-financed projects. It seems desirable that this growing awareness operates on the scale of the built-up area in its entirety, and that the nature projects, co-ordinated and structured, should represent a larger dimension of metropolitan order plans.

In fact, through the harmonisation of social, economic and environmental approaches, which metropolitan order plans insure, an important network of sustainable development policies will be created in the future.

Aside from the metropolitan approach, Fedenatur aims to favour the emergence of policies willing for protection and development in these spaces at a national and European level. Thus, the ENP would be recognised as integral parts of urban policy.

Problems with urban planning in the Vitoria-Gasteiz Green Belt

Jon Bárcenas, Centro de Estudios Ambientales (CEA) – Vitoria-Gasteiz (Basc Country, Spain)

Following several years of intense work regenerating and recuperating the natural spaces surrounding the city centre of Vitoria, the Centre for Environmental Studies has managed to consolidate the physical area of what we call the Vitoria-Gasteiz Green Belt (image 1). The work began in 1993, with the recovery of some abandoned gravel pits in the Zabalgana forest (image 2), and it is continuing today with an ambitious plan to regenerate the Zadorra River where it runs through Vitoria. The work has been carried out mainly in the country, on the physical support of the river, and the achievements have been spectacular (image 3). All the singularities and idiosyncrasies of the spaces on the urban peripheries are reflected in the concerned projects.



However, in terms of the physical conception of the Green Belt, urban planning and legislation have not followed a parallel or harmonious process. There is at the moment a legal vacuum with regards to urban planning in periphery areas. The General Plan for Urban Order (PGOU) does contemplate this, but in a fragmented and partial way, without the global vision needed to bring the criteria together with respect to the Green Belt.



Alegria River Corridor, October 2001

Throughout the year 2000 the CEA has been studying ways to provide these areas on the city margins with a concrete and coherent town planning body. Following several meetings with the technical authors of the PGOU, and having discussed the various possibilities, an analysis of the planning situation has been carried out along with a study of the alternatives. This in turn has been followed by what we call the **Strategic Plan for the Vitoria-Gasteiz Green Belt**. However, due to the fact that neither today nor in the near future can a specific form of planning be adopted to include the Vitoria-Gasteiz Green Belt in its totality, we intend to show in this seminar that the PGOU is not in itself a planning figure that will be registered in the city planning policies.



Examples of overlapping land use labels and classifications in the Salburúa Park

On the other hand, and this has been the proposed solution, there is an aim to draw up a framework document called "STRATEGIC PLAN". This must serve to increase public awareness, to find a consensus in the political community of the city and to act as a reference for future work. Steaming from this plan there will however be planning concepts, mainly Special Plans, to regulate the different parts of the Belt, differentiating amongst the varied sectors in terms of their characteristics and needs.

The General Plan for Urban Order. In order to fully understand the reasoning behind our choice of solution to the problems of legal planning of spaces on the urban peripheries, one has to look back a few years.



What has in fact been the origin of the present legal situation? How does one face planning of these areas which are neither city nor countryside?

The Land Law, later to become the Urban Planning of the city, took a huge step forward in 1975. It was at this point, when rustic land came to be considered, as land **not designated for building**. Delimitation did not only come from a principle of exclusion (what is neither urban nor building land), but also from the inclusion criteria of spaces that due to their characteristics required special protection to preserve them from construction activity.

City planning collects these premises in the 1986-1990 version. This stems from the fact that beforehand (General Plan of 1963) the land that had remained rustic was considered as a mere resource to be exploited by the city without taking its own potential into account. Thus, the PGOU of 1986-1990 developed the new concept and established the definition, classification and a set of rules for non-building land. In this way a land balance is sought between what is rural and what is urban.

At this point we come to the new General Plan, drafted in the year 2000 and currently being revised. In the Memory of the Plan and specifically in the **general proposal** for the municipal territory, the figure or concept of a Green Belt is included as a new future element with urban expansion projected towards both the east and the west. The need for the existence of this is alluded and the different elements that make up the Belt are defined and described: Zadorra Park, Armentia, Olárizu, Salburua and Zabalgana. In a very general way the set of rules for usage are also established:

. "Relaxation and leisure activity use will be favoured, accordant with the conservation of the environment, while also aiming towards greater environmental knowledge and interpretation.

. "Hunting activities and indiscriminate motor vehicle circulation is banned. In addition, all forms of exploitation of natural resources for profitable ends, construction activity and infrastructures not related to the priority use of these spaces, or that could have negative effects on the area are also banned.



Natural space to recuperate

However, the limits are not established, there is not clear delimitation and the possibilities of increasing and consolidating the Belt are not contemplated.

In terms of the **general dispositions and set of rules for the soil and habitat**, the parks within the Green belt fall into the General Systems category, General System of Open Spaces, concretely as General System of Urban parks and Green Zones. The definition and inclusion criteria, article 4.02.15, referred to in the General System of Urban Parks and Green Zones, states:

. "To identify the parks that make up the green belt for their particular significance, and that in turn make up a succession of parks. These lie between the urban land and building land that surrounds the city of Vitoria-Gasteiz, thus allowing for a transition towards the natural environment".

. "The set of building and usage rules will be established by way of a Special Plan".

Therefore, part of the spaces on the urban peripheries is already currently under protection, but without any form of single or global criteria. There is a veritable puzzle of different qualifications, classifications and rules of land ownership that affect these spaces. To aspire to superimpose a new specific Planning method on all the existing conditionals does not seem feasible. This is why we have created this "**Strategic Plan for the Vitoria-Gasteiz Green Belt**". It does not have the legal limitations of a urban planning policy, and will establish the concept and objectives for the spaces on the urban peripheries making up the Green Belt.

This document promoted by the CEA, also aims to harmonise the duties of the different municipal departments in the city peripheries, and will mark the political, social and cultural direction of the city in terms of these wonderful ecotones, which increasingly become integrated with both the city and the countryside.

The structure of this Plan, currently in process, is the following:

1. The Concept.

2. Background.

- Historical evolution of the land.
- Previous actions.

3. Current context.

- Land analysis: uses, properties, infrastructure, urban planning.
- Conclusions.

4. Future strategies.

- The convenience and opportunities of the Strategic Plan.
- Aims and objectives of the Strategic Plan.
- Programme of action:
- Restoration and conditioning of spaces.
- Infrastructure and facilities.
- Maintenance.
- Public use.
- Environmental formation, education and interpretation.
- Circulation and promotion of public use.
- Public participation.
- Environmental information.
- Studies and investigation.
- Vigilance and control.
- Development and application of the Strategic Plan:
- Management body.
- Budget and stage plan.

5. Development tools for the Strategic Plan.

“Nature Projects” in Greater Lyon

Joëlle Diani – Agence d’Urbanisme pour le Développement de l’Agglomération Lyonnaise (Rhône-Alpes, France)

The relationship between the city and the countryside, and between built-up and non built-up areas is in full evolution. The scale and coherence of development policies have been forcibly reconsidered. The intense demand for a “green lungs” nature on the city limits, the growing concern for the environment and lastly, though most recently, the legislative reforms have all contributed towards this. It has also favoured the importance given to natural and agricultural spaces on the urban peripheries within the Lyon metropolis town planning policies.

This evolution mainly involves the following:

- An approach towards a “natural” mesh or network of non built-up areas. Natural and agricultural land is no longer to be considered solely as negative space “left over” from urbanization. Henceforth, it will be better integrated with the I and development objectives. From now on environmental protection and the continuity of the ecosystems will become associated with the aim to control the urban sprawl and leisure access.
- To evolve from a policy of land protection to an increase in management and leisure policies for natural and agricultural spaces.
- The development of partnership policies amongst land collectives, towns and also the socio-economic players such as the farmers.
- To recognize the multi-functionality of the natural and agricultural areas. These new concepts are best defined in terms of sustainability of agricultural activity in the peripheral areas and the consequent opening up of these areas for public leisure activities and space management.

It is within this new context that the eleven nature projects of Greater Lyon have been registered today.

The Genesis of the project: the adoption of a city green belt.

The city of Lyon occupies 50,000 hectares within the greater Lyon limits and boasts of 23,000 hectares of non built-up land of which 10,000 hectares is made up of agricultural space. It is a rich and diversified landscape and a veritable ecological patrimony thanks to the presence of numerous reliefs that turn the Lyon landscape into an architectural design. It is also due to the important water network that enables the connection between green spaces and, thus, the existence of large natural expanses.

The ecological urban charter together with the adoption of the green framework principle, “city green belt”, both passed in 1992, marked an important stage in the conservation of this natural patrimony. Since recognizing the principle of “a continuous network of predominantly green spaces”, Greater Lyon has become engaged in a policy of active management and protection, for these spaces. This is achieved by linking natural and agricultural sites on the urban peripheries to the city centers, whilst insuring their ecological, social, landscape and economic functions.

Let us remind ourselves that at the time of the ecological charter vote one quarter of these spaces were destined to be consumed by urbanization projects already registered in the town planning documents.

At the same time as the green belt principle was being validated, the ecological charter registered a series of projects with the Chamber of Agriculture in order sustain and accompany agricultural activity on the city peripheries. The projects aimed towards the creation of managerial and development tools, “nature projects” and a partnership convention. The subsequent revision of zoning regulations (POS) in 2001 consecrated the principle of a green belt by integrating it into the spatial schema for city development.

The urban sprawl has been seriously checked with the reduction of 6% of building land which is now reclassified as natural and agricultural zones.



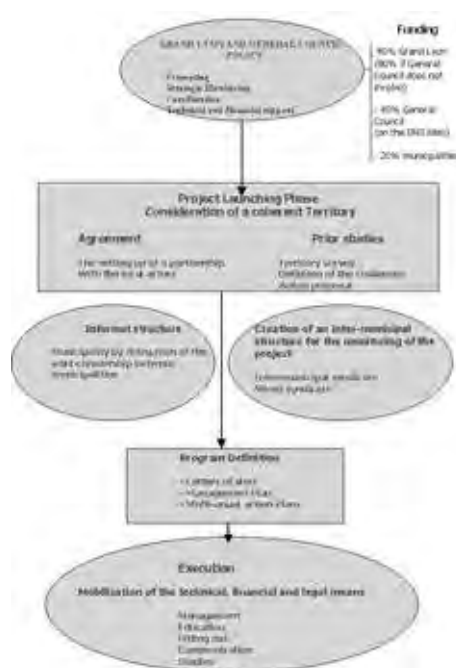
Alongside the Lyon urban community approach, there is that of the Rhône Department which, in 1991 was granted the vote for departmental tax for sensitive natural spaces (TDENS), deducted at a 1% rate on all new construction. This in turn allowed for new competencies and the means to protect the numerous sites of ecological and landscape interest and of recreational value, as well as manage them and open them up to the public. It is in this way that the Greater Lyon nature projects in sensitive natural areas will be able to benefit from the financial support of the Rhône Department.

The nature project tool.

The choice of the term “nature project” was made in 1992 as an attempt to echo the term “urban project”. The idea was that the “urban” community and its services should find the means to develop a “non construction” culture in much the same way as it was able to develop urban projects and public spaces in the city. Numerous handicaps can be mentioned to help explain this cultural and structural heritage amongst which, the urban community’s lack of legal competencies to intervene in the green areas (council responsibilities) and, above all, a serious lack of rural culture and know how, in which case the empty space in a given area becomes doomed to spatial expansion. Thanks to a growing ecological awareness, and the adhesion to the concept of a more sustainable development and a less space consuming city, currently there is the possibility of registering nature projects as projects of general interest. The urban community can always intervene via their particular competencies

The nature projects follow six main aims:

- To manage and maintain natural and agricultural spaces on the urban peripheries. This is carried out directly through the appointment of departmental and urban community maintenance teams, or indirectly by maintenance agreements with the farming community.
- To restore and develop the natural and agricultural habitat. A management plan is drawn up for each and every one of the nature projects.
- To sustain farming activity on the urban periphery. This is done through maintenance agreements as well as by paying the individual farmers for managing the space. However, it is also carried out thanks to a grant given by the Chamber of Agriculture in its aim to sustain economic development projects.



- To develop a controlled reception of nature leisure activities, to create lit up walking areas and to increase public environmental awareness are some of the preventive measures set up in order to tackle a potential conflict of interests.
- To promote environmental education practices. Hence, all projects are associated with educational programmes directed at both school children and the general public. These pedagogic activities complement the information given on site on the various information panels found along the walks.
- To start to approach a partnership between the site collectives and the socio-economic players. This partnership comes in a variety of forms, a financial partnership amongst the collectives within a syndicate framework and a permanent dialogue with the associations and the local players involved in defining and maintaining the projects.



Today and on a much larger scale, several evolutions could lead towards the adoption of better-devised and co-ordinated policies. It is a matter of the Land Development Directive project (DTA) conducted by the State. The setting up of a green framework “the network of natural, agricultural and landscape spaces”, on the scale of the urban area in question, could lead to an improved articulation between the projects for both the community green belt and the natural and farming areas within the city.



It also concerns the project for elaborating a land coherence schema (SCOT) for Lyon. The concomitant elaboration of SCOT on the peripheral areas should be the opportunity to develop new solidarity and complementary measures between Greater Lyon and its fringes.



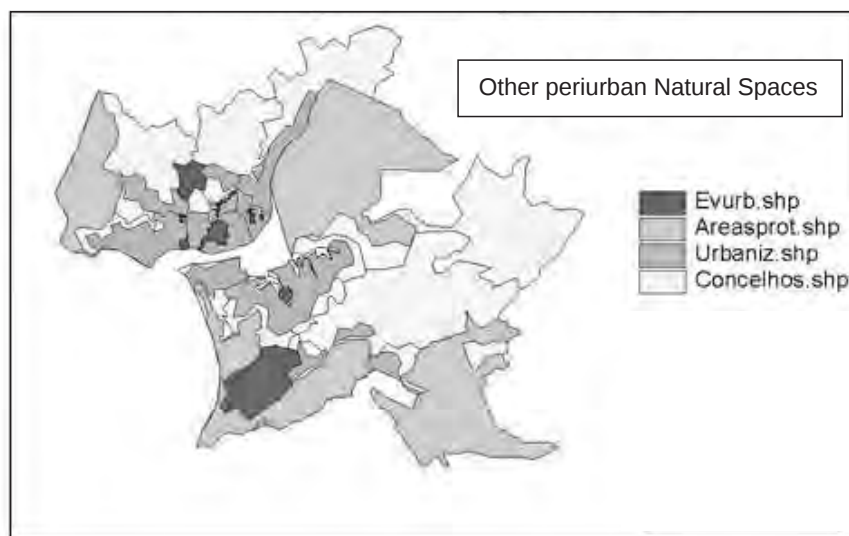
Town Planning and Intervention Projects in Natural and Semi-Natural Spaces within the Metropolitan Region of Lisbon

Carlos Souto Cruz, João Tremoceiro, João Castro e Lucio do Rosário – Parque Florestal de Monsanto (Lisbon, Portugal)

Despite the existence of a regional co-ordinating body operating in the entire Lisbon Metropolitan Area (AML), town planning and management responsibilities are entrusted to various bodies, such as the Environment Ministry and the Municipalities, without there being any co-ordination amongst them.

What is essentially an AML strategic plan, is at the moment undergoing a public discussion stage. In this way we will be proceeding with 17 master plans within the AML (that of the municipalities) without any coherence or relationship between them.

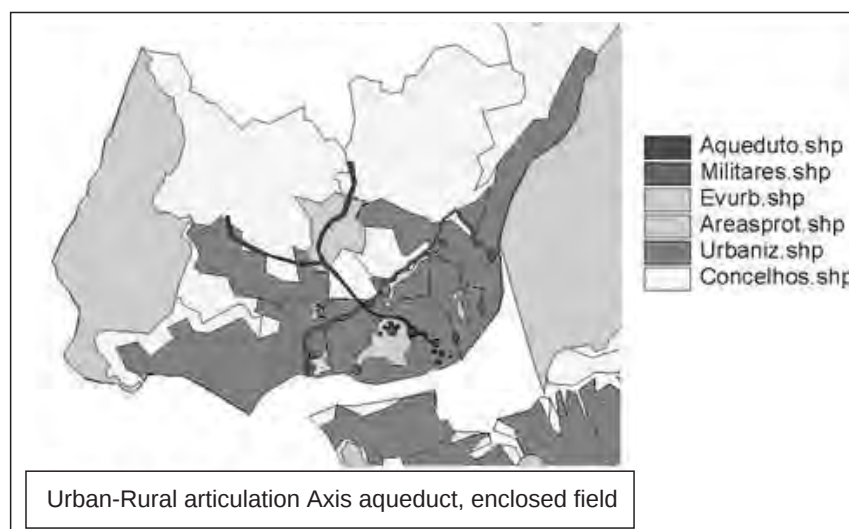
The AML is an extremely varied zone in terms of landscape. In general terms, to the north of the Taj there is a landscape of hills, agricultural areas and hedges (grove structures), while to the south of the Taj there is a large sandy plain with forests of maritime pine trees and cork oak trees.



The AML is also a very populated region (1/3 of the national population lives on 1/10 of the land). Unfortunately it also suffers from a seriously uncontrolled urbanisation.

The large natural spaces (over 80,000 hectares) form a green belt around Lisbon of great ecological value, with lagoons, Limestone Mountains, dunes, estuaries and forests.

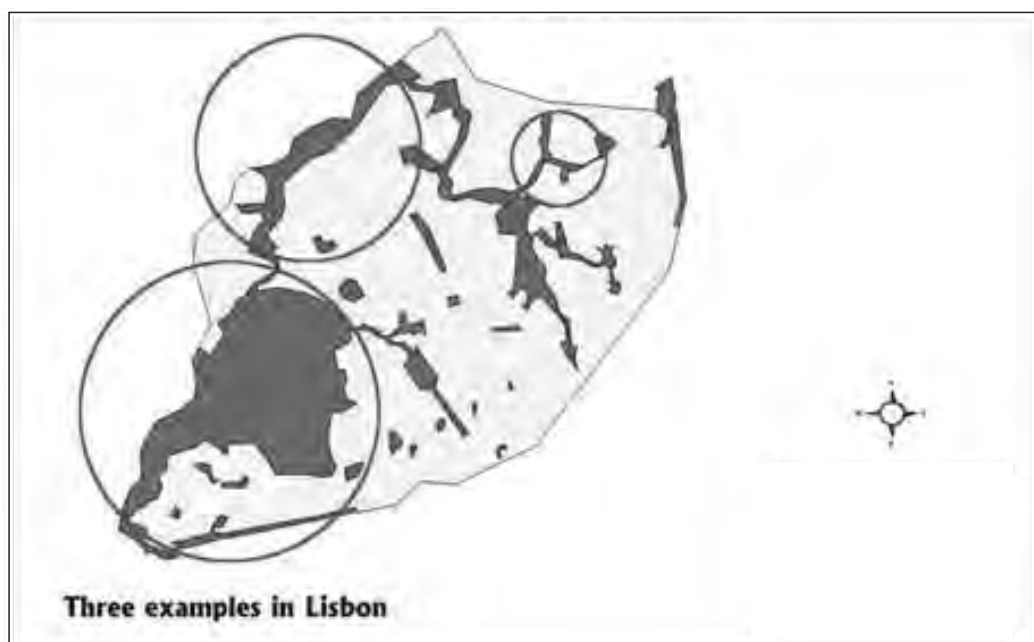
Another 5000 hectares of out-lying and inner city green spaces (private or public) are also to be found within the AML, dispersed around the urban structure.



In the absence of any kind of global town planning concerned with these spaces between the city and the country, significant land elements are being researched. These include the aqueduct and the removed military camp, as well as other interesting elements such as the old farms (some of roman origin), archaeological elements (dolmens, etc.) and a geological wealth (dinosaur foot prints).



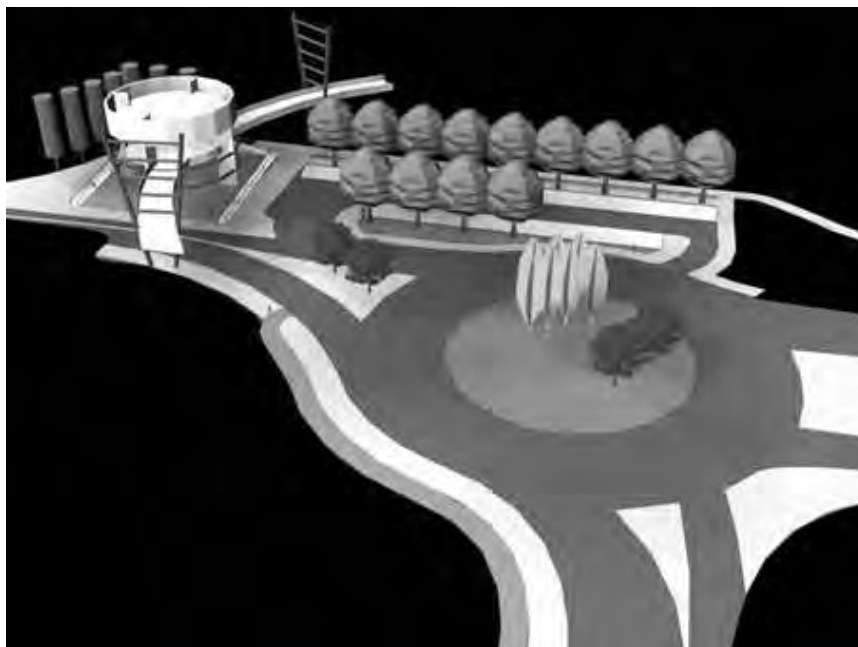
We have attempted to develop a coherent green belt in the most heavily urbanised area (the municipality of Lisbon). From the point of view of the basic pressure exerted, three situations pose themselves.



The first case is that of the Monsanto Park, a park of 1000 hectares with a rigid border which has permitted the ban on all construction. The park is marked by the presence of a very dense and continuous forest, which has distanced a great part of the population. A rehabilitation plan is in process to resolve this problem.

Within the plan, a clear and visible entrance has been envisaged to act as a liaison between the urban area and those zones of the park that are already developed. In this entrance area there are plans to install a striking feature made up of a structure built on a lake with an elevated pedestrian passage.

The dichotomy between the urban zones and the park is very strong. There is an attempt to change it through different types of interventions, from the least fierce at the centre of the park to the very intense at the peripheries. That is to say, in those areas in direct contact with the city. In these last areas, there is a strong interest in creating transitional green spaces for a very intensive usage (with vegetable gardens).



The second example is that of the periphery Park of Lisbon with its original 250 hectares now reduced to a mere 100 hectares. This occurred once the necessary modifications had been made to the master plans allowing for urbanisation. It was born from the need for mass edification, to house the inhabitants of the Lisbon shantytowns. Presently three different green zones of 15 to 30 hectares each are in the project or creation stage. The possibility of physical links between them (cycling or walking paths) has been preserved.

The third noticeable example within the urban web corresponds to a green stretch marked with pedestrian links. In order to do this, the projected location for the sports infrastructure has been changed, closed green areas (tree nurseries) have been opened, overhead passages installed, etc.

The question of continuum is also very important on other scales, since it links the large natural spaces of the AML by severing

the large urban zones with linear green areas (small valleys and other areas of limited interest for urbanisation).

On the southern edge of the Taj, protected by the Life Programme, and in direct contrast to what occurs on the northern edge, a specific town planning and management project for the natural spaces is at the last stages of completion. This has been carried out with the participation of State and local community bodies as well as private companies.

The aims of the programme, which we will try to apply to the north side of the Taj (where the Municipality of Lisbon is to be found), are essentially the following:

- Town planning and management of those areas already classified as parks or natural reserves.
- Management measures for fauna and flora as well as the habitat considered as priority protection within the context of the habitats directive 92/43/CEE.
- The creation of a network of natural and semi-natural corridors in the entire area of the AML, and essentially to link the protected areas.

This objective equally includes the balancing between vital measures for the protection of natural, historical, archaeological, geological and cultural assets, and the growing need for leisure areas for the AML population.

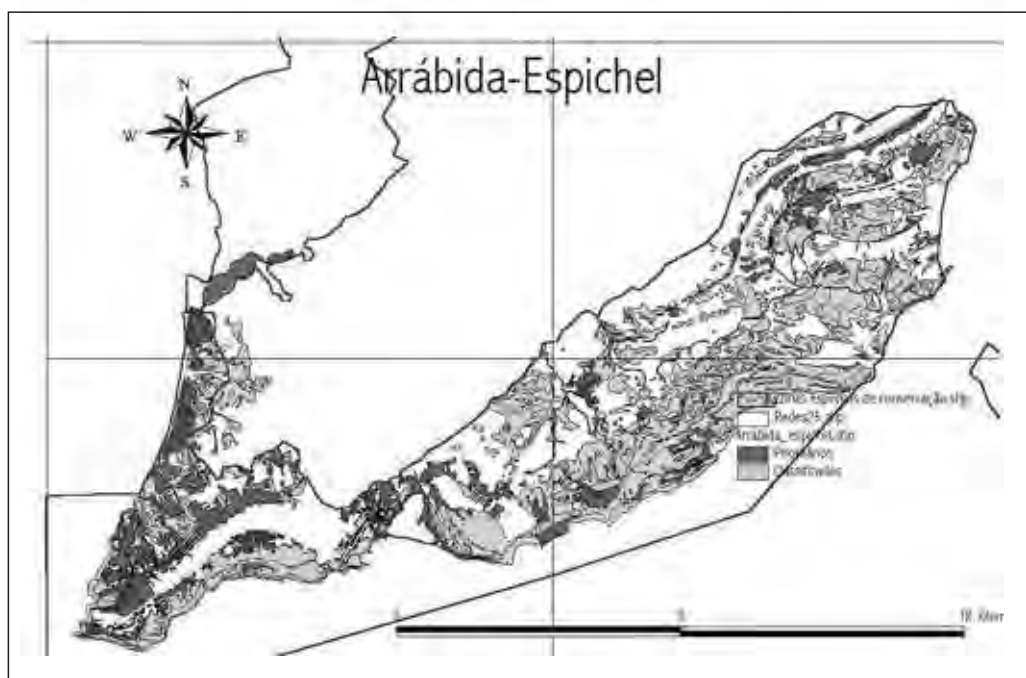


For this reason we have integrated analysis relevant to ecological and pedagogical networks for the whole of the land area in question. In the protected zones we have put together an inventory of the habitats classified as priority, non-priority and others not included in the CEE directive.

Within this study, botanical reserves (for example those reserves for the protection of the priority species *Convouulus fernandesii*) have been programmed alongside the demarcation of zones totally protected and with conditioned access.

The aspects relevant to hunting are also tackled in so far as there are two existing systems in the AML (the free and the conditioned scheme). These two have very different impacts depending on the protected species (some birds of prey and specially the Iberian lynx, which is to be found in the region).

The programme also includes forest fire detection and control measures, the programming and installation of a network of centres for nature interpretation and nature discovery routes in the natural spaces.



Other very simple measures are in the process of being established. These include a ban on motor car access, and particularly the control of cars accessing the dunes.



Planning and Management of Protected Natural Area Systems in Metropolitan Areas: The Experience of RomaNatura

Giovanni Cafiero - RomaNatura's Urban Planning Office (Rome, Italy)

Characteristics of the Roman Territory

Rome's development patterns throughout history have undoubtedly had an effect on its surroundings, which has a particularly rich variety of waters and landscapes. Indeed, one of the most extraordinary characteristics of Rome is that peculiar union of art and nature that throughout history has deeply impressed renowned tourists such as Goethe and Stendhal.

After World War II, Rome grew very rapidly. However, this did not completely break its delicate balance between man and nature. For example, the archaeological areas of Veio and ancient Appia still encroach into the city where they then follow a special corridor, the Tiber River, proceeding then to the Aniene valley and the coastal area, which is still rather well preserved. All together these areas are still semi-natural, although they are heavily eroded in their eastern and southern parts. They form a complex system which is rich in historical, archaeological and environmental aspects.

According to the Atlas of Roman Flora, a high number of species live within the so-called Great Ring Area, that is, the area of about 360 square kilometers limited by the main highway that surrounds the city. In figures, there are about 1,200 species, that is about one-fifth of the total in all of Italy (5,599 species).

It is not just a matter of quantity; 80 percent of these species are local and indigenous to the Roman territory. Only the remaining 20 percent have been imported; in other cities of central Europe imported species frequently reach up to 50 percent of the total flora.

In this context, the green areas that encroach into town, and especially in the woods on the west side, represent a veritable genetic reservoir.

No less can be said about the local fauna; there are 144 species of vertebrates (14 reptiles, 101 birds, and 23 mammals), plus seven more recently imported species. And fifty percent of birds that make their nests in the region do so within the city of Rome.

Rome's urban growth in the second half of the twentieth century had a heavy negative impact on its landscape and environment. In spite of this, Rome holds a natural asset of unique value. At the same time, however, the halt of demographic growth in the area did not

lead to a reduced consumption of soil and natural resources. On the contrary, Rome's environment suffers heavily from the pressure of the development of inefficient settlements and buildings, new standards of living with patterns of high consumption, and new infrastructures that ignore the characteristics of the local ecosystem.

Within this context, most of the significant reforms and changes in territorial planning were introduced with a view to limiting these pressures while promoting the conservation of certain areas as well as the natural richness and original landscapes of the Roman "Agro," that is, the rural areas within the Roman territory.



Protection Policies

Growing awareness of the heavy losses of historical and environmental assets due to demographic and urban growth led in the last decade to a broad cultural and political consensus on the need for environmental protection and new patterns of development. Citizens' associations and committees requested and obtained approval from the City Hall for the most important initiatives, such as identifying a set of natural areas to be protected, increasing green areas in urban planning documents, halting the utilization of rural areas for marginal urban activities or settlements, increasing the protection of rivers, and approving a list of minor cultural and environmental monuments to be specifically protected.

Most of these initiatives are included in the 1997 City Master Plan. Rome City Hall's proposal for a set of natural areas to be protected was further considered by the regional authority (Lazio) and approved by regional law 29/1997.

The set of green areas can be symbolically and physically represented by the image of a large green wheel, as it includes the rural areas surrounding the urban settlement, with green areas in the form of spokes that penetrate into the city down to its center.

According to official figures, the green areas represent 73 percent of the Roman territory and include in particular agricultural zones, natural reserves (mostly used for agriculture) and public and private green areas, which are under special regulations. When considering the amount of green areas in absolute figures, Rome gives a particularly positive impression in comparison with other large European cities. However, it should be noted that the full territory of Rome itself is particularly large (1,290 km²).

Within this context, building patterns still represent a negative factor. They occupy vast areas of the city territory and consume a large amount of soil, in addition to having severe environmental consequences. There are special difficulties with public infrastructure and services, as those related to mobility and transportation are especially inefficient and environmentally unsound.

According to the preliminary version of the Environmental Action Plan of the City of Rome (1997), the average population density of the Roman territory is 2,150 inhabitants per square kilometer. This figure reaches 7,700 in Milan, 8,810 in Barcelona, and 20,500 in Paris. The most significant figure, however, is in regard to the classification of soil uses: discontinuous settlement covers 14.77 percent of the total land area, equivalent to 19,000 hectares.

The consequence of such a diffuse pattern of settlement is the multiplication of infrastructure and technological networks. Their pressure on natural ecosystems is often heavier than that of buildings *per se*. It is for this reason that the 1997 City Plan specifically foresees procedures to evaluate the environmental impact of such activities in rural and semi-natural areas.

At a broader level, during the development of the new City Master Plan, a proposal was submitted in October 2000 regarding the development of an ecological network, that is, technical provisions and measures focusing not only on protected and green areas already included in the Plan, but also on areas where settlements exist or can be built, with a view to considering the entire territory of Rome as one complex but integrated system. This proposal is a step in the right direction, although its main limit is that it is superimposed on, instead of being integrated into, the building forecasts within the City Plan. Such a system approach has two particular advantages: it would allow for a scientific examination of the role of natural areas, and it would make these areas particularly visible for planning purposes as well.

Management of Protected Natural Areas

According to the law that established the system of protected natural areas in Rome, the management of such areas is assigned to one body only. Its tasks include to control the uses of these areas, as well as to stop activities that would alter their characteristics, as all initiatives on these territories need the body's approval before being implemented.

This body, RomaNatura, the regional authority for the management of the protected natural area system in Roman territory, covers 14 protected natural areas, for a total land area of over 14,000 km².

The mere existence of such an institutional body has many important advantages; for example:

- it facilitates a better understanding of the urban ecosystem;
- it represents a specific and sole reference in the field of environmental protection;
- it promotes better coordination of activities in protected areas;
- it facilitates communication between the public administration and private citizens and associations; and
- it permits cost-effective management of a broad set of areas.

This new institutional organization, however, also poses problems of power balance. RomaNatura is an independent body; it is included in the regional organization, and as such it is "above" the city administration. Yet at the same time, it is very close to the city administration for obvious, practical reasons. The city administration requested the establishment of protected natural areas, but once approved, all management activities were assigned not to the City Hall, but to RomaNatura, which institutionally lies within the regional framework. The city administration thus lost control of a vast portion of its territory. At the same time, RomaNatura does not have financial autonomy and actually depends partly on City Hall contributions, which account for about one third of its annual budget. The balance in power relations between territorial authorities is therefore a rather delicate issue. Within this context, positive contributions could come from broad participation by local communities and citizens' associations that wish to protect and preserve the environmental quality of the territory where they live.



For this reason, since its establishment, the regional body RomaNatura has assigned high importance to the broad and direct involvement of local associations and committees in the management of protected areas. Indeed the principle that leads to this policy is that conservation *per se* is not a valid goal, as it needs to be associated with the improvement in the quality of life of the people living within that territory. In other words, there is a need to identify and promote those activities that combine environmental conservation with the possibility for citizens to make use of the protected territory.

Planning Processes in Protected Natural Areas

Planning 14,000 m² is one of RomaNatura's most important tasks. The planning processes related to protected natural areas need to consider the scientific, social, economic, administrative and institutional dimensions as interrelated and complementary, and all of these aspects need to be considered and coordinated.

This said, the specific characteristics of Rome's protected areas, which lie within an urban-metropolitan context, clearly make the comprehensive planning process particularly difficult. The relatively small size of the new RomaNatura organization adds an additional problem.

Within this framework, the planning process starts with the identification of all required inputs; the scientific, technical, legal, economic and social dimensions need to be analyzed and then integrated.

This is indeed what happened during RomaNatura's first year of activity. Over 100 researchers contributed analyses of the environmental, historical, cultural, landscape, and socioeconomic aspects and characteristics of the protected areas. Geologists, biologists, economists and others participated in this task, which covered the entire territory of Rome, and more specifically the protected natural areas.

The second phase of this process was to examine all the institutional information already collected by RomaNatura, such as institutional exchanges, official evaluations, controls, and so on.

Furthermore, a public desk was opened at the beginning of the planning process to facilitate and encourage citizens' participation. Associations and committees were asked to contribute their comments and suggestions regarding activities planned in the protected areas. Public meetings were specifically organized to offer an additional occasion for dialogue between RomaNatura and local communities. Indeed these communities often hold deep knowledge of their territory and its history, as well as the characteristics that are essential in planning. Such public meetings have been organized for all of the protected areas, and their results included in a subsequently compiled dossier of information. The following are the main categories for contributions by individual citizens, local committees and associations:



- requests for specific attention for degenerated areas and those neglected by public authorities;
- requests for the enlargement of protected areas and the preservation of cultural/historic elements in that territory;
- concerns about and opposition to new infrastructure; and
- requests for activities which would promote the correct use of the protected areas, as well as environmental education.

Local communities' participation revealed a deep mutual interest in the protection of nature and citizens' requests for protection in an urban and metropolitan context. On the basis of all the documentation collected, under the coordination of RomaNatura, the team in charge of developing the plan for all protected areas produced a draft text. This text provides a synthesis of the strategies, goals and expectations of all the parties involved: public and private bodies, local communities and RomaNatura itself. The draft further highlights all the main issues and problems that will require further analysis, and it proposes different management solutions according to the different areas considered.

The draft text was then submitted for consideration to the regional and municipal authorities, to environmental associations and to agricultural and industrial stakeholders, the participation of all of them being essential to the proper conservation of the ecosystems in vast areas. Finally, the executive board of RomaNatura officially adopted the plan.

The plan will be publicized, and further observations and comments will be requested and considered, with a view to eventually updating and improving its provisions. At the end of the process, RomaNatura will submit the plan to the regional authorities for final approval.



Broadening the base of participation enriches the planning process and facilitates the circulation of information and the active role of all interested citizens in the management of natural protected area systems. This is a strategic factor for a sustainable future for Rome and its territory.

Natural Spaces on the Urban Periphery in the Geneva Basin

Bruno Beurret – Departement d'Organisation, Infrastructure et Logement, Canton de Genève (Switzerland)

1. Context and stakes, a cross-border agglomeration

1.1. From Canton to cross-border agglomeration

The Geneva Canton, with its 420,000 inhabitants, cannot be isolated from its hinterland in terms of natural spaces on the urban peripheries and land development in general. It includes the Nyon district within the Vaud Canton, the Pays de Gex in the Ain Department and a less individualised area, the Haute-Savoie of Geneva in the Haute-Savoie Department. This cross-border agglomeration has over 700,000 inhabitants.

Seen as a whole, the cross-border basin is made up of concentric circles: a dense urban and suburban centre, surrounded by an important rural belt and, beyond the Geneva borders, by vast intermittent and less dense urban periphery zones, surrounded in turn by the mountain massif. Furthermore, the basin accommodates diversified natural environments linked up by a hydrography network, examples of which are the Rhône, the Arve and the Léman Lake.

1.2. The common interests of the basin territories

In the Geneva region, town planning and infrastructure development poses a serious threat to the natural spaces on the urban peripheries. In fact, the agglomeration shows a particularly marked demographic dynamism, the population having almost doubled in the last forty years. This is conveyed as an explosion of suburban town planning, heavy land consumption, the fragmentation and enclosing of natural areas and the partition of the rural landscape in the peripheral areas. This has diminished by 6% in Haute-Savoie over the course of ten years.

At the same time, the high density of city population leads to an important and diversified demand for open-air leisure areas. These needs will grow, along with the increase of spare time, future town planning activity and the continual demographic growth. The population figures are estimated to reach almost 850,000 inhabitants by 2020.

A co-ordinated policy for natural spaces on the urban peripheries therefore becomes necessary. This should combine measures of protection of the natural environment, maintenance of agricultural activity and open-air leisure activity development. It must also be set up both at the level of the different areas in question and of the whole cross-border agglomeration.

2. The Canton Master Plan and plans of action in Geneva.

2.1. The Canton master plan

The Canton master plan acts as a planning tool for the Geneva Canton. Adopted in 2001, it lays out the town planning aims, the territorial co-ordination and development plans to be materialised in 10 to 15 years from now. This is relevant on several fronts: urbanisation, environment, transport, agriculture and accommodation amongst others. As opposed to earlier plans, the planning of these natural spaces on the urban peripheries is an important element of the current version.

The canton master plan is structured round several tools:

- The concept of canton town development, sets down the more important tendencies, conveyed as precise objectives, and takes an inventory of the smaller ones.
- The canton master plan includes around sixty projects.
- As a general indication, both the urban development plan and the rural development plan portray the land project in a more detailed form.

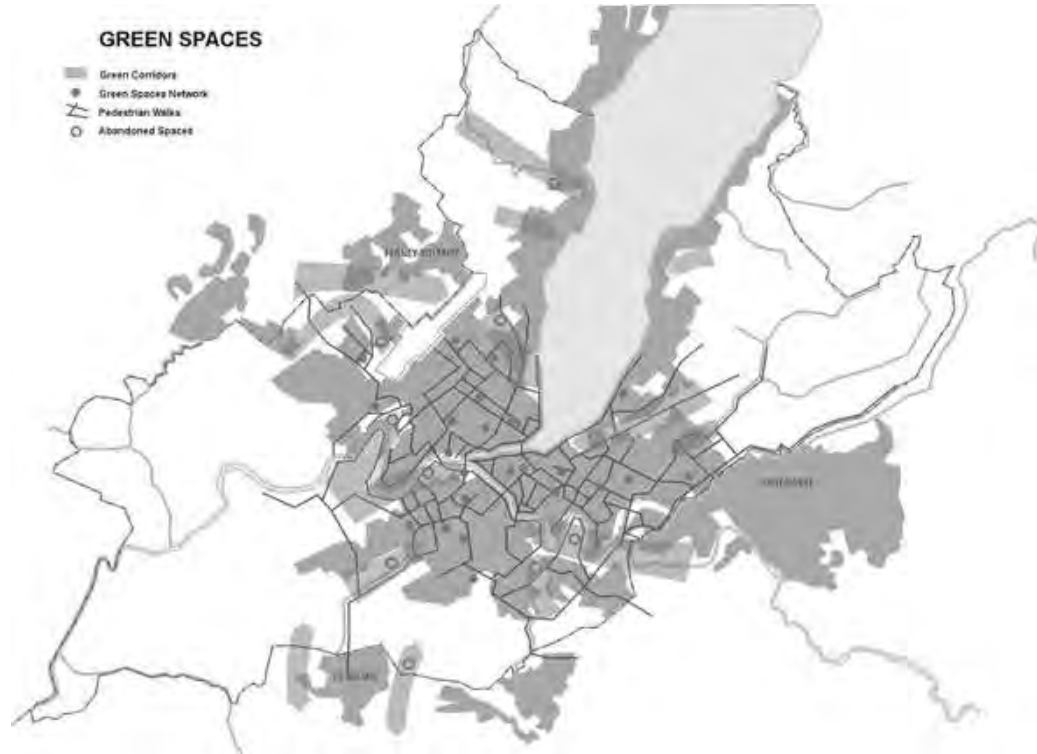
This plan acts as a land contract, linking federal, canton and local public authorities. Thus, it must be conveyed within the plan of zones, which establishes the terms for soil use. Private players and the civil society contribute towards setting up the plan by way of projects and measures that are then submitted to further procedures.

2.2. Aim within the urban space: development of a green network

Geneva is rich in parks and green areas. Moreover, it has a collection of green fringes penetrating the city of remarkable landscapes that offer a favourable environment for relaxation activities. These also contribute towards ventilating the city and act as a transitional area between the city and the countryside.

In terms of what concerns the green areas within the urban space, the aims of the canton master plan are:

- To maintain and exploit the diversified collection of green fringes, linking up the large parks to the rural belt, while insuring both the multi-functional use of these spaces (conservation of nature, culture, relaxation, sports and the ventilation of the city) and the maintenance of a viable continuity and width.
- To develop a network of green public spaces within the urban tissue, by creating new parks, notably in the new urbanisations, and to link them up with pedestrian routes.

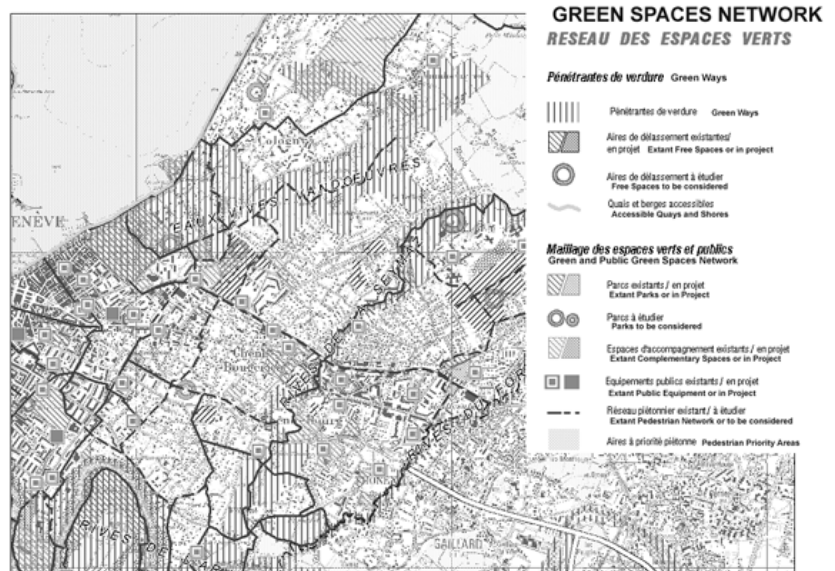


Along with the various public spaces located within the urban tissue, the green fingers make up a green city network. Their main role is for relaxation, but also to insure the prolongation of the natural environment of the rural areas right up into the city centre.

2.3. The plan of action in favour of green spaces

In order to establish the green network section of the canton master plan, the Canton Development Department, in collaboration with the districts, set up a plan of action in favour of green spaces. This requires a co-ordinated strategy between local and canton authorities as well as an acquisition and development policy. This plan includes the following measures:

- To plan and develop new green areas in the short, medium and long term: a project co-ordination plan for the global area of the canton has been drawn up.
- To direct land policies in favour of green public spaces by creating a special fund for this purpose. Besides this, the legislation will have to be modified in order to favour donations and to facilitate the use of pre-emptive and expropriation rights.
- To exploit the green fringes and create green spaces and relaxation areas within the co-ordinated development perimeters (CDP) proposed by the canton master plan. Moreover, to create a network of green public spaces in the new urbanisations.



2.3.1. A project: the Bel-Air agglomeration park

This agricultural domain, a segment of the green urban motorway of Seymaz, is part of the CDP Mon Idee- Ambilly Commune. It is one of the informal relaxation areas planned for the city peripheries. In this way it will balance the vast town planning operation of several thousand houses expected in the south in the CDP. Moreover, it is located to the north of the Geneva psychiatric hospital, which it aims to open out, all the while protecting its users. It will also have a secondary school on its far western side.

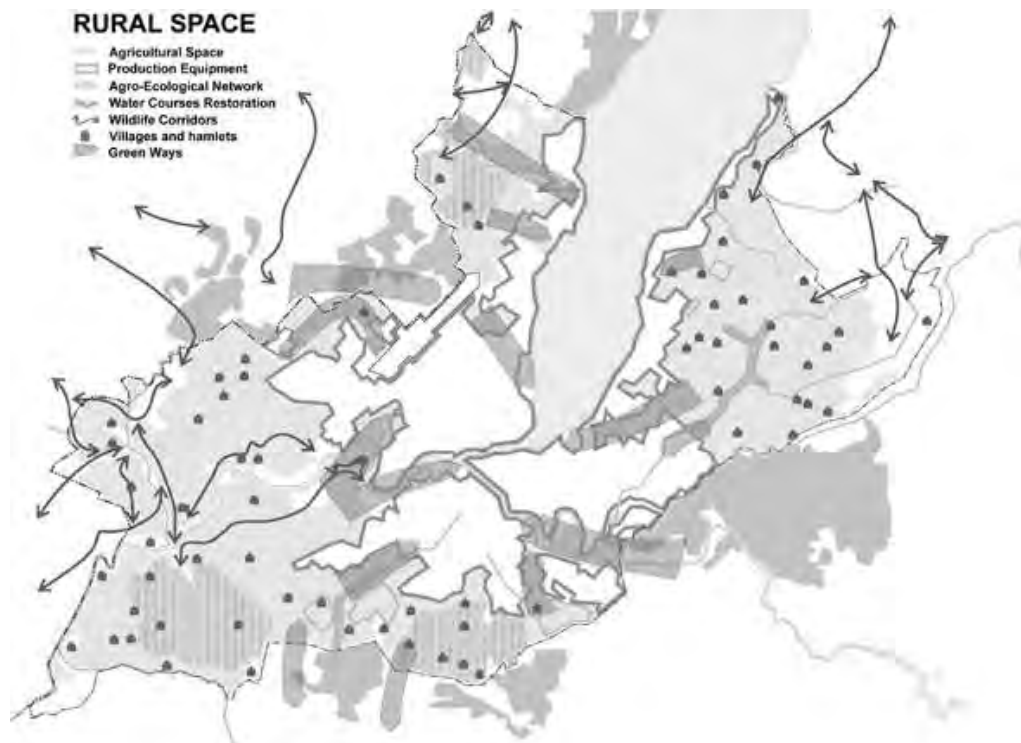
This site was the object of a European competition. The laureate project proposed to establish spaces and routes based on the permeability of the interfaces, on the perception of different scales of the site and on the sensation and expression of the body. The creation of the park, located on building land and state property, should not really come up against land or legal obstacles, but is yet to be programmed. Neither have the Master of works, nor the future management yet been determined, and its financing has not been fully considered. These questions are imperative and should be dealt with within the context of the CDP.

2.4. Aim for the rural area: the multi-functional development of natural spaces

The exiguity of the canton territory, Geneva's rural landscape has a strong ecological, cultural and aesthetic dimension. It has undergone considerable transformations throughout the centuries and is thus marked as much by natural as it is by human intervention.

In terms of the protection of the natural surroundings and open-air leisure activity areas, the aims of the canton master plan are the following:

- To prevent all operations that risk starting a partitioning process in the large areas of weak to strong levels of biodiversity, a major patrimony of the canton.
- To promote the conservation and reconstitution of natural land and water environment systems within a coherent cross-order dimension.
- To favour leisure activities that do not require facilities and which are, both compatible with the farming zone and use up little space.



The development plan for rural areas, elaborated with the relevant environment in mind, proposes a co-ordinated and multi-functional management project in the area. This is to be carried out according to five sections: agriculture, natural habitat, sites and landscapes, building area and leisure activities. In the case of affecting the farming land or the environment as a whole, qualitative and/or quantitative compensation must be paid in favour of agriculture and the natural surroundings or towards the creation of more green areas.

2.5. Plan of action “ re-naturalisation of the waterways ”

The plan of action for the re-naturalisation of the waterways, is a priority programme of the Geneva government. Being so close to the urban sprawl, it requires attentive co-ordination between town planning and the development of areas destined for leisure activities. In the rural area, the co-ordination will concern the different aspects of multi-functionality, particularly the preservation of the best farming lands. It is also an opportunity to set up a network of particularly important natural sites with the aim to insure their protection, their development and their management. In fact, the waterways are veritable ecological corridors that are used by fauna as an exchange way between different vital habitats.

The problems are complex. They affect those subjects like landscape and land development, hydrology, biodiversity, management and maintenance. The amount of players is high: canton services, riverside communities, farming lands, and patrimony and nature conservation associations. The Geneva parliament approved the plan of action and it is progressively being set up. 60 million Swiss francs have been put aside, certainly a high amount though ten times less than what was originally expected. As the majority of the Geneva waterways are cross-border, coherence is aimed at on both sides of the border, and hence cross-border contractual commitments become necessary.

2.5.1. An achievement: the restoration of the Teppes de Verbois

Only 10 km from the city centre, the Teppes de Verbois are located on the banks of the Rhône, a natural site of international importance recognised by the Ramsar convention. Recent development of the ancient gravel pits (around 100 hectares) has made the creation of a new reserve possible. The aim is to integrate the Teppes de Verbois in the surrounding natural habitat and thus create a diversified and dynamic natural area of great biological and landscape interest.

Priority has therefore been given to the re-naturalisation of the site, most significantly with the digging of three ponds and the reconstruction of the Allondon river delta. These areas had become inaccessible to the public. Meanwhile, for the benefit of site tours, roads have been equipped with observation posts and information panels. Moreover, a fishing pond and leisure area has been created. On the other hand, an important part upstream has been given back to farming activity, with the plantation of a system of hedges and the imposition of environmental constraints. Lastly, the site is accessible by train and by riverboat, and parking spaces are limited in order to restrict pressure. The site has a multi-functional vocation, with natural, leisure and farming aspects each in turn dominating the different zones. In this way the segregation of areas permits the co-habitation of man and nature.

The project has been financed by the sale of gravel extracted from the ponds as well as by a substantial federal subvention. A management and maintenance plan has been set up. Unfortunately, the growing peripheral urbanisation of the Pays de Gex entails the saturation of the purification station and serious pollution of the Allondon. Cross-border co-ordination is imperative.

2.5.2. A project: the re-naturalisation of the Aire banks

The Aire is a small river in the Geneva basin, canalised in part and particularly affected by pollution. Following a competition held by the Geneva government, an ambitious redevelopment project was started up. It superimposes natural objectives - to find a natural course for the Aire riverbed, which will in turn be transformed into gardens - onto functional preoccupations, notably vineyard management. The organisation of the site is based on multi-functional and diversified landscape logic.

Necessary funds have been approved and a master of works and administrator has been designated. However, the agricultural circles are getting nervous about the projected encroachment upon their lands. Furthermore, the source of these waterways is in the neighbouring French territory, and therefore the aim is to set up a communal management within the context of a Geneva River contract.

2.6. Problems to resolve in the framework of the plan of action.

Within the urban areas, the green spaces come mainly under local control, whereby commitment varies greatly. Although some anticipated town planning goes ahead via the creation of green areas, other areas are more deprived. In order to guarantee the setting up of a plan of action in favour of green spaces, an operational structure will have to be created. It would also regulate the co-ordination between different players, specially between Geneva administration services and the communities, and manage the canton's large green areas.

At the moment, financial resources for acquisition, management and maintenance policies are extremely limited, in comparison to those assigned to the re-naturalisation plan. The projected funds should have been extracted from financial compensation from land surpluses, rejected by popular demand, and by a facilities tax, the reform of which has not yet succeeded. It would be convenient to create a specific section for essential operations within the canton budget and in the finance plans.

In the rural areas, the multi-functionality of natural spaces on the urban peripheries is a general aim that must be declined depending on the sites by giving privilege to this or that allotment. But, if for a long time agriculture was a priority, it has since brought about certain excess in the regrouping of lands, and now the protection of the natural environment is a new priority, which can affect relaxation functions. This sometimes leads to a state of competition between users: farmers, walkers, horse riders, fishermen, private owners and ecologists, to name but a few. This in turn causes the respective associations to hold referendums. These problems are taken into account in the plans of action.

3. A cross-border charter and green-blue plan

3.1. The cross-border charter

There is no local administration body for the whole of the cross-border basin. However, within the framework of a consultative organism, the Franco-Geneva Regional Committee (CRFG) is progressively establishing itself as a co-ordinating body between the various players. In august 1997 a cross-border agglomeration management charter was put together. Its proposals have since been adopted by the Geneva Canton master plan.

3.2. The aims of the cross-border charter

The fact that both the authorities and the general public have finally understood that the natural spaces on the urban peripheries constitute a fundamental element of the heritage and of the way of life of the Geneva region, progressively helps to define and apply co-ordinated policies. The perspectives of environmental action range from conservation and reconstitution of natural areas and attending to the quality of the water, the rivers and the lake, to the re-conquest of biodiversity and the networking of these areas.

In this domain, the cross-border charter aims are the following:

- To conduct a global policy on rural spaces within the context of cross-border and inter-canton areas.
- To preserve coherent farming land for their functional and landscape values and to prevent all actions which could risk starting a fragmentation process.
- To recognise and protect valuable natural areas which are often cross-border zones.
- To diversify the landscape and to favour environmental measures while preserving and reconstituting a network of natural water and land areas.
- To pursue a protection policy for the mountain massifs in order to preserve these major elements of the natural patrimony.
- To co-ordinate the development of the lake banks and waterways policies.

The priority projects that engage cross-border co-operation and require coherent management co-ordinated by the different political bodies are progressively being set up.

3.3. The green-blue plan, a regional action programme.

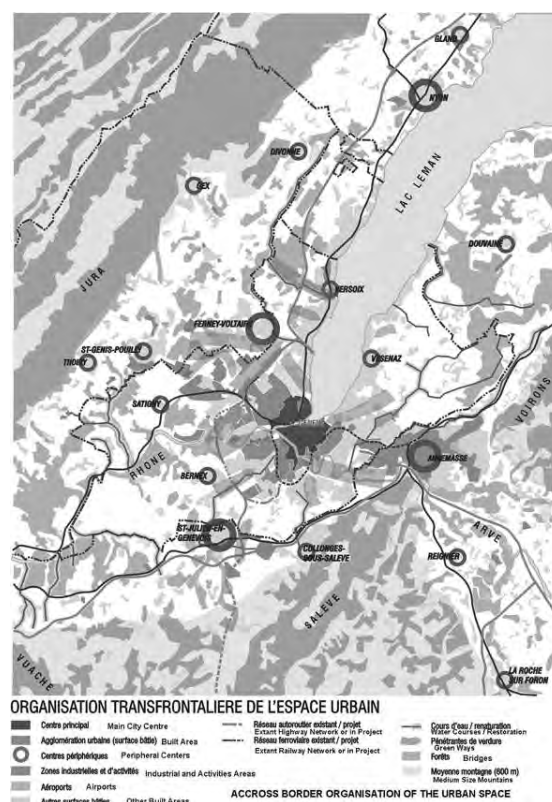
Amongst these projects, the green-blue plan aims to give concrete expression to the development principles relative to little or non-built up areas set out in the development charter.

aim to give official status to the charter principles, by engaging the concerned partners and by making sure they are carried out. It has neither deciding power nor does it have its own budget, but must hand proposals over to the CRFG. With this aim in mind, it co-ordinates, federates and brings coherence to the collection of particular projects that deal with nature, farming land, environment and landscape.

The green-blue plan aims to promote:

- A network of cross-border paths
- The protection of the Saleve landscape
- Maintenance and recreation of fauna corridors
- Co-ordinated management of agricultural land

In parallel to this, a cross-border meeting has been set up to establish and carry out cross-border river contracts and to follow up the protocol of a cross-border agreement. This was done to reassert the value of the Genevan rivers. However, co-operation in terms of protection and management of the Léman banks is equally included in the Léman Council.



3.3.1. An achievement: cross-border itineraries

The aim is to promote about fifteen pedestrian itineraries that cross the national border. The inhabitants of the Franco-Valdo-Genevan basin represent the target-public aimed at by this development project. This project associates the French districts, via community councils, the Geneva canton and the Vaud canton. This was made the object of an INTERREG subvention.

The choice of itineraries was defined and completed by identifying the patrimony susceptible to the development of these itineraries and through information documents for future visitors. The question of crossing the border, between a country taking part in the Schengen space and another country, has been delicate to regulate, as well as the co-ordination between the many concerned players.

3.3.2. An example: the Saleve landscape directive

Although it is located in France, the Saleve massif, whose emblematic silhouette overlooks Geneva, is above all a Genevan mountain. A major landscape, natural and geological site, it offers exceptional views over the Alps and the Jura. This site has become the vastest leisure area in the cross-border agglomeration. Both the cable car and especially the roads make it an easily accessible location. However, the fallows that are invading high mountain pastures, town planning which submerges the Piedmont and the fact it is over visited all poses a serious threat, without forgetting the damage inflicted by the quarries.

The different spaces- the prominent plateaux, the slopes that form its silhouette and the Piedmont all make up a coherent group. The aim is to preserve its landscape assets while maintaining its complementary spaces and their differing uses. This is why the relevant districts, brought together in the mixed syndicate of Saleve, carried out a protection and development directive study. This was financed partly by the Geneva Canton within the framework of INTERREG that sets the orientations and basic principles to be respected within the town planning documents and recommendations. However all these can be opposed by a third party.

The directive will not be bound to a specific form of financing. A series of measures and supplementary tools are still in process of being set up (Natura 2000, high mountain pasture management). The question is whether the Geneva Canton should participate in the financing and management of a project outside its territory but nevertheless strongly used by its population.

3.4. The Co-ordinated Cross-border Development Perimeters (PACT)

The development charter of CRFG has identified several peripheral centres where development and re-qualification are considered priorities and are the object of co-ordinated cross-border development perimeters (PACT). The improvement of both the peripheral poles and the centres passes through a meticulous town planning conception that aims to favour optimum functionality within the landscape and quality of public spaces.

3.4.1. A project: the Geneva Park

The small Arande valley is located within the PACT of St. Julien – Archamps – Bardonnex. A master plan proposes integrated development of the landscape, linking the urbanisation core, by taking advantage of the essential assets of the sector and the high quality of its rural landscape. The site, a ride across the border, has the vocation of becoming a city park. It is located on the Great Road, axis of cross-border pedestrian walks in process. It will play a major role articulating the Swiss and French parties. It will be a multi-functional park with three main components: nature, agriculture and leisure. The development project takes advantage of landscape characteristics: water plans, game fields and reconquest land (around 100 hectares).

The proposition to create a cross-border consortium (Geneva community of councils, relevant departments and districts of Geneva) to develop and manage the Geneva park is still in the process of being materialised. There are also questions about the following up of the project, of financing it, management of facilities and accessibility for public transport which, should still be regulated.

3.5. Policies in favour of natural spaces on the urban periphery and the border effect

The existing measures are having difficulty in managing to provoke reinforcement on a regional scale, in terms of landscape and natural tendencies. The border between Switzerland and France, as well as the one between the cantons of Geneva and Vaud, concerns the competencies and different practices of land development. Several administrative bodies, each of which elaborates their own development documents, juxtapose and superimpose themselves: cantons, departments, and community of districts, councils... The multiplication of speakers, the differing competencies and the absence of an imperative and common urbanisation document all slow down and hinder the reflection and decision process.

For example, the future of the Léman Lake and its banks, an area that is strongly affected by human presence, extremely coveted and particularly fragile, is an important regional asset. However, at the moment, the different areas have started up protection measures that haven't had the same effects: riverbank protection law for the Geneva canton, riverbank master plan for the Vaud canton, application of the coastal law by the Haute-Savoie. To what extent will the green-blue plan help to co-ordinate these policies?

In relation to the councils and the Confederation, the Geneva Canton, of centralist tradition, has a global concentration of the majority of competencies. A concern for conserving the almost intact rural space and for not wasting the soil is conveyed by dense and compact building land. On the contrary, in the other territories, the councils have a lot more autonomy: building zones are much more dispersed and less dense and soil consumption is very high. Some fear that a saturation of the rural space of Geneva will correspond to a future "californiarisation" of the borderland.

On a cross-border scale, the matter of natural spaces on the urban peripheries is therefore inseparable from that of town urbanisation control and displacement management. It is within this framework that common promotion, development and management bodies can be set up.

Web site for the master plan of the Geneva Canton:

<http://www.geneve.ch/plan-directeur>

Aim: A Green Metropolis

Pierre Dhenin, Metropolitan Natural Spaces – Mixed Association for the Deule, Lille (Nord-Pas-de Calais, France)

1. Founder Elements

Eight years ago, Pierre Mauroy, President of the City of Lille Urban Community (France) launched a project for a Metropolitan Natural Space. This was seen as a direct response to the important deficit of green public spaces that the city was suffering from. Such social penalisation has become an economic handicap within the metropolitan battle to attract and retain investments as well as its surroundings.

Since 1993, the basic idea has remained the same: to regroup the means and energy, whether public or private, to set up a new green patrimony capable of having an influence on the image of an international metropolis.

The reasons for a "Green Metropolis" strategy

Sustainable development, pursuit of a high environmental quality, near-by tourism, public participation and a public-private partnership, are all considered within this strategy for a green metropolis.

Tomorrow, the metropolitan inhabitant (but also French and foreign neighbours) will be able to spend an 'ecological' weekend at the Deule Park, a cultural stay in the Marque Valley or a sports weekend along the Lys. The facilities, inspired by the specifics of the 'land', will generate private services (accommodation, catering and transports) and the establishment of businesses, which would then link their image to the developed themes.



One territory: the green director plan for the metropolis

The proposal was to create vast open sites and green flows to play an ecological, landscape, social and economic role. It is always a matter of projects for several hundred hectares or stretches of several kilometers.

From a landscape and ecological point of view, the sites cannot easily come to a stop at their administrative limits. Each large project (the Deule Park and the Marque Valley for example) relies on global landscaping studies and the need for partnerships, which supercede traditional limits.

Currently, the pursuit of a more efficient method goes through the collection of all the local structures in one single body. This is also done in order to be aware that the urban community take over competencies of natural spaces which, in turn allows it to invest on a much larger scale.

An ambition: 5 000 hectares to be developed by 2015?

At present, one can estimate the global surface of 'significant public green areas' in the Lille metropolis, at about 2000 hectares. The first sites to be set aside for fusion, into a sole representative structure, alone represent a bit more than 800 hectares, in the process of being developed.

The 1997 master plan aimed at providing the city with 10,000 hectares of green zone for 'recreational and landscape' activities. This wish materializes when including agricultural areas amongst which very particular care will be taken of the landscape and

walking networks. The global surface of these areas can be found on a map in the district of Lille master plan: **the green metropolitan master plan**.

This objective can be achieved by uniting the means of the public collectives with that of the private sector, by rationalizing the methods and by tackling development with a concern for local development.

A partnership agreement: a commitment charter

This strategy should rely on a mapped objective and a commitment charter to bring the main public players together: the State, Region, Department and Urban Community. The signatories come to an agreement on their common objectives and look for complementary actions by getting the most out of their budgets, which they can move and use, collectively or individually, on this land. This charter institutes a permanent collaboration on a scale relevant to a pertinent natural area.

This agreement could also concern other important players like The Water Agency, the French Waterways, bordering communities, the Pas-de-Calais general council and the COPIT.

2 . The Means

Currently: decisive community participation.

For about 820 hectares, maintenance currently represents Fr 11,3 million and activities (including participation in associations) is of Fr 5,6 million. Training, communication, studies and external services (eco-guards) consume Fr 9,6 million. These three posts move 26,5 million francs for this current year. The projected investment for 2001 on the whole of the structure, is of Fr 38,9 million. Nearly Fr 66 million will be needed to take on the entire development for 2001.

From this total, Lille urban community commitment rises to about Fr 16 million, namely 25%. However, the community contribution is particularly significant because it mainly feeds the 'functioning' post on which the other partners are not very present.

Tomorrow: an assessment of ambitions

When the master plan for the district of Lille announced the need for 10,000 hectares of green areas for 2015, it relied on the ratios applied to European cities of a similar size. It was not a question of creating 10,000 hectares of public gardens or even forests, unless a large section to agriculture was sacrificed on the city peripheries or the vast fallows were taken over.

To find a way to reach these ambitions

It must be possible to create facilities to generate the profits, to delegate the management of services to the private sector and to raise a relay charge for private financiers of facilities whether in the name of their brand, or on a more mundane level, for profitable operations.

Each large site should be able to offer a set of more modest facilities (Water House at Armentieres, the wild life house at Santes and the food discovery centre at Wavrin) which, would invite public visits and allow the site to sell its services. These installations will be given to private administrators. In the same way, the park must generate private services (catering, accommodation and play areas) installed privately but with a license fee for the public sector. This would in turn allow investors to use collective goods set up by the public sector (car parks).

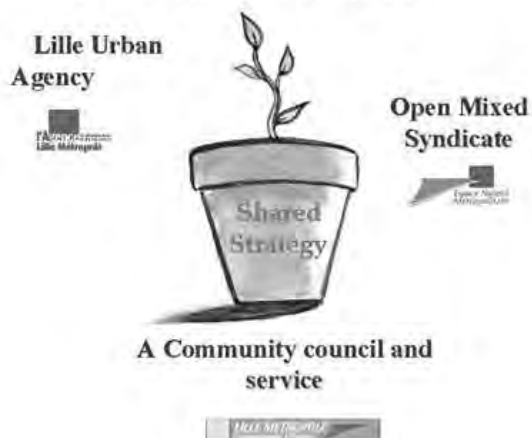
Their association on the whole of the approach is therefore essential in order to turn the sponsors into partners, especially in terms of heavy investment. A supple and open partnership structure is thus needed to allow the association of many players at equal levels.

3. The Tools

A partnership tool: The mixed syndicate

In view of the number of partners involved, the fluctuating dimensions of the land in question, an **open mixed syndicate** with full control, is the best adapted tool to be both the place for consultation and the means to carrying it out.

THE TOOLS OF THE SETTING UP



This syndicate will have to develop a strategy which coincides with the master plan for a green metropolis, to stand up against the policies of the different partners, in particular to the functional policies of Lille Metropolis Urban Community.

Within this mixed syndicate, the urban community of the city of Lille has the majority by territorial and financial legitimacy. The syndicate must be able to be the main operational bearer of this green metropolis aim.

Intervention area and partners

Within the logic of ecological continuity, the mixed syndicate must be able to regroup the collectives overriding the community management body in order to respond to natural and landscape realities of the land in question.

A homogenous management of particularly different land masses

The syndicate must insure the homogenous management of the land with a concern for sustainable development. This in turn is then linked to the pursuit of a high environmental quality and to finding a fair balance between economic, ecological and social imperatives. There is also an aim towards active participation by all park visitors, from designers to consumers, passing through experts and actors.

It is by focusing on the differences that we will be able to conduct a near-by tourism policy, but it is only by managing rationally and professionally that we will be able to deal with what that represents.

Each area must have a technical centre on site. However, by sharing materials and techniques, scale economy can be permitted, as well as a greater efficiency and group specialisation in delicate work (tree pruning). There is also the possibility of running a central cartographic database, which would allow us to establish and follow botanical and fauna management plans over several years.

The mixed syndicate assignment

The mixed syndicate must be able to act on the following domains:

- Public access to open walking and resting areas.
- Public access to closed walking and resting areas.
- Maintenance of these areas.
- Public access to play areas.
- Public access to sports areas.
- Maintenance of these areas.
- Conservation of interesting ecological sites.
- Transformation of ecologically potential sites.
- Maintenance of these sites.
- Discovery and interpretation of these sites.
- Up keep of the fauna/flora inventories (with reference to the associations, the eco-guards and specialised personnel), ecological sites and their eventual follow up in terms of scientific or interpretation ends.
- Delegation of services (catering etc...).
- History of all maintenance interventions, thus allowing for a follow up of the evolution of the environment in terms of these interventions. This work will act as a base for the definition of differential maintenance of future projects.
- Management of the whole property.
- The relationship with public or private partners.
- The possibility of new developments.
- The carrying out of studies.
- The delegation.
- Management of personnel and their training.
- Management of materials.
- Management of the buildings.

Composition of the syndicate.

The plenary syndicate committee should bring its financial partners together:

The Urban Community of Lille Metropolis, the Northern and Pas-de-Calais General Councils, the Regional Council and the cities concerned with natural spaces.

The syndicate committee is structured around a general assembly divided into separate bodies that delegate the elected representatives to the syndicate committee. One can imagine at least a body of community representatives, a body of institutions like the General Council and the Regional Council, and lastly, a body of Districts.



The Land Commission

Each territory benefits from a specialised commission, a veritable local consultative council with the help of syndicate members (local and community elected representatives) who are concerned with the land.

These councils will later allow the elaboration of projects and the organisation of a more active consultation method. They also allow the instruction of local files and an adjustment to daily management. These land commissions can prepare the work for the plenary syndicate committee.

Technical Committee

It brings the technical representatives from the plenary syndicate committee members together. It associates the private sector represented by the consular chamber with the work of the syndicate. It can associate other public and private partners around specific problems. It can set up specific work groups to later elaborate the dossiers which, will then be submitted to the technical committee and to the plenary syndicate committee. This will be done, if necessary, with the advice of the relevant land commission. The technical committee can in this way generate an agricultural team, a water group, a HQE group, a differential management group... These work groups are temporary and circumstantial. They act like so many quality circles.

A User Consultative Committee

A plenary committee, it brings representatives together from the user associations from the different territories in order to present common structural projects to all the sites. We find consumer associations from these spaces, farmers unions, naturalist associations, open-air sports associations and cultural associations concerned with the patrimony.

The ecological matrix, part of the land plan for the Metropolitan Region of Barcelona

Carles Llop, Daniel Calatayud, Enric Batlle - Escola Tècnica Superior d'Arquitectura del Vallès (UPC).(Catalonia, Spain)

1. Processes in the Metropolitan Region of Barcelona

1.1. Economic change

Mediterranean cities have gone through a series of different phases. A first phase was the pre-industrial one before 1760. The first industrial revolution took place during a second stage between 1760 and 1870, associated with coal, the steam engine, electricity and the railway. The third phase, the second industrial revolution from 1870 to 1970 is associated with petrol, the internal combustion engine, the automobile and the aeroplane. This phase culminated in a work, social security and consumer society guaranteed by the states, the welfare state. The cities are now immersed in a fourth phase, the third industrial revolution or the information society. The technological revolution has given way to global financial intergration, the reduction of transport costs, the globalisation of commerce and a change in production models to flexible models (de-located, just-in-time and outsourcing). This post-industrial society has favoured the weight of transnational companies, (20% of global GNP), strengthening the logic of the sectors and weakening the states. These in turn become forced to de-regulate so that "their" companies can compete on the global market. The metropolises are re-organising in a self-organised process.

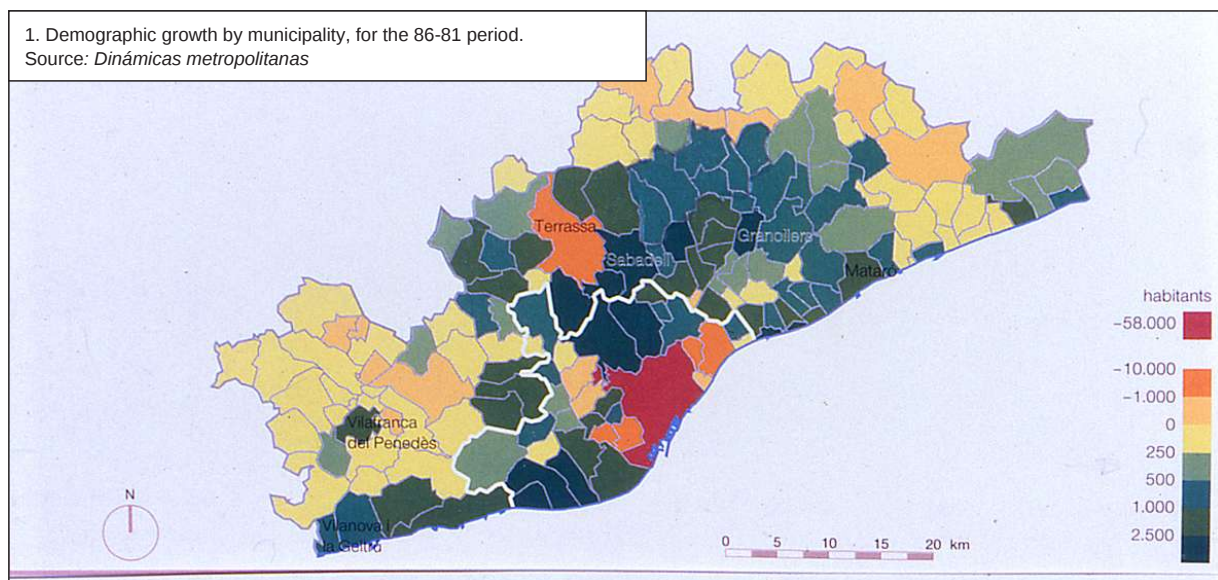
1.2. Social change

De-regulation culminates in a society of flexible, non-guaranteed work, less social security and/or more unemployment (UE) or lower incomes-rents (USA), but above all more inequality. Therefore we also witness a change in the forms of social organisation from the collective/compacted to the individual/dispersed, from the multifunctional society to the specialised and from the diverse to the segregated society.

1.3. Changes in the occupation patterns of the Metropolitan Region of Barcelona (RMB)

This new reality is transforming the RMB. It is evolving, from the agglomeration model to the network production model. This is characterised by a more elongated use of the land, more mobility, a revaluation of the peripheries, a preference for dispersed residential models and competition between municipalities in order to attract a population which is increasingly more segregated by its income. Lastly, there is a growing terciarization of the "core" focused on promoting the great urban attractions, businesses, urban tourism and commerce of high mark up prices (figure 1).

1.4. The study of morfogenesis in the Metropolitan Region of Barcelona (RMB)



The town-planning department of the Valles Higher Technical College of Architecture has studied and mapped the morfogenesis of the RMB in three phases: 56-72, 73-86, 87-96. If at all times all the different forms of growth are apparent then each one of these phases is defined by the prevalence of one of these growth models. The cartography of these changes reveals the economic model or the predominant growth model.

- *If in the 56-72 phase, extension growth predominated by way of new suburbs and estates...*

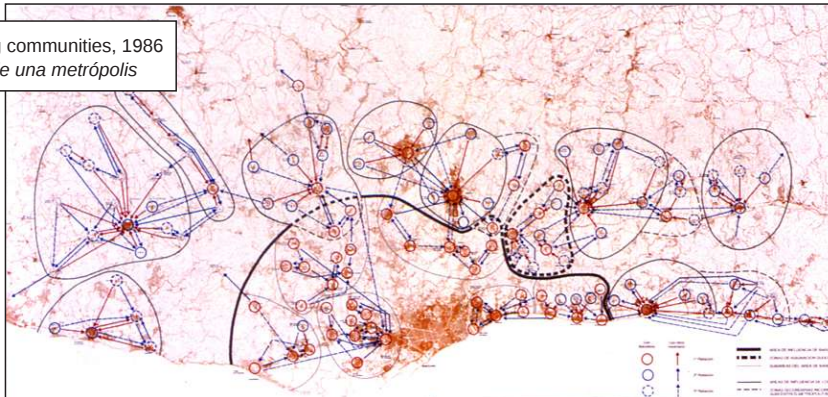
In light of the problems provoked by the accelerated growth of Spanish cities, the 1963 regional plans opted for industrial decentralisation, with the creation of industrial estates, directional centres and residential estates (Acturs). This decentralisation gave way to the construction of an arterial network at the start of the 70s (figures 2, 3 and 4).

- *... The 73-86 phase was characterised by growth in low-density landscapes.*

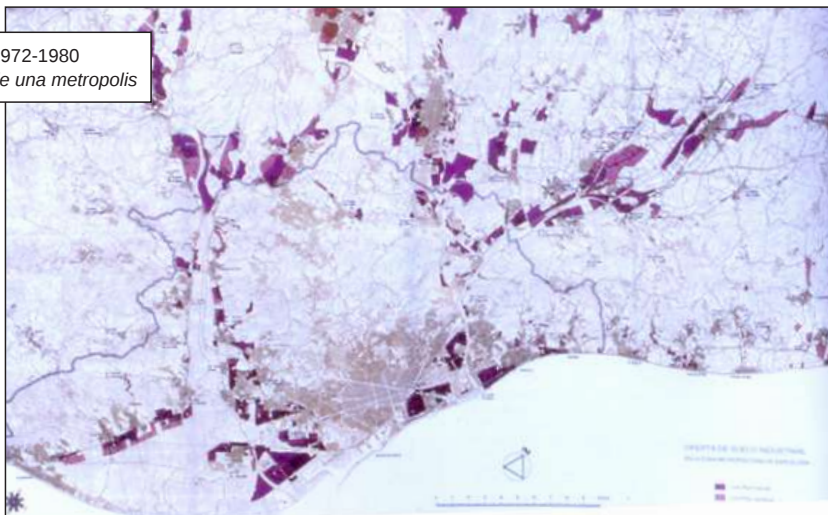
In the midst of economic crisis, urban policies were reoriented towards contention and urban requalification. However, it also

allowed industry to reorganise, thus extending along the river valleys of the Besòs and the Llobregat, near the arterial network

2.Main relationships among communities, 1986
Source : *La construcción de una metrópolis*

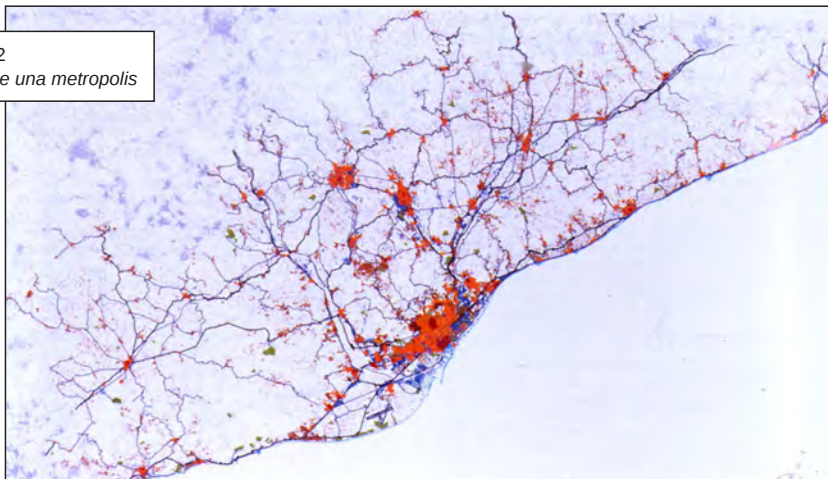


3.Available industrial land 1972-1980
Source : *La construcción de una metrópolis*



and occupying 6000 hectares.

4.Extension growth 1956-72
Source : *La construcción de una metrópolis*

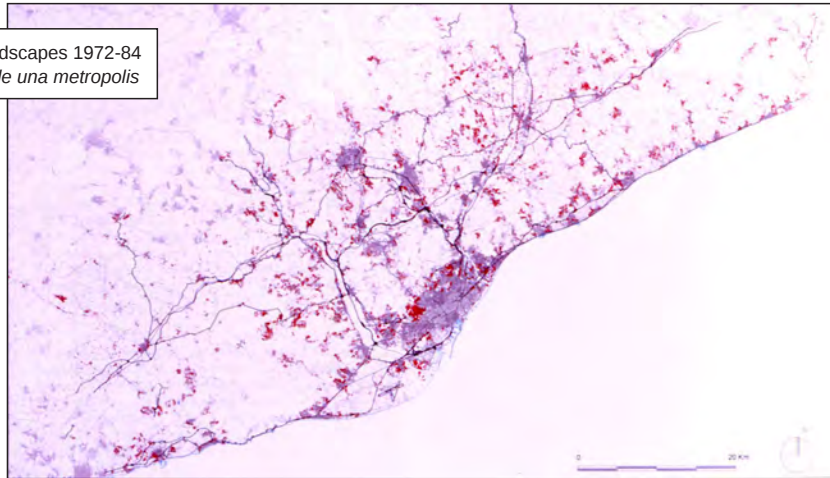


The generalised automobile access, the technological trigger of production re-organisation, promoted access to a second residence in the second and third belts and in so doing took up a further 7,000 hectares (figure 5).

- *The 86-2000 phase is characterised by a network growth model.*

This period is characterised by growing polarisation, along the motorways (east west, A7, A16, A19 and north south A2, A18) and nodes dedicated to the "banal" service industry (production services, distribution services, social and personal services). The

5. Growth in low density landscapes 1972-84
Source : *La construcción de una metropolis*

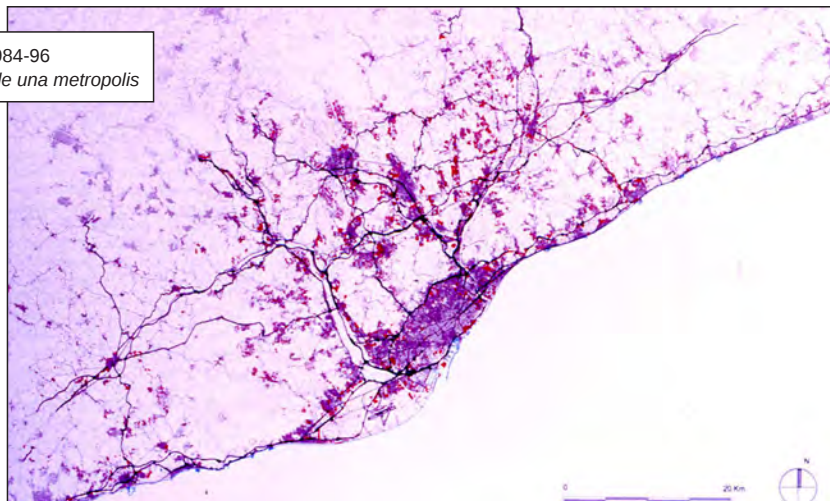


growing polarisation was taken up by the "strategic" tertiary sector on the arterial elements of the core constructed with the impetus of the 1992 Olympic Games. Examples of this are the Diagonal east sector (Glòries, Diagonal Mar, 22@ and Forum 2004), the Diagonal west sector (North Campus) and the Gran Via east sector (Plaça F. Macià, Airport city) and finally that of the Ronda Litoral-Ronda Dalt (Port Olympic, Port vell, Maremagnum). This all carries the price of public expulsion or abandonment from a core that is increasingly expensive and of a dense and fairly unstructured first and second belts. And thus in searching for low-density areas in the second and third belts the second residence becomes the first (figure 6).

1.5. Metropolitan indicators for the 72-96 period.

Without population growth, soil consumption has risen from 23,000 hectares to 47,000 hectares (+ 100 %). This rise is distributed amongst infrastructures from 1,500 to 3,860 hectares (+ 157%), industrial land from 3,500 to 10,600 hectares (+ 202%) and in

6. Network growth model 1984-96
Source : *La construcción de una metropolis*



low-density areas from 5,000 to 15,000 hectares (+ 300 %). There has also been a geometric change expressed in the change in demographic weight of the urban belts. The core (1,5 M inhabitants) has lost from 44% to 37,5% (-1% per year). The first belt of 12 districts (0,75M inhabitants) has fallen from 23% to 16,5% (-0,75% per year). The second belt of 19 districts (0,65 M inhabitants) has remained at 14,5% (+ 0,12% per year), and the great winner is the third belt comprising of 132 districts (1,35 M inhabitants) which has increased their relative weight from 19% to 33% (+ 0,7% per year).

This change of geometry leads to a density reduction, a rise in motorization rates from 174/1000 vehicles to the 620/1000 current vehicles and a strong increase in mobility kilometres associated to transport (plus 87%) between 86 and 96 (plus 300% from 72 to 01). There is therefore also a rise in energy consumption (figures 7 and 8).

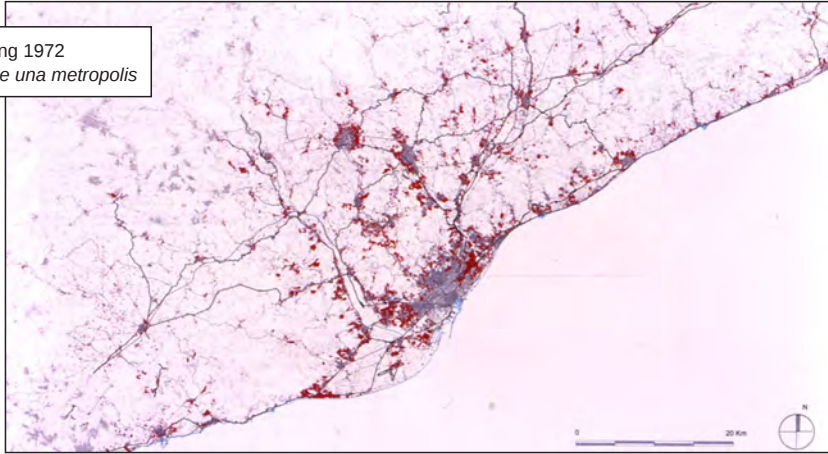
2. The land model for the Metropolitan Region of Barcelona

2.1. The Metropolitan Sector Land Plan

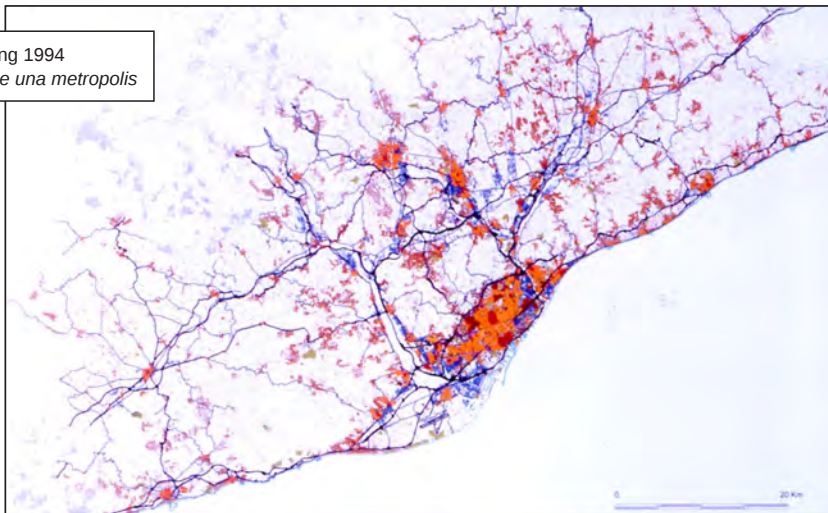
This plan structures the metropolis into a less concentric and more isotropic mesh, structuring railway and road networks and strengthening eight large urban islands. It admits generous occupation increases (1M inhabitants) based on optimistic data of vegetative demographic growth and immigration, and adds a further 12,000 hectares to the 27,000 hectares already programmed and allocated to construction, and which will in turn insulate the open spaces (figure 9).

2.2. Neoliberal or sustainable

7.Forms and uses of building 1972
Source : *La construccion de una metropolis*



8.Forms and uses of building 1994
Source : *La construccion de una metropolis*

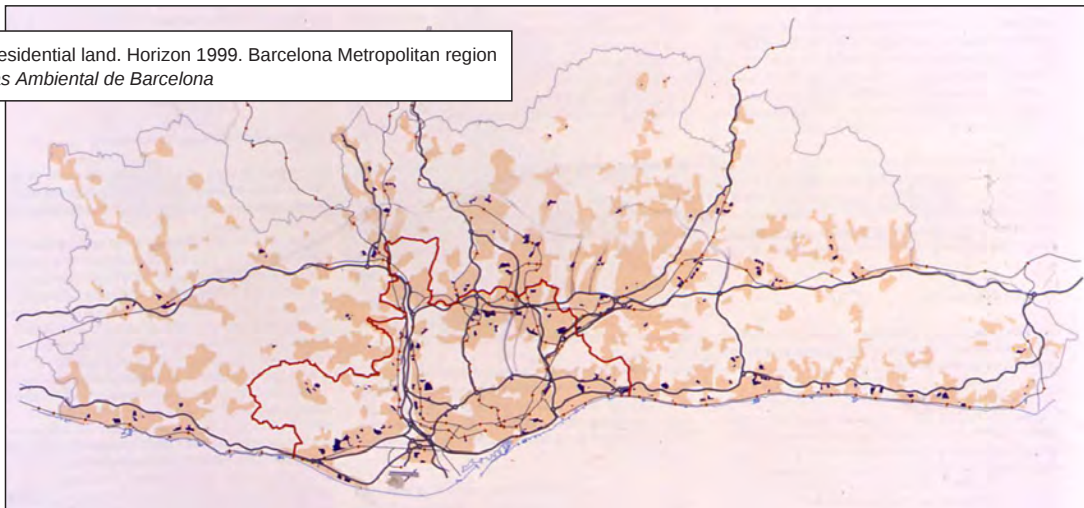


This neoliberal styled model bids for flexibility and competition between nodes of the system of cities as a survival mechanism in a situation in which there will only be winners and losers. This is achieved by betting blindly on emerging sectors of the new economy and considering that the state should only influence the system at the time when its pathologies come to light.

A second stand states that this is not defensible as a territorial paradigm. It opposes a paradigm or land ordination with its origin in Geddes and in Lewis Mumford's Regional Planning, made a science through the Landscape ecology of Forman. This stand of ecological-landscaping arguments defends the need to incorporate the system of open spaces in land ordination.

3. An ecological matrix as a base for "a different" land model of the RMB.

9.Available residential land. Horizon 1999. Barcelona Metropolitan region
Source : *Atlas Ambiental de Barcelona*



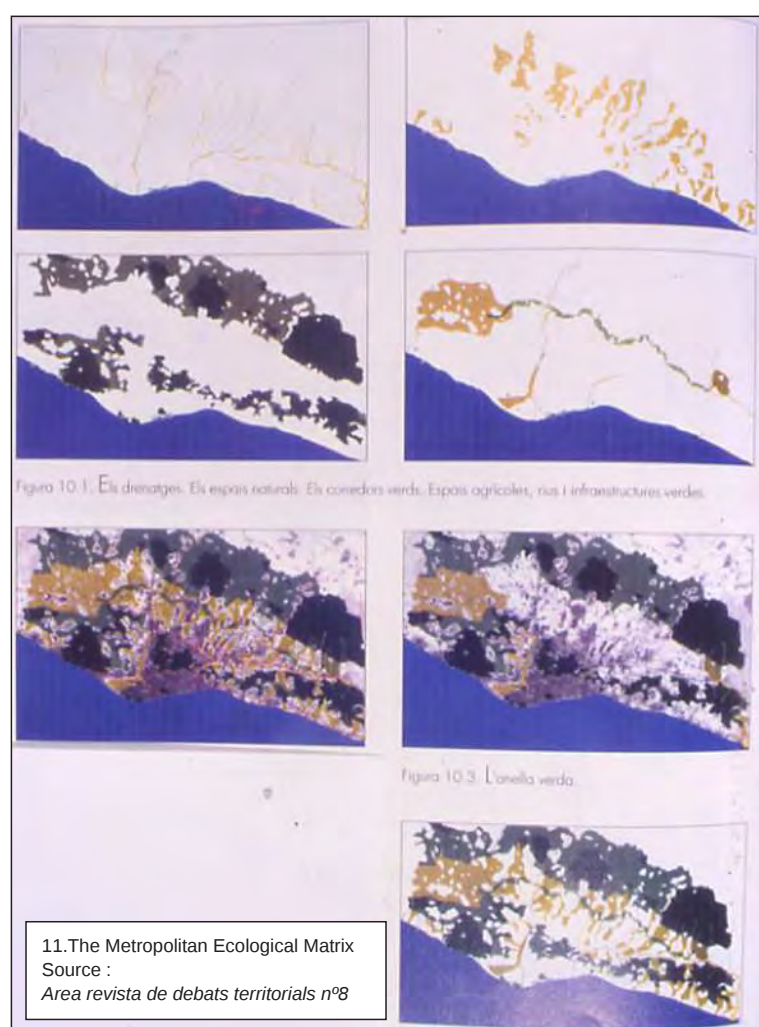
vegetation, via reforestation plans. The services supplied are erosion prevention, flood prevention and the absorption of the CO₂ produced by the inhabitants of the metropolis. They are structured in internal areas (Patches) with a progressive rise in integral reserves and perimeter areas destined to absorb demographic pressure by way of parks – doorways assigned by the municipality, with ecological roles (leisure and educational buffers).

- *The water system ("corridors"), 10,000 hectares*

Spaces of metropolitan allocation. The services contributed are water retention, flood limitation, to diminish erosion, aquifer recharge, recover riverside forests and to recover the biodiversity.

- *The agricultural spaces, 160,000 hectares*

The criteria is that of building a network of spaces allocated by the municipalities, structured as an Eco landscape mosaic of patches, corridors and buffers. These will avoid obsolete or non-productive crops until town planning requalifications are made, whilst promoting the recovery of the cultural heritage, (Delta del Llobregat). Also fomenting regulated recreational agriculture (vegetable garden on the urban periphery) and developing a new and clean productive agriculture at agropoles (Penedes vineyards, tree nurseries and floral plantations in the Maresme greenhouses).



- *Sustainability installations. ? Hectares*

These elements allocated by the metropolis are the end of pipe of the production system and treat the city outputs. These residues are undervalued resources separated from their life cycle by the Eco-inefficiency of the production system. Through the available technology these spaces reintroduce the resources into the life cycle by water treatment, water purification in third cycle installations and refuse treatment (municipal, inactive and industrial). These spaces will generate new landscapes, which must be compatible with leisure activities in order to communicate and educate in the new paradigm.

- *The network subsystem, 3860 hectares.*

The ecological matrix must integrate the subsystem of networks in its interior which, provide the inputs that feed the metropolis, its energy flows and materials. The mobility networks (roads and railways), energy networks (high tension and gas), telecommunications, but also the leisure networks (bikes). Figures 11 and 12.

3.6 Obstacles

The matrix is indispensable in order to demonstrate that the other model is also possible. It must allow for the overcoming of the fragmented view of the sectors: political (short term options), economic (productivity and competition), romantic (patrimony) and natural (the integral protection of some areas whilst accepting the total destruction of others). Both systems are integrated, complementary and need a municipal and metropolitan agreement.

3.7. Elements

Although there is no agreed plan, there are supramunicipal or municipal initiatives in process which are creating this paradigm in a process of self-organisation. A first list allows for the identification of five categories and 22,500 hectares of the ecological matrix, under discussion, but with very uneven degrees of consolidation and unitary costs. The case of urban parks is very discouraging as it is often lacking a metropolitan strategic vision or not very interrelated with a possible regional ecological matrix.

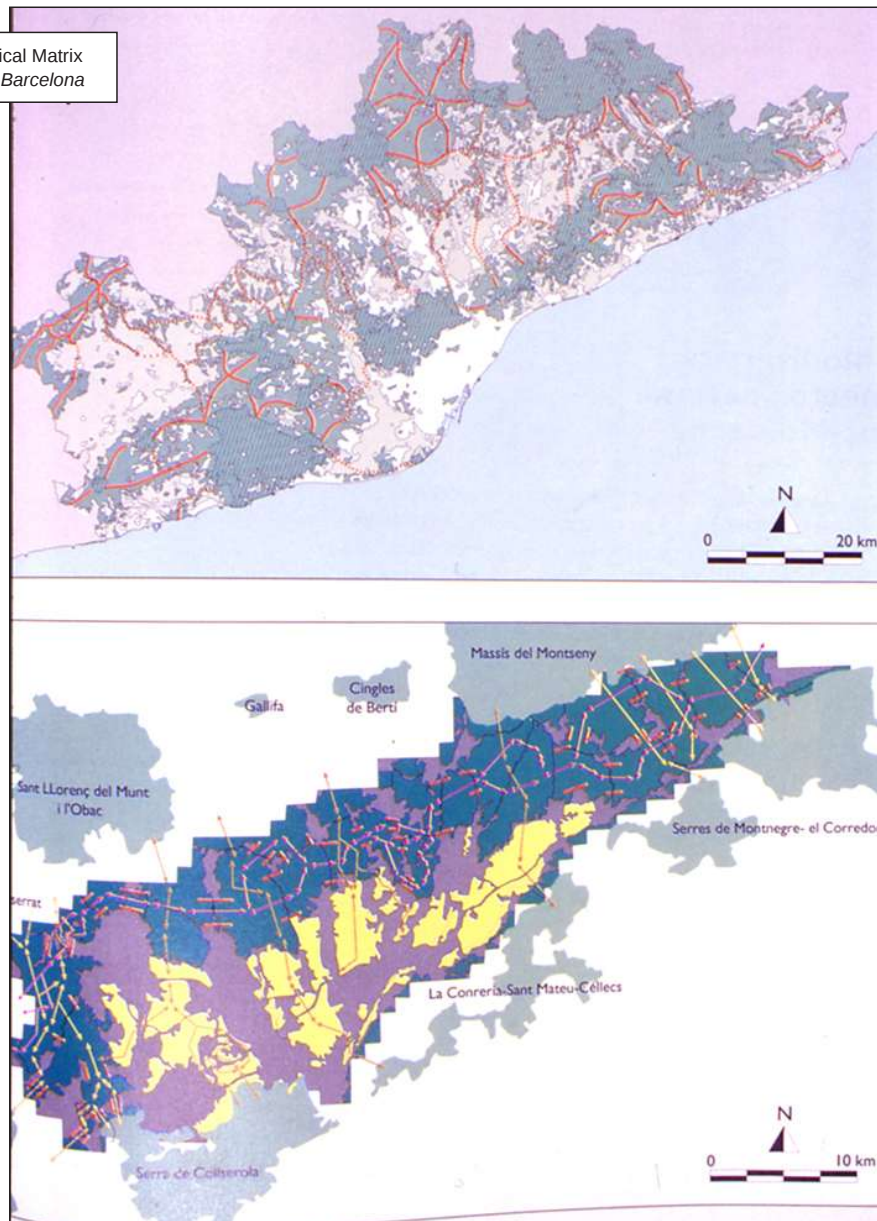
Agricultural parks	10 units	22000 Ha.	between 114 and 16700 Ha.
Fluvial parks	9 units	700 Ha.	between 5 and 450 Ha.
Coastal parks	6 units	200 Ha.	between 6 and 90 Ha.
Doorway parks	5 units	107 Ha.	between 4 and 20 Ha.
Urban parks	20units	150 Ha.	between 1 and 23 Ha.

4. Some reflections on the sustainability of the metropolitan area

4.1 Entropy and Neguentropy

Physics, a statistical science, proves through the terrible second law of thermodynamics, that ordered systems tend to evolve towards more disordered configurations thus increasing the molecular disorder. This disorder is measured via the mathematical function of entropy. Life has learnt to avoid the dangerous rise of entropy. However, a city with 4,3 M inhabitants that makes random economic decisions seems to respond to statistics and therefore to the law of entropy. Does a deregulated economic system, a result of the information society, tend to increase its entropy? How should this rise of entropy be measured?

12.The Metropolitan Ecological Matrix
Source: *Atlas Ambiental de Barcelona*



4.2. The sustainability paradigm

Cities are dissipated systems that feed off inputs (material and energy flows), metabolised as goods and services by the businesses and inhabitants which are then consumed or exported thus generating value and externalising them as outputs (resources that cannot be valued, like waste). This new and inexorable economic phase is defined by an increase in commerce and flows, increasing the city inputs and outputs. This cannot be exported as a development model (by 2020, on a worldwide scale, 8,000 M inhabitants will live in cities). How much entropy does the RMB generate?

4.3. Sustainability indicators

The Dolbris European Environmental report sets down the first city environmental indicators. As an indication, for every million inhabitants/ year, the RMB should be close to the following: energy input 420,000 M tep, H₂O input 1000 Hm³: material pack input 22,000 000 T, H₂O output 130 Hm³: municipal waste output 580,000 T, direct CO₂ output 9,000 000 T CO₂ or 1,2 hectares/inhabitant.

4.4. Local sustainability?

In this first phase, sustainability has focused on measuring outputs that is, environmental impacts of consumer guidelines on the base carrying capacity. The environmental Atlas of the Barcelona area is starting this information search broken down into sectors. It is possible to map the local natural systems and to locally assess local insustainability, or outputs, introduced by the city network. These must be mapped by territories, to the source, in order to interrelate the processes and evaluate the entropy introduced on the support system. The problem lies in that each output has its own support system and it is possible that they do not coincide with the cartographic-administrative division. As an example:

- The evolution of soil consumption
- The evolution of fabric consumption
- The evolution of mobility consumption
- The contribution, consumption, physical-chemical and biological treatment of the water.
- The exploitation and salinisation of the aquifers
- The evolution of antropoc occupation, the impact of fire and the natural capital of available forests
- The types, production, availability and recycling speed of waste
- The evolution of coastal inflexibility and how it affects the sedimentary dynamics

4.5. Global sustainability?

A good researcher cannot stop asking him/herself, - If the economic model is global and is characterised by the globalisation of the production model, how do you measure the reduction of the output charge capacity of a PC made in Taiwan? Since 1996 Rees and Wackernagel deduce the inputs associated to consumer guidelines independently of where charge capacity is reduced. This accounting, the Ecological Footprint, blessed by environmental economists, measures the entropy of cities by transforming these into energy consumption standards (Gj) or mortgaged Biosphere hectares (neguentropy) in order to produce this good or service. This indicator translated into T CO₂ allows for local indicators to be added, in this global indicator (more demanding than the ratified Marrakesh agreements).

The first evaluations of the Ecological Footprint for the RMB CO₂ give a trace of 3,77 ha/inhabitant hectares with an increase of +150% in the 72-96 period (7,3 times Catalunya), following the Randstadt footprint (15 times Holand) and far from the global 1,7 ha/inhabitant.

4.6. Global insustainability

This global indicator is an insustainability indicator. The atmospheric concentration of CO₂ (363 ppmv) which causes global warming is produced by the 65% of inhabitants who live in cities and specially us, the inhabitants of the OCDE cities (82% of GNP and consumption capacity). The EU has signed the Kyoto agreement and has ratified it in Marrakesh. It is a 92-2010 compromise to reduce direct TCO₂ emissions by 8% in order to attempt to reduce the rise in CO₂ concentration.

4.7. A “different” RMB land model.

How to make Kyoto (-8% TCO₂ direct emissions) compatible with trace increases of +150 (+150 % TCO₂ of global emissions)? Only such a powerful tool like the land model can propose itself this objective, and requires the ecological matrix. However, this will not be a sufficient condition (the absorbable footprint of the ecological matrix is equivalent to 60 000 inhabitants). The land plan must reduce the residential footprint, (compact nodes), the compulsory footprint (public transport network and rental policies), the non compulsory mobility footprint (leisure in the ecological matrix), and the consumer goods and services footprint (dematerialization, recycling and reuse in the ecological matrix). What is not sufficient is a pristine and clean ecological matrix and a production that takes place elsewhere and we consume... As part of a land plan, the ecological matrix accept the challenge of sustainable development. But who is in charge?

4.8. Methodology

Building a theoretically sustainable model must be audited by environmental economy and would require various phases. Firstly, the cartography of the ecological matrix, secondly, the quantifying of natural services supplied by it, and thirdly, an evaluation of inputs consumed by metropolitan consumer rates in ecological footprint, fourthly, balance and in fifth place, the design of possible strategies to limit insustainability. The sixth phase is the sharing of these in terms of municipal footprint charges, the seventh, is to formulate a general plan and lastly, to check the theoretical model. This check would take place (via GIS) permuting growth and the footprint associated to the economic period 72-96, by a limited footprint model. This process would permit to quantify avoidable entropy and in so doing evaluate if it is possible to comply with the Marrakesh agreements, the costs and evaluate the services supplied by the metropolitan ecological matrix in economic terms.

The politics of 'the green network' and 'the blue network' from the regional plan of development

Serge KEMPENEERS, Premier Conseiller à l'Institut Bruxellois de la Gestion de l'Environnement

1. Brussels, a patchwork of green and blue

The region of Brussels capital is greener than it first appears. Its parks, private gardens, forests, sports facilities and cemeteries, without forgetting Soignes forest, account for more than 8,500 hectares. This wide range of green spaces places our city at the forefront of European capitals.

However, simple figures are not enough. In reality, the city's appearance ranges from green to grey depending on whether you live on the outskirts or in the city centre and, as a result, spatial needs vary from one place to another. What coherent responses can the public authorities provide as a solution to these numerous and different needs? And, above all, how should a development policy be implemented for the region?

A regional framework plan has been adopted in order to develop the green and blue network. The challenge of the green network



is: to turn empty spaces into green ones in areas which are particularly lacking in them; to connect green spaces between them; and to preserve and develop the biodiversity of the fauna and flora. The aim of the blue network is to restore the value of the city's waters and wetlands, which represent the cradle of the city. In practice, however, some of these green and blue connections already exist: avenues lined with trees, railway lines, pavements, river and canal banks... The others will be gradually cleaned up. By working quickly, a good number of public and private spaces can be transformed in much more pleasant places to spend time: car parks, sports pitches, public squares, the inside courtyards of buildings, wastelands, and unbuilt plots of lands... In order to develop these green and blue networks it is necessary for the region to ensure that each inhabitant has a green space close to where he lives or work which responds to his demands: relaxation, varied facilities, peace and quiet, games areas, meeting places, walking areas, the need for greenness, the desire to discover nature...

2. The inside out of the networks Various degrees of greenness

The density of green spaces decreases from the outskirts to the city centre. Some concentric areas can today be drawn on the urban perimeter in which greening work should give preference to one of the functions of the green network.

In the centre: "the re-greening perimeter and the creation of green spaces". Here the goal is to create a "green spark". Any new urban project should take into account and include: the planting of trees along traffic routes, the creation of green spaces and gardens, the greening of roof terraces and 'façades'... This should be done both in public and private spaces, and in companies and private homes.

On the outskirts: "The green city of the second ring". Here, the aim is to preserve the most residential characteristics, and, above all their scenic character. Between these two areas, there are a good number of green spaces of all types. They are linked between each other and to the other two areas, forming the junctions of continuity of this green network network.

From global to local

The policy of the green and blue networks is a joint programme which defines a set of priorities at a global scale. Budgets condition these specific projects while their putting into practice depends on the regional public authorities. However, the desire of the Region

is to propose to the local councils that they get involved with the programme. Municipal projects which respond best to the local needs of inhabitants can be added to the base network and enrich it.



Green passageway

The “green passageway”, drafted in 1986 was designed to allow the Region to be circumnavigated without leaving a signposted route. It has, however, never been fully implemented: there are some important stretches, but they are isolated from each other. The goal of the green and blue network plan is to give a new impetus to this passageway and to integrate it into the continuous green areas, near the edge of the Region.

3. Weaving the network

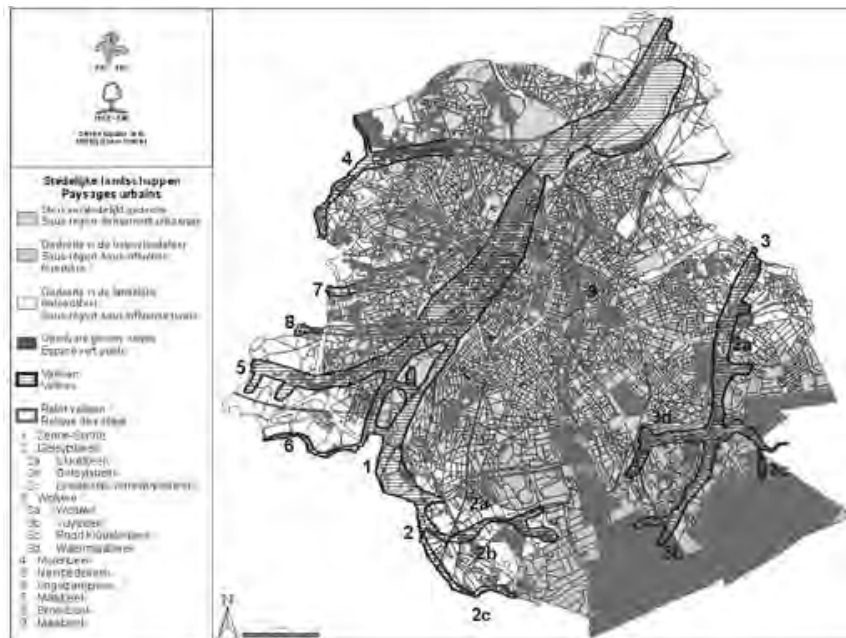
It is true that the notion of a network is related to a fabric; but not in the sense of a jersey or of an item of clothing, but rather in the meaning of a cobweb.

A network of continuous green represents the regional structure of the green network. It feeds the entire Brussels capital region. Through these axes, the idea is to link the

green spaces between them in the best possible way in order to give particular preference to pedestrians and cyclists.

These continuous green areas are based on spaces and they themselves structure the city, such as the communication routes and public spaces. Above all, the aim is to re-green the large communication axes into the city: line the boulevards and avenues with trees, pull up the pavings and concrete from the riverbanks, improve the pavements and cycleways...

Thus, in order to get to ‘Louise’ square from the forest of ‘la Cambre’ you can take Louise Avenue. The avenue structures the city and is lined with a great number of plants and trees. However, the route is not pleasant or safe for pedestrians and cyclists. The continuous network of green network proposes an alternative route which takes these users more into account, and which, thanks to some additional renewal work, will adapt much better to their needs.



4. Multifunctional

Space, from economic resources to social needs

In the Middle Ages space was a resource for Brussels. It seemed infinite and was the drive for all economic activities based on land and water.

Over the centuries, however, “free” space decreased; it became intensely urban and was thus regulated. In the 19th century, Leopold II gave new life to public space through greening, gardening and aesthetics. The public space must embellish the city and had to be visited by citizens. Nowadays, the mentality has changed and green public space should accomplish a variety of functions: guaranteeing the quality of urban life, providing horizons and colours to those without them, breaking the urban isolation

(linking the green spaces and opening them up to coexistence with people), informing citizens of their natural diversity and wealth...

Ecological function

Well distributed throughout the area, the network also plays an important ecological role. It allows the flora to disperse and some species of the fauna to move from one green space to another. The urban landscapes, natural heritage and biodiversity directly benefit from this. In order to preserve and develop this role it is not enough to classify some areas as "natural reserves". The



management of some sites should evolve from a horticultural plantation to a wilder vegetation in order to allow a more natural landscape to develop. In this way, here and there, the network is gradually being enriched with new refuges available to the wildlife.

Making choices

To the Northwest of Brussels, the cleaning-up and renewal of the Wilder forest from 1993 to 1995 was the first attempt to bring together ecological and social interests. Considered as an area of adventure and discovery, the vegetation of the Wilder forest, which in the past was dense and diverse, has suffered to some extent. In the medium term, the balance of the work done shows that it is often necessary to choose between the different roles that the green and blue networks play.

5. The forests

Part of a European network

In addition to the forest of Soignes, Brussels still has a few other forests, remnants of the past landscape. Natural areas par excellence, these forests are home to a flora and fauna which enrich the quality of urban life. With other areas, equally rich in biological terms, they form the green network of Brussels which is part of an extensive network of natural sites spread across the whole Europe.

1. The jewel in the crown

The forest of Soignes, more than 70% of which is made up of beech trees, is a green cathedral at the gateway to the city. The preservation of natural reserves and the clean-up of the lakes have allowed its ecological role to be conserved. A dense network of paths, trails, cycle tracks, bridleways and areas for games and leisure also make this forest a very popular spot for rest and recreation.

On the other side of the city...

The forest of Laerbeek grew up around the sandstone quarries abandoned in 1645 by the monks of the Abbey of Dieleghem. It is an exceptional site both because of its biological





diversity and because of its topography. However, this wealth was threatened as a result of its popularity. More and more, the region's inhabitants come to relax here. In order to reconcile these different interests a series of measures have or will be taken: the repair of the paths, better signposting, etc.

2. Accessible nature

Some forests and wooded areas are now catalogued as nature reserves. This is the case of "des Enfants Noyés" and "Vuylbeek in Watermael-Boitsfort. Their management attempts to combine the conservation of fauna and flora with public use. A network of carefully-maintained footpaths has been laid down here, allowing walkers to stroll around without eroding the soil and treading on the vegetation and the river banks so as not to disturb the birds nesting in the thickets and the grasses. Fences protect the most sensitive sites.

6. Lakes and rivers Blue, like the city

Since its beginnings the history of Brussels has been written between the city and its water. Throughout the city's history, the water network has undergone different fortunes. When used as energy to power the windmills and breweries, the waters of Brussels became an open sewer and then disappeared from the landscape. It is now time to reassess their value. This is the aim of the blue network, which is inseparable from the green network.

1. The return of flowing water

Around 1850 because of health reasons and the fight against floods, the Seine and its tributaries were diverted. These water courses and their normal flow are now being won back along many stretches. This will be possible in the very near future along the Woluwe between the Parc des Sources and the Lindekemaele windmill. The bed of the river is to be dredged and the riverbanks planted with vegetation in order to prevent landslides. The Woluwe will thus have 400 extra metres lined with a riverbank walkway.



2. Joining the waters

Several rivers, such as the Geleytsbeek and the Molenbeek, are cut off at numerous places. Their waters empty into overburdened sewers. The aim is to reconnect these abandoned stretches and allow their waters to reach the Seine.

Combating floods

The clean waters, coming from lakes and springs, are often channelled into the sewers, where they converge with used waters, increasing the danger of floods. This happens to the waters of the lakes of Val Duchesse, the lake of Leybeek, the Pecheries and Parmentier Park. In the dry season, almost 40% of the waters transported by the main sewers are clean. The best solution would probably be to separate them from the sewage waters and channel them back to the lakes and water courses. Thus, within the framework of the clean-up of the Woluwe, between the park des Sources and the park Malou, the water collected in the side drains will be channelled back to the river rather than to the sewers.

The project of redesigning the main sewers of the avenue du Roi Albert in Berchem-Sainte-Agathe is aimed at making use of the area of Hunderenveld in order to prevent flooding. Other wetlands, such as the Ganshoren marshes in the Molenbeek valley could also absorb any excess of flow in the future.

Complementary programs

The draining of the clean waters to the sewers also hinders the proper functioning of the water treatment plants. This requires the same amount of waste diluted in useless water to be treated. In the end, a part of the clean-up work of the blue network will also allow an improved performance by the industrial and domestic water treatment plants and enable better results to be achieved.



disuse and become overgrown. It is well-known by lovers of solitude and peace and quiet. Even more surprising are the reconverted cemeteries of Parc Georges Henry in Woluwe-Saint-Lambert; Parc Forestier in Anderlecht; and the Square du Petit Sablon in Brussels capital.

2. Blue and green combined

Created in place of a road, the park of the Heronnière lies along the valley of the Watermaelbeek and is today a green space with several different purposes.

The region's inhabitants cross it on foot or by bicycle to get to the different surrounding neighbourhoods. The area has been cleaned up and also offers some relaxation and leisure areas (sports courts and tracks, mountain-bike paths, gardens...), while its biodiversity has been promoted by reserving areas of the wetlands for the fauna and flora.

Green streets

Planting the streets, avenues and boulevards has numerous advantages. In its range of forms (grass, flowerbeds, brushwood, bushes or trees) its variety of functions are that of any green space: to adorn the neighbourhood, filter out dust, absorb rain water, and to act as a seasonal clock and, to a lesser extent, being a biological passageway.

3. Too much stress

The trees which shade our streets suffer from intensive stress: pollution, severe pruning, wounded trunks, soil compacting at the roots level... Their impact on the green network therefore depends on their state of health. The problem is particularly prevalent in the most majestic avenues and boulevards. The trees here have frequently passed their "retirement" age. Their replacement must thus be envisaged in the long-term planning.



4. Turquoise tranquillity

A cascade of gardens, such as those of Etterbeek (Ambiorix, Marie-José...), or the lakes of Ixelles, which prolong the Forest of Cambre Park, the 'Jardin du Roi' and the 'Jardins de l' Abbaye de La Cambre', are another type of link between green spaces. These lakes do not have any real ecological value, but rather perform recreational and embellishment roles. It is pleasant to follow them and reach a series of squares and shopping streets, or to stop in them during the lunch break or on a Sunday.

3. Wetlands maintenance

A team "of eco-workers" will deal with the maintenance of the water courses and the wetlands. Guaranteeing the proper drainage of the waters and preventing the build-up of plant remains or waste reduces the risk of floods and long- or short-term pollution. At the same time, less artificial management of the riverbanks, lakesides and the wetlands improves the attraction of the landscape along with its ecology and recreational possibilities.

8. Greenways

1. Green oases

Some of the region's cemeteries are true green oases. With its abundant trees, the cemetery of Brussels is rich in fauna and flora, giving it a significant biological value. The old cemetery of Dieweg in Uccle has fallen into

Replacing the chestnut trees

The avenue du Roi, which connects the neighbourhood close to Gare du Midi to Duden park, is a recent example of the greening of an important thoroughfare, following the principles of the green network. The chestnut trees were too old and had to be chopped down. For the inhabitants of a neighbourhood with few green areas, this need was at first opposed. However, the project as a whole was able to calm their fears. Reduced from 4 to 2 lanes, the traffic freed up space for pedestrians in the middle of a boulevard with gardens. Parking was restricted to reserved spaces which did away with uncontrolled parking on pavements and on the central boulevard. Pedestrians can now enjoy themselves as they stroll down Fonsny Avenue to Rochefort Square, and within a few years, the young chestnut trees will shade the new boulevard.

Overcoming the obstacles

It was necessary to favour pedestrians and cyclists more at the crossroads between the avenue of Tervueren and the boulevards du Souverain and Woluwe, a true hub of roads. An overhead walkway, linking the two sections of the boulevard of the old Brussels-Tervueren railway, will soon allow this road junction to be safely crossed. In addition, further overhead walkways are to be built above the boulevard and so enable easier access to the green areas.

10. The parks Multiple function

The parks are probably the parts of the green network with the most varied functions. Free spaces within the urban fabric encourage rest, recreation and walks... Moreover, because of their architecture and history, some of them have a real cultural value. There are even green walkways right in the heart of the urban areas, and these also perform an ecological function. Finally, they undoubtedly embellish the city and contribute to improve the quality of urban life.



1. Recreational and cultural space

Because of its layout, the park of the Cinquanteenaire is a public space which performs several roles: it is a space for culture, tourism, festivals and relaxation, and also functions as a green area. The Musées Royaux make the park a place of convergence for the numerous tourists and inhabitants of Brussels who visit their exhibitions. The presence of the great mosque forms a social and religious bridge between the different communities. Large popular festivals such as the Fête de l'Iris, the 20-km Brussels race, cycling events and big firework displays are all held here on a regular basis on the esplanade. Young parents push their prams, and people play sports, and cycle and skate around, taking advantage of the flat terrain.

2. Restoration of the cultural and horticultural heritage

Classified as historical site, both because of its horticultural and artistic wealth, the park of the 'Jardin Botanique' is being restored. The recent restoration begun by the regional authorities has enabled its tranquillity and calm to be recovered. The replanting of unusual species, the restoration of the statues, the everyday upkeep of the gardens, and the creation of leisure spaces for the inhabitants of the neighbourhood... everything must be perfectly blended in order to guarantee the varied uses of the gardens. In the longer term it would be ideal to join the two sides of the gardens, currently separated by the boulevard of Saint-Lazare.

3. Public space belongs to everyone

The Elisabeth park was until recently just a sad memory, split in two for many years by the express carriageway and the viaduct leading to the Rogier tunnel. Today, the park has been restored and the inhabitants can again enjoy this walking and recreational area. Once again a popular meeting point, the park's esplanade pulsates with the Spanish festival for three days every June.



The railway lines

11. Green corridors

The banks of the railway lines, with their dense and varied woody vegetation, are authentic green corridors penetrating into the heart of the urban fabric. Connecting the green spaces which they cross or run parallel to, they form true ecological corridors. In fact, they are the only ones worthy of such a name in Brussels. Their management is rather problematic, but on occasions it keeps some unexpected marvels, such as the flower meadows which have colonised the calcareous sands along the Neerpede and Haren railway lines.

to spread everywhere. The solution entails a concerted management between the different bodies involved: the regular cutting back of the railway woods, the succession of dense vegetation areas, and the chopping down of large trees where safety factors makes this essential. On occasions, railway wastelands such as Josaphat station are particularly rich in biological terms. The flora has colonised very different environments, such as ash tracks, calcareous basalt, porphyry surfaces and concrete slabs...

These deserted and warm areas are home to some strange insects, such as the blue-winged locust and the small "flying phaneropter" grasshopper, along with other insects which thrive here.

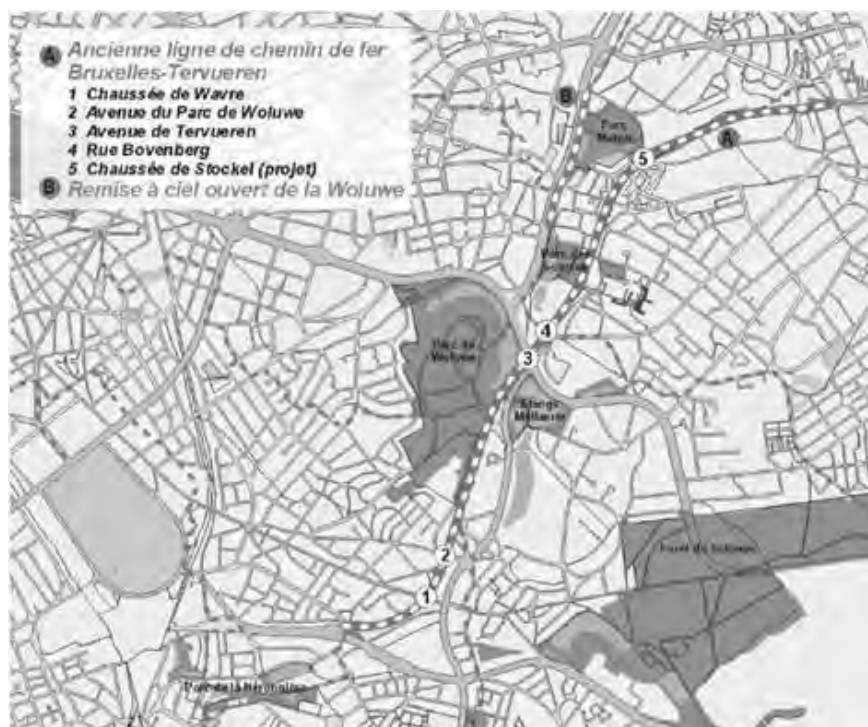
12. The urban wastelands and gaps

1. Gaps in the network

Small pieces of wasteland, unbuilt land and building plots such as the gaps between two buildings, quickly become eyesores in the city. In order to prevent their becoming illegal dumping areas, simple hedges or fences can at the same time protect them and improve the green renewal of the roads. When protected, these small areas, spontaneously colonised by vegetation, function as micro-refuges for fauna and flora, while awaiting possible building. The largest abandoned spaces can also be temporarily cleaned up and depending on the case, perform an authentic recreational, scenic or ecological role.

A large-scale project

The large industrial plot, located in the old station of goods and currently a place of transit frequented by taxis, is undergoing a complete overhaul. This is the ideal site to guarantee a green connection between the canal and the Bockstael boulevard. Located in a neighbourhood particularly lacking in green areas, the site is a gift, as its biodiversity has developed here unhindered after years of neglect. Rather rare and varied plant communities thrive here together with young willow and birch. There are also several species of insects which are rare or non-existent in the region. The cleaning-up of this site would bring together several projects: the Music City project is to occupy the existing buildings and squares, new housing is to be built, and some areas will maintain their industrial character. Next to the green network, coherent renovation work will create new green areas and preserve the ecological corridors.



13. The green network, today and tomorrow

Gradually, Brussels is building a network of habitability, opening itself up and bringing fresh air into the city. Here, the work carried out along the Woluwe, represents the future layout to be drawn throughout the Southeast of the city. In the west, the renovation work planned to join the Zavelenberg with the Ganshoren marsh is to begin in the very near future.

Some green and blue sites are also being laid out in the city: from the Gaucheret marsh to Boulevard Roi Albert II, and from the Laekenvelde towards the canal. The patches of green and blue are gradually being extended and lengthened, and thus, the fabric of the network is being strengthened. Designed on the basis of a regional network, this programme is also being implemented at a local level. Numerous bodies are involved: Institut Bruxellois pour la Gestion de l'Environnement, Administration de l'Équipement et des Déplacements, municipal authorities, STIB, SNCB... Therefore, each improvement and each piece of renewal work should be thought out in co-operation before carrying it out, and then should be jointly managed.

If this planning involves a legal obligation on the part of public, regional and municipal bodies, the resulting network can only be enriched with the help of as many different private participants as possible: associations, companies, private individuals... The emphasis placed on freeing environmental and urbanistic permits is one of a number of methods to build up the network.

However, beyond the legal framework, the voluntary sector has a lot to offer, allowing everyone to take part and benefit from this dynamism, and to do so in different ways, enjoying in first place the improvement that this network represents for urban life: walking along the green network, resting on its park benches, cycling from one side of the city to another, or playing about with a ball! Also think about the "network" when you do any renovation work on your own private space, fill your roof terraces and doorways with plants and adorn your façades. Finally, push your municipal district to actively participate in this movement.

There are currently a great number of projects under study. However pedestrians and cyclists are already finding more and more quiet and pleasant routes around the city.

