

# soil and its functions

Soil is a **living ecosystem, essential for human and environmental health**. Soil is one of the main reservoirs of biodiversity: it plays a pivotal role in major global biogeochemical cycles (carbon, nutrient, and water); it provides us with food, biomass and raw materials; it serves as a platform for human activities and landscape and as an archive of heritage.

Soil functions collectively are key drivers of **ecosystem services**, i.e. "the benefits people obtain from ecosystems".

Nevertheless, over the last decades, soil functions have been largely threatened by rapid urbanization processes. Indeed, land-use planning strategies and management practices have proved not only to disregard the importance and true value of life-critical functions provided by soil, but also to intensify soil degradation. **Land use trends are actually not sustainable**, both from a qualitative and a quantitative perspective. Indeed, fertile agricultural lands are esteemed to cover only a fourth of total land area, although only few are currently placed in the best capability classes. (*Millenium Ecosystem Assessment, 2005*).

**One of the major threats** to the preservation of the capacity of soil to perform any of its functions is **soil sealing**, as the current plights of hydrogeological instability and of desertification in plain areas show.

In order to deal with such emergencies, as well as to reduce the risk of compromising food security within the European Union, the **European Commission** has proposed to have policies in place by 2020 to **achieve "no net land take" by 2050** and has also set targets for **reducing soil erosion at an average annual rate of 800 km<sup>2</sup> from 2000 to 2020**.

In accordance with the EU Soil Framework Directive, the **SOS4LIFE project** aims to **fight and monitoring**, at municipal level, **land consumption and soil sealing**, resulting in the loss of important ecosystem services.

Starting from the **assessment of soil properties and functions in three partner municipalities**, then followed by the evaluation of de-sealing measures adopted by partner municipalities, a set of **guidelines for the mapping, the management and the improvement of ecosystem services** of soils in urban landscapes will be laid down. Finally, a specific **legal framework and tools for managing and improving the processes of urban regeneration and re-designing** in abandoned and underused areas will be provided.

# the project



## Land take

**in Europe** (source: Corine Land Cover, EEA)

**1990-2000:**

- 1000 km<sup>2</sup>\* land take/year (\*covering an area larger than Berlin).

**1990-2006**

- +9% urban areas (from 176.200 km<sup>2</sup> to 191.200 km<sup>2</sup>, consuming mostly agricultural land)
- +2,3% of the whole European Union's territory was sealed

**2000-2006:**

- 920 km<sup>2</sup> of land take/year (= 252ha/day)

**in Italy** (source: ISPRA - Italian National Institute for Environmental Protection and Research)

**2008-2013**

- 1000 km<sup>2</sup> of land taken, equal to:
  - 200 km<sup>2</sup>/ year
  - 54 ha/day
  - more than 6 m<sup>2</sup>/second
  - 5 millions tons of CO<sub>2</sub>
  - a loss of 600.000 tons of cereal production

**in Emilia Romagna region** (source: Carta regionale di uso del suolo - Regional Land Use Map)

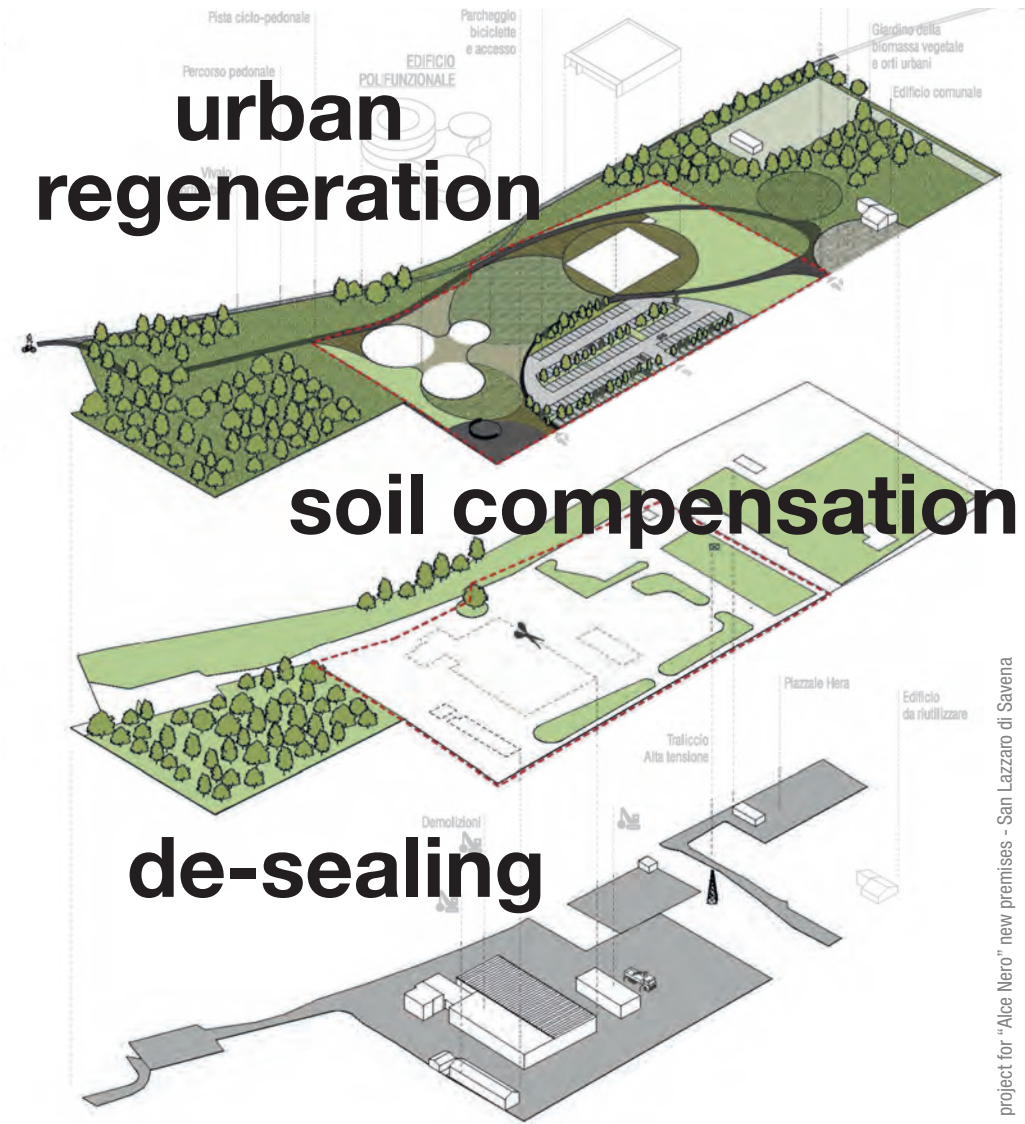
**2003-2008**

- 15.000 ha of land taken at regional level, composed:
  - 95% fertile agricultural lands in capability class I and II (among the most suitable soils for agriculture)
  - 7000 ha of sealed surfaces
- Forli: 451 ha taken by artificial land development (+ 11%)
- San Lazzaro di Savena: 61 ha taken by artificial land development (+68,8%)
- Carpi: 296 ha taken by artificial land development (+13,6%)

<b>Title</b>	S.O.S. 4 LIFE - Save Our Soil for LIFE
<b>Acronym</b>	SOS4LIFE
<b>ID</b>	LIFE15 ENV/IT/000225
<b>Start date</b>	01/07/2016
<b>Expected end date</b>	31/10/2019
<b>Total Budget</b>	€ 1.788.749,00
<b>EU Financing</b>	€ 1.060.551,00
<b>Coordinating beneficiary</b>	Comune di Forlì - Stefano Bazzocchi stefano.bazzocchi@comune.forli.fc.it

Save Our Soil for LIFE is a demonstration project funded by the European Union within the LIFE "Environment and Resource Efficiency" program that aims to contribute to the enforcement, at municipal level, of European orientations about soil protection and urban regeneration. Activities aim to reach the following goals:

- **Development of methods for the assessment and mapping of ecosystem services** provided by urban soils, as well as for the analysis of the economic and environmental impact of soil sealing;
- **Definition of urban regulations and implementation tools to achieve the no net land take goal** in the three municipalities involved in the project;
- Implementation of three **de-sealing demonstration actions in partner municipalities** as well as ex-ante and ex-post bioclimatic and soil-profile monitoring of land-use change, to assess the effects of the intervention;
- Definition of **guide lines and incentives aimed to promote urban regeneration and improving urban resilience** to climate change;
- **Implementation of an information System** for the evaluation and monitoring of: land-use change; soil ecosystem services; adaptive reuse of abandoned areas; urban regeneration processes.



project for "Alce Nero" new premises - San Lazzaro di Savena



# de-sealing: soil compensation and urban regeneration

The effectiveness and feasibility of the regulatory and operational tools put in place by the project will be tested through three de-sealing interventions occurring in each partner municipality



## San Lazzaro di Savena, "Caselle" industrial area, along the Savena creek

The project involves the urban regeneration of a 2.250 m<sup>2</sup> field covered by municipal warehouses, service and waste storage areas, which will be partially converted in a green space, through:

- the displacement of municipal and SEA warehouses;
- brownfield regeneration of the whole field (16.000 m<sup>2</sup>) through building replacement\*;
- the restoration of green spaces through the re-use of stripped topsoil.

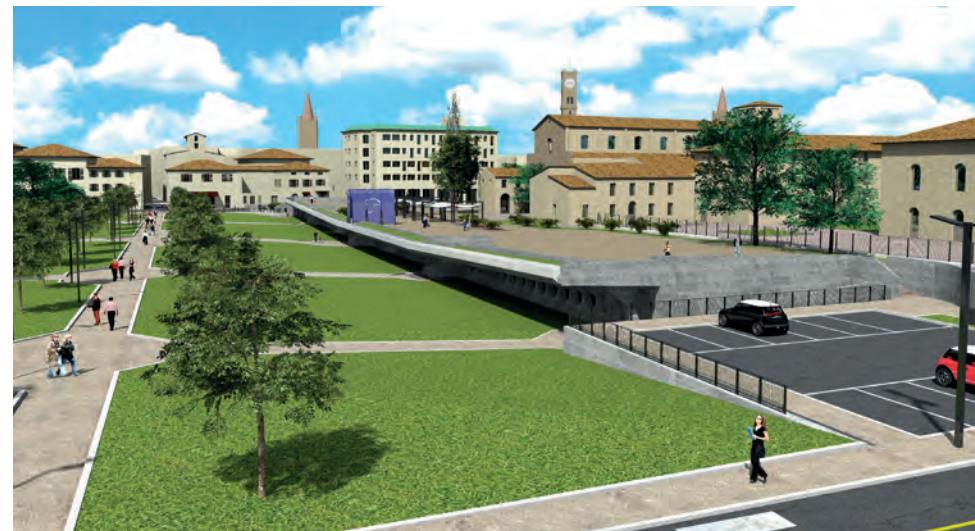
\* project for the new premises of the company "Alice Nero" by arch. Giambattista Ghersi, Rizoma Architetture.



## Forlì, surfaces in the forecourt areas of San Domenico Museums

The project involves the urban regeneration of a 6.500 m<sup>2</sup> sealed site currently used as public parking, through:

- the removal of all pre-existing structures and pavings all the way down to the permeable pavement;
- the restoration of green spaces and re-use of stripped topsoil;
- the completion of cycling and pedestrian trails and the improvement of upgrading services.



## Carpi, Piazza dei Martiri surrounding area

The project involves the urban regeneration of a 2.000 m<sup>2</sup> sealed site currently used as parking, through:

- the removal of all pre-existing pavings, curbs and foundations;
- the leveling of the ground in order to match with the surrounding surfaces;
- the implementation of a green urban area - through the re-use of stripped topsoil- where vegetation is planted, in addition to cycling and pedestrian trails.

