

The Aniene River: a green infrastructure to set up a metropolitan strategy

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Abstract: The latest territorial government tools have embedded green infrastructure with the aim to preserve the natural character and to stimulate regeneration processes of public open space and social cohesion, especially in peri-urban areas, where suburbs melt with agricultural and natural landscapes, and along the rivers, often neglected. This contribution will investigate the preparatory works for the new General Master Plan of Tivoli. A special focus is about the Aniene River as a potential Green Infrastructure, capable of restoring continuity to the ecological and functional fragmentation of landscapes heavily compromised by urban growth and production pressure. During the last decades, peri-urbanization and industrialization phenomena in these areas have ignored the river basin. The results are features of brownfields, industrial archaeology sites, informal settlements whereas open space is abandoned or unfittingly occupied by landfills, junkyards, brownfields. The Aniene River system boasts a relevant geographical dimension in order to test a strategic metropolitan governance able to address different sectoral issues. In this direction, the Aniene River Contract, that has recently started its official process, complements the traditional planning tools and represents a main opportunity for participatory processes where the community turns out to be central.

Keywords: Aniene River, planning tools, green connectivity, cultural benefits, metropolitan strategy

Introduction

After the Second World War, urbanization was characterized by a multiplicity of settlement and land occupation patterns that do not convey an overall idea of the city. Definitely, due to a series of extensions, enclaves, settlement interruptions and resumption, the Roman area, the so-called 'Agro Romano', witnessed huge aggression of agricultural land and exploitation of natural resources.

This contribution focuses on the linear city that lies between Roma and Tivoli along the low course of the Aniene River before its confluence in the Tiber River.

A specific feature of the so-called 'Tiburina City'¹ is long term interdependence between the two outposts of Rome and Tivoli, favoured by the different uses of the river. Over time, it served as a waterway for the transport of essential goods like high quality olive oil, for the shipment of travertine and other construction materials extracted from the quarries, as a reservoir for domestic water demand, as an energy source for typical proto-industrial activities linked to paper mills and ironworks, and, lastly, for electricity needs for the Capital City.

Today, many plants are abandoned, standing as monuments of industrial archaeology among quarries, brownfields, factories still in use, illegal settlements, and shopping centres.

The low course of the Aniene basin, with some 800.000 inhabitants, falls under the jurisdiction of different local authorities (Figure 1) – the Municipalities of Tivoli and Guidonia Montecelio, the Roman Municipal Districts II, III, IV, V, VI – and is featured by a great variety of historical and natural assets displaying manifold landscapes thoroughly intertwined with the Aniene River.

¹ The term 'Tiburina City' is here referred to the huge hook constituted by the eastern Rome districts and the Municipalities of Guidonia Montecelio and Tivoli, following the Tiburina consular road and the Aniene River.

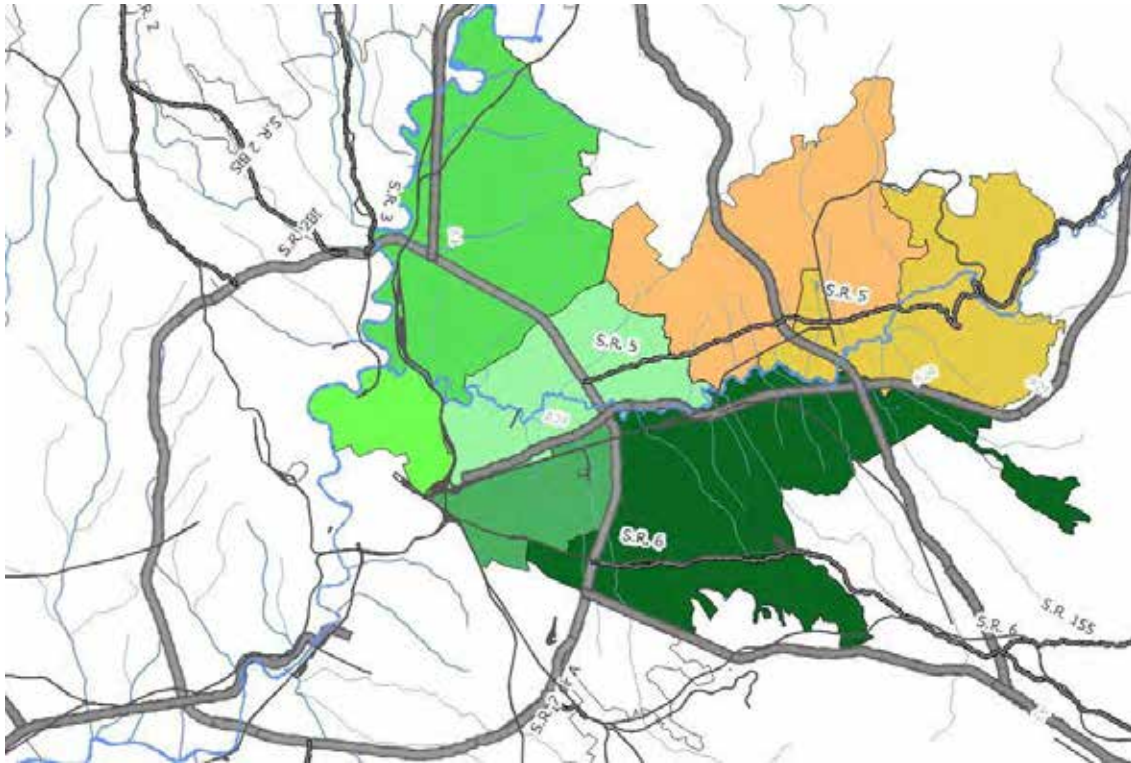


Figure 1. The Metropolitan area east of Rome. In green the Municipalities of Roma, in yellow Tivoli and in orange Guidonia Montecelio.

GIS elaboration: Romina D'Ascanio. Sources: <http://websit.cittametropolitanaroma.gov.it/>, http://geoportale.isprambiente.it/tematiche_pt/idrografia/, <https://geoportale.regione.lazio.it/>

Despite being the backbone of such linear city gathering unsuspected naturalistic qualities along with excellence industry, the Aniene discloses settlement and environmental criticalities and is mostly perceived as no man's land. Thus, the future of the Tiburtina Valley is challenged both by the needs of an 'urban continuum' to be treated as a whole and by ecological connectivity issues. Although these aspects sound dissonant, convergence should be found in order to effectively intervene by matching sectoral policies, as proved in the case of ecological transition objectives reported in urban and metropolitan governance agendas all over Europe. Within this frame, the Aniene river is to be intended as the key connection factor, playing a strategic role in terms of resilience, and thus requires to be managed and designed on a case-by-case basis.

A glance of the recent history

In 1913², the Tiburtina area was a rural context – the 'Agro Romano' by the side of Rome and the 'Agro Tiburtino' by the side of Tivoli – controlled by huge estates: a mosaic of large tesserae dotted with rare farmhouses and extensive exploitation patterns. In the first post-war period, due to strong urbanization, the natural overflow of the city coupled with spontaneous or authorized 'urban nucleuses', such as suburbs, isolated allotments, hamlets or centers of agricultural colonization. Over the years, spontaneous settlement processes linked to migratory flows invested Rome and its hinterland in successive waves. Local concentration of an urban 'underclass' mixed with farmworkers due to persistent land ownership in the hands of few, and the strong production vocation recalled by the Aniene and the Roma-Tivoli railway, are among the main reasons leading the Regime to establish in 1941 the II Industrial Zone of Rome, for a total of 1,500 hectares, on the left bank of the Aniene.

² It is referred to 'la Carta dell'Agro Romano' of Pompeo Spinetti, published in 1913, which shows the cadastral ownership subdivision

Housing needs of the second post-war period allowed for new hamlets and settlements randomly occupying and compromising the Agro. These enclaves variously display urban lifestyles on remnants of rurality: small residential plots are interspersed with agricultural uses wholly or partly efficient, with *terrains vagues* and industrial sites.

In fact, it is no longer possible to take into consideration the logics and the syntax behind previous arrangements related to the river and its multiple utilities. This reflection points out that landscape quality objectives and transformation rules need to be rethought from the opportunities stemming from residual open spaces, including both natural and historical signs still in place³ (Figure 2).



Figure 2. The peri-urban areas of the ‘Tiburtina City’, where two landmarks face each other: on the left the historical farm ‘Tenuta del Cavaliere’ and on the right the massive Agroindustrial Center of Rome.
Photo credit: Romina D’Ascanio, March 2019.

Nature and culture: planning tools and bottom up initiatives

Worldwide, ecological continuity has become crucial in addressing landscape fragmentation in new planning and management tools. On the one hand, it guarantees the biodiversity conservation and, on the other hand, it provides a wide range of benefits for people and society. In this direction, the European Green Infrastructure Strategy has prompted towards cross-disciplinary approaches linking biological and ecological issues to cultural and economic effects of well-being.

The Charter of Rome on Natural and Cultural Capital⁴ clearly underlines how the European natural capital is closely related to cultural values. Landscape construction is embedded in agricultural practices, economic systems, cultural backgrounds, communities’ traditions and habits and respectful use of natural resources. From this perspective, the Charter would like to strengthen the EU Birds and Habitat Directives (2009/147/EC; 92/43/EEC) goals to meet “ecological, scientific and cultural

³ In the Metropolitan City of Rome, soil consumption touches 71,000 hectares, increasing by 500 hectares between 2012 and 2015 at the expense of agricultural land.

⁴ In 2014, within the activities for the Italian Presidency of the Council of the European Union the Ministry for the Environment organized the Conference ‘The Natural and Cultural Capital: the Future of Europe’ at the Botanical Garden of Rome and, the informal EU Biodiversity and Nature Directors meeting at the Ministry of Foreign Affairs. The final working document was the ‘Charter of Rome on Natural and Cultural Capital’. It is a tool aimed at raising awareness of the important synergies between the Natural and Cultural Capitals, as well as increasing the integration of biodiversity issues into sector policies, also with a view to developing a greener economy. The main themes of the Charter concern the improvement of knowledge and investments on Natural Capital, the guarantee of a high functionality of natural ecosystems, the integration between Natural Capital and Cultural Capital and finally the creation of synergies between green infrastructure, rural and urban areas

requirements, while taking account of economic and recreational ones”. In this scenario, connections among natural resources, signs of history and human perceptions build up a complex system that also inspired the European Landscape Convention (2000) where, according to a holistic view, territorial vocations and communities’ expectations might converge.

Matters of fact and law – both the different uses and utilities along the river, and general and sectoral planning tools -, are actually raising relevant environmental, settlement and production conflicts. The issue of ‘open space’ as a *proxy* for connectivity is approached quite differently by the Regional Landscape Plan (RLP)⁵, whose aim is to preserve and enhance landscape patterns, and by the Provincial General Plan of the Metropolitan Area (PTPG, approved in 2010). This latter, in providing a strategic overview for local planning tools entrusted to implement its provisions, has drawn up the Landscape Ecological Network (LEN, Figure 3), that represents the main green infrastructure within the metropolitan areas (Blasi *et al.*, 2014). One of the most important purposes of this Plan is to acknowledge nature and history as main features of identity and environmental sustainability, and to assess consistency of ongoing transformations with the historical construction of the territory.

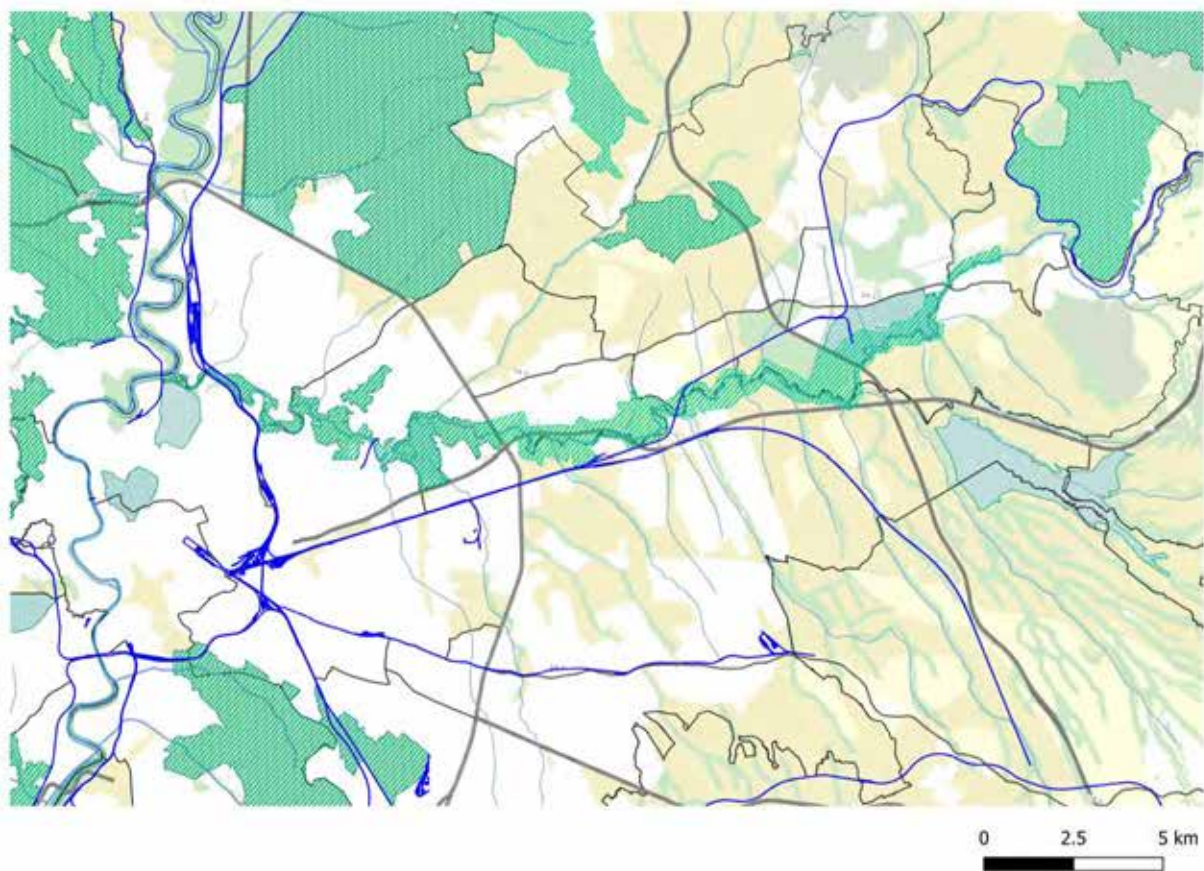


Figure 3. Landscape Ecological Network of PTPG, 2010.

GIS elaboration: Romina D'Ascanio. Sources: <http://websit.cittametropolitanaroma.gov.it/>, http://geoportale.isprambiente.it/tematiche_pt/idrografia/, <https://geoportale.regione.lazio.it/>

Furthermore, the PTPG takes as a frame the three general objectives proposed in several EU directives, such as the improvement of economic and social cohesion, the safeguard of natural resources and cultural heritage and the creation of a more balanced metropolitan competitiveness, explicitly calling upon the dimension of functional agglomerations, with their peculiarities. The ‘Tiburtina City’ is mentioned within this frame.

⁵ Despite having undergone procedural steps for some fifteen years, the RLP has not been approved yet.

At the basis of the strategy of the Plan there is the priority to enlarge some protected areas, such as the Aniene Park of a further 1,300 hectares⁶, in order to systematically protect, reconstruct and extend the allocation of naturalistic-environmental resources, promote the recovery of nature's features, even in the residual areas where naturalistic reconversion is possible.

The Landscape Ecological Network is based on levels of biodiversity and ecological functionality. It is constituted by core areas, buffer areas, and landscape connections.

The object of our analysis is mainly part of the so-called 'Lower Aniene Valley Unit' and has three core areas: the Site of Community Interest (SCI) '*Palude della Cervelletta*', the SCI '*Travertini delle Acque Albule*' and the *Valley of San Vittorino*. The Aniene River, together with its tributaries and the buffer boundaries provide landscape connection in natural and semi-natural areas.

Finally, a wide portion of the agricultural land uses may perform as ecological connection between agricultural land and settlement systems. The agricultural landscape mosaic corresponds to the still existing portions of the ancient 'Agro Romano Tiburtino' with a prevalence of olive groves.

At city level, the General Masterplan of Rome (2008) set up its own Ecological Network, but the municipalities of Guidonia and Tivoli still have General Masterplans dating back to the 1970s. During the drafting of these General Plans, both cities had addressed some criticalities, such as illegal occupations and land subdivisions, that have worsened over the last decades of building speculation. Overall, the demand for housing has seen private interest prevailing over the public one.

Since 2016, in order to face the obsolete and ineffective General Master Plan, the Municipality of Tivoli has set up a Special Office for the preparation of the new one, whose first results have been presented in May 2019. Due to the interference of manifold rules belonging to different planning tools (included the River Basin Management Plan, RBMP), and affecting the same areas, the main idea was to build a common ground and a common agreement around the Aniene system as the backbone of the entire settlement.

Being the Aniene River the core issue for the establishment of the Aniene Park, other areas, notably the protected sites, the UNESCO sites, several plots with olive oil groves, '*pizzutello*' vineyards or with typical quality agriculture productions still in place in the 'Agro Tiburtino', and plots with vegetable gardens, have been taken into account by the new General Master Plan: the overall idea is to structure the green network arranging even some minor ecological connections.

Paradoxically, the Aniene better performs the ecological role than the one linked to leisure time: to access it all along its course stays a critical issue. Time after time, morphology (deep slopes), property, illegal uses, poor mobility system, prevent people from enjoying free and safe use. Thus, the river is mostly perceived as a 'foreign element' in the community life, and only recently neighbourhood committees have claimed the need to regain possession of their historical and cultural heritage. These expectations couple with the emergent slow and eco-tourism fashion and with an increasing leisure time for citizens.

These insights have emerged along the path of the 'Aniene River Contract'⁷, for which the *Manifesto of Intent*s was signed in June 2018. As early as December 2018, the first three thematic working tables were held on the issues of water quality, hydrogeological risk and sustainable development for the three sections of the river - high, medium and low course - gathering wide participation from associations, local authorities and citizens. The path of the Contract, thanks to the awareness campaigns of the 'Aniene Committee'⁸, has been led by the Comunità Montana 'Valle dell'Aniene'

⁶ The lower course of the Aniene in the Municipality of Rome within the Grande Raccordo Anulare is already protected by the Aniene Natural Reserve, under the management of 'RomaNatura' Authority and 'Insieme per l'Aniene' non-profit organization. However, the area still suffers problems due to anthropic pressure and illegal activities.

⁷ The River Contract is an agreement that allows to adopt a set of regulations in which criteria of public utility, economic return, social value and environmental sustainability equally take part in the search for effective solutions for the river basin's recovery. (World Water Forum, 2000)

The River Contract is a voluntary tool of strategic and negotiated planning for the protection and better management of water resources, valorization of river landscape and mitigation of hydraulic risk, contributing to the local development. (Italian Environment Code, 2006, mod. 2015)

⁸ The 'Aniene Committee' is made up of numerous associations and citizens, committed to promoting concrete actions for the care of the river basin. They have been working together for more than ten years.

and currently collects about seventy actors among institutions, municipalities and associations. The River Contract (RC) has proved a new governance approach capable of matching nature, environment and historical landscape, able to create a common ground of discussion and shared ideas among all the stakeholders operating in the basin, trying to include private sectors initiatives by empowering communities and raising awareness in public sector.

Although this path is in its beginning with some difficulties in terms of organization, participation, economic support, the Aniene River Contract is aligned not only with the Water and Floods Directive, but also with the Green Infrastructure Strategy, both for environmental principles and community participation, with the perspective to enhance historical and landscape systems of great relevance.

Insights and perspectives

Along the ‘Tiburtina City’, different typologies of green infrastructure (Church *et al.*, 2014) can be found, such as forests, green space, protected areas, urban parks, blue infrastructure, farmland, historical parks, etc. (Figure 4).

The river itself could be seen as a green-blue infrastructure able to deliver different cultural ecosystem services to improve sense of place, by reinforcing the awareness of cultural heritage.



Figure 4. The Aniene River landscape. In the background the ‘Casale di Sant’Eusebio’, a medieval fortified settlement. Photo credit: Romina D’Ascanio, April 2019.

The cultural ecosystem services, which are one of the four key service components identified in the ecosystem services frameworks, are sometimes less tangible or measurable but strictly related to human well-being and social cohesion. The Millennium Assessment (2005) defines cultural ecosystem services as the non material benefits people obtain from ecosystems such as cultural diversity, knowledge systems, educational values, aesthetic values, social relations, sense of place, cultural heritage values, recreation, and ecotourism.

The opportunity to activate a comprehensive and shared strategy, starting from the river and the open space as reservoir of natural and cultural resources, represents a way to set up a convergent green infrastructure agenda matching planning perspective and bottom-up initiatives. A structured and participative strategy on the river could improve not only its environmental quality (air, water, biodiversity), but generate a variegated spectrum of wellbeing benefit, interacting between environmental space and practices (O'Brien *et al.*, 2017).

The need to build a vision focused on the main signs of nature and history able to overcome the inconveniences of our controversial recent urbanization, should be a key feature of the Roman area. Notwithstanding, on the grounds of heritage, despite century-old acquaintance between people and a huge legacy likely to better shape our everyday life by inspiring place-specific regeneration processes, general neglect is still the norm.

The 'Via Tiburtina' and the railway between Rome and Tivoli, which is being strengthened thanks to the construction of the second track, will enhance the metropolitan mobility system. The integration between such traditional infrastructure and the green one is expected to largely contribute to the regeneration of deprived neighborhoods along the Aniene River.

In such contexts, public promotion could activate widespread recovery interventions with particular attention to management issues, which are currently a relevant challenge in urban regeneration, taking into account compatible proposals from private initiative and community participation.

This scenario calls upon the new Metropolitan City, entrusted with additional powers to rule strategic planning processes and likely to play a decisive mediation role among stakeholders, identifying and addressing effective policies towards sub-functional areas homogeneous in terms of history and development trends. According to the subsidiarity principle, all government levels are advised to cooperate on the aspects that intercept their own scope for action. Environmental policies are most promising, since they advocate cross-disciplinary tools. They should provide governance models able to match top-down compulsory policies towards the primary ecological networks (Aniene Natural Reserve, Monte Catillo Natural Reserve, etc.), with bottom-up practices concerning local connections, stemming from municipalities and private action.

Complementarity, or rather solidarity, between city and country, currently assessed by reciprocal flows of tangible and intangible assets, and benefits in terms of ecosystem services, should be supported by green infrastructure and slow mobility networks.

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