



2014 Italian Presidency
of the Council
of the European Union



Conference on Natural and Cultural Capital: the Future of Europe

Botanical Garden of Rome, Italy. 24 November 2014

Green infrastructure in agricultural systems and metropolitan areas

Carlo Blasi

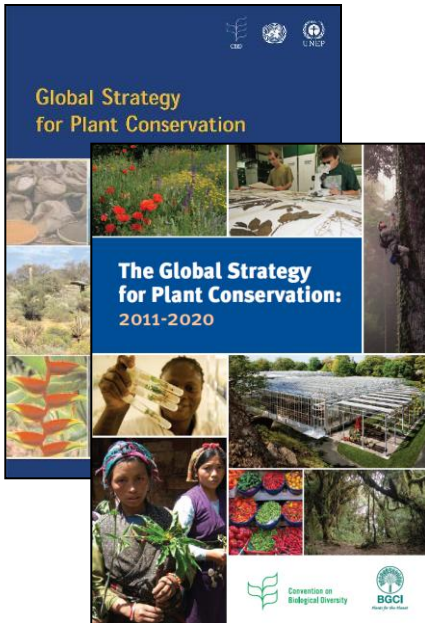
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The Global Policy framework

Convention on Biological Diversity - 1992

The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (COP 5, 2000)



Global Strategy for Plant Conservation

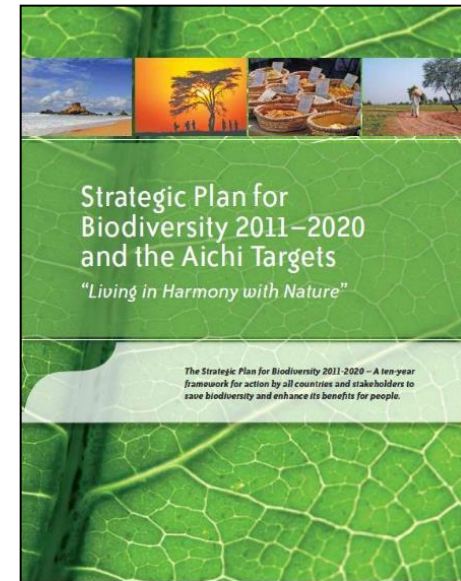
First adoption: 2002

Last update: 2010

Target 11:

Aichi Targets

In 2010, the CBD Parties adopted the **Strategic Plan for Biodiversity 2011–2020**, including a set of 20 headline targets known as **Aichi Biodiversity Targets**



By 2020, at least 17% of terrestrial and inland water areas, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

The European Policy framework

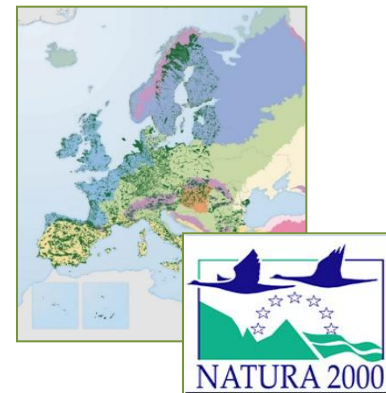
Biodiversity Strategy to 2020 COM(2011) 244

EU Biodiversity Strategy to 2020

TARGET 1	TARGET 2	TARGET 3	TARGET 4	TARGET 5	TARGET 6
Fully implement the Birds and Habitats Directives	Maintain and restore ecosystems and their services	Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity	Ensure sustainable use of fisheries resources	Combat invasive alien species	Help avert global biodiversity loss

EU 2020 vision: By 2020 Europe shall have biodiversity and the contribution of ecosystems to the well-being of citizens improved, the natural capital on which we depend on secured and better managed, and the contribution of biodiversity to economic growth and the well-being of citizens improved. EU 2020 headline target: Reduce the number of species and the proportion of threatened species. By 2020, at least 15% of land and 10% of sea shall be under effective management for biodiversity, taking into account the specific contribution to meeting global biodiversity goals.

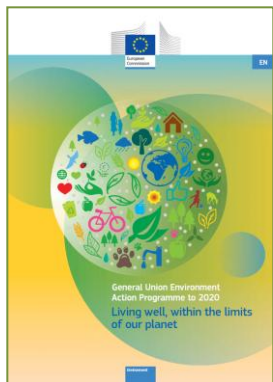
Habitats Directive and Natura 2000 network



7th Environment Action Programme (EAP)



Horizon 2020



Priority objective 1:
To protect, conserve and enhance the Union's natural capital

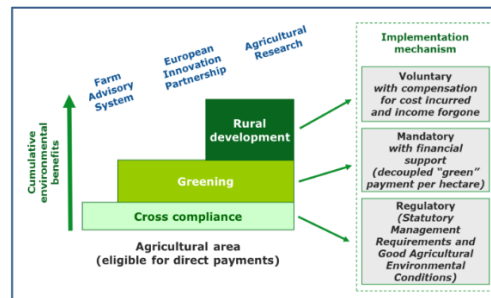
Green Infrastructure Strategy (COM 2013/249)



PAC 2014-2020

- Greening
- Agri-Environment Payments

Chart 3 The new greening architecture of the CAP



Source: DG Agriculture and Rural Development.

The Italian Policy framework

Italian National Biodiversity Strategy 2010

Three key issues:

1. Biodiversity and Ecosystem Services
2. Biodiversity and Climate Change
3. Biodiversity and Economic Policies



National Conference “The Nature of Italy” 11-12.12.2013 (attended by EU Commissioner for the Environment J. Potočník)

- Green jobs
- Protected Areas and Natura2000
- Green infrastructure and Ecosystem services
- Scientific research and natural capital



Charter of Rome on Natural and Cultural Capital

1. Know the Natural Capital
2. Invest in Natural Capital
3. Secure the functionality of ecosystems
4. Link Natural and Cultural Capitals
5. Create synergies among green infrastructure, urban and rural areas

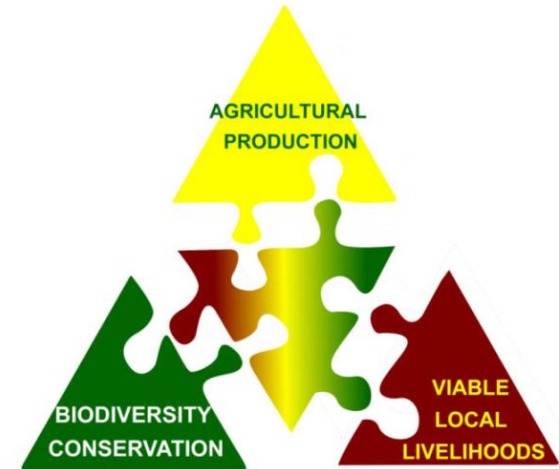
TRADITIONAL AGRICULTURAL LANDSCAPES

These landscapes result from the **long lasting interaction** between humans and their environment and are usually associated with the use of **low-impact agricultural practices**, **significant habitat diversity**, and presence of **seminatural vegetation** (Antrop, 1997; Harrop, 2007).

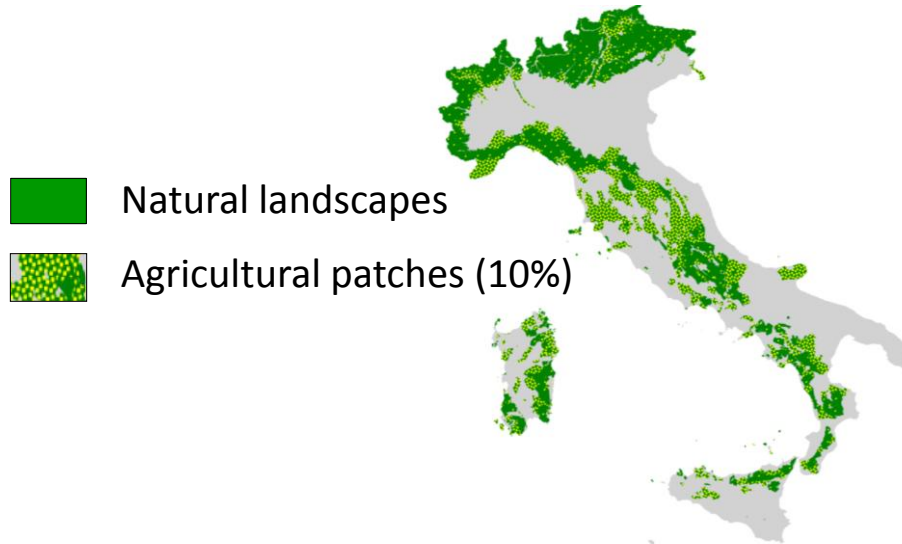


positive influence on:

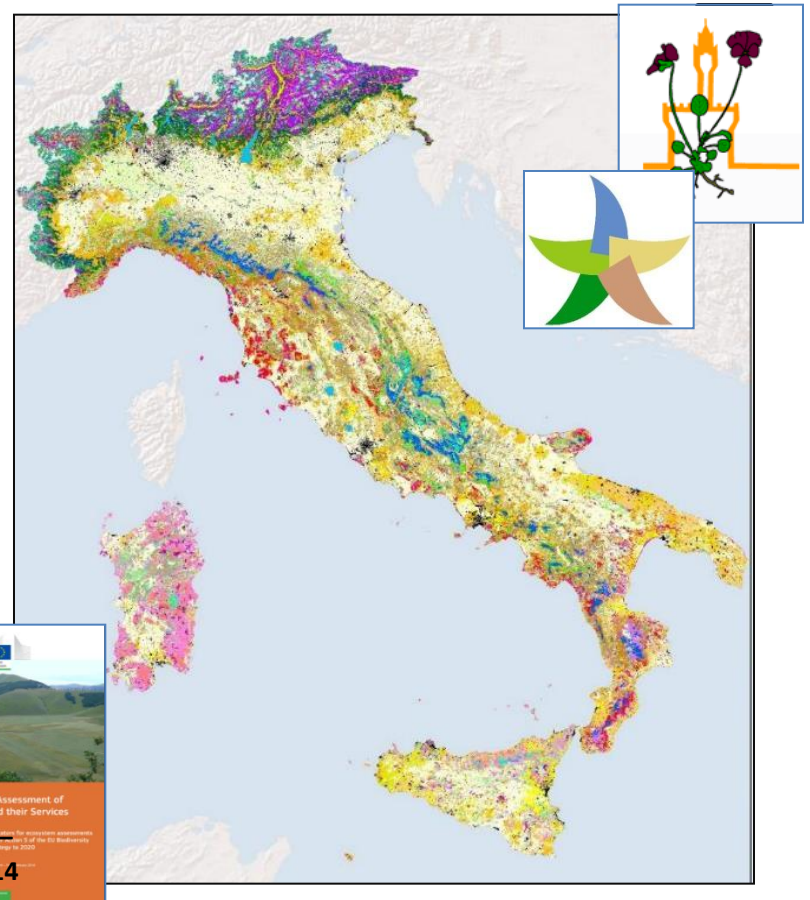
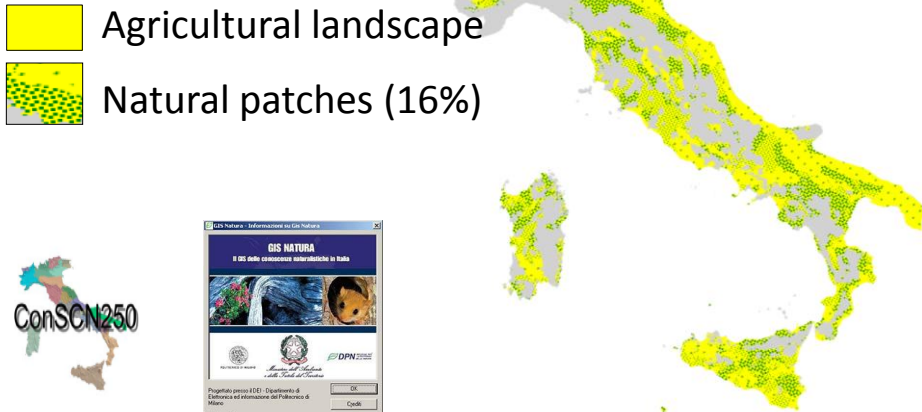
- preservation of soil resources and autochthonous species,
- species richness and abundance,
- the occurrence of species and habitats of particular conservation interest (Bennett et al., 2006; Fahrig et al., 2011; Tscharrntke et al., 2005)



Landscapes with natural matrix cover 40% of the Italian territory



Landscapes with agricultural matrix cover 55%



Ecosystem Map of Italy (1:100,000), MAES, 2014

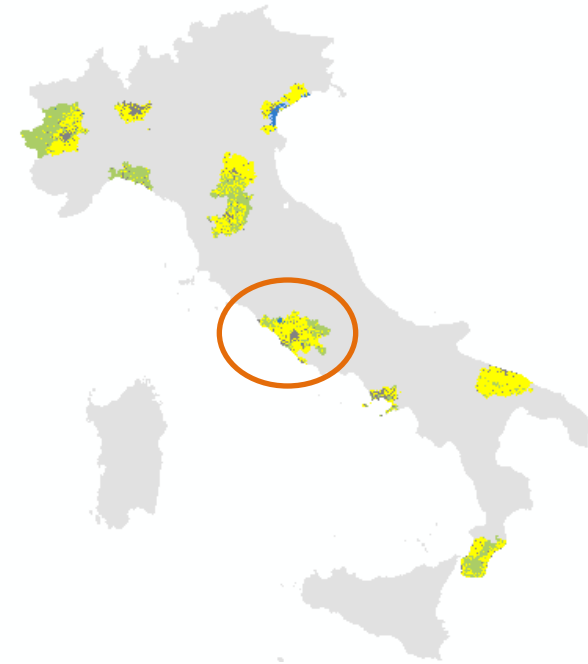
- Arable land
- Rice fields
- Vineyards
- Fruit trees and berry plantations
- Olive groves
- Pastures
- Heterogeneous agricultural areas
- Land principally occupied by agriculture, with significant areas of natural vegetation
- Agro-forestry areas

Extent of agricultural classes 52,4%

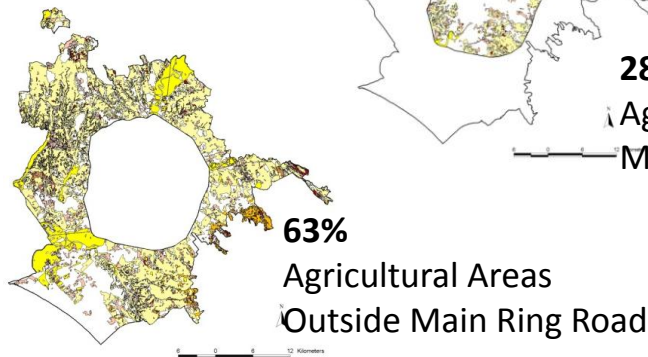
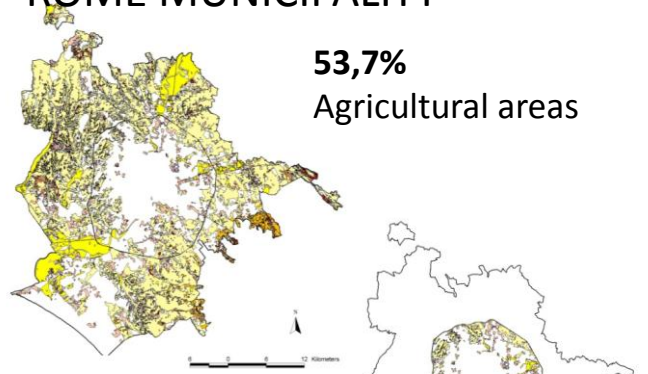
<http://biodiversity.europa.eu/maes/maes-catalogue-of-case-studies/ecosystem-map-of-italy.pdf>

METROPOLITAN AREAS

	Artificial areas	Agricultural areas	Forest and semi-natural areas	Wetlands	Water bodies
Bari	5,5	88,3	6,1		
Bologna	5,9	68,1	25,4	0,3	0,4
Firenze	5,7	43,6	50,3	0,2	0,3
Genova	6,2	11,3	82,4		0,1
Milano	34,5	61,3	3,7		0,5
Napoli	31,8	50,9	16,9		0,4
Reggio di Calabria	3,2	49,6	47,2		0,0
Roma	12,8	58,5	27,2		1,6
Torino	6,9	35,0	57,5		0,5
Venezia	10,0	67,5	0,8	6,1	15,7



ROME MUNICIPALITY



“NATURE-AGRI-CULTURAL” MAP OF ROME METROPOLITAN AREA

Hazel groves of the Cimini and Sabatini area
 Typical product: “Nocciola romana” (Roman hazelnut) with PDO label
 Potential vegetation: preApennine subacidophilous *Quercus cerris* vegetation series of Tuscany and Lazio (*Melico uniflorae-Quercus cerridis sigmetum*)

Olive groves and fruit tree plantations (cherries) of southern Sabina and of the piedmont area of the Sabini, Cornicolani and Prenestini mountains
 Typical product: Olive oil with PDO label
 Potential vegetation: preApennine neutro-basophilous *Quercus pubescens* vegetation series (*Roso sempervirentis-Quercus pubescentis sigmetum*);
 Apennine neutro-basophilous *Ostrya carpinifolia* vegetation series (*Melittio melissophylli-Ostrya carpinifoliae sigmetum*)

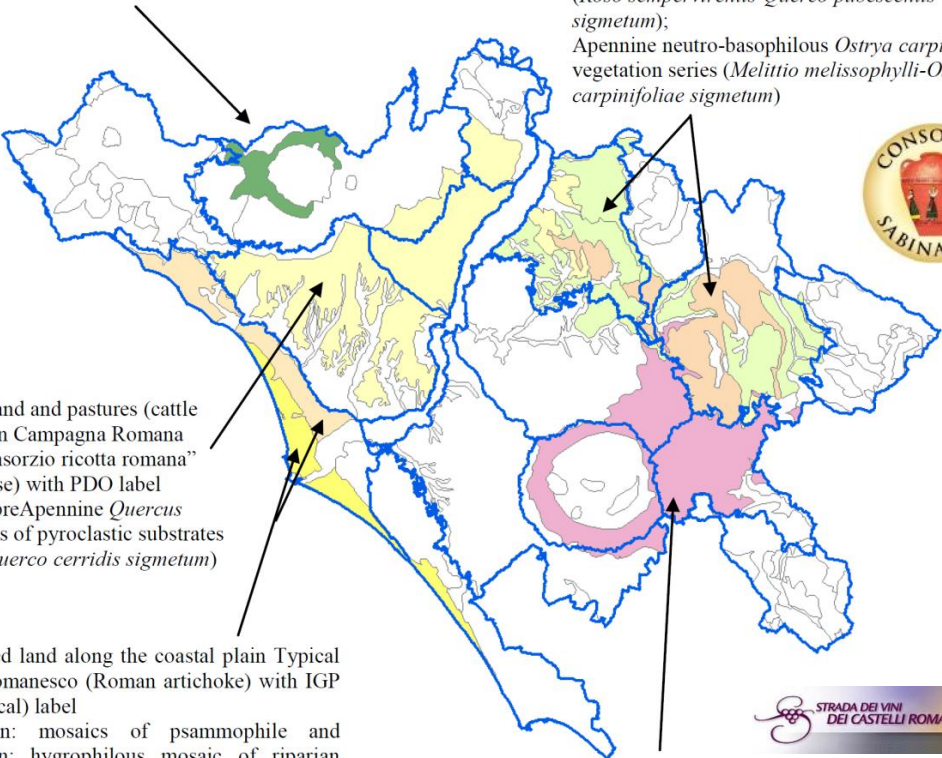


Non irrigated arable land and pastures (cattle and sheep) of Northern Campagna Romana
 Typical product: “Consorzio ricotta romana” (Roman Ricotta Cheese) with PDO label
 Potential vegetation: preApennine *Quercus cerris* vegetation series of pyroclastic substrates (*Carpino orientalis-Quercus cerridis sigmetum*)

Permanently irrigated land along the coastal plain
 Typical product: Carciofo romanesco (Roman artichoke) with IGP (geographically typical) label
 Potential vegetation: mosaics of psammophile and halophile vegetation; hygrophilous mosaic of riparian vegetation (*Salicion albae, Populion albae, Alno-Ulmion*)

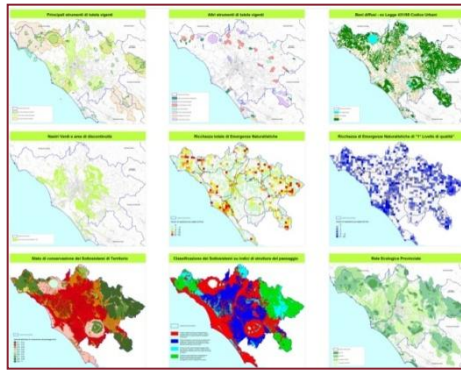


Vineyards of the Castelli Romani area
 Typical product: vino dei Castelli and vino “Cesane di Olevano Romano” (wine)
 Potential vegetation: preApennine central Tyrrhenian subacidophilous *Quercus cerris* vegetation series (*Coronillo emeri-Quercus cerridis sigmetum*)

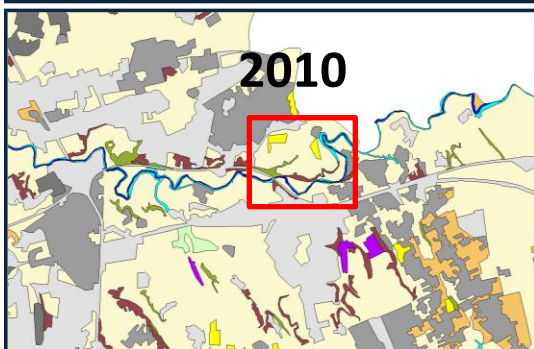
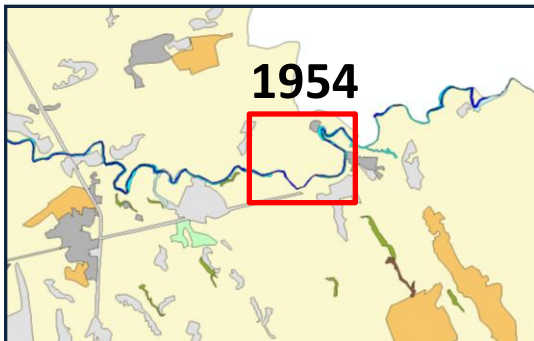
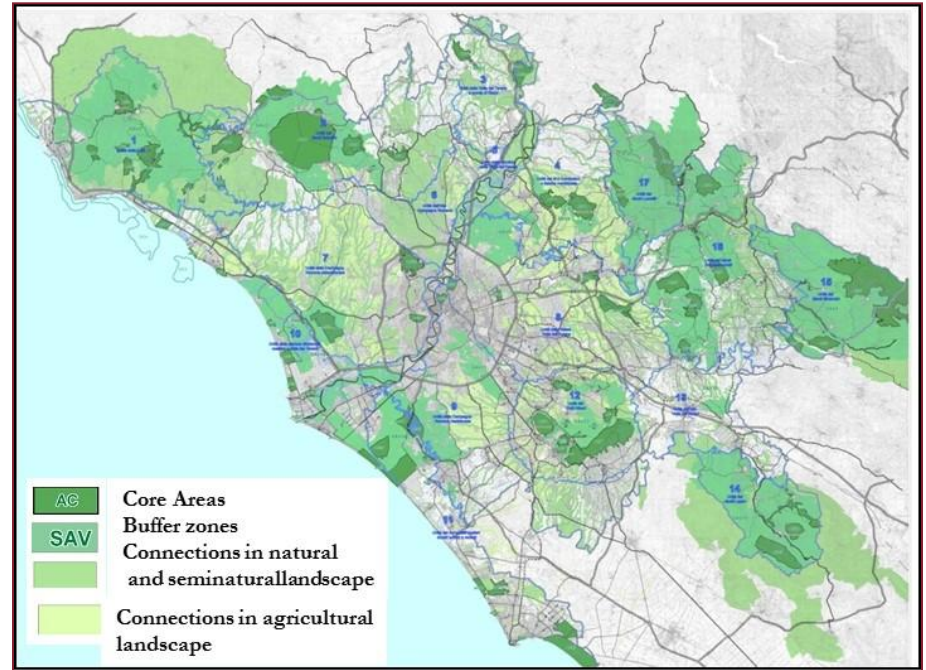


Relationship between distribution area of vegetation types and certified typical agricultural products within Rome Metropolitan Area

LAND ECOLOGICAL NETWORK as the main GREEN INFRASTRUCTURE



Recognition of areas of floristic, faunistic and habitat concern

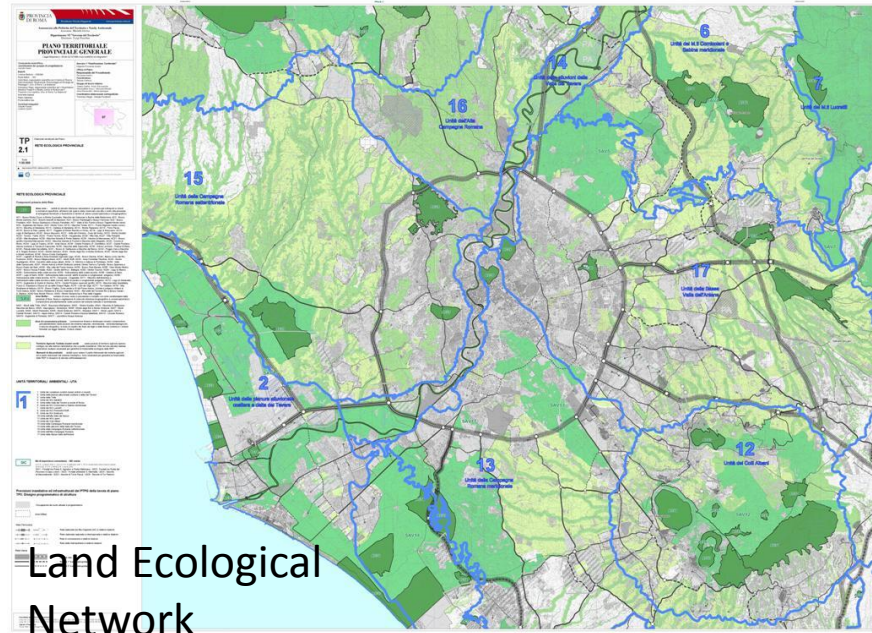


Informing the definition of the Land Ecological Network and weighting the role of agricultural areas

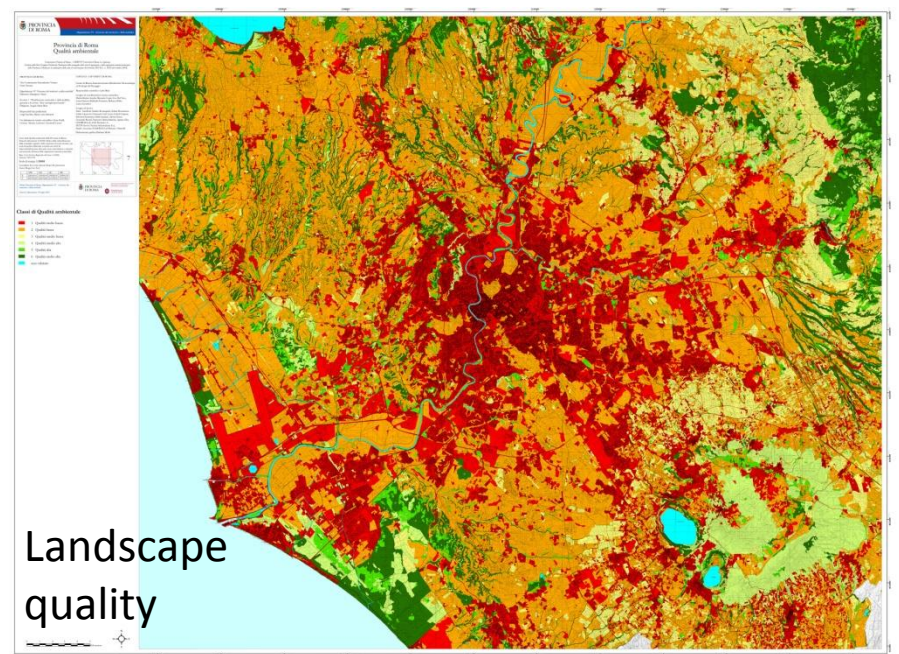
Land cover %	Node		Landscape connections	
	Core Areas	Buffer zones	in natural and seminatural landscapes	in agricultural landscapes
Artificial surfaces	3,8	4	13,4	12,1
Agricultural areas	13,7	31,9	51,6	84,9
Forest and semi-natural areas	64,5	63,9	34,3	3,0
Wetlands	0,5	0,1	0,2	0
Water bodies	17,5	0,1	0,5	0
Area (in ha)	44,6	147,0	145,7	68,9
% LEN	11	36	36	17

Cavaliere Estate -
"Campagna Romana"

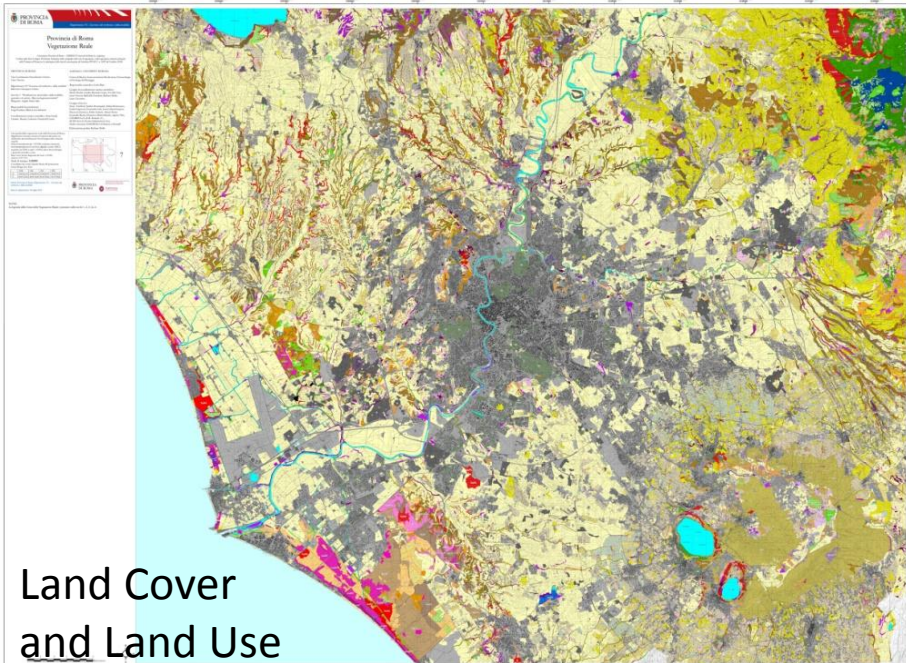
GREEN INFRASTRUCTURES AND ECOSYSTEM SERVICES



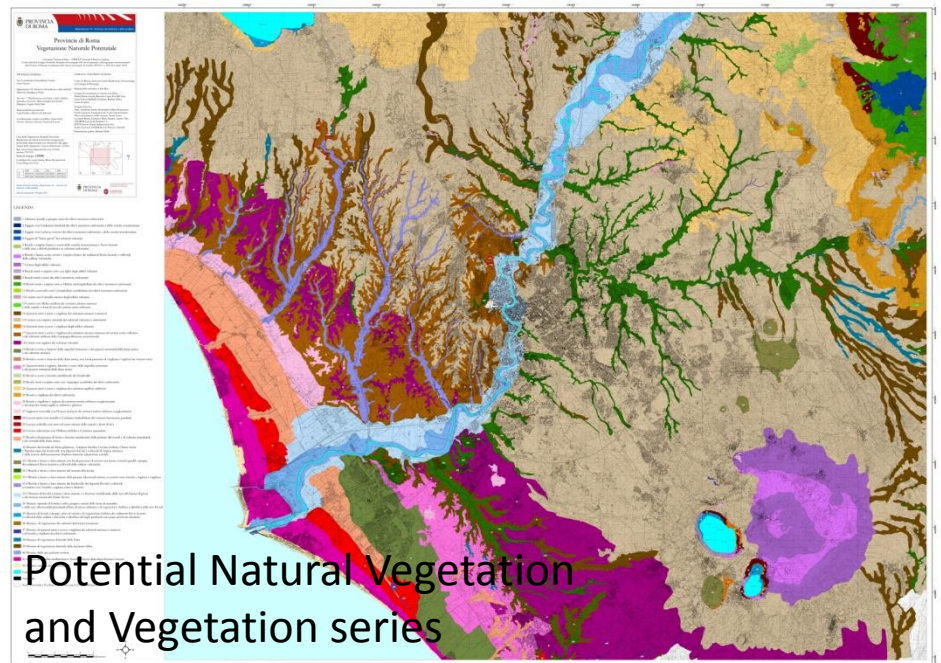
Land Ecological Network



Landscape quality

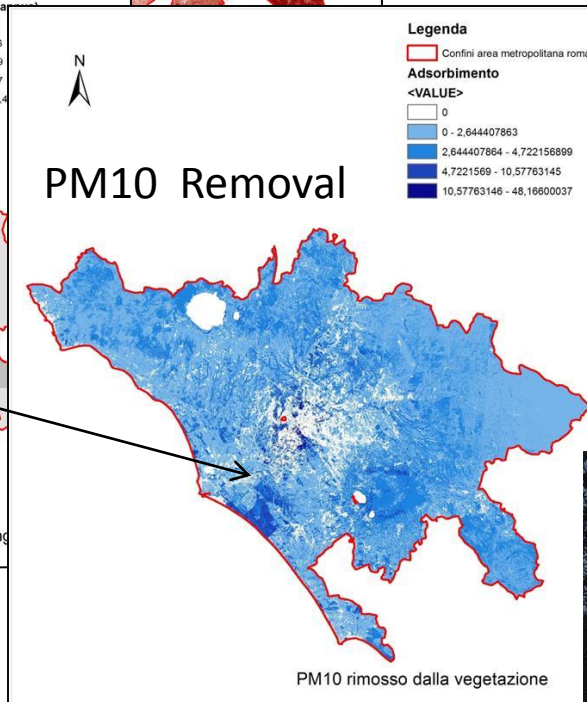
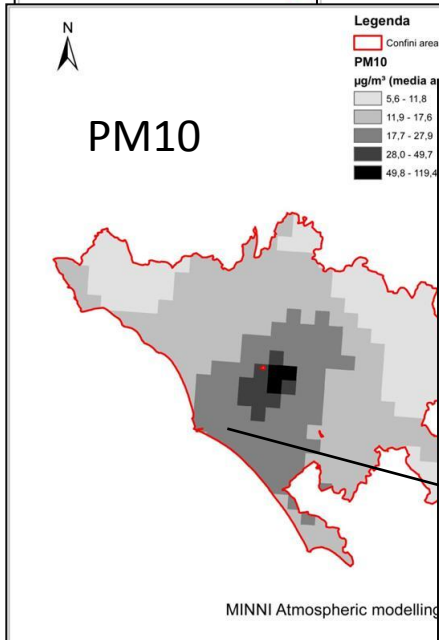
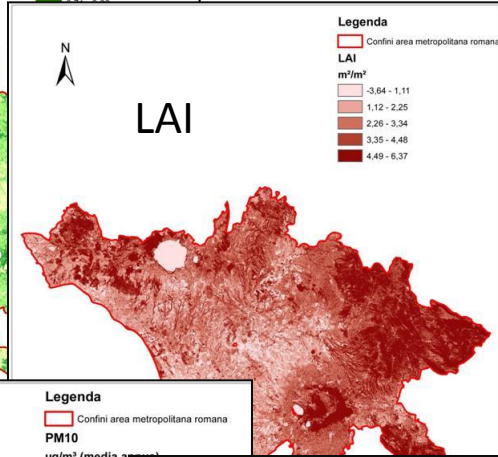
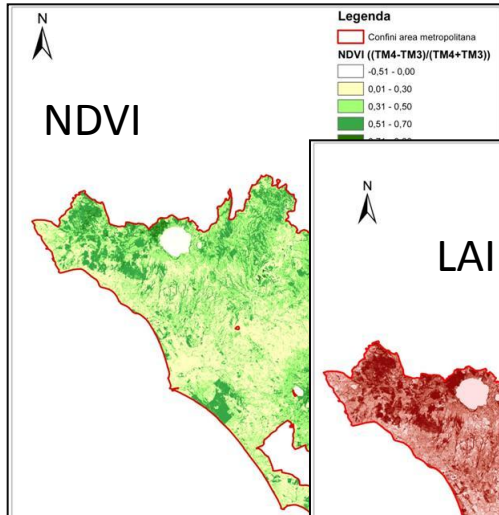


Land Cover and Land Use



Potential Natural Vegetation and Vegetation series

ECOSYSTEMS SERVICES: AIR POLLUTION REMOVAL (w.G. Fausto Manes Sapienza)



Vegetation type	Area (ha)	Removal (year) (t PM ₁₀)	Removal (year) (t/ha PM ₁₀)	%
Deciduous /evergreen mixed forest	14649.66	709.00	0.048	18.4
Deciduous oaks forest	98623.26	2725.68	0.028	10.7
Coniferous forest	3527.55	175.17	0.050	19.2
Chestnut forest	9591.39	380.10	0.040	15.3
Beech forest	18560.43	469.76	0.025	9.6
Shrub	4794.39	237.36	0.050	19.2
Arable land	324420.57	6607.47	0.020	7.7

HUMAN HEALTH AND WELLBEING

Reduction of mortality = - 36 deaths per year



CONCLUSIONS

- . The integration of cultural and natural is evident in Italy especially if we consider the traditional agricultural landscapes;
- . Thanks to the mapping of ecosystems and their services, the MAES project provides very effective tools for quantifying such integration;
- . For all this reason it is essential to plan an upcoming workshop on scientific methodology and to go on the debate on the main topics of the Charter of Rome

Thanks for your attention!

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