



A Comparison Between Italian and French Case Studies on Urban Regeneration

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Abstract

Urban regeneration is a process that aims to transform the existing city while improving its performance, adopting strategies for the recovery and enhancement of the building heritage. In the contemporary age, we are experiencing a phase of industrial crisis that is reflected in the consolidated European city themes of reactivation and rehabilitation, which are assuming a central role for both local and metropolitan communities. The aim of this paper is to highlight issues and strategies for sustainable urban regeneration from a socio-economic point of view. To achieve this, we will compare different case studies from Italy and France, all located in dynamic contexts, whose projects have been completed in the last ten years. The cases are gathered in two categories of brownfield land, each addressing a different perspective: ex-industrial areas and docks. Urban regeneration is a key challenge for the contemporary city. Restoring brownfield sites means putting the theme of sustainability, declined in all its forms, at the centre of the future city development process.

Keywords

Functional recovery • Brownfield land • Industrial area • Docks • Sustainable development

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1 Introduction

The disposal of industrial sites is a complex, large-scale process that has occurred since the second half of the twentieth century, with the decline of some traditional production sectors and the consequent progressive transition from an industrial society linked to the Fordist model to a post-industrial society characterized by a marked outsourcing. The resulting areas have become the ideal field of intervention for setting in motion and realizing the development of dynamics of contemporary cities and metropolises, with the aim of redefining their image and functioning in a sustainable key (Donnarumma, 2013; Sennett, 2018). This process contributes to the sustainable development of cities through the reuse of soil and buildings, saving on demolition waste and new construction materials as well as reducing peripheral urban growth. Furthermore, it facilitates the densification of existing urban areas. Urban regeneration strategies involve economic, social and environmental improvement measures for the dismissed areas. These areas are facing periods of decline due to: compounding pressures from major economic problems, demographic changes, underinvestment, infrastructural obsolescence, structural issues, political disenfranchisement, social tensions and physical deterioration in urban areas (Czischke et al., 2015). Brownfield regeneration, together with the reuse of dismissed industrial areas, is a common action included in local urban plans to reduce land consumption as recommended by European Environment Agency (EEA, 2019). It is important to realize public space for citizens, especially in suburban areas where the industrial districts were built. Regeneration can be expensive or complicated for several reasons cause its economic return, its management by municipalities, and its social fruition derive from how the regenerated space is accepted by local communities. Besides, considering the actual situation of Covid-19 health emergency, the current use of the public space is significantly reduced (Gehl, 2020) and its future will strictly depend on measures that will be

capable of re-thinking it in a pliable and adaptive way (Honey-Rosés et al., 2020). At a time when our built environment has been altered by a pandemic, constantly changing day by day, speaking about major investment might seem incongruous. Otherwise, brownfield reuse, resilience and adaptability are undeferrable necessities, as assumed by the 2030 Agenda for Sustainable Development by United Nations. In particular, the 11th Sustainable Development Goal (SDG 11) “*Sustainable cities and communities*” underlines the importance of “*make cities and human settlements inclusive, safe, resilient and sustainable*” (UN Habitat, 2020). All this considering, the purpose of the paper is to investigate the effects of a brownfield regeneration process on the public spaces’ fruition and their intergrability within the city, meeting the targets of inclusiveness, accessibility and sustainability.

2 Methodology

Case studies are used to investigate the effects of brownfield regeneration on inclusiveness, accessibility and sustainability of the city where it takes place, showing modes and types of intervention. The selection of the cities was made among European Metropolitan and Large-Metropolitan Areas (OECD, 2012, 2013), following a two stages process based on familiarity (in terms of industrial heritage) and variation (in terms of geographical and structural context). Representative cases were collected for Most Different and Most Similar Systems, covering a broad investigation framework and highlighting extremes and points of contact between the issues addressed (see Sect. 2.1). Moreover, the authors have direct knowledge of the cases through visits and study trips.

To meet the research objectives, a semi-qualitative analysis was carried out comparing the case studies with each other and with the goals. The evaluation was supported by the use of SDG 11 Indicators (UN, 2020), which provide a

common and internationally relevant standard of comparison. Indicators have been revised on the basis of the available data and shaped to merge with macro-categories of analysis (Table 1).

2.1 Selection of the Case Studies

Case studies selection is based on three different criteria: characteristics of the place, regeneration process and type of intervention. Following the first criterion, we chose cities with an industrial tradition, which suffered a halt in their development during the immediate post-war period. We highlighted different industrial areas typologies from each city. The second criterion considers the time of the interventions, as we decided to consider projects realized in the past twenty years, notwithstanding the fact that they have older roots. Finally, the third criterion relates to the type of intervention, as we preferred large-scale urban transformations, consisting of several different design areas that respond to a unitary vision.

Combining the previous criteria, we frequently encountered two types of regeneration projects: ex-industrial areas and docks. In both places, the industrial heritage and infrastructures—terrestrial or maritime—became a starting point for a renewal that was strongly linked with the local environment. According to the EU “*Nomenclature des unités territoriales statistiques*” (NUTS), we chose to compare Italian and French cities for their resemblance in the process methodology and in their urban-planning regulation. In Italy and France, the urban regeneration process responds to national economic policies and municipal strategies at different scales. The processes are managed by planning tools, implemented through strategic guidelines and municipal master plans (PRG for Italy and PLU for France). At a local scale, regeneration interventions are individuated as strategic areas that can be transformed according to a public–private partnership programme.

Table 1 Reference indicators for the evaluation of the case studies

Macro-category	SDG target	SDG indicator	Proposed indicator
Inclusiveness	11.3	11.3.2	1. Percentage impact of direct participation of civil society in urban planning and management
	11.7	11.7.1	2. Surface extension of open space for public use for all
Accessibility	11.2	11.2.1	3. Proportion of population with convenient access (15 min’ walk) to public transport
	11.a	11.a.1	4. Implementation of urban and regional development plans based on population projections and resource needs
Sustainability	11.3	11.3.1	5. Land consumption rate
	11.6	11.6.2	6. Adoption of mitigation and adaptation measures to reduce the environmental impact

Each indicator is associated with a SDG 11 Indicator and target, and with a macro-category of analysis

3 Case Studies on Urban Regeneration

Among the most representative examples, we propose an analysis of ex-industrial areas as Italian case studies, and of docks in the French context: *FICO Eataly World* in Bologna, *Porta Nuova* district in Milan, *Euroméditerranée* in Marseille and *Les Docks* in Saint-Ouen.

3.1 Ex-industrial Area: Bologna, FICO Eataly World

Bologna is a city in central Italy, the first city of the Emilia-Romagna region. Bologna experienced a period of economic and cultural splendour in the late Middle Ages (Dondarini & Borghi, 2014), growing with textile and food goods sector trade (Sicari, 2004). The commercial spirit of the city, combined with a passion for cookery, makes the traditional Bolognese cuisine one of the cornerstones of Italian gastronomy, emphasizing the common perception of Bologna as the ‘city of Italian food’ (Crinò, 2020). This perception inspires many projects where the city proposes itself as a new tourist attraction in central Italy, getting over the traditional role as a university city, political and cultural centre. FICO Eataly World, an agri-food park, is an urban project made in 2017 in the outskirts of Bologna that should strengthen the touristic dimension of Bologna, and create new jobs and activities in the metropolitan area.

FICO was built on a public area of about 100,000 m² in *San Donato Nuovo*, in the city outskirts, among *Terza Bologna* areas. Bologna is a historically left-wing city: since 1960, the Municipality has accomplished several urban and social policies focused on housing rights, giving rise to the cultural season of reformist town planning in Italy. The reformist model was based on a gradual reform of urban planning, providing a social dimension to the urban policies, as the priority role accorded to social housing, the protection of green areas, the reuse and renovation of the existing building stock (Oliva, 2010). The reform of urban planning was mainly carried out in the outskirts, towards planning tools such as PEEP (Plan for economic and social housing) that offered a significant number of green areas and public services (at least 30 m² per inhabitant) and public transport connections with the historic centre. *Terza Bologna* was built between 1964 and 1990, and today holds a good standard of quality of life, commonly recognized by the same inhabitants (Municipality of Bologna, 2020). However, in *San Donato Nuovo* and *Pilastro* neighbourhoods—historic parts of *Terza Bologna*—in recent years, it has been reported a growing demand for new jobs and activities, particularly in the *Pilastro* district. *Pilastro*, which was built in 1966, today is one of the greener suburbs of the city

(*Arboreto del Pilastro* park covers 10 hectares). The district suffers the distance from Bologna’s centre, where most of the jobs and cultural activities are located. Besides, social problems and weaknesses in public transport generated critical issues and requests for a greater connection with the city and more employment opportunities. The demand for new jobs, joint with other objectives, such as zero soil consumption and building stock reuse, constitute a priority strategy of the PUG (General urban development plan). Within the PUG, FICO World Eataly represents a touristic pole for the city and a new centrality for *San Donato Nuovo* and *Pilastro* neighbourhoods, through the creation of new public areas and new jobs in the touristic, gastronomic and agricultural sector.

The FICO (Fig. 1) project started in 2013 as an agreement for the redevelopment of a large, dismissed part of the CAAB (Agri-Food Centre of Bologna), a public logistic and trade centre for advanced services dedicated to the agri-food sector. FICO has been designed to respond, with a form of public–private partnership, to the regeneration needs of *San Donato* and *Pilastro* area, through the creation of new public spaces and new jobs in the touristic and agricultural sector. The project occupies one-fifth of the CAAB, born in 1991 as a consortium of cooperatives with participatory processes, typical of the farming sector in the Emilia-Romagna region (Menzani, 2007). The CAAB is a mainly public company, owned by the Municipality and the Chamber of Commerce of Bologna. It covers an area of 500,000 m² including structures such as the Vegetables Market, platforms and frozen logistics, offices, retail outlets and related services (CAAB, 2020). In 2013, the Municipality decided to allocate a dismissed part of the Market of 70,000 m², and a management centre of 40,000 m², to a shared project with *Eataly*, the Italian food distribution company. The project concept was based on the idea to reuse the spaces of Vegetables Market to host a “Citadel of food and sustainability”, reconstructing the route of food from “field to table”, in the words of Andrea Segrè, the President of FICO Foundation (Garuti, 2017). The concept was shared with the Municipality, the majority shareholder of the CAAB, who approved the project on 1st July 2013 (Metropolitan City of Bologna, 2017). The actual project is quite similar to an ordinary *Eataly* point, as a commercial centre of typical and luxurious Italian food. Nevertheless, FICO joined this character with an education will. The FICO Foundation, which manages the project with FICO World Eataly, declares that it will provide customers a shared knowledge on the agri-food sector and Italian gastronomy. FICO, beyond the part of the retail trade, offers the discovery of food production chains, from farming to final processing of the food products. The vision which aims the project is based on teaching nutrition issues, using an educational farm

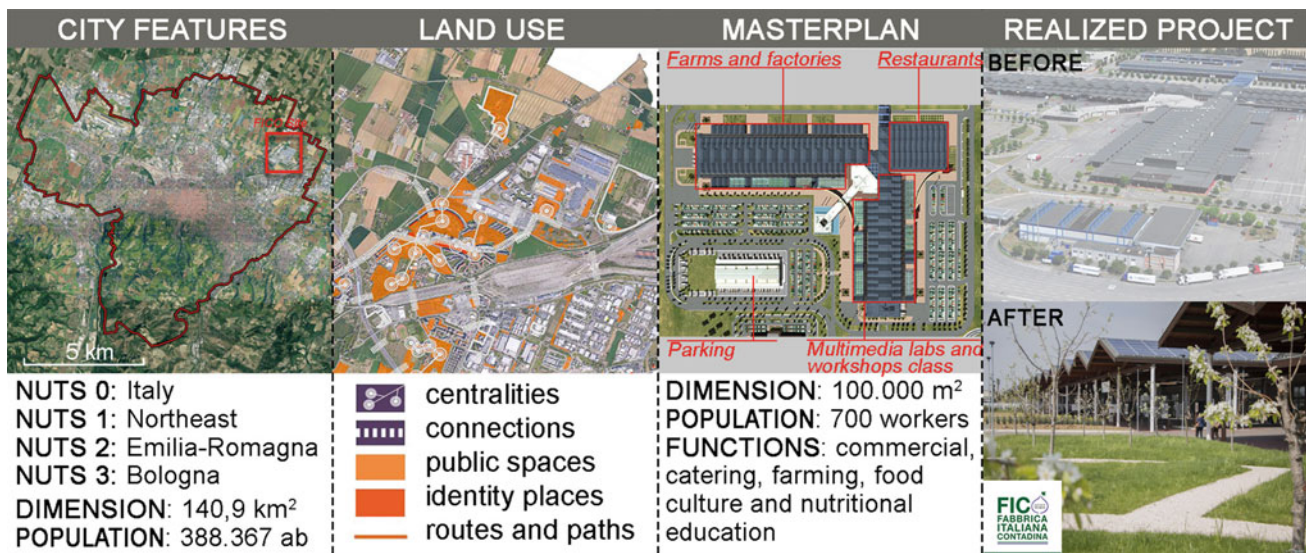


Fig. 1 FICO Project. The sheet shows project's location and land use in the urban context of Bologna with a focus on the Masterplan area (Authors own elaboration, 2020)

and multimedia paths and combining in a single circuit the food cultivation, breeding, processing and consumption. For the production part, the project includes farms, orchards and vegetable gardens, with an enhancement of Italian biodiversity. Regarding the transformation and goods distribution, the structure includes ovens, an oil mill, a brewery and a fishmonger. The educational section consists of practical cooking classes, gastronomic sciences and nutrition science. The aim is to inform visitors both about Italian agricultural offers and on the importance of the Mediterranean diet, endorsing healthy food and a correct lifestyle. A series of dining options allow the consumption of locally produced goods, as well as retail or wholesale. FICO collaborates with the CAAB companies, which supply products and materials for the sale, the educational farm and the food-experience courses; at the same time, FICO advertises companies in the tourism and catering sector, thanks to the international relevance of the project. Professor Segrè said that FICO will prove to be “a formidable promotional tool for Italian food, and the country will have to learn to take advantage even in the export” (Garuti, 2017). FICO constitutes an attraction for the city of Bologna, assuming culinary tourism as a strategic line of city development. To reach this, the project also includes a dedicated bus line, an ecological shuttle service that connects the city centre to the suburbs, as well as a special infrastructure—the ‘People Mover’—that links the Bologna Airport to FICO. The complex was also designed respecting environmental sustainability issues, such as zero soil consumption, due to the redevelopment of dismissed areas and energy self-sufficiency, thanks to the cover structure made entirely with solar panels.

3.2 Ex-industrial Area: Milan, Porta Nuova

Milan can be defined as a “sponge city that absorbs and releases, it is the engine of the infinite city”, a set of smart city, social city and smart land. It is structured as a city that enhances its features and resources in a continuous process of technological innovation, and social and economic development (Bonomi, 2012; Bonomi & Masiero, 2014). Developed as an industrial hub of Italy, between the XIX and XX centuries, the city grows on the model of two Town Plans. The 1889 Beruto Plan defined an infrastructure system to connect the inner and the external city, guarantee the city's industrial development and improve the city's living conditions. The Pavia-Masera Plan of 1912 instead planned to expand the city prescribing the road network and the buildings construction rules, thus giving the current structure of the city. In both plans, industrial areas were underlined as the key assets for the city's development. However, during the war and in the post-war period, the city underwent a halt in its development like many other European cities (Marseille, Hamburg, Manchester, Liverpool) until it tries to revive its fortunes with the 1952 Town Plan, then with the 1980 Variant to the Town Plan and with the 1984's Loop Municipal project. The urban regeneration begins in this period, with the 1988 “*Director Document for Decommissioned Industrial Areas*”, which classified industrial areas, including Pirelli alla Bicocca and the Porta Nuova area as “*Urban industrial sites of predictable disposal and reuse*” (Denti & Mauri, 2000; Oliva, 2002).

In these last twenty years, the city has turned into a metropolis, divided between a historic industrial city and its

widespread metropolitan territory. Thereby the municipality redirected the industrial area's regeneration on different guidelines focusing on innovation and creativity, poverty phenomena and hinterland integration. The city, therefore, changed, despite the crisis, during the crisis. The regeneration processes have been promoted by private stakeholders who transformed the city with their managerial skills through public policies, such as the Bicocca, Expo and Porta Nuova (Andreotti, 2019; D'Ovidio, 2009; Gibelli, 2016; Goldestein & Bonfantini, 2007). In particular, *Porta Nuova* is a large-scale urban and architectural regeneration project within the Milan Business Center, the tertiary district that extends from *Porta Garibaldi* train station to *Piazza della Repubblica*, from *Porta Nuova* to *Palazzo Lombardia*. After the disposal of the *Varesine* railway yard, in the 1950s, the area has been highly regarded by all public and private stakeholders of the economic, financial, social and cultural sectors. Thus, they began to develop planning hypotheses for an urban transformation, which were not implemented for legal disputes. Since 1999, Milan Municipality has developed a unitary urban project extended to a territorial area of over 26 hectares, in collaboration with private stakeholders. The operation aims to give vitality to the site, which is divided into three autonomous areas—*Porta Nuova Garibaldi*, *Porta Nuova Varesine* and *Porta Nuova Isola*—to create a place of great prestige for the entire Lombard community. Its main objective is to mend the three different districts through the business centre and the new public park *Biblioteca degli Alberi*.

The operation starts between 2003 and 2006, with the approval of the Integrated Intervention Plans (P.I.I.) as planning tools: the P.I.I. Varesine by Kohn Pedersen Fox Architects, the P.I.I. Garibaldi-Repubblica, by Pelli Clarke Pelli Associates, and the P.I.I. Isola-Lunetta, by Boeri Studio. All P.I.I.s were presented by Hines Italia, a global real estate investment, development and management firm, founded in 1957, which makes these interventions very similar to the major regeneration interventions in Hamburg, Liverpool and Manchester, (Anselmi & Vicari, 2020; Comune di Milano, 2000, 2004; Dragone, 2007; Molinari & Catella, 2015).

Porta Nuova Isola neighbourhood represents a part of the intervention that seeks to synergistically reconcile the historical characteristics of the area with the most advanced ideas of the green city model, representing an abandoned industrial areas regeneration model, negative effects included. The area is located in the northern part of the *Porta Nuova* Project and it is a 31,500 m² area with residential (22,000 m²), commercial (850 m²), offices (6,300 m²) and leisure (2,360 m²) land uses. It has been realized by Boeri Studio, between 2006 and 2014. Its historical features are

closely connected to the name of the neighbourhood. The name *Isola* (island) derives from the construction of the railway in 1865, which limited connections, dividing and isolating the neighbourhood from the city. At the beginning of the 1900s, it was a working-class neighbourhood, due to its proximity to the factories of Tecnomasio-Brown-Boveri, Pirelli and Helvetica. According to the first Town Plan, the blocks were regular of about 120 × 100 m and the houses included shops and craft shops with warehouses on the ground floor and residences with a balcony or landing on the upper floors, with projects by rationalist architects such as Terragni, Lingeri and Giò Ponti. The innovative feature instead is represented by the urban renewal strategy. It is based on the architectural re-evaluation to develop a neighbourhood that maintains its origins but evolves into a futuristic district, joining and raising many questions on financial, social and environmental sustainability. Office and residential buildings are reducing the solar heat with energy control and production systems. The most representative residences building is the *Bosco Verticale* by Boeri Studio, which is a new green architecture prototype building. The “vertical forest” is the main character, with condominium maintenance independent from the tenants. This is a metropolitan forestation project that allows to regenerate the environment and urban biodiversity without implying an expansion of the city in the territory (Distretto Isola, 2020; Ordine e Fondazione degli architetti, pianificatori, paesaggisti e conservatori della provincia di Milano, 2015; Porta Nuova, 2013; Stefano Boeri Architetti, 2014). Nowadays, the *Isola* district area is served by several bus and tram lines, underground lines and stations, suburban railway lines and regional, national, international lines and Malpensa Express in the *Porta Garibaldi* area. The new connections aim to retrain the negative aspect that gave the neighbourhood its name into a positive one, making it one of the most connected neighbourhoods of the city. Therefore, all the area of *Porta Nuova* Project has been individuated as one of the fourteen “Unitary districts for commerce”, due to its financial, commercial and real estate influence and attractiveness (Bianchini, 2019; Unione Confcommercio imprese per l'Italia, 2020). As result, the project defines a regeneration process to achieve great urban transformations by supporting and promoting private stakeholders' initiatives. This aspect brings negative effects too since the price to pay for the economic attractiveness is the increase in housing rental costs and all the district activities. Thirdly, the results draw attention to the issue of environmental sustainability, realized through prototype buildings (*Bosco Verticale*) which, despite countless criticisms of its feasibility in the context, today represent the landmark of the entire urban planning and real estate operation (Fig. 2).

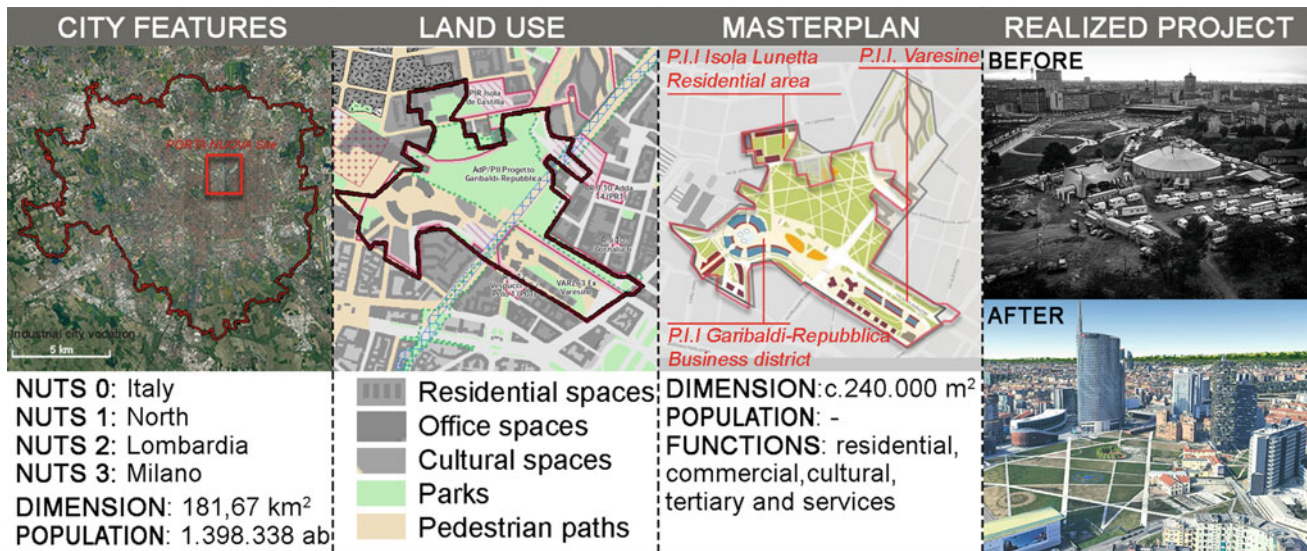


Fig. 2 Porta Nuova. The sheet shows project's location and land use in the urban context of Milan, with a focus on the Masterplan area (Authors own elaboration, 2020)

3.3 Docks: Marseille, Euroméditerranée

Marseille, a strategic historical pole of the Mediterranean with a deeply rooted maritime tradition, is the first French port for size and flows and the second city for inhabitants (826,700) (INSEE, 2013) of southern France. We can determine that four main areas give identity to the city: the old town with its Vieux-Port, the popular disadvantaged districts to the north, the south with its high-class residential neighbourhoods and its eastern part, where the interventions of industrial rehabilitation concentrate. From the administrative point of view, the city is divided into 16 arrondissements that group 111 neighbourhoods (AGAM, 2020). The city model of Marseille is a virtuous example of how to invest in the culture to give a new and attractive image of a city and how creativity can be a leading force in the sustainable regeneration of waterfronts and port areas.

The transformation process of Marseille began at the end of 1999 with the design competitions announced by the Ministry of Culture, under the name of “Operation of National Relevance”. The administration has chosen to use contemporary architecture as a vehicle to promote the new image of the city, by choosing some of the most prominent studios on the international scene as the ones of Zaha Hadid or Kengo Kuma. Since 2000, Marseilles has been associated with the 18 neighbouring municipalities to form the Communauté urbaine Marseille Provence Métropole, recognizing the Grande Marseille as an urban community (Esposito, 2011). The human settlement in this coastal area can boast a history of several thousand years and today extends over fifty-seven kilometres. In 2013, Marseille Provence became the capital of culture receiving funds to rehabilitate the city

with the project Marseille Euroméditerranée (Euroméditerranée, 2020). The project has been linked to the improvement of cultural infrastructure throughout the territory including new locations, restoration projects in pre-existing industrial and commercial areas, as well as numerous renovations and extensions of existing facilities. The chosen strategy rejects the need for punctual interventions, focusing on a system of widespread quality, more suited to the specific reality of the city. Many architectural interventions were realized with different languages and functions, allowing better continuity to the urban system.

The area of the project covers 480 hectares with an increase in housing of 18,000 units, a million square metres dedicated to offices, 200,000 square metres for trade, as well as for public equipment. The green space covers 60 hectares and the entire project involves an investment of seven billion euros with a return of 35,000 new employees and 38,000 inhabitants (McAteer et al., 2014). Mobility remains closely linked to its maritime tradition as the development of the urban route stretches towards the sea, with its modern buildings serving the Port and showing off different historical phases, distinguishing the value of an improved port-city interface. The project “Marseille-Euroméditerranée” had a clear European dimension through the theme Partage des Midis (sharing the south), which crossed the entire cultural programme, highlighting the historical role of the city as a meeting point between European and Mediterranean cultures. Thanks to this high-profile international dimension of the project, public funds were supplemented by large amounts of private sector sponsorship, which sought to build on the urban renewal in the heart of Marseille, while promoting greater integration of the surrounding area. Marseille

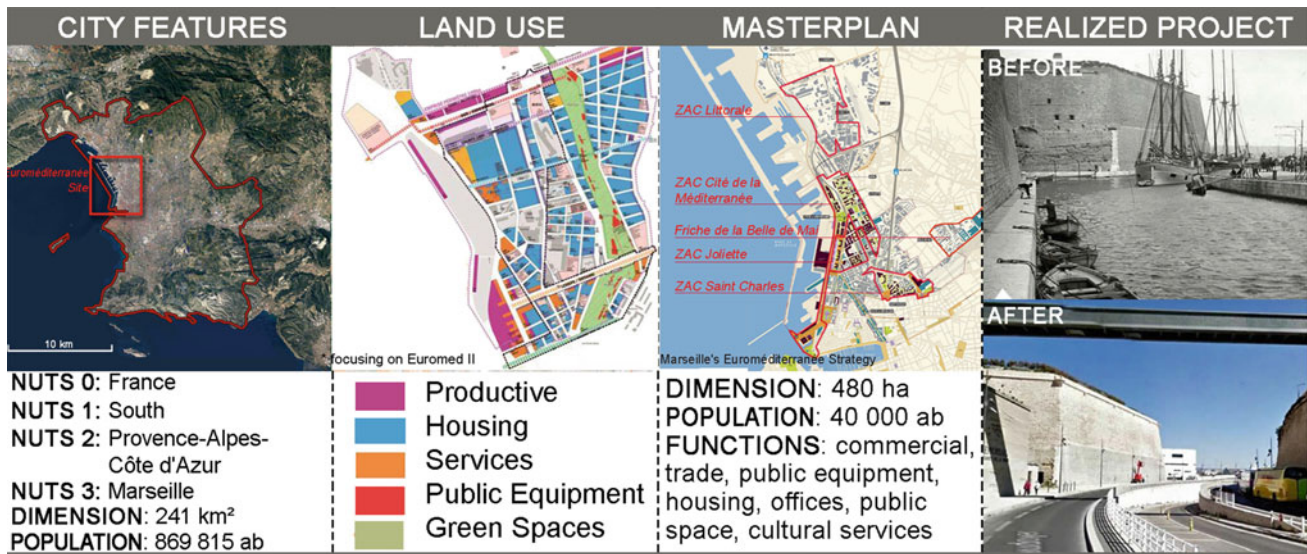


Fig. 3 Euroméditerranée. The sheet shows project's location and land use in Marseille, with a focus on the Masterplan area and a focus on the land use of Euroméditerranée II (Authors own elaboration, 2020)

Provence has surpassed its private sponsorship target, with €16.5 million raised by 207 companies (McAteer et al., 2014). This success reflects a consistent strategy to create partnerships with corporate sponsors and an understanding of the need to generate mutual benefits. One of the main goals of the project was to cancel the great social and geographical contrast between the North and the South of the city, (Buslacchi, 2013) an attempt already put in place at different times in Marseille (Anselme & Peraldi, 1990; Tarrus, 1987; Roncayolo, 1993; Donzel, 1998; Ascaride, 2001), actively involving locals and artists, called to live and reinvent the degraded areas to make it the aggregating heart of the city. From the economic point of view, the project has created several impacts, especially in terms of total cultural audiences and the increase in the number of tourist visits.

Among the different operations, the “Friche de la Belle de Mai” in the east area of the city is interesting to mention. This area is comparable in dimension to a real neighbourhood. In 1860, the factory, then located in Rue Sainte, near the Vieux-Port, was the city's first employer and the second manufactory of France after Paris. The factory has undergone various transformations and extensions linked to cigarette consumption and the evolution of production modes. The transformation process begins in 1992 when the twelve hectares inside the district are acquired by the Société Française d'Assainissement (French Sanitation Company) from the private company SEITA (La Friche, 2020). From 1992 to 1997, thanks to the inclusion of the area in the scope of the Euroméditerranée project, a commission was appointed (to which architect Jean Nouvel was added) which has the task of developing an overall plan of rehabilitation.

The rehabilitation aimed to create a local and international centre for artists and the locals, which will improve the quality of the city's social spaces. From a conceptual point of view, the operation proposal is based on education and awareness of cultural activities as an opportunity for the local territory. The former factory covers an area of 12 hectares with a centre of 45,000 square metres area. One of the most catching elements of the project is the relationship between the activities of the association Friche and the work carried out by the Commission chaired by Jean Nouvel. The Commission has focused on the artistic presence as a driving agent for the urban development of the district. Accessibility of the public space was not only a key point, but also the value of the *mixité* of the area, the relationship between public and private and the definition of a programme for sports and cultural activities to be carried out over time. In this specific case, the Commission played the role of facilitator and intermediary between the Friche project and the Public Administration. The majority of the estate belongs to the City of Marseille which has agreed with the association a free lease of the spaces, on a condition to carry out activities for the neighbourhood. (Fig. 3).

3.4 Docks: Saint-Ouen (Paris), Les Docks de Saint-Ouen

The *Les Docks de Saint-Ouen* (Fig. 4) is an *EcoQuartier* under construction in Saint-Ouen-sur-Seine, a municipality north of Paris of 51,108 inhabitants. The plan is located on the old logistic site of the fluvial docks on the Seine, a brownfield previously occupied by industrial buildings. As

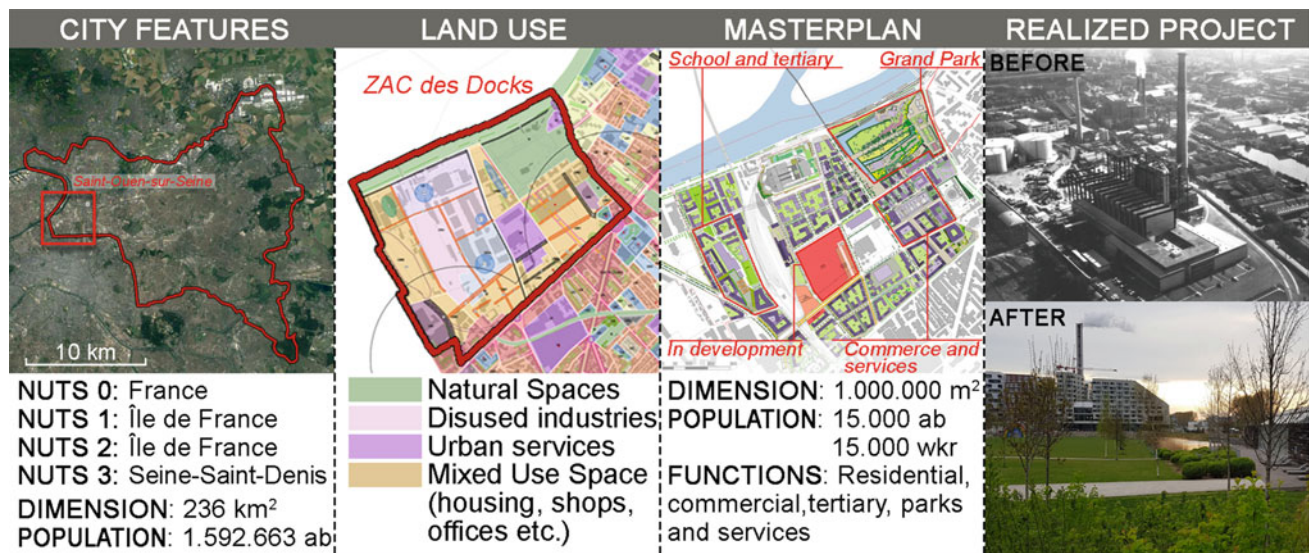


Fig. 4 Les Docks de Saint-Ouen. The sheet shows project's location and land use in the urban context of Saint-Ouen with a focus on the Masterplan area (Authors own elaboration, 2020)

in many places in the metropolitan area of the *Grand Paris*, Saint-Ouen is a place of profound transformation conceived and implemented under the supervision of the Ministry of Ecological and Solidarity Transition. Public domain agencies and private agencies participated in the project.

The programme started in 2004 to regenerate the areas of *Total* and *Alstom* factories and transform them into an eco-neighbourhood. Saint-Ouen has a long industrial tradition, but it clashed with the deep conversion of the labour market, which brought visible effects on the economic and demographic decrease (Commune de Saint-Ouen, 2017; Guironnet, 2017). The culture of the *banlieue rouge* (red suburb), strictly connected with the principles of communism, lapsed when national spatial planning policies encouraged deindustrialization, until the 1970s, with the emersion of new liberal logic of land profitability (Albecker, 2015; Séquano Aménagement, 2020). This transition culminated at the beginning of the twentieth century when the last remaining industries left the site, *Total* in 2003 and *Alstom* in 2004, leading to the definitive abandonment of the area and the decision to create an urban regeneration plan. In 2007, this programme took shape through the development of a *Zone d'Aménagement Concerté* (ZAC), born through the first feasibility studies and the involvement of the stakeholders in a partnership between Paris and Saint-Ouen municipalities. In 2010, the *Plan local d'urbanisme* (PLU), or local urban plan, was revised and updated several times until 2017, while the *Plaine Commune* was deposited in 2011, starting the first excavations. The first phase of construction, which included 2,000 houses, the *Grand Parc* and school facilities, took place between 2012 and 2016. The second phase started in 2015, including housing, offices,

shops and more, and ended in 2019. In the same year, the third and final construction phase, for the completion of the infrastructures by 2025, began.

The district develops on a quadrangular plan of about 100 ha, of which 12 ha are destined for the local park "*Le Grand Parc de Saint-Ouen*". Within the eight project sectors, it is planned to establish 15,000 new inhabitants and create 15,000 new jobs through the construction of 878,600 m² of built-up areas destined for various activities, with an intervention budget of €666 million. The project includes 443,000 m² of residences (about 50% of the total and comprehensive of 40% of social housing), 300,000 m² of offices and economic activities (34%), 68,000 m² of commercial structures (8%), 52,000 m² of collective structures (6%), and 15,600 m² of public structures (2%) (Ekopolis, 2020).

The active participation of the stakeholders (local elected representatives, developers, inhabitants, associations) allowed the structuring of an advanced plan able to satisfy requests from different directions. The city of Saint-Ouen and project management teams used two tools to engage citizens in the local planning process: public meetings and the Docks website. Citizens presented themselves in public meetings through the *Mon voisin des Docks* association, created in March 2014, fuelling the debate on structures and services, which continued from 2017 through telematic meetings on the Docks website. In addition to housing, central was the idea of creating new jobs for residents, preventing them from living in the neighbourhood only when they came home or went out to work in central Paris or in other peripheral areas of the capital, and configuring the intervention as a fully pedestrian-friendly neighbourhood.

The short distance (<1 km) from the two main existing public transport hubs of RER C and line 13, with the new addition of line 14, ten bus lines and modal shift incentives are aimed at developing a sustainable mobility model that makes the neighbourhood accessible and directly connected to a large part of the city without using the car. Water is a constant feature in outdoor public spaces. The high concentration of infrastructures close to the Seine has prevented urban development towards the river over the years, not only marking a great production opportunity, but also a strong break with the territory. The neighbourhood is planned as a natural extension of the river network, including a water canalization system for phytoremediation. Stormwater management promotes drainage and treatment, according to the Integrated Urban Water Management approach, with bioswales along the roads and green roofs on buildings, moving the runoff to permeable surfaces or the Seine, and reducing discharge into underground municipal sewage conduits. Part of the rainwater is collected in two storage basins, respectively of 3,000 and 10,000 m³, treated and reused for irrigation. Furthermore, riparian wetlands serve as a transit corridor for the fauna along the Seine, protecting biodiversity (also insects and mosquitoes findable in these places). Inside the park, the greenhouse and large urban gardens for the cultivation of vegetables (about 5,000 m²) provide food for the inhabitants and become a place of multiform activities. The *Île des partages* (Island of sharing), is a protected area for pesticide-free cultivation that offers space for family gardens (former Alstom workers' gardens created in 1928), shared gardens (for local citizens), educational gardens (with pedagogical activities for the children of Le Petit Prince school), therapeutic gardens (for people with a handicap or illness) and integration gardens (for the reintegration of people in social or occupational difficulties) (Toura, 2019). In Saint-Ouen, physical and mental wellbeing takes on the same relevance: an inter-partnership cooperation platform has been created with the *Centre Local de Santé Mentale* to identify and help young people, the elderly over 65, young mothers, parents at home, single-parent families, unemployed, to offer them the opportunity to confront other people and talk about their daily lives (Brise, 2017). Finally, energy resources management takes place through production from renewable sources. A district heating network provides heat and domestic hot water generated through heat recovery from Seine's waters, steam from local production processes and waste incineration. Refurbishment of former industrial complex is realized with the project of the *Etoile verte*, an old disused chimney which will be an integral part of a future double filtration system for energy production from biomasses in 2021, flanked by 5,800 m² of vegetated land, 7,700 m² of green roofs and 600 new trees planted. The Docks operation was designated "New Urban District" by the Region in 2009, obtained ISO 14001

certification (environmental management) in 2012 and won the Ile-de-France programme "100 innovative and ecological neighbourhoods" in 2016. The second phase of development, which involves the completion of line 14, the development of a cultural and commercial centre that extends to the rehabilitated Alstom room, is underway. This programme is supported by the installation of the hotel in the Ile-de-France region and by the development of an important pole, mainly tertiary, west of the ZAC. Actually, 2,920 houses, the entire Grand Parc and various public structures such as a school complex, a gym, a nursery, 74,000 m² of offices and 2,300 parking places are completed (Séquano Aménagement, 2020).

4 Discussion

Each city, in its own way, has benefited from brownfield regeneration:

- Bologna tries to become a new touristic pole in central Italy, choosing to reuse the spaces of a logistic and agri-food centre to create the first theme park on healthy food and nutrition education.
- Milan, as a financial district, focuses heavily on the technological-environmental sustainability of buildings, aiming to reduce the heat island and the energy needs in the city and to realize a prime neighbourhood.
- Marseille, as a creative city, encourages wider participation in culture through free and public events, specific events for young people and activities taking place in disadvantaged neighbourhoods or showing the diversity of cultures in the territory.
- Saint-Ouen is implementing a path of economic development and repopulation of the city through an urban intervention characterized by inclusiveness and a variety of public spaces, ecological management of natural sources, wastes, mobility and renewable energy. Positive aspects have been recognized, as the attention to the climate change issues, the zero-consumption soil goal and the wealth produced by tourism, according to the Agenda 2030:
- Innovative design approach. The futuristic approach to the city realized some international landmarks. In Milan, the *vertical urban forest* is the prototype to bring all over the world to promote urban forestation. In Marseille, *les docks* represent a modern approach to historical buildings, transforming a huge industrial area into a multi-cultural dynamic living neighbourhood.
- Social gathering. In all the case studies, due to the economic and cultural activities, the opportunity for the meeting of the social classes is enhanced through the public spaces.

- Economic attractiveness. The private companies' investments in the regeneration process have promoted the development of an autonomous economic system related to different sectors—from food tourism to tertiary activities, as in Milan and Marseille. Therefore, the private funds allowed to achieve faster and better interventions providing 700 new different job positions in the outskirts, as in Bologna.
- Land reuse and reclamation. The attention to environmental sustainability is the core of all the regeneration processes analyzed. In particular, the predominant aspect is the attention to minimize the soil consumption, against the current high trend in Milan, Bologna and Marseille. Negative aspects can be traced along with all these processes, divided into the morphological, social, economic and environmental dimensions. They share problems related to the transformation of a circumscribed area, such as brownfields, influencing the entire urban context:
- Outsized-out of scale- self-referred morphology. The oversized scale of intervention, as in Milan, Bologna and Saint-Ouen, clashes over the surrounding area and sometimes appear in a self-referential stylistic form. In Saint-Ouen, the urban plot dispersity has led to petty crime spread. Also, in absence of a stratification process over time, situations of rejection by citizens often occur.
- Social inequalities. The marked distinction between city districts, as in Marseille and Milan, has been increased with the transformation. Access disparities in housing policies, health, education and transport, are not cancelled but strengthened despite the regeneration. The plan benefits only a narrow segment of citizens and homelessness is constantly increasing, despite the high number of social housing.
- Gentrification. The incomplete partnership between public and private stakeholders, as in Bologna, Milan and Marseille, has generated projects that appear unbalanced in favour of an entrepreneurial vision. In both cases, the aspects of community development seem to be faded in the background. This led to the gentrification issues due to the change of the surrounding living costs, caused by the realization of prime housing, slowly moving away from the regeneration process target, that is the middle-working class.
- Environmental ordinary standards. Despite the environmental aspects are the core of the projects, not all the cases have promoted significant environmental standards.

The strengths and weaknesses of the case studies, declined in the social, economic and environmental dimensions, highlight the points of contact that can be collected in three common issues, such as inclusiveness, accessibility and sustainability, as proposed by SDG 11 (Table 1).

As regards inclusivity, it is understood as the active involvement of all citizens, in all its forms, at different levels in the regeneration processes, and it is directly connected with the presence of public spaces.

While in the French cases, active participation is a central theme of the intervention, in the Italian cases, the aspect is less relevant. Despite FICO was realized from a collaboration between public and private stakeholders, the project has a marked entrepreneurial vision. The project is mainly targeted at a paying clientele, and this prevents spontaneous participation. In Milan, the lack of commitment between experts and citizens has strengthened the financialization of the project's results excluding the citizens' role. In Saint-Ouen the constant commitment between experts and citizens has encouraged social resilience. The urban renewal process development allows redefining roles, establishing the citizens as participants of equal dignity. In the case of Marseille, the constant communication between citizens and administrations in a participatory development model has allowed the balancing of private interests with individual needs. Also, the local cultural planning strategy offered the opportunity to transform local structures and social ties into "third places", offering new services and uses to the population.

The involvement of citizens is also related to the use of public spaces, a very important element in most of the cases studied. In Fico, 0.5 ha is dedicated to green areas, but mainly intended for private use or linked to the needs of the agri-food park (fruit and vegetable cultivation, educational gardens). In Milan, 10 ha are dedicated to public spaces and pedestrian paths. In particular, the new urban park *Biblioteca degli alberi* and *Gae Aulenti* square became new public centralities for the entire neighbourhood. In Saint-Ouen, 12 ha are occupied by *Le Grand Parc de Saint-Ouen*, which is a reference point for the entire neighbourhood as green infrastructure and which also offers various activities related to integration (see *Île des partages*). In Marseille, one of the main aspects of the Euromediterranéé II plan, in extension to the recovery of the port of the first phase, is that of providing equipped spaces and public green areas. The equipped spaces area is 60 ha on 480 ha, in total. Located in the north of the city, the Aygalades envisages a total covered area of approximately 14 ha by 2025 as an extension of the Parc François Billoux.

As far as accessibility is concerned, it is to be understood as the project connected the whole city. In all the projects, public transport is highly valued, especially as a link to the city.

There is an eco-bus service which connects the city centre and the railway station of Bologna with FICO. Furthermore, is shortly expected the realization of a new public mobility service, the People Mover, which should directly connect the

airport with FICO, like a monorail service. In the other cases, there was an approach to the “15 min city”. In Milan, the district is accessible to everyone from everywhere. In less than 15 min by foot, citizens can reach the main public transport hubs: five metropolitan line stops (on three lines), three train stations and the tramlines. The same approach is valued in Saint-Ouen, there are not any kind of barriers and child safety is guaranteed by avoiding the cars’ circulation or limiting their speed (30 km/h). In less than 15 min by foot and 5 min by bike, citizens can reach the main public transport hubs: three metropolitan line stops (on two lines) and ten bus stops. Marseille changed from the infrastructural nets and mobility (TGV, new subway lines and tram lines, waterways, tunnels, parking areas under all the squares of the city centre, underground rerouting of motorways) up to the delocalization of the harbour equipment (merchant and tourist), to the arrangement of the Old Port and the entire urban waterfront. The main objective was to abolish the physical and psychological barrier between the city and its seaport.

In general, all the case studies were developed according to the urban and regional development plans guidelines. The interventions join a network of interventions, promoting general accessibility to the rest of the city. FICO enhanced the third urban strategy, *attractiveness & work*, representing a strategic hub, and creating 700 new jobs and an economic induced for local production. Porta Nuova Project accords to the city’s industrial and infrastructure development. The transformation guaranteed a high-density settlement, with respect to soil consumption and it increased the public spaces areas, lining up to the new Milan Vision 2030. *Les Docks des Saint-Ouen* realize the PLU inclusion of social and cultural *mixité*, respecting ecological principles. In Marseille, the *Euroméditerranée* has been able to track the changes in the “urban thinking” of recent decades. The project creates a city, certainly tertiary, but first marked by the diversity of its functions.

As far as sustainability is concerned, it is primarily to be understood as environmental sustainability and how projects affect the urban ecosystem with deep attention to climate mitigation and adaptations solutions.

The project FICO envisages a total of 10 ha area. Among these, 7 ha are covered by building, 0.5 ha with green areas for gardens and farming and 2.5 ha are covered by parking lots, with around 85% of land rate consumption. It includes advanced technology to reduce energy consumption: magnetic levitation refrigeration units have been used which are characterized by high yields at partial loads, and a large photovoltaic system is installed on the roof, covering more than 100,000 sqm, producing 15 million kWh. The provided energy is used for an efficient LED lighting system, with an advanced regulation system, which optimizes energy consumption based on real requests. The project—*Porta Nuova*

garibaldi Repubblica, Isola and Varesine—envisages a total 24 ha area. Among these, 10 are covered by building, with around 40% of land rate consumption. The project guarantees sustainable energy production, mitigating greenhouse gas (GHG) emissions and solar heat. Especially the *Bosco Verticale* has started a transition to reduce the CO₂ emission and fine dust by planting around 800 trees of different sizes—equivalent to that of 30,000 square meters of forest and undergrowth, concentrated on 3,000 square meters of urban surface. Irrigation is also centralized: the needs of the plants are monitored by a remote digitally controlled probe system and the water is drawn from the filtering of the grey drains of the towers. In *Saint-Ouen*, the project envisages a total covered area of approximately 18 ha by 2025. In parallel, 8 ha of land occupied by *Alstom*, with asbestos in soil, were decontaminated along with the demolition of 50,000 m² of workshops. Approximately, 60–75% of energy district demand is covered by renewable sources, moving to more sustainable production and mitigating GHG emissions. The *Syctom* waste treatment plant has started a transition to reduce the CO₂ from the incineration system and to produce biomaterials (bioplastic, biofuel), together with the planting of 600 trees. The adaptive research for eco-urbanism is also reflected in the integration of the urban water cycle in open spaces and in buildings, with particular attention to wastewater management. In Marseille, the project is made up of a perimeter of 310 ha. The city recovers places of memory, integrating social, economic and cultural objectives, as well as environmental rehabilitation, pursued through the transformation of hectares of industrial areas and volumes. The Euro-Mediterranean eco-city focuses on bioclimatic design to exploit natural resources, in order to produce houses that are energy efficient. In 2016, the first geothermal power plant was inaugurated to feed the Docks area.

To summarize the various aspects of the different case studies, it is proposed a table of synthesis and analysis (Table 2).

5 Conclusions

The paper’s primary proposition is to analyze some relevant case studies of urban regeneration reusing brownfield sites, in order to understand how urban processes of functional recovery worked in major European metropolitan cities. The paper seeks to individuate common and innovative analysis issues, referring and extending the study both to the project’s authors and to all stakeholders and shareholders directly or indirectly involved. From the selection of the case studies, it has been possible to define recurring types of dismissed industrial areas and different regeneration models emerged with the common goal of redefining the image of the city in a

Table 2 Comparison between the case studies in relation to the Issues and the indicators described in paragraph 2. Methodology (Authors own elaboration)

Issues	Indicator	FICO Eataly World 10 ha	Porta Nuova 24 ha	Euroméditerranée I e II 480 ha	Les Docks de Saint-Ouen 100 ha
Inclusiveness	1	General lack of participation: the projects have been designed without considering or taking little account of the needs of Pilastro and San Donato Nuovo population	Lack of participation of citizens, because of the private property of land and the real estate company management	Active involvement of locals and artists called to live and reinvent the degraded areas of the Vieux-Port. Process open to all local residents, political representatives and civic associations	Direct participation of citizens through meetings, also online, open to all local residents, political representatives and civic associations
	2	0.5 ha	10 ha of public green spaces	60 ha	12 ha of public green spaces
Accessibility	3*	90%	95–100%	95–100%	95–100%
	4	The project respects the need for regional plans and laws (Regional Law 24/2017)	New urban functions and sustainability issues according to the PGT (town plan) vision of Milano 2030	The main objective was to abolish the physical barrier between the city and its seaport, through its infrastructural net and mobility	Only strategic goals are included in the 2015 revision of the PLU
Sustainability	5**	85%	40%	35%*	15–20%
	6	Solar energy Water reuse system	Renewable energy Vertical urban forestation Mitigation of the solar heat with energy control and production systems	Renewable energy Reduction in GHG emissions and 65% reduction in water using thermo refrigerating pumps and high energy-efficient refrigerated units	Mitigation of GHG emissions from industrial processes and waste management Adaptation in rainwater and wastewater management, and promotion of renewable energy

* The percentage derives from the *15 min city approach*

** The percentage of land use is calculated by estimating the soil coverage of the new building projects.

sustainable key, with different economic development guidelines. The four case studies show how industrial areas are fragile territories that frequently clash with a necessity of change, imposed by productive and economic trends but hampered by the citizen's identity will and needs. In fact, both physically and symbolically, there is still a gap between top-down and bottom-up regeneration initiatives, which have almost never successfully linked the needs and the wills of the stakeholders and shareholders involved. In conclusion, these projects are innovative and sustainable as advertised by their authors, but nevertheless through their weaknesses. It is to us to underline the necessity to re-think the brownfield regeneration process in Italy and France, like in similar European cities, embracing aspects of social inclusion, local communities' involvement and gentrification restraint. The new city model should be oriented on Inclusiveness, Accessibility and Sustainability, looking at the opportunities available in its lands and its heritage.

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