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RESIDUALS AS RESOURCE
Urban strategies for the former Manifattura Tabacchi in Naples

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ABSTRACT
The state of abandonment of many Italian territories declared Sites of National Interest (Siti di Interesse Nazionale – SIN) reveals the absence of a shared urban planning strategy leading to rethink the need for non-renewable resources, indispensable for the urban ecosystem. This research – conducted within the Department of Architecture at the University of Naples 'Federico II' with Cassa Depositi e Prestiti – reconstructs the political, administrative, and urban events that affected the former tobacco factory Manifattura Tabacchi in Naples, now in a state of abandonment. The research aims to identify zero-waste regeneration strategies and outline new best practices for waste management in the regeneration project of open and built spaces in order to ensure a landscape made up of new ecosystems networks. The research, therefore, proposes a set of actions applicable both in new design processes and in the control and management of the life cycle of existing buildings.

KEYWORDS
urban regeneration, wastescape, urban mining, C&D waste, recycling/up-cycling

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In the whole Italian territory, there are fifty-eight Sites of National Interest (Siti di Interesse Nazionale – SIN). More than one thousand hectares of land in Campania region – particularly in the western area of Bagnoli-Coroglio and in East Naples – are contaminated. In the eastern part of Naples, several institutions have presented plans for the renewal of over five hundred hectares and remediation plans for about two hundred hectares. These data, published by the Ministry of Environment and Protection of Land and Sea (MATTM), led to a reflection on the condition of soils and highlight the absence of a common strategy of urban planning on the national territory. This condition is shared by many Italian areas, disused industrial and logistics areas, sites on the edge of large infrastructural systems or large disused commercial areas: 'wastescapes' (Amenta and Attademo, 2016). These underline the lack of propulsive and shared urban strategies towards a sustainable development able to safeguard non-renewable resources such as soil, or land, which instead is a necessary element for the urban ecosystem and an essential resource to ensure biodiversity as well as an indispensable quality to implement natural and urban life.

As Vittorio Gregotti wrote, before transforming a support into a column, a roof into a tympanum, before placing stone on stone, man placed the stone on the ground to recognize a site in the midst of an unknown universe: in order to take account of it and modify it (Gregotti, 1983, p. 27). The earth itself is the primary surface of contact, distribution of forces and represents the basis of every project. Modifying the land is the first action of men to manifest the appropriation of space and thus affirm their presence. But it is precisely this action of 'modification' – understood as alteration and tampering – that has determined a critical condition for the environment in recent years.

Throughout Italy, economic and production changes have left a constellation of urban ruins and industrial wastes that require an increasingly specific confrontation with the project of architecture: «La dismissione interessa contesti dove è la città che viene a mancare o dove appare, essa stessa, in una condizione di dismissione, i processi di contrazione dei perimetri urbani […] delineano un fenomeno in espansione che […] fa pensare che le strategie progettuali di intervento non abbiamo più la forza di dare nuova forma a intere parti di tessuto, ma possano agire puntualmente grazie a trasformazioni interstiziali, lavorando nello 'spazio tra le cose'» (Setti, 2017, pp. 11, 12). Giulia Setti's statement – from the recent publication about decommissioning in Italy and Europe – invites to rethink the role of architectural design, which often finds itself intervening in places that are the result of «[…] processi poco ordinati con implicazioni spaziali multiple e spesso contradditorie» (Bianchetti, 2017, p. 195).

The study and the comparison of some international projects such as Buckthorn City in Hoek van Holland in Holland by West 8, South Park Plaza at Queen Elizabeth Olympic Park in London by James Corner Field Operations and examples of Italian urban regeneration such as Parco Dora in Turin by Peter Latz, the complex management of the regeneration project of the former Falck area in Sesto San Giovanni (first design by Renzo Piano, reworked by Norman Foster & Partners in 2020), up to the re-

cent project for the Scalo Farini competition in Milan Agenti Climatici by OMA, show how the way of thinking urban design has changed. In these projects, it is possible to recognize various kinds of waste that have altered the urban ecosystem in different ways: large abandoned industrial buildings waiting for new uses, marginal urban spaces often considered dangerous and not integrated into the physical context; residual areas close to infrastructural systems and, finally, the critical condition of polluted and toxic soils waiting for possible forms of re-naturalization. With different approaches, West 8, James Corner, Peter Latz, Renzo Piano, and the OMA group have transformed these criticalities into a new set of resources: waste – material and immaterial – is integrated into a new vision of the urban and architectural project where recycling becomes the primary focus of the urban strategies. In these projects, physical, environmental, social, and economic transformations activate circular processes in which the landscape becomes a network of ecosystems able to support actions of production and transformation.

Working in these contexts means weaving together complex issues that go beyond the mere physical decommissioning of former industrial buildings. Environmental, social, cultural, and political aspects have a central role in defining new and possible future strategies. Reusing existing spaces may seem like a banal, already-seen action, but it is necessary to take care of the environment, to mend disconnected urban fabrics, and restore a new urbanity in those places that have been abandoned and degraded for too long. Since the 1980s of the 20th century, the reuse of urban spaces has been the focus of architectural and urban debate. In recent years, academic research has focused on the preservation of hybrid and transitional forms of landscape. These new forms are capable of absorbing changes in the territory and adapting them to processes of re-use and remediation. Through theoretical statements, academics have often proposed the reuse of existing buildings thanks to innovative design experiments, avoiding waste of land and of non-renewable energy; the experience we have in practice makes these operations increasingly complex. In order to quickly respond to these urgent issues, the action of tabula rasa is the preferable and fastest one. Starting from these considerations, the Department of Architecture at the 'Federico II' University of Naples in collaboration with CDP – Cassa Depositi e Prestiti, a financial institution – is conducting research[1] in the eastern area of Naples, in particular in the site of the former Manifattura Tabacchi. This essay intends to define new management strategies for the urban project that rethink the role of Construction and Demolition (C&D) waste in the landscape design where the soil becomes a resource for a process of urban regeneration.

The research proposes a new gaze that considers the integrated and multi-scalar project capable of reinterpreting material and immaterial aspects of waste. Academic studies debated consumption of land, recycling of urban parts and processing of waste materials. Yet, they remain lacking adequate regulation. This condition generates unresolved urban scenarios, made of scattered fragments. Major investors own the land, limiting the access to public and green spaces which have become indispensable to the

Fig. 1 | The nature among the abandoned buildings of the former Manifattura Tabacchi of Naples (credit: M. Ascolese, 2020).

Fig. 2 | The abandoned void of the former Manifattura Tabacchi area in Naples (credit: M. Ascolese, 2020).

city's daily life, especially following the latest closures due to the pandemic situation. The research proposes a substantial rethinking of waste[2], which from being a problem becomes an occasion for 'urban mining': a resource to reconfigure fragments of landscape and reinterpret technical actions. The final aim is to identify a design methodology applicable to cases with similar physical and environmental conditions.

The former Manifattura Tabacchi is an abandoned and degraded area. The industrial structures still inspire a certain archaeological monumentality, while vegetation has conquered spaces-in-between, suggesting new reflections on waste at different scales of the transformation process (Figg. 1, 2). The research focused on two aspects necessary to trigger a process of urban regeneration: the demolition of buildings and the remediation of soils and aquifers. In an ecological vision, technical issues become a means of activating a process of circular economy in which waste is an operating material of the project. The main actions to start a circular process are selective demolitions; a process of 'soil handling' thanks to an in situ management of demolition materials; the organisation of the construction site phases. This last aspect guarantees continuous accessibility to the area by the community.

As Eleanor Beaumont affirmed, «[…] land is the assimilation of countless layers and threads, many man-made, some etched by conflict, capital, ecocide, some buckled or melted under human neglect and abuse» (Beaumont, 2020, p. 3). Thus, the project intends to precisely investigate the layers of the ground that define its physical and material consistency but which over time have been strongly defaced, altered, and polluted by human actions. The land is both a 'recycling' material and a catalyst for actions. These transform waste into a material capable of restoring nature back to contaminated soils; that is a form of 'up-cycling' (Stockhammer, 2020).

The area of the former Manifattura Tabacchi in Naples is deemed 'fragile'[3]: a site that, due to a sudden breakdown, could collapse abruptly and without warning, causing lacerations and interruptions in the closest urban context. Due to this peculiar characteristic, these areas require latent transformations; these are yet capable of reinforcing those fragments of landscape, reconnecting communities through renewed conditions of urbanity.

Three points define the methodology of this research: physical and environmental knowledge of the area and infrastructural networks; systematization of regulatory and implementation references on the land use and remediation and management actions; development of a BIM-oriented strategy for defining a semi-automated process for the management of construction and demolition waste. The research aims to identify new

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Fig. 3 | Map of East Naples with the identification of the perimeter of the area SIN East Naples Italian Law 426/1998 (credit: M. Ascolese, 2020).

Fig. 4 | Plan of the former Manifattura Tabacchi, current status (credit: S. Piccirillo and S. Tordo, 2020).


GOLFO DI NAPOLI
MARE TIRRENO
MARE TIRRENO

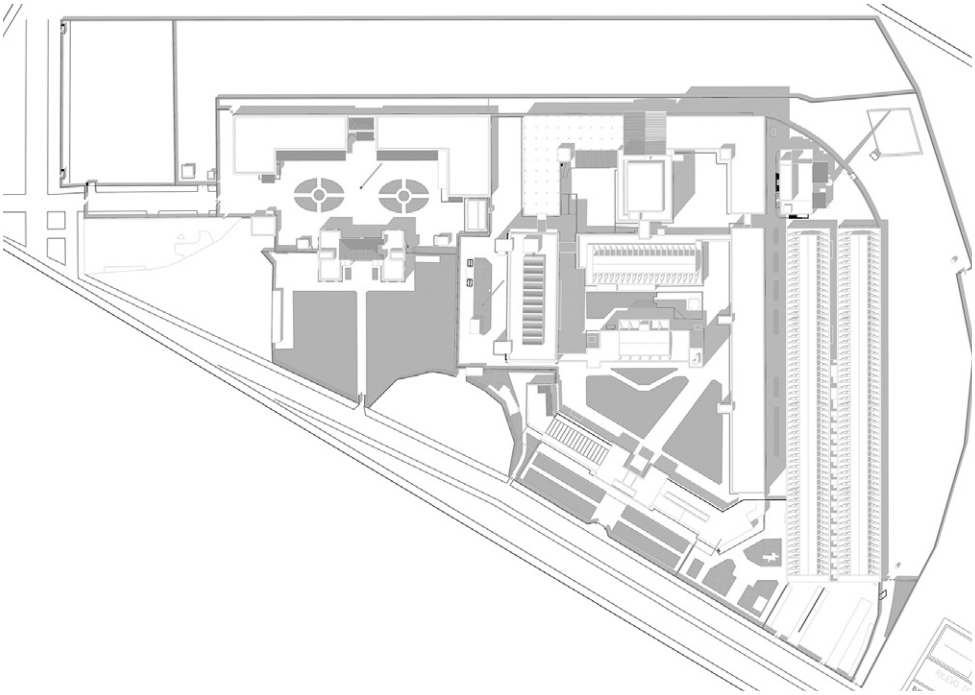

Fig. 5 | Fragments of urban residues, some in-between spaces (credit: M. Ascolese, 2020).

Fig. 6 | The emptiness of former industrial buildings (credit: M. Ascolese, 2020).

best practices for waste management in the regeneration project for open and built spaces to ensure a landscape made up of a new network of ecosystems. The research, therefore, proposes a set of actions applicable both in new design processes and in the control and management of the life cycle of existing buildings.

The former Manifattura Tabacchi in Naples: from waste to 'urban mining' | The Cirio complex in San Giovanni a Teduccio, the former Redaelli plant, the abandoned sites of Feltrinelli and Snia Viscosa, the former Q8 area, the former Corradini and Municipale del Latte plants, together with the former Manifattura Tabacchi define the complex and articulated scenario of the area of East Naples (Fig. 3). A vast part of the city that laps the ancient center of Naples and extends as far as the Vesuvius. A complex territory made up of a growing number of former industrial areas, once representative of a working-class sense of community for post-war Italy, but today a 'terrain vague' (de Sola-Morales, 1996) consisting of some fragments of industrial archaeology often inaccessible because of contaminated grounds. Among these residential buildings there are many new or reused production halls inhabited mainly by the Chinese community. It represents most of the populations currently present in the area and it is devoted to trading. Despite the forms of marginalization and often discomfort that characterize this area, several manifestations of public and private interest recognize this part of the city as an opportunity to rethink Southern Italian peripheries: a new – but already obsolete – political and urban planning slogan.

The Gianturco district, in the eastern part of Naples, represents a focal point for the geographical position it occupies. The proximity to the Centro Direzionale (the business center of the city), the infrastructural system of Piazza Garibaldi, and the eastern part of the ancient city are points of particular interest to start a reflection on the area. Numerous toxic lands, industrial waste, and abandoned sites on the edge of the infrastructural arteries or fragments of the buffer green zone characterize the district. Before the industrial transformation, numerous waterways made the eastern site swampy and inaccessible. Subsequently, it assumes a new configuration consisting of massive infrastructural systems: they represent both the primary connection with the railway and the port and a highly representative presence in the urban landscape.

The fragmentation of the urban fabric and the uncontrolled growth are the direct consequence of the industrialization process. The first production nucleus in the future area of the Manifattura Tabacchi dates to the early 20th century with the Salin factory, of which the only surviving structure is the Pontecorvoli tower. The industrial plan of 1918-22 marks the boundaries of the area yet keeping a strong connection with the port, the railway, and the vast flatland to the east (Del Prete, 2012). The Manifattura Tabacchi was founded in the 1930s as a project of the fascist regime, but it came into operation only after the Second World War. After opening in 1956, the area became one of the primary centers of tobacco production in southern Italy. It represents a new centrality capable of guaranteeing a safe job for over two thousand workers.

It is also an industrial complex with an almost entirely mechanized cycle. At that time, the Manifattura Tabacchi was a very innovative structure for the methodology of production and the surrounding facilities: in addition to workspaces, the complex housed rooms for more than one hundred workers' children, an infirmary, a large communal kitchen, a refectory, and a laundry.

In 1998 the complex fell in disused. In the same year, the Southern Association of Industrial Archaeology and the Planning Department of the City of Naples signed an agreement. It provided for a census of assets of archaeological interest and guidelines for reuse and conservation. In 2004, the new City Plan[4] only partially absorbed these indications, which would have been fundamental to avoid indiscriminate soil consumption. Although the urban planning provisions foresaw a regeneration plan for the industrial buildings, today the area is almost entirely in a state of degradation and inaccessibility (Fig. 4). As in many other Italian territories, the investigation of soils has revealed high rates of pollution. In fact, from the end of the 1990s, the area belongs to the site of national interest Napoli Orientale (SIN Napoli Orientale, Italian Law 426/1998). This condition requires soil and aquifer remediation to ensure new accessibility.

In 2010 Fintecna Immobiliare Srl, the company that owns the site, presented a Regeneration Plan to the Municipality of Naples to start a regenerative process in the area. The project, entrusted to Mario Cucinella Architects, covers 170,000 square meters and 590,000 cubic meters, comprised of both new constructions and renovation of existing buildings. The project aims at preserving the memory of the industrial area through the maintenance of the most relevant industrial plots and the integration of new buildings (housing, commercial office buildings, student residences, schools, and a covered market). It intends to define a new urban fabric that grafts into the surrounding areas building new relationships. The open space, equipped for parking and recreation space, is the authentic social glue of a fragmented and scattered fabric. Between 2009 and 2010, Fintecna presents two Characterization Plans. In 2011, the company starts the Emergency Safety Intervention, completed in 2012. In 2018 CDP Immobiliare (Cassa Depositi e Prestiti – formerly Fintecna) submits to MATTM the Project of Permanent Safety of the area, approved in 2019.

The processes of deindustrialization and decommissioning, together with economic and productive transformations, have determined the critical conditions of the former Manifattura Tabacchi and of the nearest urban context, like many other national and international sites[5]. In twenty years, slow and ineffective bureaucratic practices have transformed the area into a fragile, marginal, and residual territory: a 'drosscape' (Berger, 2006). This abandoned area is still a place of political and urban reflection (Figg. 5, 6), a place of theoretical and practical speculation which reflects on a new circularity for the area to mend fringed pieces of the city and give back new urban scenarios to the community. Often, these areas are wastescapes result of transformations that have turned them into warehouses, parking lots, exchange nodes, enclaves, abandoned containers. That's why cultural, architectural, urban, and political opinions need

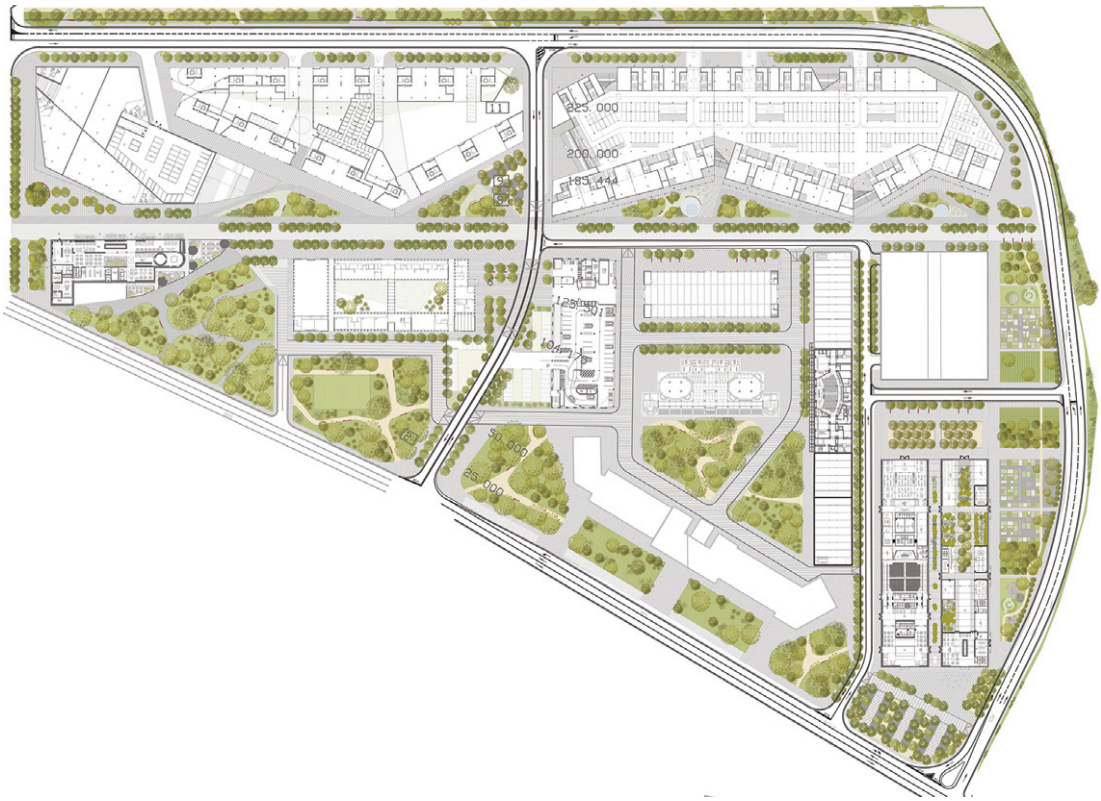

Fig. 7 | The project by Mario Cucinella Architects and LAND, 2010 (credit: Cucinella Architects and LAND).

to elaborate new reinterpretations for these areas that, starting from waste, are understood as necessary parts to the functionality of the city. The reactivation of these urban fragments requires complex processes that mitigate different skills and knowledges. Often the first actions of transformation are the less visible ones: that call for a rethinking of space and soil layers, remediation of large portions of the landscape that cannot be reduced to a pure technical space (Secchi, 1986, p. 23), that is, to transform it to ensure a new life to the urban scene.

Urban reactivation strategies | The project by Mario Cucinella Architects with LAND studio (Fig. 7) proposes the definition of a new urban system characterized by the re-use of some existing buildings and the construction of new blocks which, together with the system of external spaces, reconnect the area of the former Manifattura Tabacchi to the surrounding fabric. The total volume of demolitions is more than 7,000 cubic meters, a considerable amount that puts in crisis the complete disposal and opens the possibility of recycling and re-use.

The data on Italian waste production from the ISPRA report (2020b) tell that about 45% of non-hazardous waste production comes from C&D waste. European Commission[6] evaluated these data and will consider by 2024 the possibility of re-establishing the limits for recycling operations of building materials. In Italy, the presence of many available raw materials, the low cost of landfill disposal, and poor practice of re-use materials have slowed down the recycling of construction and demolition materials, impacting the quality and performance of the final product. The characteristics of the materials, the type of demolition, and economic issues influence the recycling and re-use of materials. The absence of harmful or dangerous substances is one of the first data to be verified; progressively, it is appropriate to evaluate the degree of inhomogeneity of the materials, a property that influences the type of demolition (if it is selective or not). This has direct repercussions on the processing and the dismantling facility and consequently on the characteristics of the final product. Finally, there is the temporal issue that involves different management of the processing and construction phases as well as specific considerations on the type of treatment of materials that depend both on the availability of space and economic resources.

Italian and European regulations impose strict performance requirements on materials, substantially influencing the contemporary architectural design, which on the one hand must respond to the obsessive regulatory overproduction of the construction industry, and on the other must produce works with a high degree of sustainability and maintenance. In more complex sites, these conditions make operational interventions not easily controllable in the different phases of the project requiring continuous double-checks with multiple aspects in an increasingly reduced time frame.

How to intervene in these contexts has become an urgent issue in the contemporary debate. It requires a new balance between the authorship of the project, the definition of figures with appropriate skills and techniques, and the construction of tools suitable for decision support. All these aspects should be absorbed and integrated into urban transformations. The enormous amount of information that is necessary for the systematization of the project requires new operational support tools for management and control. The research has synthesized these aspects with the use of Building Information Modeling (BIM). While the field of design and construction widely uses this methodology as a tool to understand industrial buildings, this research uses it for the management of demolition and decommissioning operations. It proposes the definition of a semi-automated process for the management of C&D waste as the identification of a supportable to control the life cycle of buildings. The objective is to activate a digital workflow to identify the C&D waste in a circular process. The operational phase has reworked the plot of the former Manifattura Tabacchi in BIM and associated with them a semi-automated process to define in advance the amount of waste produced in the demolition phase. The BIM tool also provides the quantity and quality of produced waste and foresees recycling actions to be integrated into the urban regeneration process.

Another substantial issue for the regeneration project of the area is the condition of soils and aquifers. Surveys[7] conducted in selected points show non-compliance for metals, PAHs, heavy hydrocarbons, making these soils polluted and requiring remediation to reduce risks for the users. Combining these data with those inferred from the BIM analysis, the research proposes a design approach that can minimize waste through a project based on a circular action of recycling in a zero-waste philosophy. The treatment and regeneration of scraps in situ from demolished buildings allow their reuse as materials for 'capping' a remediation strategy for the soil and aquifer. Therefore, the land becomes the urban element capable of absorbing changes: from waste, harmful for the community, to a new resource capable of absorbing and metabolizing possible transformations. The outcome is a new recycled form of soil that welcomes the possibility of public space, which becomes a necessary goal for the entire project. Referring to the concept 'cradle to cradle'[8] the research proposes a recycling process where materials as agents, «[…] nutrients in a global metabolism, without ever being discarded as useless substances that are of no value» (Hebel, Wisniewska and Heisel, 2004, p. 11).

Conclusions | In the research, waste plays a central role in both a metaphorical and physical meaning. In the first case, the abandoned area of the former industrial complex has been considered as waste since it is excluded from the territory and inaccessible by the community; in the second case, waste is the discarded product, not reusable, toxic, and harmful for the environment and the inhabitants. Urban waste is an indispensable substance to rethink the relationship between different natural elements, trigger new networks of ecosystems, feed production processes and reactivate new forms of landscape (Rahmann and Walliss, 2016). The actions to rethink these wastes go beyond technicalities and introduce comprehensive regeneration strategies capable of assimilating and translating silent transformations into new transitional landscapes, diverse forms of community, and conditions of urbanity.

The case of the former Manifattura Tabacchi in Naples is both a pretext and a paradox: on the one hand, it raises the possibility of new solutions, while on the other one, the bureaucratic systems impose loopholes that are difficult to untangle. The result is still too uncertain in a path that unfolds between theoretical aspects and operational practices. The research invites us to look at waste, and 'wastescape' with a new gaze, able to put at the center of the contemporary cultural debate the need for sustainable development, the importance of non-renewable resources, but especially the need to think the consumption and production in a more integrated way.

Nature asks us to make new choices and to answer questions. Nature itself reveals a landscape that requires a transformation which pays attention to transitional and resilient forms. The international research scenario proposes new circular economy processes: 'cradle to cradle, de-growth, deep-ecology'. These can redefine new life cycles for the environment, reduce consumption, integrate recycling actions, and enhance resources with new experimental solutions. But these processes lead to a 'decoupling'

condition (Swilling et alii, 2013). Although they ensure a circular economy process by reducing the non-renewable resources, it is necessary to deploy a considerable amount of infrastructure and resources to obtain these results: this does not fully coincide with growth and individual and collective happiness (Easterlin, 1974). From the analysis of the case studies, recycling and remediation processes are central to the contemporary urban debate and applied in different forms in the project – urban park, soil remediation, and soil management – in the Italian context, the difficulty of implementing the project is increasingly evident: administrative procedures focus on practices and not on the quality of space. So, in the end, we should try to answer this question: are we ready for these new forms of transition?[9] Perhaps the answer lies precisely in the ability to activate a new way of looking at these buildings that is inclusive and capable of imagining transformations as complex processes, as an articulated order of urban actions capable of producing new conditions that could adapt to continuous and constant change.

Notes

1) The research 'Studio su processi sostenibili per la razionalizzazione degli impatti ambientali delle demolizioni selettive nel complesso della ex Manifattura Tabacchi di Napoli, volto alla valorizzazione del vuoto negli interventi di rigenerazione urbana', Scientifis staff: F. Rispoli, M. Giammetti, with the collaboration of a technical-operational commission composed of M. Losasso, M. Rigillo, F. Rispoli (DiARC) and by E. Gentilucci, A. Cammarata, M. Ciaburri (CDP Immobiliare).

2) «Waste is what is worthless or unused for human purpose. It is a lessening of something without an apparently useful result; it is loss and abandonment, decline, separation and death. It is the spent and valueless material left after some act of production or consumption, but can also refer to any used thing: garbage, trash, litter, junk, impurity, and dirt. As we have seen, there are waste things, waste lands, waste time, and wasted lives» (Lynch, 1990, p. 146).

3) «Esiste anche un significato figurato di territorio, secondo cui esso può essere definito come luogo delle 'relazioni'. […] Un territorio fragile sia un territorio in cui il sistema delle relazioni si 'rompa' bruscamente, senza preavviso» (Campione, 2013, p. 152).

4) The amendment of the City Plan describes part of the area of the former Manifattura Tabacchi as zone D (Settlements for the production of goods and services) – subzone Da (Settlements for the production of goods and services – redevelopment) and subzone Db (New settlements for the production of goods and services); zone F (Territorial Park and other facilities and installations on an urban and territorial scale) – subzone Fc (New Park).

5) See the document of the Italian Ministry of the Environment and Protection of the Territory of the Sea about SIN (Siti di Interesse Nazionale) – Remediation Procedure Status, February 2020.

6) Waste from construction and demolition operations is a stream monitored by the European Commission, which has set, in article 11 of Directive 2008/98/EC on waste, a target of 70% preparation for re-use, recycling and other material recovery by 2020, including backfilling operations using waste as a substitute for other materials. By 31 December, 2024, the Commission will consider introducing new targets for preparation for reuse and recycling of construction and demolition waste (ISPRA, 2020a, p. 42).

7) Data taken from the Permanent Safety Project, proceedings ex art. 242 Italian D.Lgs.152/06, 2018.

8) It is Walter R. Stahel who is creditated to have first coined the term 'cradle to cradle', an expres-

sion later turned into a well known principle by the architect and former student of John T. Lyle, William McDonough (Hebel, Heisel and Wisniewska, 2004).

9) Compare the recent lecture given by Prof. P. Viganò entitled Are We Ready for the Transition? Gazes, Values, Projects within the seminar The City As a Renawable Resource in the PhD School 2021 – Urbanism, Iuav Doctorate, Scientific Director Prof. M. C. Tosi.

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