

Turin

and its Green Infrastructure

Front Runner City

a Smart City of Innovation and Culture

The Municipality of Turin is the capital of the Piedmont region (North-West Italy). With 908.000 inhabitants, 130 km² territorial extension and a GDP of 55.000 million euro (which is 4.5% of the national GDP) it is one of the most important cities in Italy. The administration, with about 9.000 civil servants, deals with the overall management of municipal assets and public services. Since the 1990's, Torino has been transformed from an industrial capital (predominantly in the automotive sector) into a centre of innovation and culture.

In 2009, Turin officially kick-started its path to become a "Smart City", when the City Council decided to take part in the "Covenant of Mayors" initiative of the European Commission. As one of the first Italian cities, it developed an Action Plan for Energy in order to reduce its CO₂ emissions more than 20% by 2020. In 2016, the City won the second prize as "European Capital of Innovation" for open innovation models supporting social innovation start-ups and creating new market opportunities for urban innovations.

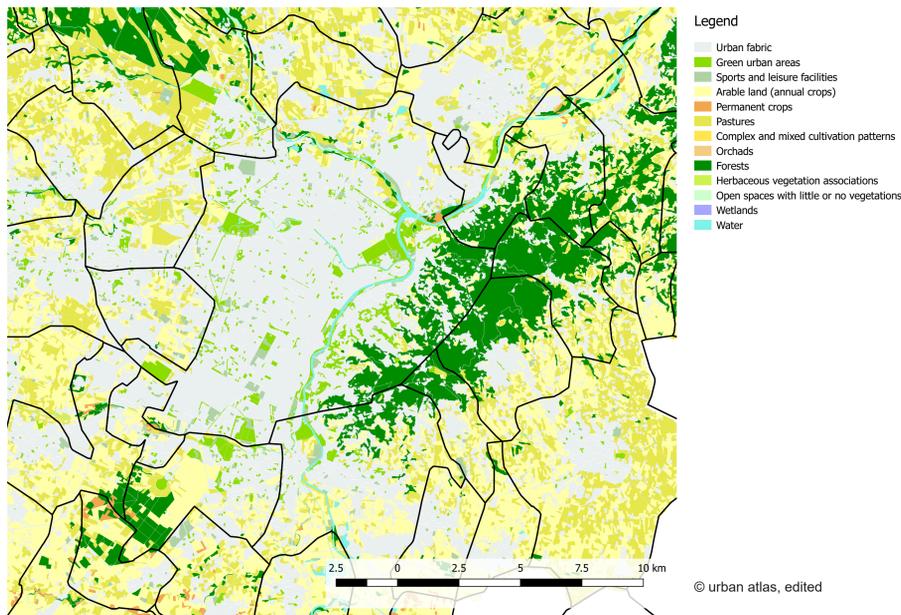
Torino's Green Infrastructure Network

In parallel, the City developed its green vocation through integrated actions for urban regeneration and sustainable mobility. Since the 1970s, the urban green area grew from 4 to 18.4 million m², reaching a standard per inhabitant of 19.05 m² that puts Turin in first place in Italy. This remarkable increase, a result of a far-sighted and ecologically sound strategy, was guided by a series of urban studies elaborated since the late 1970s which informed the General Regulatory Plan approved in 1994. Now, the city's urban green network includes:

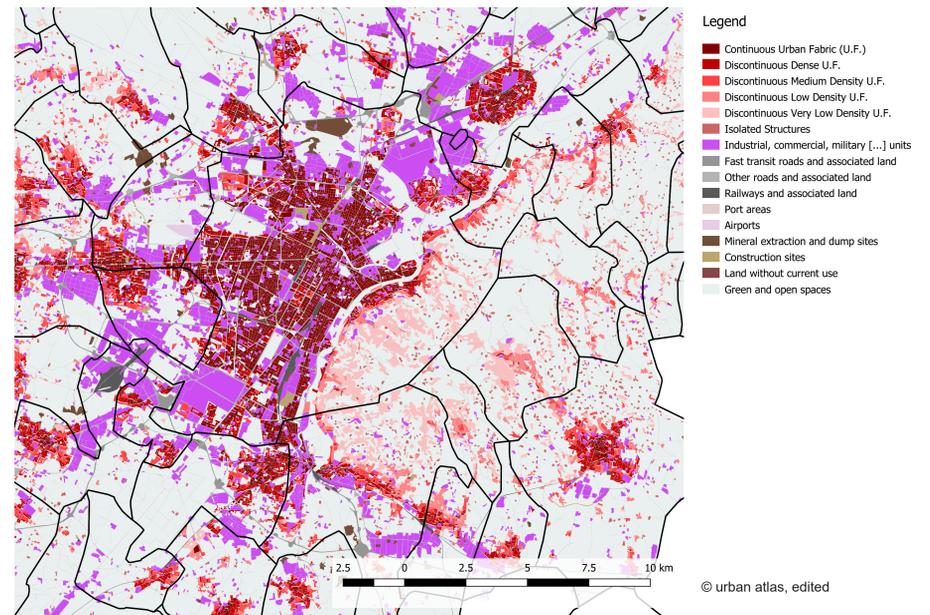
- the "Green-Blue System" connecting four river corridors and the Green Circular, a 45km path system connecting hills and river banks
- the "System of the Cyclopaths" along transport corridors and within the system of urban and peri-urban parks
- the "Spine System", green areas created following former railway lines and industrial areas of the semicentral urban area
- the "Urban Park Network", parks and gardens of the core urban area
- the "Urban Tree Network", the city's woodland heritage network distributed across the city
- the "Network of small green neighbourhood areas" for which the city administration is seeking direct involvement of citizens' groups.



Green Infrastructure



Regeneration Challenges



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An urban renewal programme, launched in 1998, gave derelict post-industrial areas a new use. Reminiscent of a necklace, the interventions line up along a development axis called the "spina" (backbone). With 45 hectares "Spina 3" is the largest project within the comprehensive structural redevelopment. Due to the positive inclusion of its industrial heritage, the Parco Dora signifies a new understanding of inner urban landscapes that reflects the transition of society.



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Urban agriculture: For years Turin has been using sheep and cows for mowing large areas. This mode gives a valid support for mowing the grass and for fertilizing the soil, as well as allows savings both in terms of economy and in terms of CO₂ reductions. The "large plot of vineyard populated by fruiting plants", which extends on the hill north of Queen's Villa, was created as agricultural part of the Vineyard and designed in the early 17th century. In 2009, the first official Queen's vineyard harvest took place: 40 tons of ripe and healthy grapes gave birth to the first bottles of "Vigna della Regina".



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Cascina Piemonte is an old farmhouse in the Sangone Park, owned by the city, historically used for agricultural purposes but now abandoned. It will be used by "Associazione Coefficiente Clorofilla" for social farming activities (teaching, training and job placement).



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Abandoned and vandalized building in the former industrial areas.



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Torino Città d'Acque (Turin water city), officially approved in 1993, provides for the recovery of banks of rivers into a single river park of 70 km, with an area of 17 million m². The project links the four rivers of Turin (Po, Dora Riparia, Stura, Sangone) into a continuous system of river parks connected by networks of pedestrian, cycling, naturalistic and educational routes, including protection and enhancement of the environmental and architectural peculiarities for each watercourse.



© Laura Ribotta

Former Fiat (FCA) plant today used for events. Temporary use for proGREG: events and Living Lab for testing hydroponic solutions in former industrial sites.

Thanks for contribution to: Laura Ribotta, Riccardo Saraco, Elena Deambrogio



Turin

as a Living Lab

Front Runner City

Living Lab area

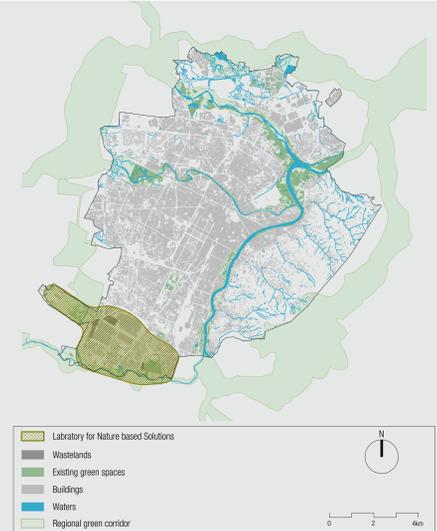
The Turin Living Lab (LL) will test and develop models for participatory urban regeneration whilst implementing the new municipal regulation on common goods. The LL area is the post-industrial "Mirafiori Sud" district (40 000 inhabitants on 12 km²) which is located along the river Sangone.

The former working class district is characterised by poor quality of the urban environment (green and grey infrastructure) accompanied by social segregation, poverty and security problems. It hosts different social groups (Roma, Sinti, Camminanti siciliani).

The area, however, offers several key opportunities which can be further developed: active local associations, recent green infrastructure operations, industrial and pre-industrial cultural heritage, abandoned or underused private or public buildings available for new community vocations.

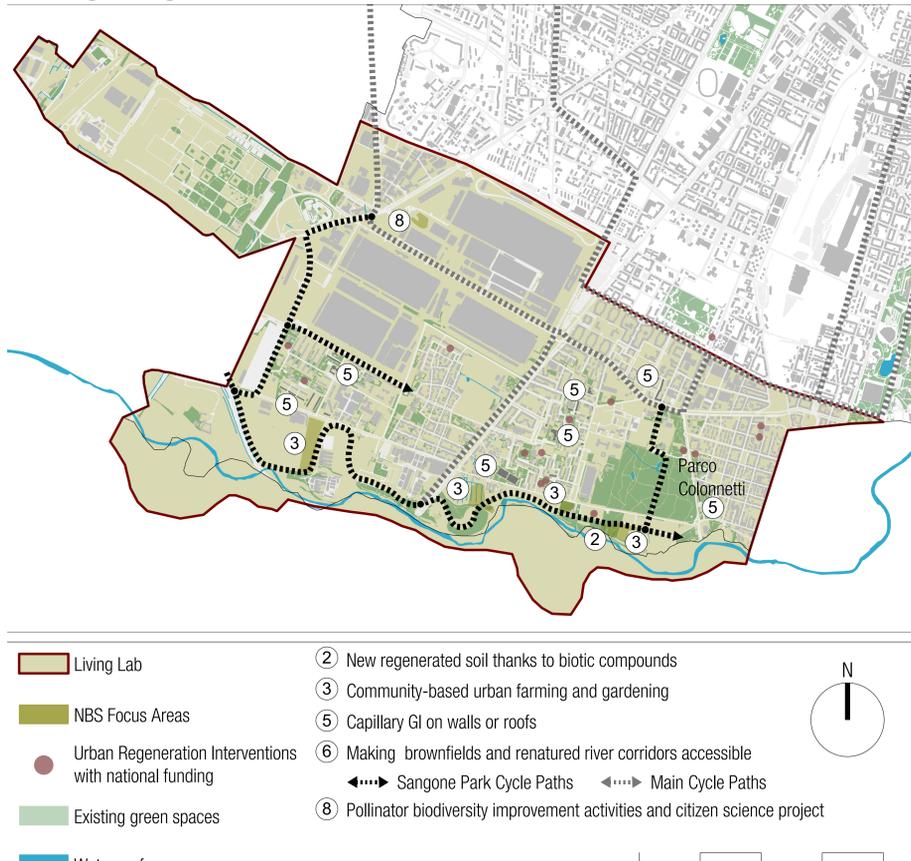
The main goal in Turin is to implement an urban regeneration plan with measures, activities and tools that will

- regenerate, valorise and make accessible abandoned or underused areas: Sangone river, parks, and the remains of the historic Mirafiori Castle
- improve the security of these places: involve citizens in the management and maintenance of common goods (public green spaces, cycle paths, etc.)
- foster and support urban greening activities, especially urban agriculture, as social and inclusive actions which will enrich the skills of inhabitants and create new social entrepreneurship and economic opportunities.



Living Lab Plans

proGREG Living Lab Turin



As part of the larger urban regeneration programme within the Turin LL the following nature-based solutions will be implemented:

- NBS 2:** a 2 000 m² test area "New soil and plant species for urban forestry" in Parco Sangone
- NBS 3:** a 8 ha development area for urban farming and gardening involving disadvantaged groups
- NBS 4:** a small aquaponics testing installation, implemented in cooperation with experts from Dortmund LL involving local communities for future replication
- NBS 5:** small scale green infrastructure interventions (green walls, green roofs, urban gardens) in deprived neighbourhoods, with active inclusion of specific target groups (including education in schools and collective gardening projects involving refugees)
- NBS 6:** a new greenway and cycling corridor along Sangone river which is connected to the overall Turin metropolitan cycling network and links ex-industrial private areas with public ones
- NBS 7:** New environmental compensation instruments, connected with the environmental assessment and compensation of big events and the realization of a "green business network"
- NBS 8:** Pollinator friendly green spaces, to encourage bee-keeping and honey production as well as bee monitoring, involving local communities in citizen science project.

Current Situation



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After the Second World War this area was dedicated to the National Agricultural Mechanic Centre. Later the buildings were used for social housing and today they are abandoned. With the co-design process, citizens will decide which NBS can be implemented here.



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The green roof of the "casa del Parco" (civic centre), which has undergone vandalism over the years, will be restored and returned to public use.



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The new soil test area.



Turin

and its Focus NBS

Front Runner City

NBS no.5 capillary Green Infrastructure on walls and roofs

Small Scale GI Interventions

Green walls and roofs for productive use will be created in the Turin LL area. Initial implementation will be located on public and social housing buildings, schools and the Casa nel Parco and then additional locations will be identified with the help of citizens.

expected benefits:

The "Castello di Mirafiori" school, a mixed school/ association building, will be used as the LL information centre, hosting the testing of innovative solutions. This will allow the development of a new model of a school-civic centre on a site which is scarcely used and has low student uptake problems presently.

Torino's Support for NBS in general

In 2016 the City Council has approved a master plan amendment to support the development of farms geared towards multi-functionality (farming, eco-tourism, agriculture, education and horticulture). Another useful action for the development of Nature Based Solutions was an amendment to the municipal building regulations, promoting the creation of garden and allotments on flat roofs. Finally, the new "Urban Common Regulations" allow citizens to establish collaboration agreements with the administration for the care of urban assets, including green spaces and deprived/abandoned areas.



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NBS no.2 new regenerated soil thanks to biotic compounds for urban forestry and urban farming

New Soil

For the construction of new green areas soil of good agronomical and environmental quality is necessary. However, the municipalities in the Torino urban area report that available arable soil is almost used up. Innovative solutions, which aim at the preservation of natural soil and comply with the principles of circular economy, are needed. NBS 2 will be applied for the afforestation of Sangone Park through the experimental use of „new soil“.

Excavated soil substrates, compost from municipal solid waste and specific microbial consortia are components of a soil substitute to be developed.

expected benefits:

Instead of producing waste, this NBS uses a circular stream of resources. The soil substitute developed will be an eco-product to be included in the list of materials for public green procurement. The NBS implementation will be accompanied by activities which reinforce the link between citizens and public green spaces, e.g. the creation of educational nature trails supported by volunteer guides.



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NBS no.8 pollinator biodiversity improvement activities and citizen science project

Pollinator Friendly Green Spaces

This NBS creates a systemic link between several other NBS to be implemented in the Turin LL. It complements all greening actions with the aim of promoting pollinator-friendly spaces and in assessing its efficiency in improving the environmental quality, ecological connections and aesthetical values. The NBS will include active citizens' participation in the realisation, management and monitoring for social inclusion of mental disorders.

expected benefits:

NBS success will be evaluated through monitoring pollinators that visit the new green areas through a citizen-science approach. Nature-based impact evaluation through biodiversity and environmental quality monitoring (pesticides, honey bees, butterflies), visual analysis on nectar butterflies (plant source of nectar and/or breeding sites). Turin proposes a completely new citizen science project which does not start from scientists but from citizens and focuses on particular group of citizens: doctors and users of mental health centres of Turin.



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Core Stakeholders



Environment Park SpA (ENVIPARK) is a Scientific and Technological Park located in Turin (Italy), founded in 1996. ENVIPARK plays a key role in the implementation of the LL in Turin, will assess technical barriers to upscaling of NBS and will help to develop a NBS business model catalogue.



Mirafiori Community Foundation (MIRAFIORI) carries out activities for social cohesion and public benefit promoting the development and improvement of quality of life in the Mirafiori South neighbourhood. MIRAFIORI plays a key role in implementing the NBS in the Living Lab.



Dual s.r.l. (DUAL) transformed from a small family business to an important company in the building infrastructure and the quarry sector. DUAL will play a key role in implementation of the Living Lab, in particular in the reuse of soil. It will undertake the testing, classification and splitting of excavated soil and stones.



OrtiAlti (ORTIALTI), established in 2015, is a non-profit organisation working in the field of social innovation, cultural promotion, dissemination, research and experimentation of urban farming practices and reuse of unused urban areas, through the involvement of citizens. ORTIALTI will be an operative partner for "NBS Pilot implementation".



The University of Torino (UNITO) is one of the largest Italian Universities and ranked as a top national university. In proGReg, the following will be involved: IcxT - ICT and Innovation for the Society and the Territory; the Department of Chemistry; the Department of Agricultural, Forest and Food Sciences (DISAFA); the Department of Life Sciences and Systems Biology (DBIOS); and Urban and Event Studies (OMERO).



The Politecnico di Torino (POLITO) has a long-standing tradition of leadership of polytechnic culture. It is one of the most important universities in Europe for engineering and architecture studies and is strongly committed to collaboration with industry. POLITO will contribute to the spatial analysis of Turin and the co-design processes in the Living Lab. Furthermore, POLITO will help to implement the NBS and the flourishing of the Living Lab.

Thanks for contribution to: Laura Ribotta, Riccardo Saraco, Elena Deambrogio

