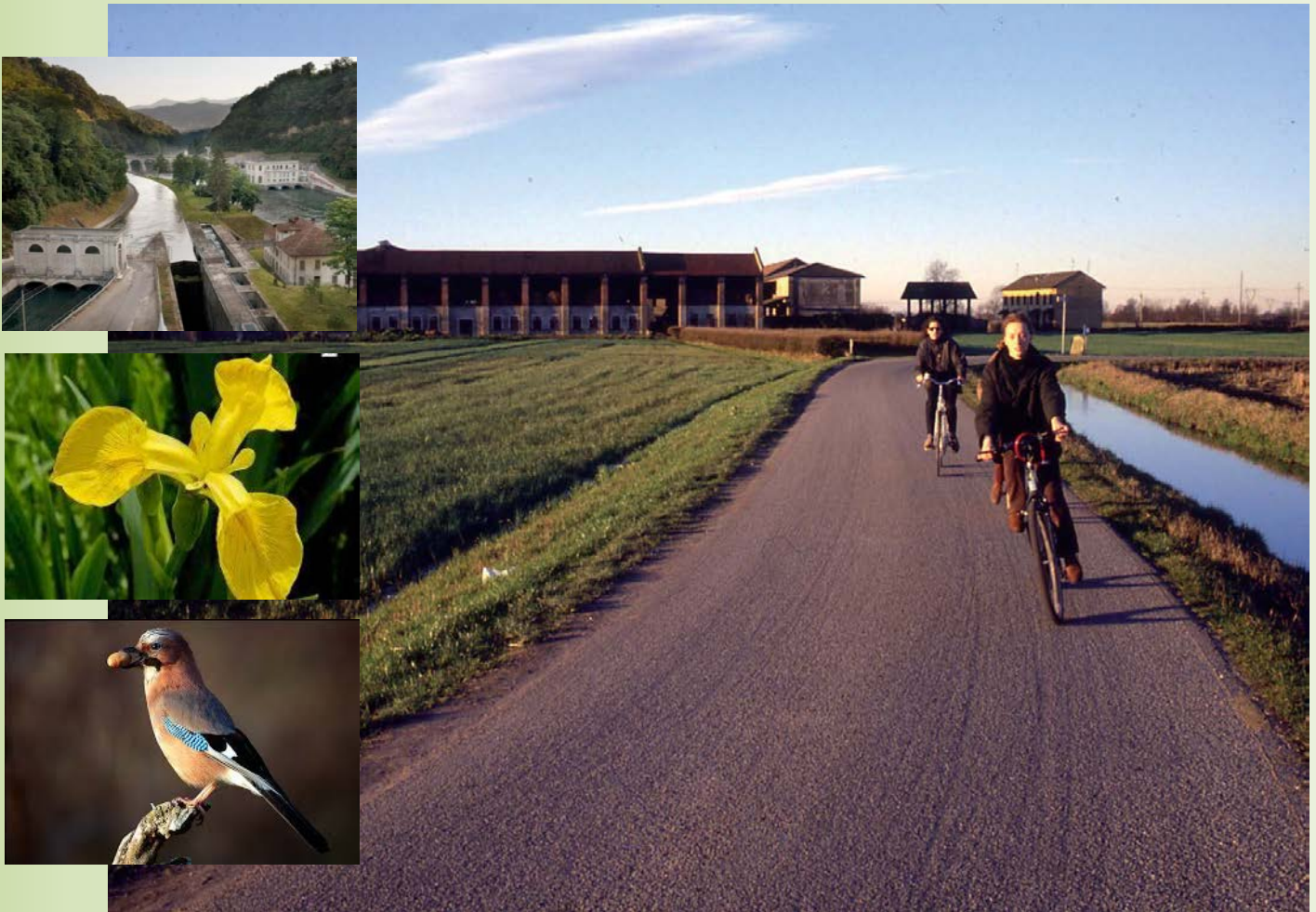


# Ecosystems Services supported by Periurban Natural Spaces

## Nurturing metropolitan areas to nurture the planet



Proceedings of the technical meeting held in Milano  
17-19 June 2015



European Association  
Periurban Parks

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## Introduction

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Within the last years has emerged the concept of **ecosystem services** which is also known as **natural capital** in economic fora.

The conceptual framework of ecosystem services derives from the **Millennium Ecosystem Assessment** driven in 2005 by an international working group which was established in order to meet the needs of policy makers and the public for scientific information concerning the benefits that brings the ecosystem services for human well-beings.

Ecosystems provide a large variety of services and benefits (e.g. recreational or protective services, production of food and fodder, timber production, renewable energy, air quality, CO<sub>2</sub> storage, etc.), even if their actual value is still not “recognized” in economical assessments.

The protection of natural sites within metropolitan areas is a strategic element to ensure the supply of ecosystem services to the city, especially those of strong social and economic value.

The purpose of the meeting “Ecosystem systems supported by periurban natural spaces. Nurturing metropolitan areas to nurture the planet” that was hold in Milan, home of the world exhibition **EXPO 2015 "Feeding the Planet, Energy for Life"** has been to discuss the monetary and non-monetary valuation of various ecosystem services provided by periurban parks (production of O<sub>2</sub>, CO<sub>2</sub> storage, food production, health and well-being).

The technical meeting was dedicated to leaders in charge of periurban parks (directors, managers, politicians, technicians, etc.) in order to exchange ideas and enhance their knowledge via specific examples of other parks and through experts from the academic and non-academic world.

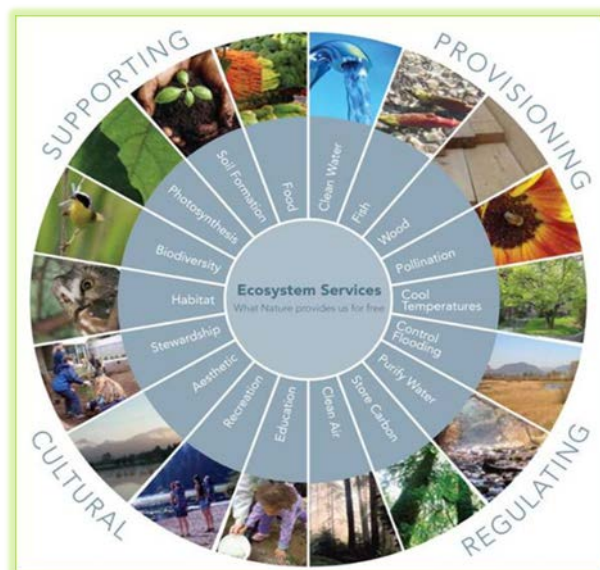
## The benefits provided by natural and semi-natural habitats to urban areas. Preliminary results from the LIFE+ MGN project

Benedetta Concetti, ERSAF - Lombardia Regional Agency for Agriculture and Forestry

### LIFE + Environmental Policy and Governance

The LIFE + Environmental Policy and Governance project, which started in 01/09/2012 and is expected to end in 15/06/2016, aims at:

- a. creating tools for qualitative and quantitative evaluation of Ecosystem Services (ES) in the framework of the Natura 2000 network;
- b. improving habitat management through Payments of Ecosystem Services (PES) mechanisms and other innovative self-financing tools;
- c. involving stakeholders at local and national level for the development of innovative forms of governance.



### The study builds on 3 methodological steps:

#### (1) Quantification and evaluation of ES flows model:

Application of the model to qualitatively and quantitatively evaluate the ES: assessment of the supply and demand for associated ES and identification of different flows from/to "providershed" and "benefitshed", evaluating all the related monetary costs and benefits

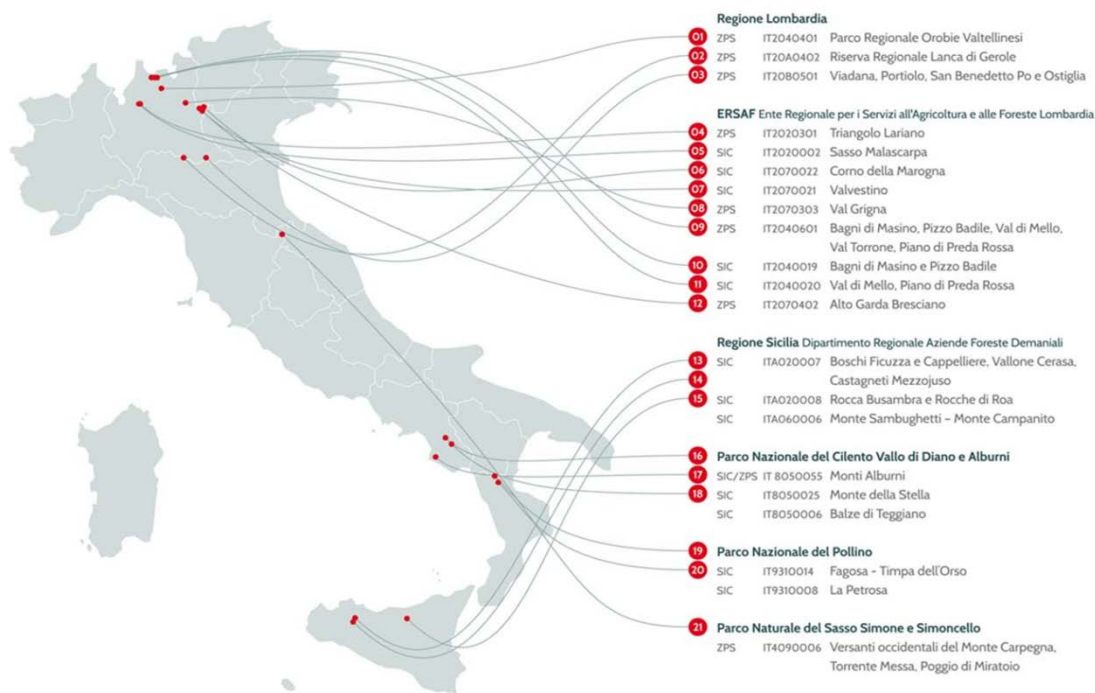
#### (2) Management efficiency evaluation model

Qualitative and quantitative evaluation of the site management efficiency through stakeholder and management staff participation

### (3) MGN governance model

Implementation of the MGN Governance Model in order to select the most suitable PES or other types of self-financing mechanisms for each site

**21 pilot sites** with total area of **90,239 hectares** (7 Regions, 3 biogeographic regions) belonging to the Natura 2000 network.



For each Natura 2000 pilot site, the specific actions are:

- **Data collection** and preparation of spatial datasets compatible with software GIS
- Application of the **model to evaluate the ES qualitatively and quantitatively**: assessment of the supply and demand for associated ES and identification of different flows from “providershed” and “benefitshed”, evaluating in monetary terms all costs and benefits
- Actions related to the **evaluation of management effectiveness** and the administration of Natura 2000 sites together with stakeholders and the management staff.
- **Application of PES** scheme mechanism with emphasis on self-financing and financing mechanism and strategies.

The selection of the best PES or other types of self-financing tool for each site requires the assessment and valuation of the priority ES in combination with the assessment of the site management efficiency and the implementation of the MGN governance model.

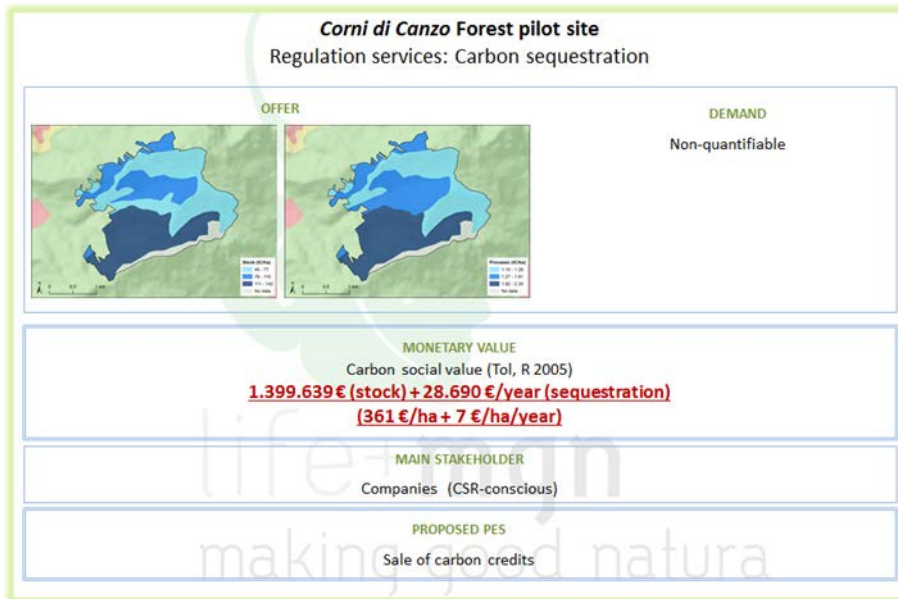


## Case studies

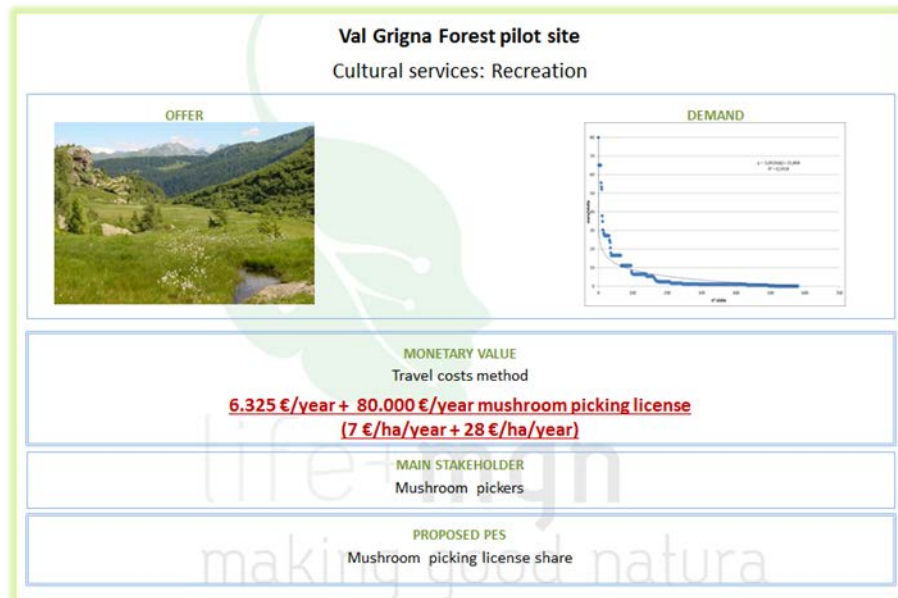
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## The main challenges and lessons learned so far

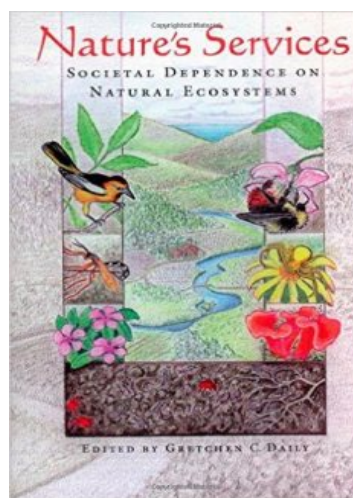
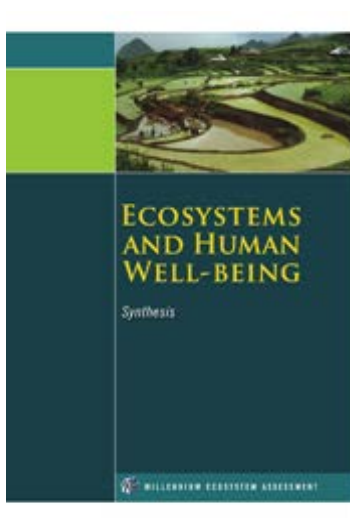
Regarding the data collection is important to be taken under consideration their availability and quality. In addition in their processing the choice of valuation methods is essential since the outcomes of valuation are meager so far. Finally, concerning the stakeholders' engagement there is need for effective communication tools catering to business-minded stakeholders lacking environmental awareness and support of local policy makers and associations as negotiations facilitators.

## Identification and cartography of ecosystem services at local level

Carles Castell, Head Territorial Planning and Analysis, Barcelona Provincial Council

### Conceptual framework

Although there are various definitions and approaches, usually is accepted that "**ecosystem services are considered direct or indirect contributions from the ecosystems for human well-being**" (TEEB, 2010). The origins of the concept of "Ecosystem services" is back at the end of the 1970s, when some authors began to point out our social and economic dependence in relation to the goods and the functions of nature, with the aim of attracting the public interest towards biodiversity conservation (see Gómez-Baggethun et al., 2010 for a historical review of the concept of ecosystem services). The generalization of the concept at the scientific level came in the 1990s through two publications above all: the book "Nature's Services: Societal Dependence on Natural Ecosystems" (Daily, 1997) and the scientific paper published in "Nature" under the title "The value of the world's ecosystem services and natural capital" (Constanza et al., 1997). The monetary values presented by this article caused a great impact, both scientific and political.



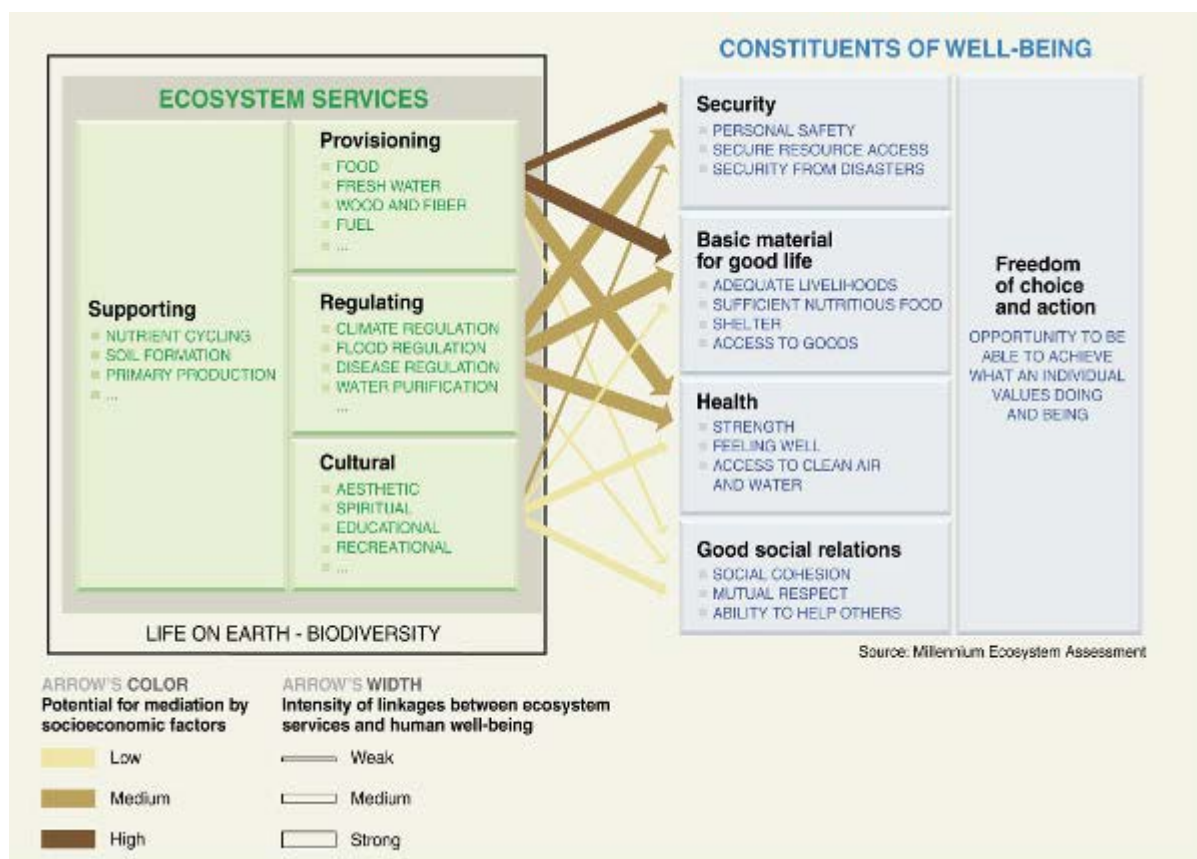
The Millennium Ecosystem Assessment (MEA 2005) identified four major categories of ecosystem services: habitat or support, supply or provision, regulation and cultural. The services included in the last three categories would be directly related to the main constituents for human well-being: security, basic material goods for a good quality of life, health and good social relations. Habitat or support services (which are not real services under the opinion of some authors) are directly related to main ecosystem functions.

With a level of impact similar to the Millennium Ecosystem Assessment, TEEB initiative (The Economics of Ecosystems and Biodiversity, see TEEB 2010), aims to highlight the growing economic cost involved in biodiversity loss and the degradation of ecosystems at a global level, and to propose measures at different levels in order to stop these processes. It is also important to



mention the recent creation of IPBES (Intergovernmental Platform on Biodiversity and Ecosystem Services), an intergovernmental independent platform open to all members of the United Nations that has led the evaluation of the state of biodiversity on the planet, its ecosystems and the essential services provided to the society.

Despite the great scientific and political interest in this field, there are still pending challenges that must be addressed in order to fully integrate the concept of ecosystem services in planning and decision-making (de Groot et al., 2010). For instance, the development of a framework of integration that fully consider the ecological, economic and socio-cultural values of ecosystems or the definition of methodologies to quantify, model and map the flow of the services generated by these ecosystems at different scales, which is still in the process to be established completely.



### Ecosystem Services Classification

The relationship between the structure and the biophysical processes of ecosystems, as well as the different dimensions of value relevant for human well-being, based on the concept of ecosystem services, is a subject of scientific debate. One of the theoretical frameworks that is having more acceptance within the scientific community is the so-called "ecosystem services cascade" (Haines-Young & Potschin 2010). This framework differentiates between "functions", "services" and "benefits" to establish the connection among the biophysical structure of ecosystems and values attached by humans because of their relevance, whether economic or not. Thus, functions of ecosystems would be intermediaries between ecological processes and services, and could be

defined as "the capacity of ecosystems" to provide goods and services that satisfy human needs, directly or indirectly" (De Groot, 1992; Gómez-Baggethun & de Groot, 2010). The effective use of a good or service provides benefits (which have a direct impact on human welfare) that in turn can be measured in monetary terms for society. This assessment (which could equate to the demand of the service) may have some impacts on the biophysical structure of ecosystems that could be adjusted through political action.

## **Mapping Ecosystem Services**

Mapping of ecosystem services allows to highlight their territorial variability, to identify key areas of provision (the so-called green infrastructure) for their sustainable management, as well as to assess possible synergies and conflicts (trade-offs) between multiple services. Currently, there is a great diversity of approaches, both because of the scale and scope and the method of evaluation of ecosystem services, or by the sources of information used.

One of the first attempts to map the monetary value of global ecosystem services was explained in the article mentioned above (Constanza et al., 1997). The method used was the value or benefit transfer, in which the empirical results of valuation or quantification of ecosystem services in a case study were transferred to others, usually through the cartography of soil covers, habitats or biomes. This method has been used by different authors, but it was also criticized to neglect the spatial differences of the typologies of habitat and to give, therefore, inaccurate results (e.g. Nelson et al., 2009). There are also other methods to measure the social values obtained through surveys of preferences and subsequently to map ecosystem services by methodically integrating these values with biophysical data (e.g. Sherrouse et al., 2011). Finally there are sociological evaluations of the provision of ecosystem services that model the relationship between ecological variables (sampling of services measured in the field, weather, cover soil, water data, etc.) and social ecosystem services provided through the territory and their beneficiaries (e.g. Chan et al., 2006, Naidoo et al., 2008).

The ecosystem services most commonly mapped are regulating services (e.g. the capture and storage of carbon, erosion control or water regulation). Among provisioning services, the cartography of food production is the most widespread and in relation to cultural services it is usual to represent the recreational uses. The most commonly used information sources include data and soil covers, topographic information, or vegetation index maps. There are also models for the development of this type of cartography, from which one of the most widely used is the so named InVEST (the Integrated Tool to Value Ecosystem Services and their trade-offs). Other relevant tools to map ecosystem services are AIRES (the Artificial Intelligence for Ecosystem Services), and also SolVES (the Social Values for Ecosystem Services)

The cartography represents a key element for decision-making in the field of public administration. Due to its explicit nature, is the most common approach to study, analyse, plan and manage ecosystems services in an optimal and efficient way. The European Union (EU), in the document "The EU Biodiversity Strategy to 2020" through objective 2 action 5 - maintenance and restoration

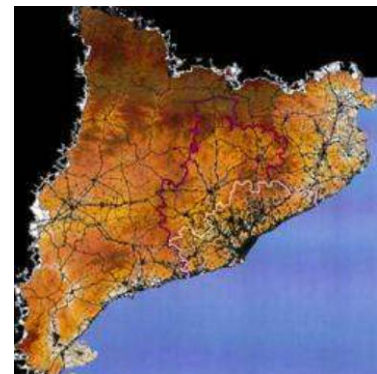
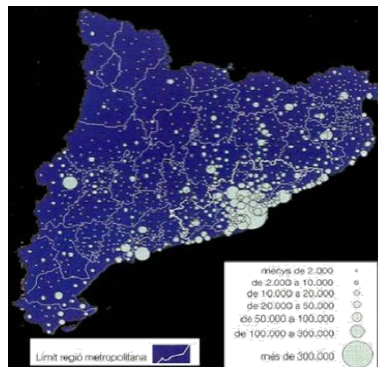
of ecosystems and their services-, foreseen that all member states must create a map of the state of ecosystem services in their territories by 2014.

Other institutions such as the World Bank or the United Nations, through some of its agencies, also promote the evaluation of ecosystem services to improve environmental planning and management. For instance, the International Union for the Conservation of Nature or the United Nations Development Program, among others.

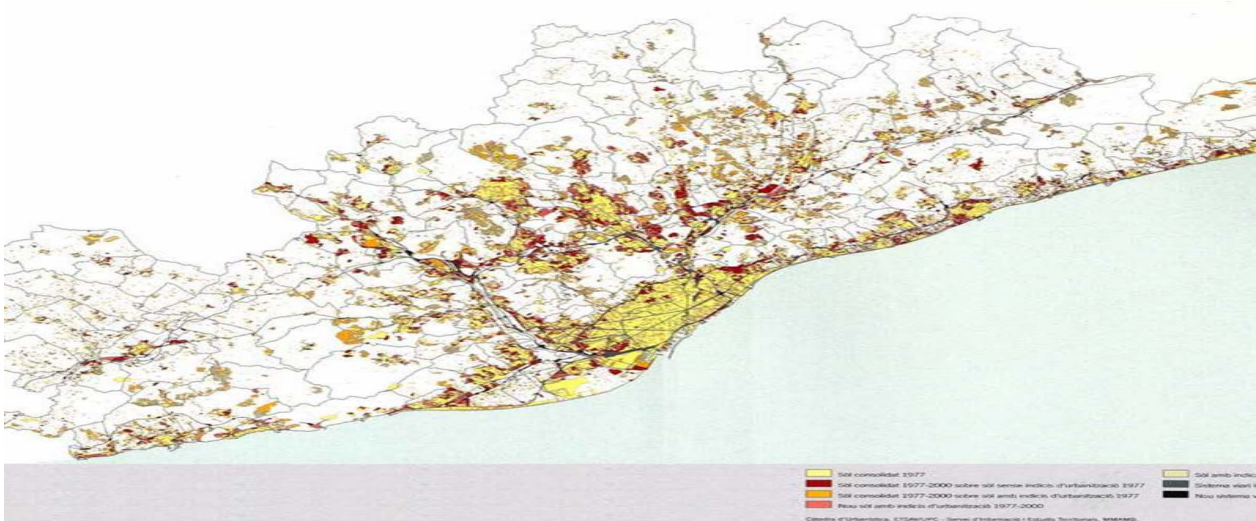
## Mapping and Assessment of Ecosystems and their Services in the province of Barcelona

### Introduction

The ecosystems in the province of Barcelona are mainly forest types (forests, scrub, meadows, grasslands, etc...) and agricultural ecosystems, highlighting as well the specific ecosystems linked to urbanization, which are especially present in the metropolitan area of the city of Barcelona. As shown in different editions of Land Cover maps of Catalonia (MCSC, CREAM) the metropolitan area has suffered a drastic drop in agricultural surface (almost 58% ) over the last decades, much of which has been transformed into urban coverage and, to a lesser extent, forestry surface. These changes in land cover and use have direct implications in relation to the provision of ecosystem services within the field of study, especially in terms of supply services, as well as for the demand of these services, as the increase of urban surface is proportional to the increase of population.



	<b>Km<sup>2</sup></b>	<b>Habitantes</b>
<b>Catalunya</b>	31.894	7.504.008
<b>Provincia de Barcelona</b>	7.733	5.523.784
<b>Región metropolitana</b>	3.234	4.774.561



## PROVISIONING SERVICES

### Food production (crop/pasture)

The food products can come from various ecosystems such as forests (mushrooms, hunting wildlife, etc.) or fluvial and marine ecosystems (fishery products), but mainly comprise the agricultural ecosystems (pastures and crops) that are the most relevant in this function, especially in the province of Barcelona. In this first approach to the mapping of this role have only taken into account the production of agricultural crops intended for human consumption, calculated from agricultural average yields in biophysical value (kg/ha per year)



### Forest biomass (CREAF method)

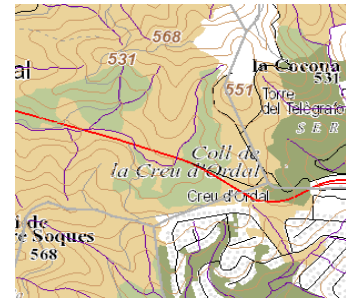


The provision of forest biomass refers mainly to service production of raw materials (building material/furniture and fuel) from forest ecosystems, this means wood and firewood. As in the previous case, other ecosystems, such as agricultural, can provide biomass as commercial wood or fuel (for example, woody biomass energy crops), but they have not considered at this stage because of its minor relevance in the area of study. It must be highlighted that mapped indicators show the ability of forest ecosystems to provide this service, i.e., the potential supply of the service, which obviously does not match with the annual extraction of biomass in the form of wood or charcoal (which correspond to the use or service flow). Likewise, only the total aboveground woody biomass has been considered (sum of the fractions of woody biomass: wood,

bark and branches) of tree species. Estimation of the indicator is based on the calculation of biomass average increase (t/ha per year) from the formula:  $(B\_IFN3 - B\_IFN2) / 11$ , where 11 are the years between the completion of National Forest Inventory (IFN) 2 (1990) and IFN3 (2001).

### Forest biomass (Farmers Union method)

The provision of forest biomass refers mainly to service production of raw materials (building material/furniture and fuel) from forest ecosystems, this means wood and firewood. As in the previous case, other ecosystems, such as agricultural, can provide biomass as commercial wood or fuel (for example, woody biomass energy crops), but they have not considered at this stage because of its minor relevance in the area of study. It must be highlighted that mapped indicators show the ability of forest ecosystems to provide this service, i.e., the potential supply of the service, which obviously does not match with the annual extraction of biomass in the form of wood or charcoal (which correspond to the use or service flow). Likewise, only the total aboveground woody biomass has been considered (sum of the fractions of woody biomass: wood, bark and branches) of tree species. Estimation of the indicator is based on the layer of Agricultural Dynamism 2013 (Farmers Union, 2013) and on the table of forest yields (Farmers Union, 2013), which includes the estimated average net growth of forest each category (in t/ha per year).



## REGULATING SERVICES

### Global climate regulation. Air carbon stored in the tree layer of forests (t/ha) for the year 2001



Biomass storage occurs mostly in forest ecosystems, mainly woody crops also can accumulate significant amounts of carbon and, therefore, also contribute to the global climate regulation. Even the urban ecosystems (parks, gardens, woodland road, etc.) are able to provide this service, although moderately. To be able to map this service, have been used cartographic bases to evaluate the ecological status of the forest in the area of the SITxell (Pino, 2007), because it includes a cartographic modelling of data from forest inventories (IFN2 and IFN3). In accordance with these results, the total storage of aerial carbon in the Sitxell forests are over 10 million tons in the year 2001 (National Forest Inventory, IFN3).

## Global climate regulation. Air carbon stored in the tree layer of forests in the area of SITXELL (t/ha) projection for the year 2013

Assuming that the annual flow of carbon between both national forest inventories (IFN2 and IFN3) is kept linear, can be projected the estimated carbon storage present in SITxell's forests by 2013. According to this premise, the forests of the area of the SITxell would be accumulating in 2013 about 11.11 million tons of aerial carbon. Calculation of the woody aboveground biomass of the IFN2 from the formula:  $B_{IFN2} = B_{IFN3} / (1 + \Delta B / 100)$ . Calculation of the average increase of biomass in tons/HA per year with the following formula:  $(B_{IFN3} - B_{IFN2}) / 11$ , where 11 are the years between the completion of IFN2 (1990) and IFN3 (2001).



## Global climate regulation. Air carbon captured annually in the tree layer of forests in the area of SITXELL (kg/ha per year)



The estimation of air carbon captured annually in the tree layer of forests in the area of SITxell (in kg/year) considers a linear annual increase between 1990 (IFN2) and 2001 (IFN3). From the map of IFN3 (National Forest Inventory 2001) biomass, and the map of net increase in biomass between inventories has been able to map carbon captured annually. Keep in mind that these results only show the captured carbon fraction of aerial tree layer (wood, bark, branches), and therefore do not consider carbon underground biomass (roots) or what is present the shrub layer, herbaceous or even necromass accumulated in the soil (which may be higher than the total carbon biomass).

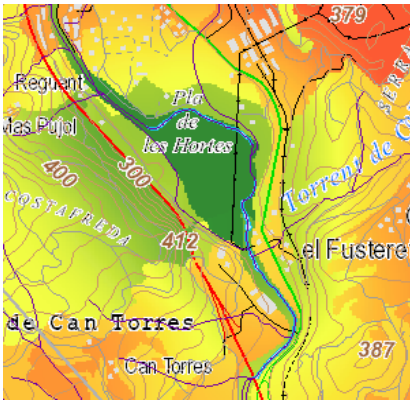
## Erosion Control

Erosion control or regulation is an ecosystem service which can be defined as the capacity of ecosystems (mainly vegetation) to retain soil and prevent sudden or gradual erosion (landslide). The service can be quantified in biophysical units, for example, through the amount of soil retained (kg/ha and year) by vegetation. In this case, the chosen option has been to make an approximate assessment based on the index of potential erosion ability (SITxell) and a generic values of the capacity of land covers to control erosion based in expert knowledge (Burkhard et al., 2012).



## CULTURAL SERVICES

### Potential recreational opportunities



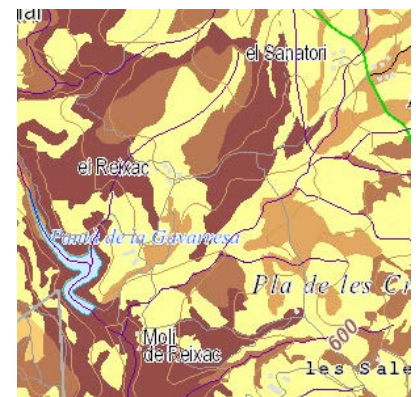
Recreational and leisure outdoor opportunities offered by ecosystems represent one of the most important cultural ecosystem services for human welfare, services. Especially in a highly populated area such as the Barcelona province. Quantification, modelling and evaluation of cultural services pose a major challenge, since, unlike provisioning or regulating services, they are intangible benefits and, therefore, subject to the perceptions and preferences of the people. With the aim of mapping the potential of recreational opportunities generated by the ecosystems within the SITxell area, the ESTIMAP (Ecosystem Services Mapping Tool) model has been used. This model estimates the potential capacity of ecosystems to provide recreational opportunities or outdoor leisure based on a set of components (1- the degree of naturalness; 2-natural elements (except water); 3-infrastructures; 4-water elements). It is assumed that all of these variables influences this provision in greater or lesser extent.

## SUPPORTING SERVICES

### Habitats for species

Each ecosystem provides different habitats that may be essential for the life cycle of the species, including those migratory who depend of them. The map of botanical interest (VGI) of habitats is calculated taking into account the rate of chorological interest and the rate of intrinsic interest of the habitats used in the SITxell project. This cartography represents a good indicator to assess this support ecosystem service.

Like other services already analysed, higher values in this map corresponds in many cases to natural protected areas of the province of Barcelona and freshwater areas.



## Ecosystem services of the Royal National City Park in Stockholm. The value of *Garrulus glandarius*

Richard Murray, President of Ekoparken Association

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This park was inaugurated in 1995 upon national legislation. It comprises 27 sqkm out of which 8 sqkm are lakes and sea. It stretches from the absolute hub of the Stockholm region – the Royal castle and the old, medieval city – to suburbs almost 15 km away. It is cut through by some major roads and contains several residential areas. 86 percent of the area is forests, meadows or lakes and sea. 14 percent is hard-made. In some places it is quite narrow, a couple of hundred meters, but it hangs together and as far as we know it works for the spreading of animals and plants throughout its entire area.



It has been shown that cities can house biodiversity, sometimes even more than surrounding landscapes of monoculture agriculture or forestry (Secretariat of the Convention on Biological Diversity (2012) Cities and Biodiversity Outlook. Montreal, 64 pages). RNCP works as a reservoir for biodiversity, hosting 75% of all species that can be found in the middle of Sweden. A recent report also shows that the large number of old oaks in the park makes the park work as the heart of ecological infrastructure in the region. For this to work it is essential that there are green wedges and corridors to other areas.





Of course, for residents in the Stockholm region – approx. 2 mill. inhabitants – the green and blue spaces are of great value for recreation: jogging, swimming, walking, skiing, skating, playing. The air in the city is refreshed – both cooled and cleaned – by the vegetation. The biodiversity is of value for habitats outside the park, which in turn are of value for all sorts of ecosystem services like hunting, fishing, pollination, medicines, etc. Large rainfalls are absorbed by the natural land and lakes. Schools, universities and research institutes use the park for instruction and research.



One example of an ecosystem service in the Royal National City Park that has been valued in money terms is the service that a special bird performs.



*Garrulus glandarius* - Euroasian jay - is a relatively small bird in the family of crows that is found in the park. It collects, eats and hides acorns. It tends to forget where some of the acorns have been hidden and therefore helps oaks to be planted. It does this to the extent that so many oaks are being planted that the value of just one pair of birds is set to € 3.500 (Economic evaluation of a seed dispersal service in the Stockholm National Urban Park, Sweden, Kajsa

Hougner, Johan Colding, Tore Söderqvist, Beijer Institute, 2005). The sum is calculated from what it would cost to do the planting manually in a forest. The Euroasian jay, however, does not live amongst oak trees, it lives in northern pine forests. Therefore, one of the ecosystem services of a pine forests - located in connection with oaks - is being the habitat to the Euroasian jay that in turn plants oaks.

## **Functions and services for the metropolitan city of Milan: the experience of the Parco Agricolo Sud Milano**

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Michela Palestra, President of the Parco Agricolo Sud Milano

In order to introduce the theme of my speech and then talk about the functions and services that the Parco agricolo sud Milano provide to the metropolitan area of Milan, I will use the four guidelines of the law that established the park in 1990.

The Parco agricolo sud Milano should combine the protection and recovery of the territory, the ecological balance and the cultural and recreational enjoyment with the defense of an economic function such as agriculture, which has marked the history of the economic development of this area.

The agricultural function remains central even though the Parco agricolo sud Milano is located at the center of a region highly economically advanced. It is a high productive agriculture. The industrial activities are in fact greatly developed, the service sector and the network of services in the territory are well branched. The presence of large urban centers, the strong population density and a considerable degree of fragmentation of agricultural land have unique characteristics that then allow classifying our protected area within the peri-urban areas.

Among the objectives of the law establishing the park can be found the items that generate the focal point of conjugation between conservation and development nearest to the Milan metropolitan territory and identify its functions.

This element lies the originality of the Parco agricolo sud Milano, a park that not only stands out as an opportunity of strictly naturalistic protection but as a place of simple enjoyment and recreation for the urban population and where agriculture at its best expresses all its characteristics, thus responding to the overall themes of EXPO 2015, that the city of Milan hosts.

Rural areas, which cover an agricultural area of about 38,000 hectares, expand in spots like a leopard fur within the confines of the Park, in an urbanized territory of 61 municipalities that constitute the Park. The agricultural sector is particularly diversified and developed. In fact, there are about 1,000 companies, which thanks to their different actions not only contribute to the definition of an agricultural landscape of great interest, but are able to give back to the citizens services of considerable interest.

But what kind of agriculture is developed within this area?



Figure 1- Peri-urban agriculture graphical representation - the relationship between town and country

This is what is called peri-urban agriculture, or agriculture that in this local context plays an important role not only with respect to the conservation of soil but also agriculture that may be able to take on positive relationships for our area compared to the expressed demand by the local community and in particular with the urbanized population, through the encounter between city and country, but especially by offering diversified services.

In order to develop the potential of this complex system, in recent years we have worked on four fundamental assets of this system, namely the main issues that may develop features and services for the metropolitan area:

- a. environment
- b. agriculture
- c. landscape
- d. recreation

The set of projects, business skills and development of specific functions of the park today allow the park to contribute in an interesting way to sustainable development of the 'metropolitan area, providing services of various kinds and shifting economies towards sectors such as agriculture or the simple use of cultural heritage in our area.

The ability to start this path also lies in the capacity that many of our companies have had to develop multi-functional paths, based on institutional projects enhancing their potential. In fact today we have approximately 100 companies operating the direct sale of their products, which combine accommodation and food service activities (43), or environmental education (36), with the development of educational farms, and still others that can offer additional activities such as sports

activities, in addition maintaining the agricultural landscape in which they are located, guided tours in the area, KMO markets, and environmental services related to the maintenance of natural areas owned by the park.

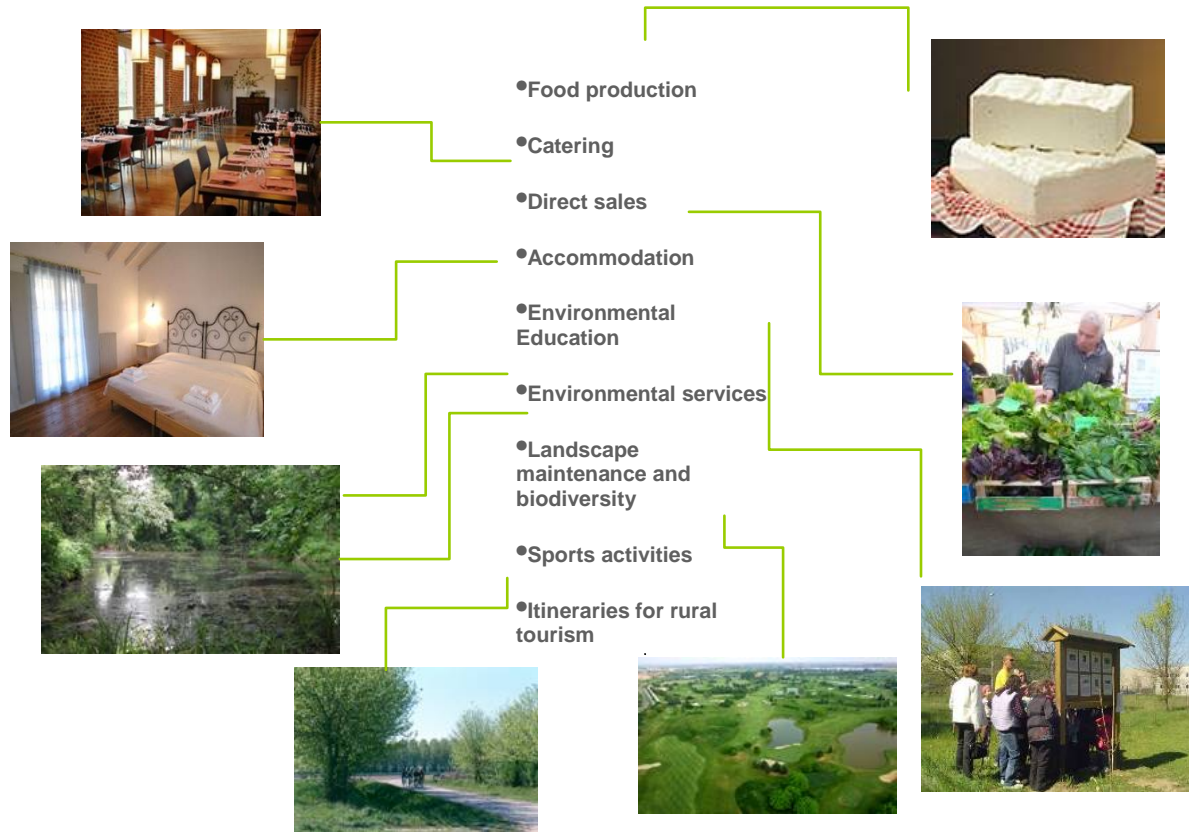


Figure 2 - Overview of services offered

The processes that have had a greater impact on the city were definitely those related to direct sales, or shortening the food chain, started in the park for many years now and it always sees a positive response from the people. The grocery shopping from the farmer, then triggered a virtuous cycle in the citizens not only in terms of food quality, but also in terms of knowledge of the area, bringing them closer to environmental realities of great value placed a few kilometers from the center of Milan. Finally, it also provides a social service attentive to the increasing economic difficulties of the consumers themselves.

An important action aimed at enhancing the multi-functional activities of farms and their ability to provide services was to create a brand dedicated to all those companies that voluntarily operate with actions in favor of environmental quality. The "Environmental Quality Producer" mark is attached to both products and services that the same companies offer to the public.

These are some of the strategies put in place to ensure that a territory and peri-urban agriculture as ours has created for and with farmers, but in recent years it has become necessary to ensure that

many of the realities in the park could always highlight their dimension, but above all the themes of the park resulted connected with each other, from agriculture to history, landscape to nature. To do so, in 2010 the park has set up an integrated project in the area that has been developed and funded under the regional operational programs financed by Europe.

The project had as its main objective to build a unified framework, integrated and coordinated management of the issue of the use within the territory of the Parco agricolo sud Milano, a use that has its roots on fundamental issues, such as: agriculture, nature, landscape, history. The project experience has involved several municipalities of the park, with a bottom joint planning, and in one of the park territorial sectors, included among the axes of the two canals, which mark the agricultural history, landscape and territorial park.

The project as a whole, through a series of interventions of different nature, has enabled the generation of a rural circuit, which brings together important natural areas, as well as historical and cultural heritage, and allows you to enjoy the area by bike paths that connect the circuit, with additional interventions interchange for soft mobility at the metro stations, thus providing further possibilities of use for the citizens. The created circuit also allows the user to make use of services by farms that are located inside the circuit.

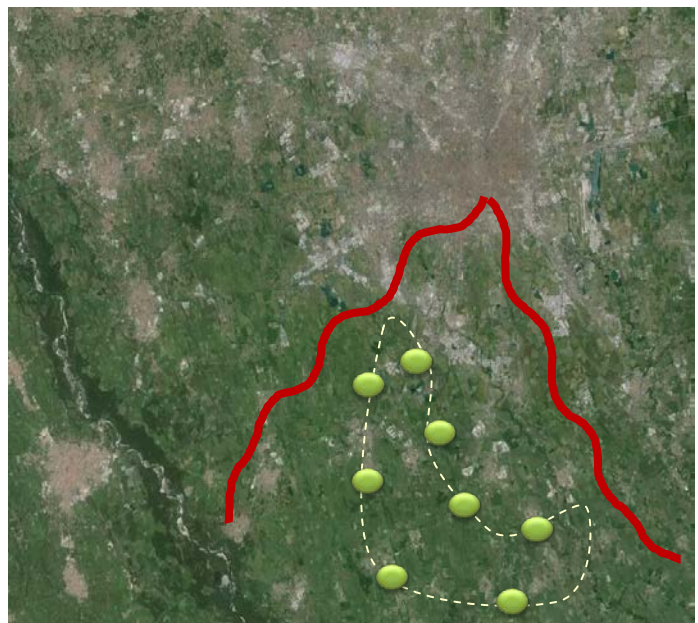


Figure 3 – Rural circuit

All of these operations has enabled us to create the conceptual and practical relationships with EXPO, making sure to create a link between individual action and the themes of EXPO, finding a common sphere of issues that result in synergies, and that can be declined in the following

categories: environmental Sustainability, environmental Education, sustainable economy, sustainable transport, sustainable use, multiculturalism.

Another project linked to local knowledge and services, but also to the presence of EXPO 2015 is the LET project (Landscape Expo Tour). The project stems from the participation of different actors and involves 31 municipalities of the western sector in the metropolitan, and identifies 10 cycling circuits connected to the EXPO site, a length between 12 and 36 km.



Figure 4 - 10 Cycling circuit LET connected to EXPO site

The goal of the project is the use of a new identity of the north-west Milan landscape and the development of a system of historical excellence, cultural and natural, agricultural food production in the area, and then peri-urban agriculture enhancement. The interest of LET of the park is a 28-km circuit, which begins and ends at the railway, in connection with the lines leading to EXPO, and passing through a rural area rich in historical, cultural, landscape, linked to the presence with farms that can provide catering services, accommodation and direct sales.

A project of use of the territory and of the services that the park has to offer is accompanied by projects such as Agricultural Products in Catering, the acronym PARC.

PARC is a collaboration between the companies of the Parco agricolo sud Milano with the Environmental Quality Producer Brand and a catering company and the sponsorship of the Chamber of Commerce of Milan. The aim is to meet the growing demand for local products and quality, and strengthen the link between producers and consumers.

PARC is a cultural vocation catering with a locally inspired cuisine, which changes with the seasons and aims to promote the culture, the traditions and the flavors of a fascinating territory.



Figure 5 - Agricultural products for catering

Guests who participate in the catering can virtually visit the Park, its companies products and see the menus and recipes, thanks to the tasting sheets - real "street maps of taste", illustrating the ingredients used in the recipes and the geographical location of the map of the companies from which they come, through two IPad connected to [www.parc-me.it](http://www.parc-me.it) site you can explore the South Agricultural Park and its companies and establish direct contact.



Projects and themes I have outlined can be synthesized through a word cloud, which expresses as well the picture of the contents of our theme using keywords, such as: agriculture, nature, use, services, landscape, etc., words that I use to describe the services and functions that a protected area like ours is able to return to the

metropolitan area of Milan city. This also has important significance not only as an added value for those who live this territory, but also in economic terms. In fact the national press reported that the ecosystem services generated in protected areas are able to generate huge economic resources for

protected areas. A research says that the rate of youth enterprises is one percentage above the Italian national average. The number of women entrepreneurs is 3% higher than the national average. 27% of green companies have planned recruitment in 2013 compared with a national average of 13%, and the study shows how the system of protected areas can accelerate the growth of ecotourism which already today is worth 102 million admissions and nearly 12 billion euro revenue.



## Farmers, essential actors in the green infrastructure of Lille European Metropolis

Pierre Dhenin, director Espace Naturel Lille Metropole

### The Park de la Deûle

The first project took place from 1968 to 1976 and resulted in a « Green buffer » between two metropolises, a site for purifying the water of Deûle's canal and outdoor leisure centers.

In 1992 the project was reborn. The aim was the protection of the water resources and the natural periurban areas with a focus on Deûle canal. The landscape and ecological reconquest led to the creation of a green link between two urban areas and walking and hiking trails.



A project competition was realized in 1994 and between 1995-1997 a Declaration of Public Utility (DUP) followed. A declaration of public utility is a formal recognition that a given project has public benefits. Many large building projects in France, especially those related to infrastructure, must achieve DUP before works can actually begin. The first part of a DUP is a public enquiry, usually started by a prefect, to collect the views of all affected parties. Responses from affected parties are considered by a commissioner who assesses whether the proposal has an overall benefit for the public. If the finding is favourable, the DUP is granted by decree. The DUP process is required by article 545 of the Civic Code; that property cannot be confiscated except for public purposes and with fair compensation.

After the requested recognition of the project's public benefits the first phase was implemented (1997-2004) and concerns a landscape of 330 ha. In 2004 started the second phase of development and lasted till 2011.

In general, the Park de la Deûle is considered as a complex territory because of the following features:

- a. Groundwater supply zone of Lille
- b. Urban development
- c. Industrial areas– canal port

- d. Former industrial sites
- e. Former desludging tank VNF
- f. Garbage dump
- g. Complex administrative borders



For this reason the project led by local officials and developed in consultation with farmers, water users and defense of nature associations and local residents.



Especially there is a strong relationship with farmers. Through the owner / tenant relationship was achieved the concerted management and the establishment of farm network contributing to the diversification and landscape integration of farm. Actually, it consists of a partnership agreement for land sustainment which contains a charter of 27 farmers with shops. The farm network has an active role from publishing booklet (30 000 copies) and web TV advertisements to organizing study visits and training courses. Regarding the landscape integration of farm, 42 farmers are involved on the basis of a 5 years Agreement with 3 steps which provides for several kilometers of hedge planted annually.



The Natural Area of Periseaux (2011-2012) is a small agricultural park which covers 250 ha on 4 cities and has a farm network of 11 farmers. The ownership is mainly private except from 10 ha which are public property and used as a path. In this case, it has not been achieved a declaration of public utility (DUP).

