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Urban Form and Sustainability. New Adaptive and Resilient Tools and Strategies for the Regeneration of Territories of Unauthorized Production

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Abstract

The prefiguration of new strategies and tools for the regeneration of the territories of unauthorized production constitutes a field of research full of perspectives for the purpose of building new physical and intangible assets and configurations, capable of raising the levels of settlement and environmental quality, inclusion of social and economic growth. In the current phase characterized by the increase in environmental fragility, by fragmentation and territorial dispersion, by the risks due to global climate change, and by the economic and socio-health crisis caused by the pandemic, these objectives require the implementation of a unified strategy, integrated and inter-scalar, capable of promoting new planning tools based on adaptive and resilient strategies, aimed at recomposing the morphological-functional characteristics of fabrics and the construction of spaces and infrastructures of the public city. A perspective in which we play a fundamental role interventions capable of increasing the complexity of the urban structure, increasing the relationship between the parts, finalizing the design of the voids to the demands of sustainability, investigating the relationships between plan and project, between architecture, city, and territory, at the search for new urban morphologies and settlement models. In this frame of reference, the paper intends to outline the characteristics of the "Roman case", particularly characterized from a historical, morphogenetic, and dimensional point of view, highlighting not only the procedural, methodological and operational approaches, the limits, and criticalities, but also the evolutionary paths that could affect the overall process of urban regeneration and territorial rebalancing.

Keywords

Urban regeneration
Resilience
Unauthorized production
Innovative urban planning tools

21.1. Introduction

The prefiguration of new strategies and tools for the regeneration of the territories of unauthorized production constitutes a field of research full of perspectives for the purpose of building new physical and intangible assets and configurations, capable of raising the levels of settlement and environmental quality, inclusion of social and economic growth. In the current phase characterized by the increase in environmental fragility, by fragmentation and territorial dispersion, by the risks due to global climate change, and by the economic and socio-health crisis caused by the COVID-19 pandemic, these objectives require the implementation of a unitary,

integrated and inter-scalar strategy, capable of promoting new planning tools based on adaptive and resilient strategies, aimed at recomposing the morphological-functional characteristics of the fabrics and, through the re-weaving of relations with the compact city, at the construction of spaces and infrastructure of the public city (Ricci [2017](#)).

In this context, also characterized by the transformation of the production organization (Magone and Mazali [2016](#)), already underway for some time, but which the international geopolitical crisis has accelerated, the importance of entrusting to an innovative system of participatory and cooperative practices emerges, of new institutional geometries, planning tools, and innovative operational references, the aim of raising the levels of settlement and environmental quality, social inclusion, and economic growth, mending the identity ties between settled communities and territories, between settlement dynamics and historical and stratified heritage (Ricci [2019](#)).

The numerous challenges we face require concrete and immediate responses focused on the new disciplinary focuses of urban regeneration, *smart cities*, *twin transition*, strategies and actions for *adaptation* and *mitigation to climate change*, the improvement of natural cycles, and the *decarbonization* of the energy system (European Commission (EC) [2021](#)). It is necessary to implement new cognitive paradigms, such as that of Ecosystem services (Es) (Costanza [1999](#); MEA: Millennium Ecosystem Assessment (Program) [2005](#); TEEB [2010](#); Giaino et al. [2019](#)), new design metaphors such as *green and blue infrastructures* (European Commission (EC) [2013](#)) which can play a decisive role in the implementation of sustainable and resilient *climate-proof planning* through the integration of urban planning and environmental policies, triggering a new *urban metabolism* (Gasparrini [2015](#); Gasparrini and Terracciano [2017](#)). Through new open and flexible knowledge and design tools, it is therefore possible to revitalize communities and territories characterized by symptoms of environmental, social, and economic decline, producing high levels of urban, environmental, energy efficiency, and circularity of resources, improving the health and psycho-physical well-being of the inhabitants.

21.1.1. Territorial Imbalances and the Self-production Process of the Spontaneous Metropolis

Starting from the second post-war period, the tendential processes of territorial organization fueled by the massive migratory flows from the south and from the north-eastern regions toward the richer and more industrialized areas of the country lead to the formation of extensive conurbations formed by continuous aggregates of small centers willing to crown around the cities or located along the lines of the main transport infrastructures. The abandonment of vast agricultural areas; the concentration of the industrial apparatus and the workforce in a few areas of the national territory (Hall [1966](#)); and the centralization of organizations with a political, economic, and cultural function will be the cause of strong territorial imbalances between the various geographical areas of the country. Processes that have crossed the multiple forms of settlement, historical, consolidated, urban peripheries, and territories of diffusion, homologating their identity characters and invalidating the concepts of center and periphery (Ricci [2014](#)).

In particular, the proliferation of spontaneous and unauthorized productive forms of settlement that arose alongside and parallel to the main residential phenomenon (Onetti Muda [1983](#)) will characterize the outskirts of many urban centers, especially in central and southern Italy, causing a huge consumption of land, the deterioration of the historical-architectural, landscape and environmental heritage, and the expansion of the physical boundaries of cities, fueling their congestion and ungovernability (Crupi [2018a](#)). The self-production process, the result of a complex and articulated congeries of causes and dysfunctions affecting all the actors of the urban scene, will often be associated with the crisis of the city but will give rise to moments of collective participation, learning, listening (Schön [1983](#)), of sharing, of iteration. Fragmented and interrupted territories, not only in morphological-functional, infrastructural, environmental terms, but above all in their social and economic components, must today, face up to new needs, new forms of production and exchange, new actors, innovations of the plan and project, integrating procedural innovation and operational flexibility (Crupi [2020](#)).

21.1.2. The Path, the Laws, the Tools

In Italy, despite the macroscopic dimensions reached by the phenomenon of building illegality and the fundamental role that it should play in the disciplinary debate, a systematic reflection on the contents and effectiveness of the regulatory provisions adopted and on the ways in which the reorganization can be affected, on the shape and the landscape-environmental quality of these settlements, it is a subject that has not been dealt with much. After the 70 s and 80 s, which saw the production of a substantial set of plans, studies, and research, the phenomenon has been little investigated, particularly in relation to the preponderance of settlement dynamics over the effectiveness/efficiency of planning tools. The approval of law 457/1978 (Legge 5 agosto 1978, n. 457 [2023](#)) provides organic terms for the "recovery" of the existing building heritage and introduces two new urban planning tools: the "Perimeter of degraded areas" (art. 27), and the "Recovery plans" (art. 28), identifying criteria and methods for their implementation and financing. The regional law of Lazio 28/1980 (Legge 2 maggio 1980, n. 28 [2023](#)) defines, in the absence of a national framework law on the subject, rules for the recovery of illegal groups through the drafting of "Special variants" (art. 4). The 80 s are a period in which new interpretative models of the "spontaneous metropolis" are developed (Clementi et al. [1925](#)), more frequently used terms such as "recover", "sew" (Secchi [1989](#)), "requalify", precisely because the relationship with the existing city becomes more and more important. Law 47/1985 (Legge 28 febbraio 1985, n. 47 [2023](#)), in addition to dictating rules for the control of urban planning and construction activities, the recovery and amnesty of illegal works, governs the criminal aspects and administrative sanctions related to building abuse. In the 90 s, the "Complex-negotiation programs" (Pru, Preu, CdQ, Prusst and Urban) experimented with the themes of "revitalization", "re-functionalization", "urban rehabilitation", through the coexistence of subjects, of public and private capacities.

In this period, the reference paradigms change: we move from "expansion" to "transformation" (Campos Venuti [1987](#)), from "separation" to public-private "integration". The "contracted town planning" of the 1980s is replaced by "consensual town planning" characterized by the involvement of all stakeholders interested in the development processes and environmental, social and economic

sustainability of the interventions. In the last decade, after a period of relative stagnation, there is also a renewed interest in the study and experimentation of practices for the regeneration of unauthorized territories that suggest innovative solutions for the implementation of projects and policies (Zanfi [2017](#)) and the recovery of the landscape (Angrilli [2018](#)). It is necessary to implement new cognitive and design paradigms capable of integrating the planned city with the environmental and landscape context, reconfiguring the morphological structures, design the public space as a place of collective re-appropriation and expression of local identity, giving the green material the function of infrastructure of ecological reconnection and fabric redevelopment.

21.2. Methodology

The contribution adopts a methodology aimed at the synthesis of the themes investigated around three disciplinary needs: a need for contextualization of the phenomenon and the main theoretical-disciplinary, a need for operational and interpretation of the results obtained, consisting of the analysis of the case study, and a need for critical and proactive reflection. In this framework of theoretical [AQ1](#) and methodological reference, the contribution, starting from the introductory paragraphs, intends to outline the characteristics of the abusive production in Capital, particularly marked from the historical, morphogenetic, and dimensional, highlighting not only the procedural, methodological and operational approaches, limits and criticalities, but also evolutionary paths that could affect the overall process of urban regeneration and territorial rebalancing. In this context, the paper, after analyzing the phenomenon on the entire municipal territory, focuses on the design of the Print for activities of the city to be restructured Villa2 "Tor Tre Teste".

21.3. The Hoped-For "Industrial Take-Off" and Unauthorized Production in the Capital

The reasons for the lack of industrial take-off of the Capital are well known, originating from the policies subsequent to national unification tending to characterize Rome as an exclusively bureaucratic and tertiary center (European Commission (EC) [2015b](#)). Unlike the other European capitals, Rome had never existed nor was strategically foreseen a development linked to industry. According to Quintino Sella, the presence of the working masses would have brought with it the risk of unrest and popular uprisings not easily manageable in the place in charge of hosting the administration of the new state (Sella [1888](#)).

21.3.1. From 1883 to 1965

The "Regulatory building plan for expansion" of the city drawn up in 1873 and approved in 1883 provides, in fact, a single area intended for industrial plants of about 28 ha adjacent to the new residential district of Testaccio in the southern quadrant of the city. In the following years, the project for the industrial area of Testaccio will be characterized by the construction of housing only and the construction of the new slaughterhouse (9 ha) near the walls and the river in contact with the railway and with the new Trastevere station. In 1907, a year before the expiry of the 1883 PR, the election of Mayor Ernesto Nathan opens a brief but intense season of renewal that places the capital in the European political and cultural context. Mayor of Rome from 1907 to 1913, Nathan helped to give a decisive and innovative impulse to the development of the city through a new urban planning instrument.

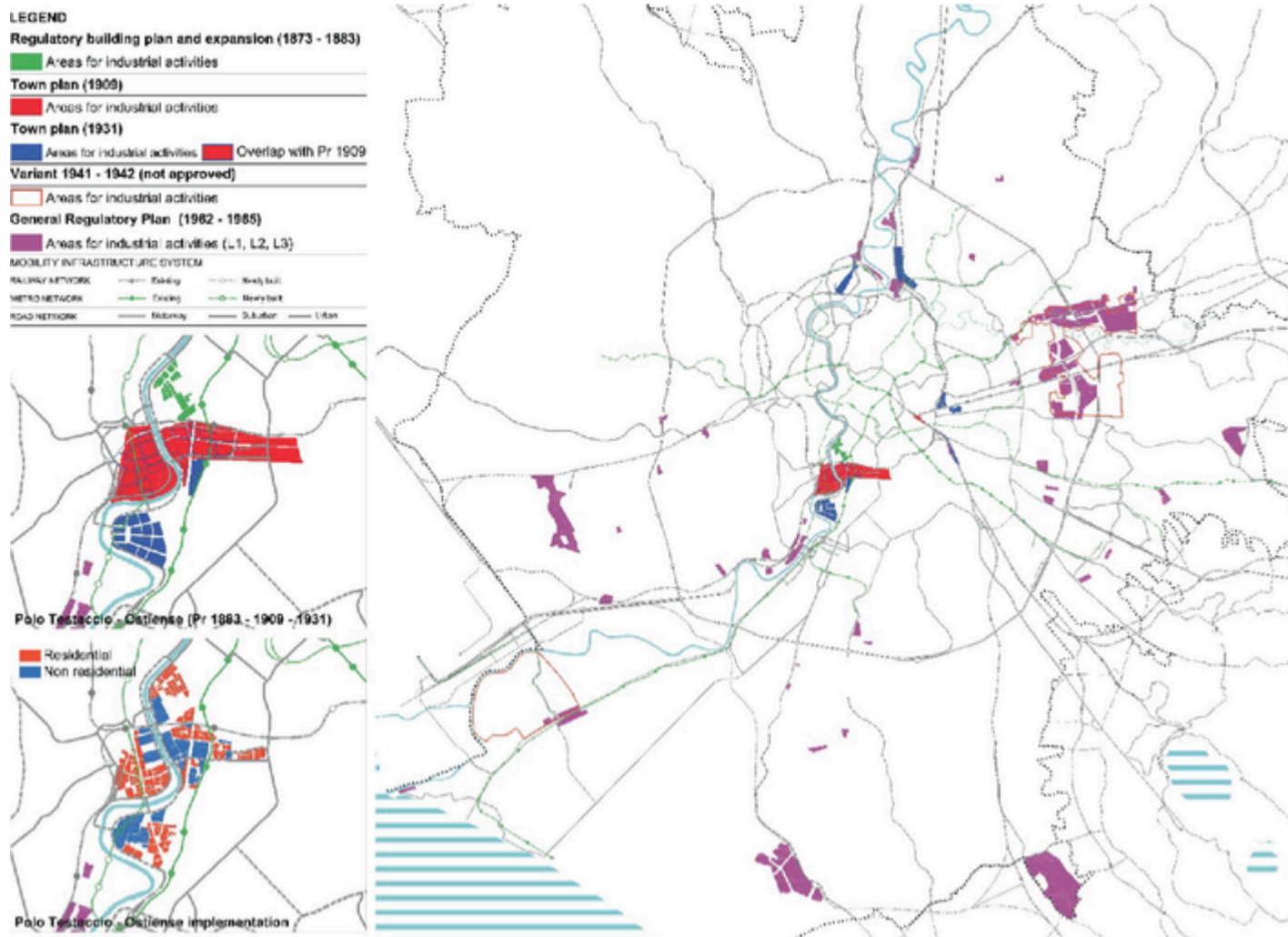
The new Regulatory Plan (Pr) approved in 1909 provides for new industrial areas for a total of 227 ha to be built in the southern quadrant of the city near the right and left banks of the Tiber, respectively, in the Pietra Papa area, and on the Via Ostiense as well as along the Almone River. However, even the project for the new industrial center in Ostiense will not have the desired development. The only areas to have productive implementation will be those located along the Via Ostiense around the large nuclei of the SAR (Anglo-Roman Company, owner of the gas workshops), and of the general warehouses, in addition to those located along the right bank of the Tiber where they will locate companies dedicated to market production (Molini Biondi, Mira Lanza) for a total of 38 ha.

In the following years, despite the heavy defeats, the hoped-for "productive take-off" was faced several times by the Municipal Administration (AC). The new Regulatory Plan of 1931 drawn up under the fascist regime provides for industrial areas for a total of 310 ha located both in the south, between Testaccio and Magliana, and in the north, in the area of Tor di Quinto and via Salaria. Nevertheless, even the forecasts of the Pr of 1931 will only be implemented to a minimum part (47 ha) (Fig. [21.1](#)). With the drafting of the "General variant 1941–42", the development of the city envisaged by the previous Pr in each direction has, for the first time, a prevalent development axis (Rossi [1984–2011](#)). The shape of the new Rome designed for the "twentieth anniversary" is configured by a "comet" and divided into four zones. In the tail of the comet, extended between the E42 complex being built and the sea, industries, commerce, and large infrastructural equipment (airport and seaplane base) are expected. The variant involves the construction of two new industrial areas, the first, located to the south-west between the Tiber, the Rome-Lido Railway and the Acilia-Dragoncello area of about 1,200 ha, and the second, located to the east between via Tiburtina and the via Prenestina of about 1,630 ha. For the latter, the institutive Law 346/1941 (Legge 6 febbraio 1941 n. 346 [2022](#)) provides for the establishment of a specific body, with the aim of proceeding with the expropriation and urbanization of the areas to be sold «at a controlled price to the companies concerned» (Rossi [1984–2011](#)). This is an innovative measure that promotes, for the first time, generalized expropriation by anticipating one of the issues at the center of the political and disciplinary debate in the following years. Presumably it was also for these innovative elements that the Variant did not reach approval.

Fig. 21.1

1883–1965. Compendium of municipal urban planning tools for industrial and handcrafted destinations. On the left, the Polo Testaccio-Ostiense

(graphic elaboration by the author)



However, with the law 187/1952, the “Ente industrial zone of Rome” was also suppressed and its powers devolved to the Municipality of Rome. Immediately after the war, thanks to the Institute for Industrial Reconstruction (IRI), public entrepreneurship introduces elements of technological and managerial innovation that have positive reverberations also on private entrepreneurship. A new productive fabric emerges, the creator of the so-called “Italian miracle” that aims to gain national and international market shares, especially in the manufacturing and trade sectors.

In the Capital, in the face of substantial stability in the number of employees, the increase in small businesses implicitly denounces the uncontrolled spread of production facilities. Despite the lack of forward-looking planning and large complexes, in this period the Roman industry can count on numerous and qualified companies operating in the sectors of technological innovation such as Fatme, Voxson, Autovox, Fiorentini and Contraves, television entertainment, cinema and music RAI, Cinecittà and RCA, and the pharmaceutical company Galter, LEO (Fig. 21.2).

Fig. 21.2

Left, former LEO penicillin factory in Via Tiburtina. Right, former Voxson electronics factory, in Via di Tor Cervara

(photos by the author, 2022)



21.3.2. From 1965 to the 2000s

To respond to the new, pressing demand for spaces and equipment for industrial and craft activities, the 1962–65 General Regulatory Plan (Piano Regolatore Generale–Prg) provides for settlements for about 2,070 ha divided into three sub-areas, L1 for large- and medium-sized industries, L2 for small and small industry crafts, and L3 intended for industries of any type and service equipment, subordinating their transformation to the adoption of Particular Plans (PP) or Agreed Subdivision Plan (PdLC). Compared to the previous decade, in the 1970s there were structural changes in the economic and social life of the country. It affirms a widespread industrialization process characterized by a strong cyclical adaptability and greater production efficiency guaranteed by many small- and medium-sized enterprises specialized in weaving with the territory a dense network of relationships to economic character-productive and socio-cultural (Bagnasco 1977; Becattini 1979).

At the beginning of the 70 s, the persistent absence of an economic planning of the productive development of the city which is accompanied by poor urban management, delayed with respect to the preparation of the implementation tools, exacerbates the problem of the uncontrolled and indiscriminate diffusion of unauthorized constructions destined for located productive activities now throughout the municipal area: along the bends of the Tiber, on the major traffic routes, on the edge of the Gra, near the large industrial areas envisaged by the Prg of 1962–65, or in the Pontine plain. Activities that squeeze the city from many sides, creating volumes of traffic and commuting phenomena that contradict the choices of the Prg (Leone 1981). Among the causes of the phenomenon there is certainly the increase in the population of the city passed in the period 1946–1975 from 1.2 million to 2.7 million inhabitants, together with the inability and inertia of various administrations to put a decisive halt to the devastation of the territory. The need and urgency to proceed with the implementation of the industrial zones provided for by the Prg is the subject of the Agenda presented to the City Council (CC) on November 26, 1971 with which the processing of the PP relating to the most important industrial areas such as Tor Sapienza (PP 8/L), Tor Cervara (9/L), and Tiburtino 18/L is formally started.

At the same time, the Circumscriptions try to trigger, with the drafting of the so-called “Variants Circumscriptions” (VC), an embryonic process of recovery of the industrial and handcrafted areas spontaneously sprung up in a widespread form throughout the territory for a total of 2,032 ha of which about 81% free from buildings. At the end of the 70 s, after a long procedural process, the lack of regional approval of the VC re-proposes the theme of the recovery of unauthorized building production. That this is a speculative phenomenon is testified by some research conducted at the end of the 70 s by the AC which detect rented real estate units equal to 63% of the total in the illegal areas, and about 34% in areas subject to implementation planning (Onetti Muda 1983). In 1978, with the Variant of the Prg for the urban recovery of the building nuclei that were not in conformity with the indications of the Plan, the urban recognition of some important illegal industrial and handcrafted settlements was carried out for a total of 1,277 ha (Fosso dell’Omo, Idrovore della Magliana, Santa Colomba, etc.) for which the Lazio Region subsequently prescribes the removal and recourse of a specific variant.

Almost immediately the idea of a traditional urban variant faded since, according to many orientations (Onetti Muda 1983), the change of urban destination would have increased the rents without supporting the entrepreneurial and productive fabric, the Municipality initiates, pursuant to of the art. 27 of Law 865/1971, the drafting of the Plans for Production Settlements (PIP) with the aim of acquiring areas to be allocated to new production activities and facilitating relocation operations of illegal buildings established in a chaotic and irrational way in the area.

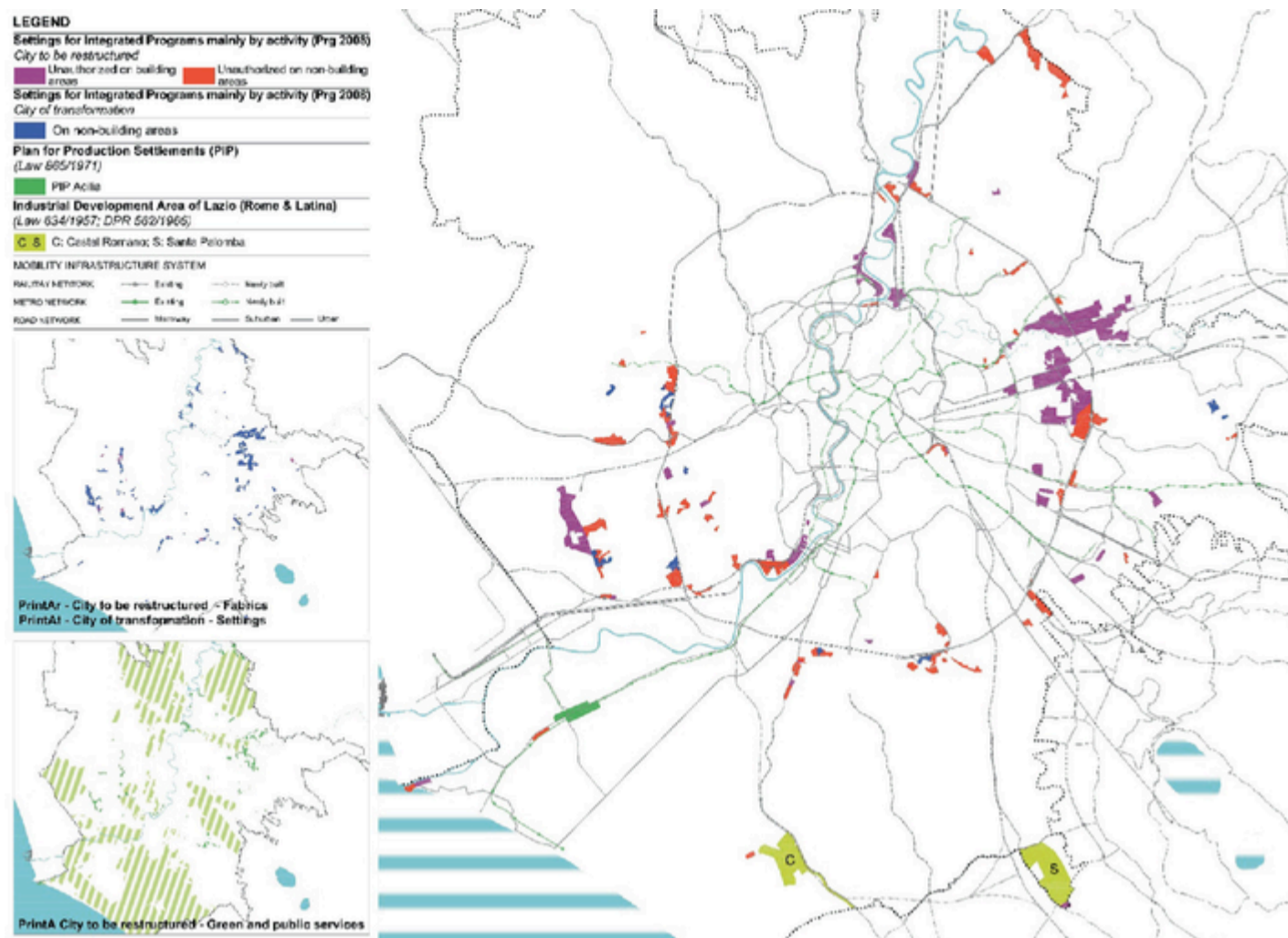
Unfortunately, even these experiences did not have the desired effects. While reaching regional approval, the plans were only partially implemented. The experience was limited to the creation of the “Acilia” PIP for an area of approximately 106 ha. In the 90 s, some integrated-complex programs were also promoted (Law 493/1993; Ministerial Decree of 22 October 1997) affecting the productive fabric of the city (Prusst Asse Tiburtino, Pru Magliana and Corviale).

Different, however, are the settlement dynamics affecting the southern sector of the city which, since the 1950s, was included in the intervention areas of the “Cassa per il Mezzogiorno” (Law 646/1950) (Legge 10 agosto 1950 n. 646 2022) AQ2. In implementation of Law 634/1957 (Legge 29 luglio 1957 n. 634 2022) AQ3, with Presidential Decree 562/1966, the Consortium for the Industrial Development Area of Lazio (Rome & Latina) was established and, in the early 1970s, the first Territorial Regulatory Plan for the area was approved (DCRL 129/1972) pursuant to and for the purposes of which the settlements of “Santa Palomba” (345 ha) and of “Castel Romano” (194 ha) are built (Fig. 21.3). The Consortium, within the framework of the regional and sectoral planning forecasts, promotes activities aimed at the creation and development of industrial, craft, and wholesale production functions.

Fig. 21.3

Prg Roma '08, Settings for Print mainly for the activities of the City to be restructured, and the City of transformation. PIP Acilia and ASI Lazio (Rome & Latina)

(graphic elaboration by the author)



However, even in the face of these measures, the persistence in the Capital of a complex and composite articulation of the productive assets that escapes any model of rational organization, together with administrative inertia, calls for a profound reflection aimed at the prefiguration of new strategies and tools that accompany the new phase of modification of the economic-productive model.

21.4. The Programs Integrated into the New Regeneration Strategy of the Prg '08

The new General Regulatory Plan (Prg) of the City of Rome approved in 2008, after more than 40 years of existence of the old Plan of 1965, takes as priority the strategies of organization of the physical and functional structure of the city, and urban and metropolitan rebalancing (Marcelloni [2003](#)), through the definition of new rules, new instruments, new procedures, and new implementing mechanisms (Ricci [2009](#)) and a strong procedural connotation. The principles that inform the project contents of the Prg are based on overcoming the isolation of the municipal plan, the separation of structural and operational components, the updating of disciplinary contents (environmental sustainability, mobility, urban regeneration and equalization), characterizing the Prg as «emblematic place of anticipation, confluence and updating of the most significant elements of disciplinary innovation» (Ricci [2009](#)).

In the Prg, the urban and metropolitan integration and rebalancing strategy capable of counteracting the phenomena of settlement spread and promoting processes of regeneration of the city and the territory prefigures a «double level of morphological-functional, socio-economic reorganization and management that makes clear the need for an inter-scalar and integrated approach: a reorganization on a large scale» (Ricci [2009](#)) around a polycentric urban structure made up of 18 centralities at urban and metropolitan level, and «a reorganization on a small scale [...], aimed at the widespread requalification of local systems» (Ricci [2009](#)) structured on the identification of a total of 196 Integrated Programs (Legge 17 febbraio 1992, n. 179 [2022](#)) of which 85 mainly residential setting of the City to be restructured, 80 settings mainly for city activities to be restructured, 15 mainly residential settings of the consolidated city, and 16 settings of the City of transformation, of which 5 mainly residential and 11 mainly for activities, considered the new tools for the ordinary implementation of the regeneration policies of the existing city, capable of ensuring a high level of operation and conferring urban quality, environmental, social, and economic, through the involvement of public and private subjects and financial resources and the coordination of interventions. The Integrated Programs (Print), «intervening on all the causes of degradation and on the factors of economic growth» (Abis [2003](#)), radically modify the nature, contents, and objectives of the old implementation tools, contributing to the implementation of the overall strategy di Piano which establishes the primacy of the disadvantaged city. A strategy that meets the management profile in the administrative organization of the city divided into 15 Municipalities to which the activation of participatory processes is entrusted.

21.4.1. Print Mainly for Activities of the City to Be Restructured

The Prg '08 identifies 80 settings for Print mainly for the activities of the City to be restructured (PrintAr) concerning both the nuclei built in part legally and in part illegally on areas for industrial and handcrafted use (pursuant to Prg 1962–65) for about 1,376 ha, and the nuclei built illegally on areas that cannot be built for industrial and craft purposes, for about 1,024 ha for a total of 2,400 ha (Fig. [21.3](#)). Agglomerations in which activities related to residence, manufacturing, mining and construction industries, trade, agriculture, transport, services, public administration, information and telecommunications technologies (ICT) are located. Unfortunately, there is no shortage of contaminated sites (brownfields) that require environmental remediation and restoration.

21.4.2. Print Mainly for the Activity of the City of Transformation

The Prg '08 identifies 11 settings for Print of the City of transformation (PrintAt) which concern, for almost all free areas, with the exception of small built lots without fabric requirements, generally not buildable according to the Prg 1962–65, often located adjacent to the nuclei of the City to be restructured, on the edge of the GRA or in external areas intended for Agro Romano (Fig. 21.3). These are settings for a total of 121 ha, aimed at satisfying the needs of residential or productive settlements, at achieving building compensation objectives and activating private competition in the financing of public works and services (Comune di Roma Prg '08, NTA, Art. 60 2022g).

21.4.3. Procedural Process and Implementation Mechanisms

In the PrintAr and PrintAt, the choice of priority interventions, access to urban planning incentives, the landing of compensations, and the determination of the Extraordinary Urbanization Contribution (CSU) (Comune di Roma Prg '08, NTA, Art. 20 2022c; Roma Capitale, DAC 11 dicembre 2014, n. 128 2014) take place through listening, analysis, evaluation, and planning (Crupi 2017). Briefly, the procedural process that initiates the Prints, which can be of public or private initiative, is divided into three phases concerning the start of the procedure, the formation of the Preliminary Program including the publication of the Call for solicitation of participatory contributions and intervention proposals, and the approval of the Definitive program.

For the PrintAr, the implementation mechanisms aimed at both encouraging the participation of private individuals and obtaining free areas to be allocated to purposes of public or general interest provide for a double regulatory regime based on the equal determination of building rights that takes into account the destination of pre-existing use of the land in order not to favor the rise of free rents. In summary, participation in the Print allows individuals to double the territorial building index (ET) from 0.3 to 0.6 m²/m², of which 0.3 m²/m² subject to the CSU and, in Roma Capitale, to find building allowances and land to be used for purposes of public or general interest (landing of compensations, construction of social housing, etc.).

For direct interventions falling into fabrics, the standard prescribes a building index (EF) equal to 0.3 m²/m² (Comune di Roma Prg '08, NTA, Art. 53 2022f). The acquisition of green areas and public services is guaranteed, as an alternative to expropriation, by the "compensatory assignment" mechanism (Comune di Roma Prg '08, NTA, Art. 22 2022e). The rules, in fact, provide, in the case of participation in the Print, that the areas destined to green areas and public services are acquired by attributing to the area for which the sale of a territorial building index (ET) of is expected 0.06 m²/m² and the transfer of buildability to the fabrics of the City to be restructured or to other "compensation setting" (Comune di Roma Prg '08, NTA, Art. 18 2022b), assuming the intended uses permitted therein. In the case of direct intervention, the buildability in favor of the property is equal to 0.04 m²/m², to be concentrated on 10% of the area, against the sale to the Municipality of the remaining 90%. In this case, the building rights accrued must be used for the construction of private non-residential volumes (small sales structures, public businesses, and private services) also in order not to generate further needs for public areas. The urban planning incentives for the renewal of the building stock provide for an increase in the existing Gross Floor Area (GFA) calibrated according to the type of intervention (Comune di Roma Prg '08, NTA, Art. 21 2022d), while the payment to Rome Capital of the CSU, aimed at the construction of works and services public, is commensurate with the real estate valuations generated by the new settlement forecasts.

The Plan prescribes ecological-environmental standards (permeability index, tree and shrub density) for each intervention inside the fabrics, which contribute to improving the levels of environmental and settlement quality. To encourage the formation of functional mixes to support new development policies, economic growth, and social cohesion, the Prg provides for the PrintAr, that a share not exceeding 20% of the GFA can be destined for housing functions, while a share not less than 30% must be reserved for production functions.

For the PrintAt, which concern almost totally free areas, the implementation rules provide for the attribution of a territorial building index ET of 0.3 m²/m² for each area, for a portion equal to 0.06 m²/m², at the disposal of the owners, and for the remainder at the disposal of the Municipality, which will use it for public purposes and of general interest, with priority for building compensation. The private building quota may be doubled, provided that the CSU applies to the additional GFA (Comune di Roma Prg '08, NTA, Art. 20 2022c; Roma Capitale, DAC 11 dicembre 2014, n. 128 2014).

21.4.4. The Tools and Procedures for Participation

Roma Capitale recognizing citizen participation as a fundamental method of supporting decisions on urban transformation subordinates the approval of each print to the completion of a "participatory process", necessary to illustrate the urban planning program to citizens, collect the requests of the community, promote transparency, and produce social inclusion. This process is governed by a specific regulation (Comune di Roma. Deliberazione di CC 2 marzo 2006 n. 57 2022), which intends to involve, through structured and non-occasional tools and procedures, all political, economic and social actors, associations, committees, companies, organizations, and institutions, promoting local entrepreneurship and a transparent use of resources. To this end, it provides for the establishment, at the municipal level of the "Town House" and, at the municipal level, of the "Town Halls", special offices designed as places available to citizens to learn about the work of the AC and acquire information on the most important urban transformation projects. The set of data concerning the technical, localization aspects, and the progress of the procedural process of the various intervention programs are also made available on the website of the Municipality of Rome. Finally, the municipalities are entrusted with the preparation of the "Municipal Charter of Objectives" (Comune di Roma Prg '08, NTA, Art. 13 2022a), an act of political-programmatic orientation of fundamental importance for orienting choices on the territory and activating participatory processes.

21.5. The Print Mainly for Activities of the City to Be Restructured VIIa2 “Tor Tre Teste”

The contribution also focuses its attention on the elaboration of the Print masterplan by activity of the City to be restructured VIIa2 “Tor Tre Teste”, located in Town Hall V, between via Casilina and via di Tor Tre Teste about 9 km from the center. The area constitutes a polarity of strategic interest for the organization of the city and the entire Alessandrino area, as well as representing an area of great ecological and environmental value. The area is inserted in a historical, archaeological, and environmental context characterized by the presence of valuable historical-monumental testimonies, such as ancient communication routes, towers and farmhouses, and naturalistic sites, such as the park of the “Mistica”. However, this is a cultural heritage that is not sufficiently usable due to a fragmented urban structure that does not allow proximity relationships, between the various components of the fabric, and between the different settlements of Alessandrino, Torre Spaccata, and Tor Tre Teste. The PrintAr which has an area of 23.20 ha, despite having, in accordance with the Prg 1962–65, building destination for small industries and crafts (L2; PP 25/L), has a predominantly uneven and unfinished productive and commercial fabric both from legal fabrics, and from unauthorized and spontaneous fabrics. Specifically, the area is characterized by the presence of two shopping centers and some medium-sized handcrafted production activities, partly abandoned, and by a small residential settlement (Fig. [21.4](#)).

Fig. 21.4

Prg Rome '08, PrintAr VIIa2 “Tor Tre Teste”. Above, territorial framework. Below, photos of the settlement (graphic elaboration and photos by the author, 2023)



In relation to the system of infrastructures for mobility, the area is served by two important public transport lines, the underground line “C”, with the “Torre Spaccata” station and the “Roma-Giardinetti” railway, while the road mobility is affected by the failure to adapt and upgrade Via Casilina. With reference to the planning process, the “Casilina—Tor Tre Teste” area was the subject of two municipal council resolutions (nos. 284/2006 and 651/2006) with which the “Preliminary Urban Planning Program” was drawn up and issued the public competition announcement. However, despite a fair amount of private participation, the Print approval procedure was blocked when the Prg '08 (Roma et al. [2008](#)) was approved, which changed both the Print perimeter and the implementation methods. The new Deliberation of the Capitoline Council DGC 8/2021 (Roma Capitale, DGC 15 gennaio 2021, n. 8 [2022](#)) has interrupted the procedure of formation and approval of the Print “Casilina—Tor Tre Teste”, reshaping the “Preliminary Urban Planning Program”, as amended and renamed—Integrated Program VIIa2 “Tor Tre Teste”—and approving the relative “Call for solicitation of participatory contributions and private intervention proposals”.

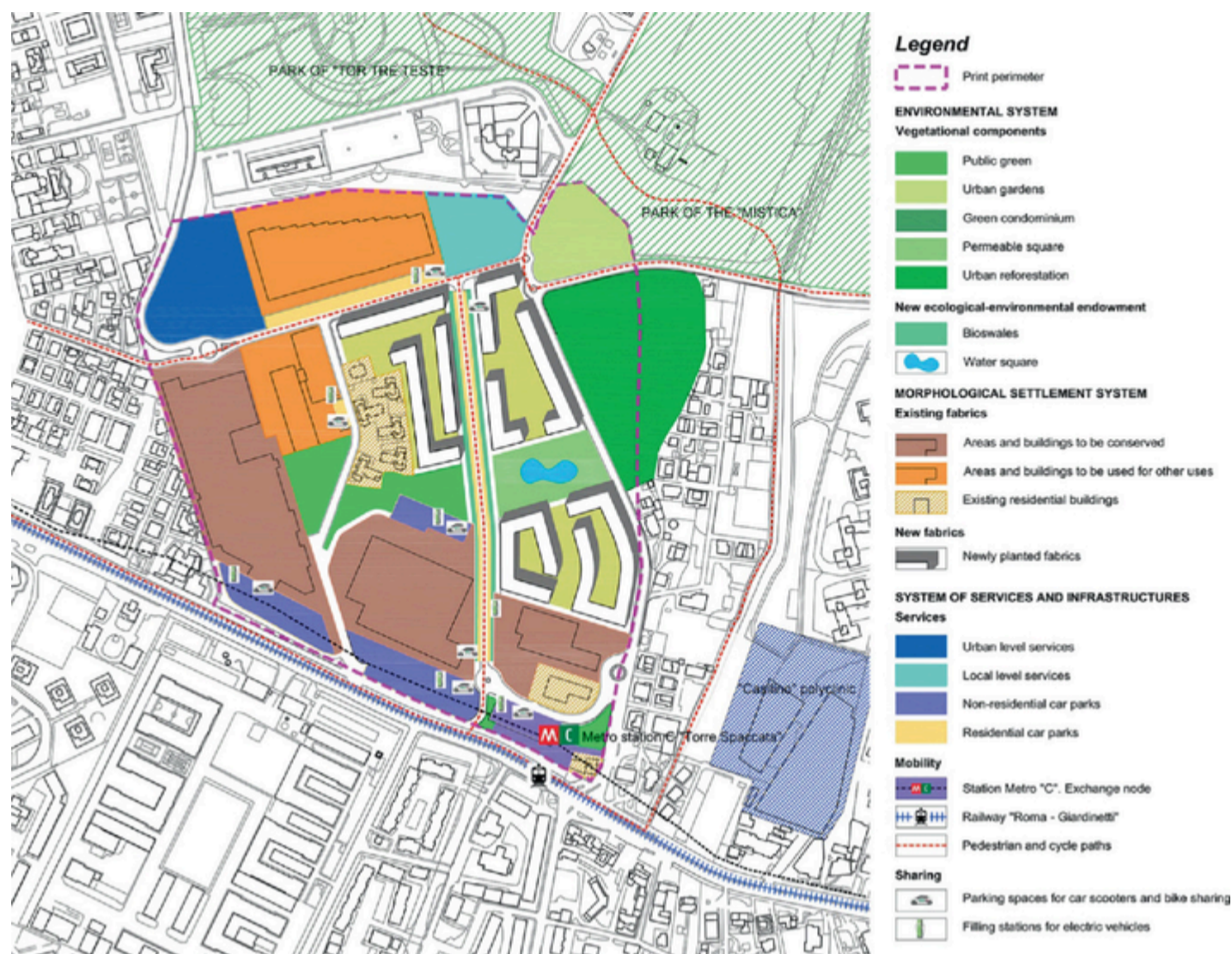
In line with the characteristics of the new ecological-environmental regeneration strategy, and with the guidelines contained in DGC 8/2021, the masterplan has the general objective of guaranteeing a drastic reduction in the release of climate-altering substances into the atmosphere, high levels of energy self-sufficiency and to mitigate the effects induced by *climate change* (Fig. [21.5](#)). This through the reclamation of contaminated sites, the integration of the planned city with the landscape and the environment, the morphological redefinition of fabrics, the provision of new ecological-environmental devices, the use of eco-compatible technologies, materials nature based (European Commission (EC) [2015a](#)), the recycling and reuse of resources, the use of systems for the production of energy from renewable sources, the creation of a functional transport network with low environmental impact, and the enhancement of cycling and pedestrian mobility. The interventions on fabrics must be able to increase the complexity of the urban structure, increase the

relationship between the parts, the social and functional mixité, the typological variety, the quality and permeability of open spaces and urban morphologies, and ecosystem performance. In particular, the objectives and the design hypotheses contained in the masterplan foresee for the environmental system:

Fig. 21.5

Masterplan

(graphic elaboration by the author)



- The creation/completion of the municipal ecological network through the prefiguration of new green corridors for the reconnection of environmental components for the enhancement of historical and archaeological emergencies.
- The creation of cycle and pedestrian paths to complete and integrate existing ones with the function of increasing the use of the naturalistic and historical-archaeological heritage and ensuring its accessibility and usability even for users with reduced mobility.
- The provision of areas to be allocated to urban gardens.
- The construction in correspondence of the new *neighborhood boulevard* of bioswales, spaces rich in vegetation, designed with the aim of reducing the speed of the surface runoff and establishing, together with the *water square*, a system for the collection, purification, and recycling of water rain.
- The construction of a *water square* (Boer [2013](#)) conceived as a multifunctional public space which, in the event of heavy rains and extreme climatic events, is transformed into a rainwater collection and storage basin, with the aim, both to relieve the pressure on the sewage system, and to reuse the stored water in periods of drought and water stress.
- The provision of an area destined for "Urban forestation" (Roma Capitale [2021b](#); Mirabile et al. [2015](#); Bianco et al. [2014](#)) designed to increase ecosystem functionality, contribute to the reduction of climate-altering emissions, improving the microclimate, mitigating pollution, and acting as a reservoir for carbon sequestration.

For the settlement-morphological system:

- The identification of lots to be used for the conservation/maintenance of existing functions (commercial and residential).
- The recovery and reuse of disused and/or degraded production areas, through the establishment of multifunctional and adaptive services, capable of activating policies for training, work, and social inclusion (*business incubators, coworking, fablab, business center, etc.*).
- The demolition of disused buildings and replacement with new residential fabrics for mainly residential use (*social housing, co-housing and supplementary services for housing*).

For the mobility system:

- The construction, at the site of the power line to be buried, of an ordering axis of the new urban plan (*neighborhood boulevard*) (Risorse per Roma Spa [2021](#)).
- The adaptation and safety of the existing road network, the construction of new intersections, the provision of new parking lots, refueling columns for electric vehicles, specific parking lots for cars, scooters, and bike sharing with the extension of these services to entire scope.
- The creation of an integrated cycle/pedestrian network capable of increasing the levels of usability and accessibility to public and private services.
- The enhancement and enhancement of the "Torre Spaccata" metro line C stop, with particular attention to the creation of an intermodal interchange complete with related functions (parking and service equipment).

For the system of services and equipment:

- The increase in the supply of local public services supplementary and complementary to existing services outside the PrintAr perimeter.
- The increase in the supply of public services at the urban level.
- The identification of strategic functions in the vicinity of the rail/road intermodal junctions (metro stations C "Alessandrino" and "Torre Spaccata") (Risorse per Roma Spa [2021](#)).

21.6. Results and Discussions

With reference to the analysis of the 80 settings for PrintAr, out of a total of 2,400 ha, 1,700 are destined for fabrics, 495 for greenery and public services (equal to over 20% of the total, essential for the completion of the municipal ecological network), and remaining 205 ha to infrastructure for mobility (roads, railways, etc.). Of the 1,700 ha destined for fabrics, about 500 are occupied by abandoned buildings or buildings in a bad/very bad state of conservation, 200 ha of vacant lots, and the remaining 1,000 are buildings in a normal/fair state of conservation (Graph [21.1](#)). A research conducted by the writer (Crupi [2018b](#)) and updated for the purposes of this publication has verified, in the hypothesis of a broad adhesion of private individuals to the PrintAr, and in the hypothesis of a doubling of the GFA available to owners in the PrintAt, the possibility of creating approximately 64,279 equivalent rooms of which 45.1%, equal to 28,977 rooms, deriving from building renovation and functional conversion, and 13,824 rooms equal to 21.5% to be used for residential functions. A maneuver that would allow Roma Capitale to find approximately 11,237 rooms to be used for purposes of public or general interest, ordinary urbanization charges (COU) equal to 491.91 million euros, and extraordinary urbanization charges (CSU) equal to 195.70 million euros for a total of 687.61 million euros (Table [21.1](#)).

Graph 21.1

Prg Rome '08. On the left, PrintAr morphological-functional division and state of conservation of fabrics and free areas (hectares). On the right, PrintAr and PrintAt, breakdown of ordinary and extraordinary expenses by category of intervention (million €.)

(graphic elaboration by the author)

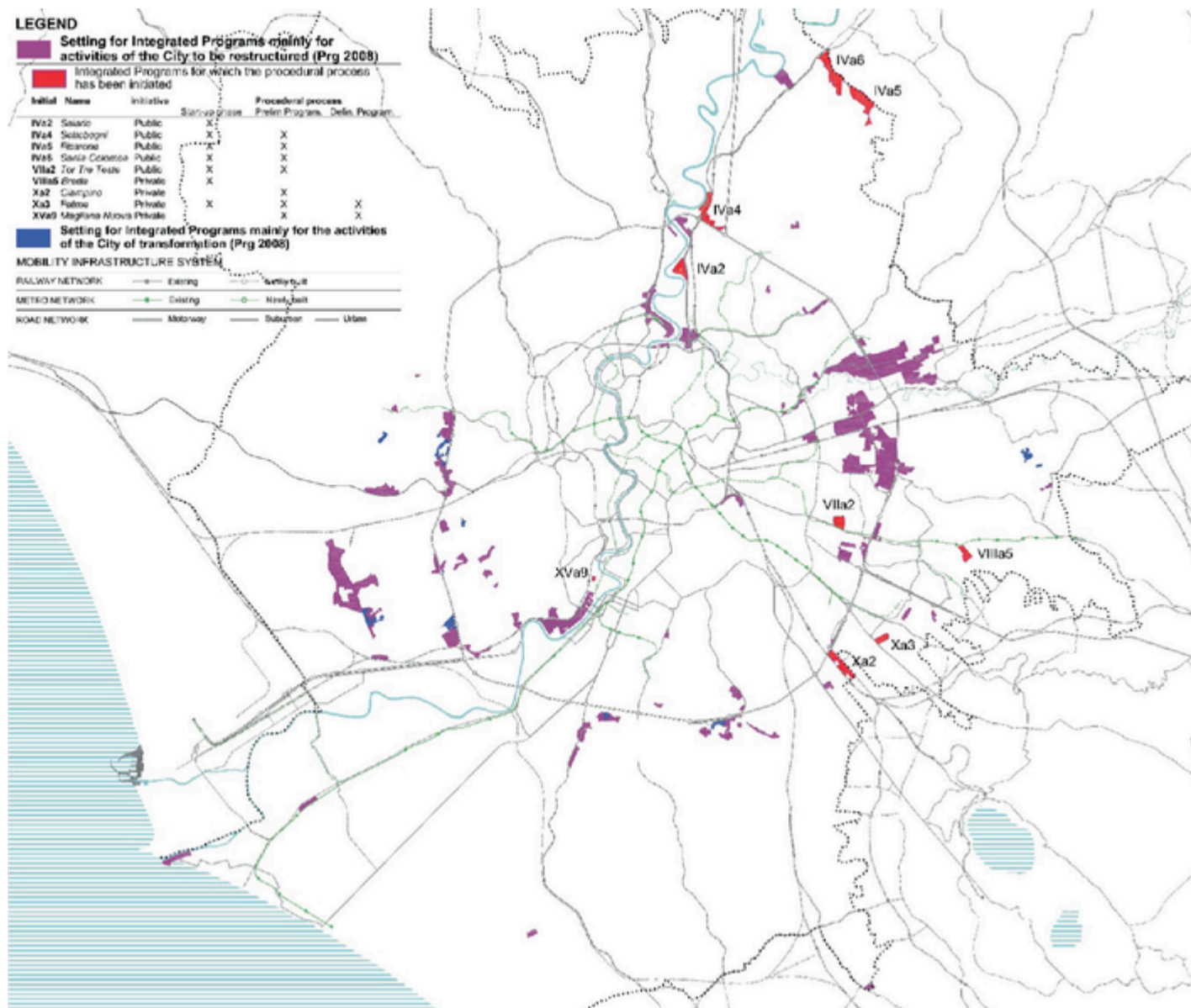


Table 21.1

Prg Rome '08, Integrated programs mainly for the activities of the City to be restructured and the City of transformation. Estimate of the equivalent rooms achievable, amount of the CSU and ordinary charges (COU), by category of intervention

	Total rooms equ	Res. rooms equ	Public rooms. equ	CSU	COU	CSU + COU
	n.	n.	n.	mln €.	mln €.	mln €.
<i>Print mainly for activities of the city to be restructured</i>						
New construction works (NE)	25,623	5,125		84,68	217,38	302,06
Building renovation interventions (RE, DR, AMP)	20,192	4,038		26,88	104,19	131,07
Functional conversion interventions (CDU)	8,785	1,757		72,01	53,60	125,61
Total 1	54,600 (*)	10,920	5,430	183,57	375,17	558,74
<i>Print mainly for the activity of the city of transformation</i>						
New construction works (NE)	9,679	2,904	5,807	12,13	116,74	128,87
Total 2	64,279	13,824	11,237	195,70	491,91	687,61

(*) Quota not including 6,347 stanzas deriving from the "compensatory assignment" mechanism

With reference to the design verification of PrintAr, Villa2 "Tor Tre Teste", the masterplan includes conservation areas equal to 59,647 m², areas intended for functional conversion and reuse of existing buildings equal to 28,658 m², demolition for a surface area equal to 50,851 m² and areas to be allocated to the New urban plan (NIU) equal to 40,610 m² (Table 21.2). The project is completed by 72,329 m² destined to urban planning standards and new ecological-environmental endowments (bioswales, water square, urban forestry, urban gardens, etc.) (Table 21.3 and Fig. 21.5). For the calculation of the admissible GFA, the formula taken from the Announcement was applied (Roma Capitale 2021):

$$GFA/admis = \Sigma (\text{Free areas} \times ET) + \Sigma (\text{Partially built up areas} \times ET) + \Sigma GFA/existing$$

Table 21.2

Prg Rome '08. PrintAr Villa2 "Tor Tre Teste". Functional destinations, urban planning standards, new ecological-environmental endowments, and admissible GFA

Storage	Reuse	Demolitions	New urban plan (NIU)	Standards and new ecological-environmental endowments	GFA/admis
m ²	m ²	m ²	m ²	m ²	m ²
59,647	28,658	50,851	40,610	72,329	44,572

Table 21.3

Prg Rome '08, PrintAr VIIa2 "Tor Tre Teste". Urban planning standards and new ecological-environmental endowments

Urban level public services	Local public services	Public parking	Public green, bioswales, and water square	Urban gardens	Urban forestation	Total
m ²	m ²	m ²	m ²	m ²	m ²	m ²
11,122	6,233	7,132	17,261	7,145	23,436	72,329

From which: GFA/admis = $(23,436 \times 0.6) + (0) + (30,510) = 44,572 \text{ m}^2$

Areas expressing building rights = $74.287 \times 0.6 = 44.572 \text{ m}^2$.

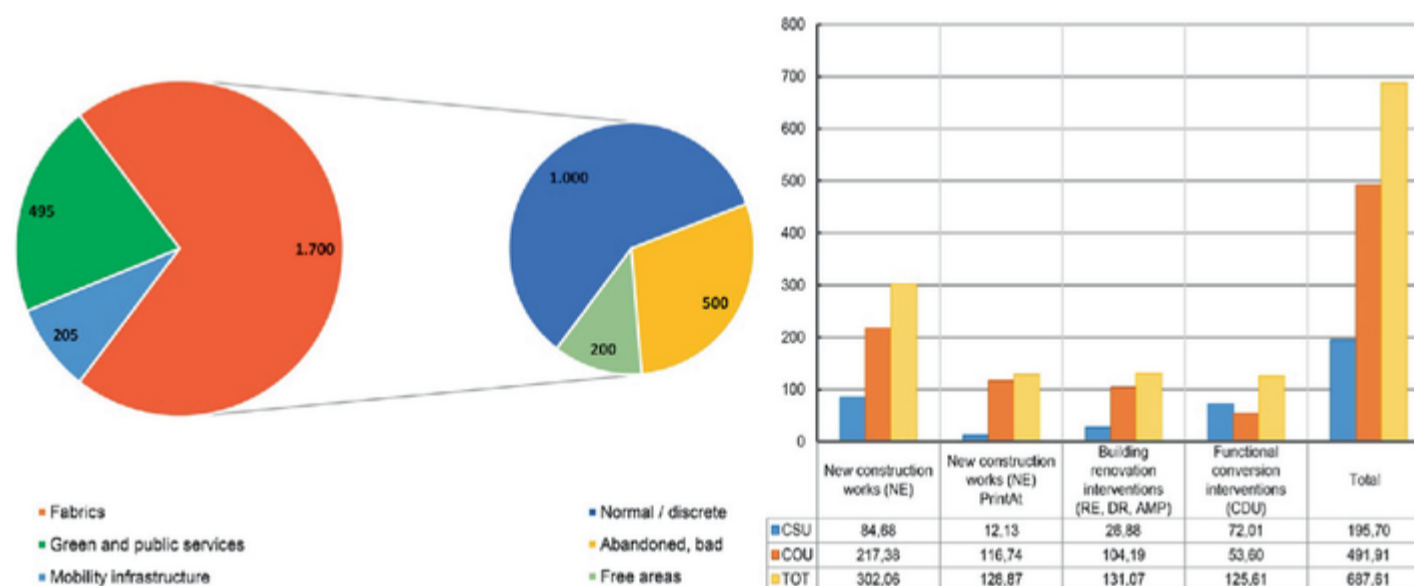
The masterplan hypothesis provides that the entire admissible GFA, net of any urban planning incentives, equal to $44,572 \text{ m}^2$, is mainly intended for residential functions. In particular, considering the serious level of housing hardship reached in the capital, the project provides that 60% of the GFA, equal to $26,743 \text{ m}^2$, is intended for *social housing* and *co-housing* interventions including supplementary services for housing, commercial establishments, and special residences, designed to foster a culture of sustainable and collaborative living, while the remaining part, equal to a GFA of $17,829 \text{ m}^2$ to free building. With reference to the new urban layout, the building blocks follow the boundaries of the lots creating, on the new *neighborhood boulevard*, two built wings that interrupt near the square and the water square, allowing the creation of an important ecological-environmental corridor. The morphologies of the settlement system allow the formation, within the lots, of large condominium spaces characterized by distribution avenues, resting places, and areas used as vegetable gardens and gardens that interact with the outside. The *neighborhood boulevard*, characterized by tree-lined rows, wide sidewalks, *bioswales*, and a cycle/pedestrian path, as well as constituting a new road network between via Casilina and via Della Bella Villa, performs the indispensable social function of meeting place between passers-by and inhabitants of the neighborhood.

Fourteen years after the approval of the Prg, only nine PrintAr are being investigated, of these only two, XVa5 "Magliana Nuova" and Xa3 "Fatme", both privately owned, have reached the approval of the Definitive Program. Of the remaining seven, five have received the approval of the Preliminary Program and the Call for solicitation of participatory contributions and intervention proposals, and two have started, in the Municipal Council, the procedure of approval of the Preliminary Program (Fig. 21.6). The situation is even more bleak for the PrintAt where no area has yet started the formation procedure of the Preliminary Program.

Fig. 21.6

Prg Rome '08. PrintAr. Top left, list of the PrintAr who have started the procedure. In the center, PrintAr and PrintAt, state of implementation

(graphic elaboration by the author)



In relation to the implementation of participatory processes, the "House of the City" is today essentially an empty place with no activity, the "Town Hall Houses" and the "Municipal Charter of objectives" have not been activated; the meetings organized on the occasion of the presentation of the programs have almost always proved to be an opportunity to impose decisions already taken, while the contents of the Roma Capitale website do not appear to be sufficient to guarantee adequate levels of information, participation, and interaction. More generally, the failure to implement the PrintAr and PrintAt is due both to political, bureaucratic, and technical-administrative difficulties linked to the complexity of the procedural requirements, and to the very long times that discourage the participation of many private operators who prefer to pursue the path of direct intervention, or take advantage of deregulatory forms (LR 21/2009; LR 7/2017). In addition, the need to integrate public and private resources, concertation and coordination actions, and the multidisciplinary nature of the hypothesized objectives require the use of professionals who are practically absent in local administrations today. Despite the proliferation in recent years of legislative measures in support of urban policies (Legge 7 agosto 2012 n. 134 [2022](#); European Commission (EC) [2022](#); Governo Italiano (GI) [2021](#)) in our country there is a lack of structured public resources for the redevelopment/regeneration of cities.

21.7. Conclusions

In retracing the procedural, methodological, and operational approaches introduced by the Prg '08 in planning, the territories of unauthorized production, alongside obvious elements of innovation, contained in the regeneration strategy of the existing city, the lack

of clear political governance, funding sufficient public, and a hypertrophic bureaucratic apparatus, are hindering its implementation. Criticalities that urge the clarification of concrete proposals, debate, and comparison. They concern

- The implementation of a clear strategy for the Roman production areas also within the framework of the European sector policies.
- The ability of public administrations to rediscover that urban and design continuity constitutive of political alternations without which it is impossible to guarantee the implementation of programs and projects already started or the start of those planned.
- The prediction of appropriate functional mixes capable not only of helping to reverse the strategy of urban regeneration, but also to generate new urban morphologies and settlement models consistent with the new shape of the contemporary city.
- The provision of implementing rules of an equitable nature to be used also in a complementary and integrated form, including, in addition to free and compensatory supplies, the extraordinary contribution and the loss of the concession charges, also the use of market-based mechanisms.
- The integration of physical regeneration interventions with employment, training, and cultural policies, aimed at socio-economic development and social inclusion.
- The modulation of withdrawals on the building stock and on urban transformations (according to a balanced mix of incentives and disincentives), to be used as a tool capable of influencing settlement choices, facilitating anti-cyclical urban planning policies (Curti [2004](#)), overcoming fragilities territorial and favor a balanced and coherent urban development.
- The introduction of new methods of financing the public city, capable of intercepting the vast range of resources, both nationally and community, deployed on the issues of resilience, the eco-digital transition, such as those proposed by the *Green New Deal* (European Commission (EC) [2019](#)) or deriving from post-pandemic relaunch programs such as National Recovery and Resilience Plan (Governo Italiano (GI) [2021](#)).
- An overall rethinking of participation practices with the launch of “participatory processes” already in the initial stage of preparing the preliminary program.

These reflections recall, more generally, the need to place the development of the Capital’s productive contexts at the center of the political and theoretical-disciplinary debate, recognizing its value and enormous potential as an engine of development, cohesion, and social innovation. The opportunity to experience a new generation of sustainable and inclusive urban planning tools based on the new disciplinary focus of *smart cities*, *green and blue infrastructures*, adaptation and mitigation strategies to climate change, promoting morphological and spatial quality and environmental sustainability, stimulating the involvement of established communities, institutions, and the entrepreneurial fabric. Tools to facilitate “adaptive” and “temporary” reuse strategies, recovery, reuse, and functional conversion of free, disused, underused, or polluted areas (*brownfields*), promoting the diversification of functional mixes, the development of activities related to residency, creative and cultural industries, circular economy, tourism, hi-tech, and ICT productions, capable of producing greater economic benefits than the costs associated, and to transformation operations, and to possible reclamation works. Objectives that must include an update of the forms and uses of urban space through new ecological-environmental and functional devices (Crupi [2021](#)), and interventions capable of increasing the complexity of the urban structure, increasing the relationships between the parties, finalize the design of the voids to the demands of sustainability by investigating the relationships between plan and project, between architecture, city, and territory in search of new urban morphologies and settlement models. Finally, we need a decisive change of pace that includes the radical simplification of bureaucratic and urban-building procedures and the strengthening of public structures capable of avoiding the inefficiencies and mistakes of the past, and to promote visions of the future consistent with the challenges we face.

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