

Chapter 7

Re-urbanising the Contemporary City: Spatial Planning and Green Strategy in Turin



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Abstract Among the different configurations that public and private space takes on in the city, green space is undoubtedly the component where the improvement of the health and well-being of urban communities and the quality of settlements, as well as social inclusion and the mitigation of the impacts produced by climate change, are most at stake. The environmental, social, economic and technological challenges the contemporary city faces require the revision of traditional models of modern urbanism. That is, they call for a rethinking, above all, of the more recent spatial models that have mostly focused on the punctual government of transformations and reconversions of urban brownfields, without however succeeding either in limiting the persistent intensity of widespread urbanisation processes or in grafting broader effects of urban regeneration (in its multiple components: environmental, social, housing and employment). Through the case study of the City of Turin, this paper tackles the theme of green infrastructures as a frame of a broader and anthropocentric ecological-environmental reorganisation of the contemporary city. In this perspective, the urban scale opens up new ways of working through the use of design devices capable of becoming a structuring part of the urban spatial project, contributing to directing choices towards objectives of complex regeneration (ecological-environmental, social and economic) of the city aimed at an optimal use of resources.

Keywords Green infrastructures · Public space · Urban regeneration · Spatial planning

7.1 Introduction

The urbanisation processes that have taken place in recent decades, often in the absence of adequate territorial planning, have generated—and continue to generate—a series of negative impacts on the environmental balance of territories and may

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be considered one of the main threats to sustainable development (European Commission 2012; EEA 2016a, b).

Unsustainable urbanisation and intensive land use contribute to amplifying the impacts of climate change and make cities increasingly vulnerable to the risks of extreme events such as heavy rainfall and heat waves (Revi et al. 2014). People living in urban areas are also exposed to high levels of vulnerability and risk associated to air pollutants (Manes et al. 2019). And there are additional possible threats to be considered, as is the case for the COVID-19 virus, which spreads very easily through the air, with negative effects both in the short and long term. It may cause health functional alterations (respiratory, pulmonary and cardiac) as well as increased mortality, with strong repercussions on the well-being of citizens, on the public sphere (specifically on health) and on the quality of urban living (ISPRA 2016).

Conversely, many past and recent studies have documented the positive role of vegetation to consistently reduce pollution levels, both through the absorption of fine particles on the leaf surface and through the absorption of ozone through the stomata of the green organs of plants (Diener and Mudu 2021). The benefits provided by the different types of urban greening in terms of support, regulation and cultural ecosystem services, green areas, among all the other space (especially the public one) components in urban areas, play a key role in contributing to health improvement, to the well-being of communities, the quality of settlements, as well as promoting social inclusion and climate change impact mitigation (Daily 1997).

In this perspective, the urban scale opens up new working paths based on design devices that can be structurally integrated into urban design and thus help target the objectives of urban complex regeneration (ecological-environmental, social and economic) as well as optimal use of resources.

7.2 New Paradigms for Urban Design

Among the design options for the new resilient, adaptive and anti-fragile city, the concept of urban green area has evolved into the more complex notion of urban “green infrastructure”. The latter entails fertile deployment potential when acknowledged as essential in the policies for conservation, environmental protection and enhancement, sustainable development, mitigation and adaptation in the urban environment (Ahern 2007).

The importance of green (and blue) infrastructures for the environment and society has been acknowledged in the European (European Commission 2013), international and national political agendas on the environment and green economy, climate change (EEA 2016), biodiversity and sustainable development (United Nations 2030 Agenda, Goal 11).

The concept of green infrastructure implies the opportunity to triangulate different fields of public action while simultaneously fulfilling a range of different functions: production reservoir of ecosystem services, dynamic system to adapt to climate change phenomena, reorganisation of urban metabolism and frame of the new public

city (Gasparri 2018a, b). In this sense, the evolution of green spaces becomes embedded in the urban structure, shaping its formal design as well as the layout of both open spaces and buildings.

At the international level, the numerous experiences gathered in urban planning and design have produced innovative urban-territorial regeneration, both in terms of the proposed design and operational solutions (nature-based solutions) and in terms of new knowledge acquisition methodologies to deal with current challenges and adequately support the assessment of possible land use scenarios.

In Italy, the topic of green infrastructure has been widely covered in the urban planning debate (integrating the semantic shift towards resilience). A substantial paradigm change has occurred in the way of thinking and designing the city (Gasparri 2015). However, the urban planning practice still struggles to deal concretely with issues like urban heat island, saving resources, risk prevention, urban resilience, which are hardly translated into policies, design practices and specific regulatory systems.

In the face of this, the new social, environmental and ecological challenges of contemporary cities and territories require a radical change in the paradigms and forms of urban planning. This change necessitates both the revision of conventional models of modern urban planning, mainly based on the governance of urban growth and local infrastructure and a rethinking, especially of the more recent models. Against the backdrop of the profound crisis hitting the industrial economic systems, indeed recent models have been mostly focused on the punctual management of transformations and reconversions of urban brownfields, without succeeding either in limiting the intensity of urban sprawl or in triggering wider effects of urban regeneration (environmental, social, housing and employment) in a less efficient and liveable consolidated urban fabric (Arcidiacono et al. 2018). There are still few and sometimes disappointing experiences of urban plans applying these concepts and therefore introducing planning devices targeted on the urban green infrastructure. Unfortunately, the latter is still rarely applied as one of the design categories of municipal urban plans.

7.3 A Far-Sighted Vision: Green Paradigm in the Programmatic and Planning Contents of the Turin Land Use Plan

The current Turin Land Use Plan, drawn by architects Vittorio Gregotti and Augusto Cagnardi and in force since 1995, frames the topic of green areas within more general considerations about the 'environmental condition' understood as "the set of transformations produced and induced in building the city" (Città di Torino 1989: 31). One of the main goals is to improve the built environment and the image of the city but especially improve urban environmental quality, as a prerequisite for transformations and a guide for planning.

The first line of intervention aims at rehabilitating the main degraded resources to improve the flat part of the city through a strategic use of river strips and non-urbanised areas. The subsequent step aims at recovering residual spaces in urban organisms as far and as well as possible. The redevelopment of riverbanks will ensure maximum continuity through reforestation. To this purpose, the Po axis plays a vital role as a multifunctional area for leisure, rest, sports and as a green lung. For an improvement of urban conditions, Parco della Collina will also be included as parkland—public and restricted private—with improved itineraries along public paths starting from public parks. The park is no longer planned as a physical geographical limit of the city but as a possible ‘central park’ with respect to an inter-municipal area expected to expand in future. Rather than a frame or a margin of the urban structure towards the east, the Collina torinese is intended more properly as the centre of a wider area, where the urban body extends both into the plain area of the city and over the hills, wrapping it on all sides (Città di Torino 1989: 43).

The plan also provides for the development of a system of urban parks resulting from the reuse of dismissed industrial areas (Susa area and Dora area) and of the railway yard between Lingotto and Porta Nuova. The new parks will be the cornerstones of an urban redevelopment of the most densely populated and least serviced districts with the aim of improving the general environmental conditions of the city but also, in a more direct way, the living conditions of innermost districts, crowning the historical city.

7.3.1 The Spatial-Functional Green Model

Although Turin and its metropolitan area expanded and grew substantially not unlike other Italian metropolitan areas, Turin stands out in its exceptional geographical position and Baroque territorial presence granted by its large parks and suburban paths, which stemmed undifferentiated growth and imposed a demarcated compactness and density on the inhabited flat area of the city.

At the end of the 1980s, Turin is no longer an expanding city and is already showing the signs of a new dramatic urban transformation. As observed by Cagnardi (1992: 2), “a new era is being prepared in which the city is rebuilt on itself; the empty spaces of the large factories become fertile lands for the birth of the new city within the existing city”.

The 1995 Land Use Plan has reset the spatial layout of green spaces (and other activities) along essentially north–south axes with the declared intention of disrupting the hierarchy between centre and periphery and reopening the city towards the two plains that it previously separated (to the north towards the Canavese, the Eporediese and the Vercelli areas, to the south towards the Asti and Cuneo districts).

According to the Land Use Plan, the design decisions related to green spaces are susceptible of promoting a different aspect of the city: within the urbanised area, four main green systems are outlined, with an axial configuration vis-à-vis the Turin territory.

For the Po valley, the first axial system, a sort of natural trunk placed between the city and the hill, the plan foresees an intense forestation of the valley to recreate a continuous, compact natural presence with a strong landscape impact. The aim with the Po river system is to create a consistent green volume, morphologically juxtaposed to the built flat volume of the city and a 'hub of leisure and free time' within the urban space.

The second axis, parallel to that of the Po river, is the Spina Centrale, along which the design scenarios envisage four areas of urban transformation for a total of almost 3 million square metres of land area. It is designed to be a place of urban innovation and host the operations of public and private tertiary companies. As a result of the plan implementation rules, 50% of these spaces, made available by the decommissioning of large industrial plants, are re-naturalised and equipped as a park (while construction is allowed in the remaining space). The (planned) forested spaces are expected to make a significant contribution to creating a 'new balance between the green and built environment' in the city. Given their extension and location in the urban fabric, these new parts of the city "will play a structural role in the morphology and functionality of the future city, comparable at least partially to that played by the new urban areas which in past centuries have taken the place of military facilities and infrastructures" (Città di Torino 1991: 117). Along the Spina, which crosses the urban part of Turin, as a sort of barycentre, the planned transformations include the construction of the Rebaudengo, Dora, Susa, San Paolo Parks and one more on the roof of the Scalo del Lingotto. The construction of Spina Centrale, which overlaps the railway line from Piazza Rebaudengo to the Lingotto through a moderate lowering of the railway tracks, allows the railway furrow to be closed through a roof slab with a green cover, a sort of green boulevard marking the city from north to south.

The third axis, the so-called corridor in urbanisation, is Corso Marche, on the western edge of the city (from the Stupinigi Park to the Venaria Royal Residence), in a north-south direction, for mainly tertiary activities requiring large spaces and vehicle accessibility. It is surrounded by pre-existing agricultural areas redesigned with greenery and woods (along the axis) and by the large space of the former Campo Volo di Collegno expected to host the new Parco della Dora (as an extension of the Pellerina urban park).

The last axis, of lesser importance, orthogonal to the previous ones, develops along the east-west direction and consists of Corso Tirreno, close to the former Piazza d'Armi, the gardens of Piazza Marmolada and the existing Ruffini Park, extended to an adjacent green area.

The riverbanks of the Stura, the Dora and the Sangone overlap this axial system. Their elements are almost orthogonal to the system of the aforementioned axial system and areas. The plan provides for a thick and substantial green volume of tall trees so as to recreate 'strong' natural elements in a balanced and landscape-positive relationship with the built urban space volume.

For the hills of Turin, the plan provides for the forestation of free areas, the creation of a large park of regional relevance and an adequate system of pedestrian paths, car access routes and multimodal public transport systems, to enhance the recreational function of this area. The rest of the existing and planned green areas

include a plurality of large and small historical and recent spaces, either equipped or not. Taken as a whole, these green areas fulfil an important connective function of the urban fabric at various levels.

Therefore, the overall scenario envisioned by the plan consists of structural elements clearly identifiable in a set of built-up spaces, well set around the historic and newly built infrastructural networks, as well as another set of ‘green volumes’ made up of potential river forests framing the built-up area and the network of urban parks connected to them.

7.3.2 Green as an Urban Standard

In the Turin 1995 Plan, green spaces are encompassed within urban planning standards, as is customary and pursuant to legislative provisions (starting from Ministerial Decree no. 1444/1968).

The endowment of existing services, confirmed as areas, public and private, as regards ‘public green, parks and sports facilities’, is equal to about 10 million square metres, albeit a strong increase is expected: the plan envisages 30 million square metres as green spaces, thus tripling the existing ones (at the date of drafting the plan). The recovery of additional areas to increase the supply of existing services can essentially take place in two ways: the use of areas not yet built up and the reuse of areas freed from urban transformation processes.

The free areas beyond the continuous built-up area (25 million square metres in 1989) and mostly located on the hills and north of the Stura stream are classified as protected areas in the plan and deemed a resource for a ‘system of green spaces’ in the metropolitan area, including both equipped and non-equipped public areas (the urban parks provided for in the standards), and private agricultural or wooded areas. Urban areas not yet built up (about 5 million square metres in 1989) are designed to increase the supply of services in absolute value, although their marginal location is not functional to all types of services. A possible alternative is that of transformable areas (old industrial plants, obsolete equipment and plants) that became available in the 1980s following the technological transformation of production. They were certainly an opportunity—perhaps unique—to renew the image of Turin, the one-company-town (Bagnasco 1986) and redevelop, as well as enhance, its infrastructure and service system. The recovery of the central areas occupied by disused railways or metal and steel plants—the so-called Spina Centrale—offered a design opportunity of exceptional urban significance, almost a metamorphosis of the city.

The plan also shows a certain sensitivity to non-quantitative issues, for instance, the profound crisis in public finance already clearly underway in the 90s of the last century. It also addresses the still uncertain legal and regulatory framework since the five-year validity limit of the constraints and services envisaged by urban plans raises challenges in the medium-long-term planning of interventions. In this sense, the current plan re-evaluates the resources available when it was drafted, in terms of the two fundamental public and private components, paying close attention to the

consistency, characteristics and level of public structures present in the area. The aim is ensuring maximum functional integration between existing and planned services and maximise the effectiveness of the service system. Finally, the plan leverages the resources that the private sector can make available through the existing facilities to partially meet the demand (also through agreements with the public bodies) and through investments for concession interventions in public areas.

7.3.3 The Urban Planning Regulation for Parks

The river and hilly urban park areas envisaged by the Turin Land Use Plan (under the urban planning and building implementing regulations) are specific regulatory areas where the equalisation mechanism, apparently similar to that of Urban Transformation Zones, works in a different and more complex way in this case. Since building rights in situ are not provided for, transferring volumes to other areas implies uncertainties about the result. Therefore, the river and hilly urban park areas are classified as public service areas. Due to their territorial relevance (because of their wide extension and location), they are designated mainly for public services of general interest, as provided by the Piedmont spatial planning law.

In the course of the over 25 years of the plan, however, due to implementation obstacles, these measures largely remained on paper: private operators, differently from the Urban Transformation Zones, did not show any interest in these additional building opportunities, especially in the case of hilly parks (with the lowest indices). In response to these critical issues, in 2001 the Plan Variant no. 37 introduced some flexibility, extending the possibility of assigning areas to the category of areas to be transformed for services.

With a planned surface area of currently 20,616,198 square metres, the 18 urban and river parks measure a total of just over 14 million square metres of land area (equal to 68% of the total), while the 15 hilly parks extend for about 6.5 million square metres of land area (about 32% of the total).

7.3.4 A Sectoral Plan for the Green Infrastructure

In 2017, the City of Turin defined, among the government's programmatic objectives (Città di Torino 2017), to complete the implementation of the urban park system and to adopt a Green Plan (Città di Torino 2018): a tool introduced into Italian legislation with Law 10/2013 (Regulations for the development of urban green spaces), which flanks the traditional municipal Land Use Plan. The Green Plan is an optional device, left to the sensitivity and capacity of individual municipalities, supplementary to general urban planning.

Consistent with these intentions, in March 2021, the City of Turin approved the Strategic Plan for Green Infrastructure (Città di Torino 2021), supported by the

signing of a Memorandum of Understanding between the Ministry of the Environment, the National Committee for the Development of Public Green Areas, the Piedmont Region and the Metropolitan City of Turin to develop a common strategy for the enhancement of green infrastructure, urban forestation and related ecosystem services through planning tools and mechanisms for the management of environmental contributions and compensations.

The objective enunciated by the Strategic Plan is to support the direction of investments and the definition of intervention priorities in the medium-long term for the public urban green infrastructure system based on the various analyses constructed on an urban scale.

The Strategic Plan identifies the multiple functions performed by green spaces in the ecological-environmental, socio-cultural and economic categories. It provides a considerable cognitive framework for the quantitative and partly qualitative components of Turin's various types of green spaces. It also devotes a particular focus to recreational greenery (understood as green areas freely accessible and usable by citizens for walking, free sports activities, playing, socialising and relaxing) and to its degree of accessibility in the city, also in relation to specific social categories of users.

Other elements of interest concern the introduction of ecosystem services evaluation, the focus on urban horticulture and 'cultivated' green, the attention to climate vulnerabilities and the evolution of management approaches.

Although the plan does not reveal any significant deficiencies in the coverage and accessibility of green areas in Turin, the strategy defined for the evolution of the public green system emphasises the need to implement future interventions following the destination for green services of the current Land Use Plan. Therefore, the Strategic Plan's context of action is exclusively that of the areas destined for public use by the Land Use Plan, whether existing or planned, without defining planning hypotheses for unbuilt private areas.

Considering the two plans together (the Land Use Plan in force since 1995 and the Strategic Green Plan approved in 2021), it can be observed that there is no explicit and systematic system of relations between them, i.e. of choices and provisions capable of triggering regulatory relations. Moreover, since in 2020, the City of Turin had also started a process of revision of the 1995 Land Use Plan, it remains to be clarified whether, in the near future, the strategy for the green system in Turin will be able to constitute a structuring design criterion to orient actions and policies of the urban Land Use Plan, in an ecological perspective for the overall urban environment.

7.4 Conclusions

In Italy, public green spaces are a good indicator of the state of green infrastructures in urban settlements. As the case of Turin has shown, if Decree 1444/68 represented an undoubted reference for directing urban planning towards the criteria of quality

of life—building expansion has to be matched by minimum public equipment facilities—its validity has to come to grips with the urgency of guaranteeing the sustainability of transformations as well as territorial resilience. From the environmental point of view, therefore, the priorities for the future are to protect nature and citizens' contact with it, ensure the adequacy of settlements to climate change, reduce hydrogeological risk and resource scarcity, reduce energy consumption and waste, protect landscapes and natural resources, with particular attention to non-renewable ones, such as the soil.

Urban green infrastructures (along with blue ones) are an important field of design experimentation where the design of public (but also private) open spaces performs multiple functions depending on the urban connotation and land use options. Green infrastructures expand the concept of network (its ecological definition points to the protection of biodiversity and connections between natural areas) to encompass multifunctionality. Open areas and spaces, natural and anthropic are integrated with the networks of slow mobility as well as energy and digital infrastructure: waters, urban and agricultural landscapes, green areas and waste and neglected areas interact and build systems of spatial, social and value relations, cohesive and inclusive, linked by multilevel governance processes (Arcidiacono et al. 2018).

In this sense, green infrastructures will serve as an actual frame of urban design in the contemporary city, a supporting structure to assess and verify the settlement and infrastructural choices of the plan.

This design perspective overturns the conventional quantitative and functionalist urban planning approach, proposing new performative criteria and design guidelines based on natural solutions to be adapted to local physical and social contexts as an anchor for methods of evaluation and control of urban regeneration processes.

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