The Recovery of Disused Infrastructure and Military Areas in Spain and Italy, Contributions to the Regeneration of Territories

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Abstract. Brownfields represent complex areas that require appropriate intervention strategies. Now more than ever, the impetus for sustainable land recovery is through the regeneration of sites destroyed and contaminated by conflict or abandoned land conservation activities. These include barracks, forts, defensive and warning installations, former powder magazines, and disused military infrastructure. A forward-looking vision suggests innovative strategies for regeneration.

The essay presented is the result of research conducted on best practices for the regeneration of military areas and is entitled: "Urban regeneration of brownfield sites for future sustainability scenarios."

The essay will present a careful review of the literature and state of the art focusing on best practices in terms of innovative responses useful for ecological transition and resilience of territories.

Through the reconnaissance of legislative and programmatic guidelines and the examination of Spanish and Italian case studies, 3 phases of the regenerative process will be identified:

1. Decontamination;
2. Renaturalization/environmental rebalancing;
3. Refunctionalization.

The essay shows how decontaminated sites will be able to be part of a single environmental and social infrastructure and will have to meet qualitative/quantitative and performance parameters.

Keywords: Brownfields · Redevelopment · Social Justice · Regeneration

1 Introduction

1.1 The Complex Scenario of the Restoration of Decommissioned Military and Infrastructure Areas

The reclamation of disused military and infrastructure areas, while being an environmental priority due to the implications of the abandoned conditions of probably contaminated facilities and installations, often encounters 'resistance' in the planning phase due to the

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complexity of the issues and the financial dimension of any investments required. This is not always due to a lack of attention and adequate policy with respect to critical issues, rather it depends on the difficulty of managing vulnerable territorial areas at environmental risk [1], with large areas in operations that involve local communities, which are often reluctant with respect to the cost-effectiveness of the actions and the externalities produced by the recovery operations.

At present, it is evident that the need to connect the brownfields areas [2] to their surrounding territorial context leads to the choice of a "container" of services and authentic experiences of public interest, such as a landscape garden, multifunctional spaces, with the aim of improving the well-being of citizens and increasing the satisfaction of users and possible tourists.

This mission is not always sufficient to justify and make sustainable brownfields reuse choices and necessary investments. This practice is widespread everywhere, suffice it to say that in Europe, and particularly in Spain and Italy, more brownfields [3] are abandoned than are involved in recovery and regeneration projects.

2 State of the Art on the Rehabilitation of Disused Military and Strategic Infrastructure Areas, Focus on Italy

2.1 Challenges and Opportunities in the Rehabilitation of Disused Military Facilities in Italy: Case Studies and Strategic Considerations

Few reuse operations in Italy have been successful, often they are isolated cases; others are unimplemented projects involving areas of particular historical, landscape and architectural value. Among the former is the project for the D.I.A. [4] in Reggio Calabria, the area is located in the northern part of the city of Reggio Calabria in the Santa Caterina area, near the port and the entrance to the Salerno-Reggio Calabria motorway. The intervention area, located on Via Enotria, is opposite the Manganelli Multifunctional Centre inaugurated in 2014, which houses the offices of the Police Headquarters of Reggio Calabria[1]. Urban context. The parcel subject to intervention is indicated in the P.R.G. tables in zone F called "Areas for military headquarters and equipment", these are areas subject to military jurisdiction.

According to the P.S.C. (piano strutturale comunale-municipal structural plan), the area falls within the A.T.U. (Ambito territoriale unitario - Unified Territorial Area), II.1 of the consolidated urban fabric or in formation, oriented mainly towards the consolidation of the recent city (Fig. 1).

[1] New headquarters of the D.I.A. - Direzione Investigativa Antimafia in Reggio Calabria (RC) (mateng.it).

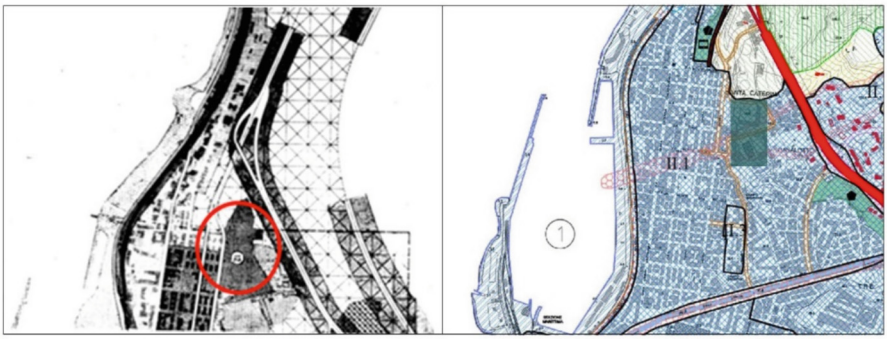

Fig. 1. In the left image P.R.G. 'Quaroni' of 1970, of Reggio Calabria, in the right image Extract of the Municipal Structural Plan of Reggio Calabria, adopted in 2019. Source: elaborated by C. Fazia based on maps of the PRG and PSC of Reggio Calabria.

For the project of the new headquarters DIA, Antimafia Investigative Directorate, several specialized investigations and analyses were carried out: interference analysis with overhead and underground utility networks and design resolution (Fig. 2).

As a result of Law No. 177/2012, about war remnants, which amends and supplements the T.U.S. 81/2008 on occupational safety, the possible definition of a level of risk of non-acceptability implies the need to adopt the necessary prevention and protection measures suitable to eliminate or at least significantly reduce the probability of occurrence of the potentially harmful event. In the latter case, the subsequent conventional securing, defined as "ordnance clearance," can be envisaged, to be activated in the requested case under the aegis and binding opinion of the competent Ministry of Defense pursuant to Art. 22 of Legislative Decree 66/2010 (New Military Code). Therefore, the area affected by the implementation of the DIA, was subject to specific verifications, analyzed in relation to geological characteristics, the presence of possible inhibitory and protective constraints. The presence of possible archaeological finds, seismic risk. The design of the DIA headquarters (it will also host the 12th Mobile Department and the State Police) was drawn up to meet the needs of the Administration receiving the property. At the site of the former military complex now known as DIA, two impressive cisterns that survived the devastation of the 1943 bombings persist. Located in the Montevergine area, specifically in Santa Caterina, these structures, despite their historical importance, have been neglected over the years and are currently in a state of complete abandonment. The two gigantic metal cisterns, with a diameter of about 40 m each and a capacity of about ten million liters, are enclosed by a shell of reinforced concrete and are located within a state-owned area of about ten hectares, now bordered by fences and shrouded in lush vegetation. Originally, there were three of these cisterns, but one of them was dismantled and demolished to make room for the Manganelli multi-purpose complex, the barracks that housed the military personnel responsible for guarding the entire area. What makes this site even more interesting is the presence of a network of vaulted underground routes, still intact, that connected the various cisterns together. This historical heritage represents a fundamental testimony to the wartime events of World War II, so it is essential today to recover and properly enhance it (Fig. 3).

For the new DIA [4] headquarters , the following criteria were met

• Flexibility of spaces and solutions to eliminate architectural barriers, including a tactile path with relative aids in the area open to the public, services and a conference room on the ground floor. The tactile language that will be used is the LOGES-VET-EVOLUTION (LVE) and is created by inserting special tiles into the flooring, the different types of which can be easily felt under the feet and with the white stick.

• Quality of the working environment (systems to improve the quality of acoustics), healthiness of the indoor air and respect for the microclimatic conditions of the site

• Energy saving (photovoltaic system on the roof slab)

• Ease of maintenance and durability of the materials.

The sizing of the building was carried out using the parameter sqm/employee

Total area of intervention: 3,675 m2

Premises: 1.246 m2

Covered area (SC): 985,20 m2

Permeable surface (SP): 1,847.55 m2

Total area (ST): 4,628.92 m

The new building is spread over four floors above ground and a basement for the garage and technical rooms.

On the ground floor, in addition to the archive and the wellness area, there is a conference room. The first and second floors are used as offices and guest quarters. The third floor is dedicated to the manager's apartment. The building is characterized by a central courtyard covered and lit from above with natural light.

The functional layouts, the distribution characteristics and the orientation of the envelope have been designed to improve the energy and functional performance of the building by reducing the consumption of resources and the emission of pollutants. Through:

- controlled mechanical ventilation system with heat recovery;
- primary air diffusion in the room, domestic hot water production systems;
- the draining outdoor pavement plays with the perimeter hedge made of *Teucrium fruticans* and *Phyllirea angustifolia*, an important role in surface water management. The hedge and the portion of lawn that follows the ramp are irrigated with rainwater.

Fig. 2. Sustainability and innovation in the DIA building: architectural and environmental criteria for a modern headquarters. Source: by C. Fazia

Different case is the Former USAF military base. Left to total abandonment, it quickly became a receptacle for trash and debris, as well as an environmental threat due to the massive presence of eternit and rock wool. In the years to follow it has been looted of its still usable removable parts (electrical panels, motors, French doors, sanitary…) [5]. The location is Mount Nardello. We are about 1,750 m above sea level in the territory of the municipality of Roccaforte del Greco. It lies close to Montalto, on a ridge overlooking the Ionian and Tyrrhenian seas, making one grasp the measure of a strategic geographical location. The project that came into being following the 1965 settlement of Americans in Aspromonte, which was never fully realized, is called Aspromont Horizon. It is the name of the study that, since the late 1950s, the United States has been processing, with bases in Catania and Trapani, as a strategic crossroads in the area of sensitive data collection and processing. Abandoned in the late 1980s, it was officially decommissioned in 1993 and transferred to the Italian Ministry of Defense, falling into a total state of disrepair [6]. The base was reactivated on May 10, 2023 for some military exercises, the Municipality



Fig.3. Aerial photo of the metal cisterns in Santa Caterina, Reggio Calabria. Source: https://www.citynow.it/reggio-e-le-antiche-cisterne-nascoste-uniche-sopravvissute-alle-bombe-del-1943/

of Roccaforte, by resolution of the Regional Council of Calabria, acquires the entire territorial jurisdiction over the former military base of Monte Nardello in 2019; the former military facility fell almost entirely within the Municipality of Roccaforte del Greco, with the exception of 200 m^2 (the entrance to the former radio station) falling within the Municipality of Reggio Calabria. With the administrative aspects clarified, the conditions can be created to boost redevelopment and enhancement projects for the area.

The Monte Cimone Barracks in Banne is located in a predominantly agricultural area, is connected with provincial roads that connect the capital with the Fernetti-Sesana pass, where there is an interport, an infrastructure dedicated to intermodal logistics. Its location is strategic, for the Adriatic and the Mediterranean. It is in close proximity to a connecting hub for freight traffic between Central and Eastern European markets and the Mediterranean basin. A few kilometers away is the Area Science Park, which operates the Trieste Multi-Sector Science and Technology Park. The complex has 28 main buildings, 5 of which have been declared of cultural interest, as well as a number of small accessory buildings with their appurtenant areas covering an area of more than 17 hectares (Fig. 4).

Despite the many solicitations and ideas, including those initiated by local administrators, for the environmental rehabilitation and social use of the area of the former Monte Cimone Barracks in Banne (formerly the Bidischini-Burgstaller Estate) and recovery for use by the community, the reuse of the largest of the abandoned sites in the territory of Trieste is quite complex. The State Property Agency has been trying to manage the decommissioned military assets, with the aim of triggering multi-level urban regeneration and redevelopment processes [7] through a coordinated system of interventions and partnerships. But even the mere enhancement of an important part of the public heritage, with benefits from public use at least in its forested part, becomes quite complex. The possibility of accessing the funding opportunities of the regional programming of



Fig.4. Banne barracks, source: Journey to the dilapidated former barracks of Banne, candidate to become a CPR PHOTOS - Il Piccolo (gelocal.it)

the European Structural and Investment Funds 2021 - 2027 remains open. The European Regional Development Fund 2021 - 2027 (ERDF ROP 2021–2027), which provides funding for "territorial regeneration projects" for the "enhancement of some of the region's iconic places," is an opportunity to be seized. To this end, many administrators urge "territorial regeneration interventions" that can activate local resources by involving communities. The Mardichi area [7], also known as the former Artillery Barracks, is an architectural complex of great historical importance to the city of La Spezia. In the past, it housed the headquarters of the Army Cavalry and later the Navy Artillery. This area had a defensive function of the arsenal and represented a true independent citadel capable of resisting even a siege [8].

The State Property Agency has commissioned a detailed survey campaign to assess both the seismic vulnerability of the existing buildings and the presence of polluting materials in the complex. In the meantime, a fruitful collaboration has been initiated with the Superintendency to strike a balance between conservation and innovation. The project involves the rehabilitation and restoration of three out of four buildings. The central building, which has undergone several alterations over time, including as a result of bombing, will be demolished and rebuilt to house the new offices of the Internal Revenue Service, while the other two buildings will be consolidated and house ancillary functions such as archives and a conference room. Special attention has been paid to the ruined building, which once consolidated will be enhanced as a historical memory within a public park open to citizens. A new wooden floor will be built in the center of this attractive space, which will allow for the holding of events, concerts, and demonstrations, as happened sporadically in the past on the premises of the Barracks. In this way, an urban area that is currently abandoned and has been the subject of occupations will be redeveloped, returning to the citizenry, which has publicly requested it several times, a venue for an important institution and a park usable for all.

The project, following the practice of the Agenzia del Demanio (D.R. Liguria) will be carried out in accordance with Leed sustainability protocols, and the offices will be designed with advanced structures adapted to recent innovations in SmartOffice. The former seaport with the Nervi warehouses and the former ammunition depot at Via

Dante Alighieri, Marsala (Trapani), disused since the end of World War II, its facilities are still military area owned by the Italian Air Force, sporadically the facility is used for amphibious military aircraft. Regarding the former ammunition depot on Via D. Alighieri, it would appear that the area was reclaimed several years ago and secured with a metal boundary placed around the perimeter. The area is in a state of neglect.

There have been attempts at reclamation, which have remained unimplemented. An agreement had been made with the Ministry of Defense according to which, the area of the Nervi hangars could be acquired free of charge by the City of Marsala, if it undertook to change the use of the area of the former ammunition depot, up to the Marsala ring road. The area would have remained at the disposal of the Defense, but with a new zoning destination; the former military seaport in contrada Giunchi, on the other hand, would have been ceded free of charge to the same administration. For the Former Military Hospital, located in Corso Calatafimi in Palermo, urban redevelopment works were started in November 2020 that will lead to the refunctionalization and restoration of the former military hospital, now abandoned for about 18 years, within the Michele Ferrara barracks in Corso Calatafimi. The former military facility will be repurposed as a new Carabinieri Headquarters Hub where a few departments and warehouses that are now located in different locations will also find space. The work, worth 7.2 million euros, was financed by the State Property Agency and the Region of Sicily.

3 Significant Materials and Methods of the Case Studies. Decommissioned Military Infrastructures in Spain: Ideas and Projects for Their Redevelopment

3.1 La Real Fábrica De Armas De Orbaizeta (Navarra, Spain) as an Engine for Local Revitalization

As a result of numerous international geographic and governmental changes following triggering events that have led to shifting economic, social, and political interests many facilities and infrastructures intended for military functions have become obsolete or even unsuccessful.

The European scenario is dotted with so called “Military Voids,” some more recent others older [9]. An example would be the former “Real Fábrica de Armas y Municiones de Orbaizeta”. Its history and nature give it a double role in its categorization.

In fact, this structure can be counted not only as a “military vacuum,” but also as a splendid example of industrial archaeology. Its history begins in the 18th century located in the valley of Aezkoa, 5 km from the border with France, in the heart of the Pyrenees. The ruins of the former arms factory are a reminder that hidden in the Irati forest was born the main military-industrial center of Northern Spain. Its strategic location gave it easy access to excellent raw materials (iron, water, and wood), making it a very productive establishment, but its proximity to the border with France also made it an attractive place for fires, looting and raids. The development of this complex is divided into two main phases: the first running from 1785–1789 and the second from 1789–1794. This era was marked by many vicissitudes such as the wars against France and the Carlist Wars, which is why the Royal Arms Factory arose; its purpose was to supply the army with arms and

ammunition. The factory suffered numerous attacks during the wars, the various fires and raids caused it to be abandoned in 1884. The factory was an important industrial center during the 18th century. It employed more than 2,000 workers and produced a wide range of weapons, including pistols, rifles, cannons and grenades. Today, the factory ruins are an important historical monument.

They are considered a testament to the importance of the industry in Navarre's history. Archaeological excavations conducted in the Royal Arms Factory of Orbaizeta have revealed important information about the history and operation of the factory. The complex boasts some rather innovative techniques such as, for example, the underground channels that carried water from the dam to the machinery [10]. With its 100 years of operation marked by multiple vicissitudes, the facility played a key role in supplying the army during numerous war campaigns, the fascinating structures that remain today are an indelible sign and memory of the history of the place. Although the industrial complex has been classified as an asset of cultural interest, its state of neglect, caused by the inactivity of the infrastructure dedicated to industrial production, placed it among the architectures at risk. The economic recession resulting from the abandonment of industries characteristic of the area under consideration and the increase in urbanization have prompted the consideration of abandoned industrial and military heritage as a tool for the revival and revitalization of the area. For this reason, The Royal Orbaizeta Ammunition Factory has been considered an excellent engine for the revitalization of the local economy [11]. The complex and the surrounding areas have always been a source of interest for scholars and archaeologists; in fact, numerous archaeological campaigns were carried out in the late 1980s and early 1990s. The curiosity and involvement that arose over time for this place meant that funds were allocated for its revival. The redevelopment project sees the factory as the centerpiece for a broader process of reactivation of the entire area that focuses on a new economic viability and a more sustainable vision of the management of the place. The project integrates visitor accommodations while fully respecting the original architecture. Between 2018 and 2020, work was promoted on the reconstruction of the building that housed the furnace, considered the "heart" of the large industrial/military complex. This has promoted not only free visitor access to the facilities, but also other cascading interventions related to the reactivation of dormant structures. One such initiative is the visitor reception center called "Kultur Ola" opened in 2023. The old weapons factory building has been reopened and renamed "Aezkoako Kultur Ola," this cultural project at the entrance to the Irati Forest represents an exhibition space that showcases the historical and cultural heritage of the place and its community. The creation of this new association space not only allows a site of historical interest to be reopened to the public, but also provides an opportunity to share the heritage with the local community and visitors, further enriching an already intrinsically valuable place.

The Royal Munitions Factory in Orbaizeta is renewed, becoming an attractive tourist destination and, above all, an engine for the revitalization of the local economy, demonstrating how abandoned industrial and military heritage, if properly enhanced, can be a catalyst for the rebirth of an area (Table 1).

Table 1. Analysis of the framework of the case study "Real Fábrica De Armas De Orbaizeta" (Navarra, Spain).

Region:	Navarra
City:	Orbaizeta
Name:	Real Fábrica de Armas de Orbaizeta
Initial destination:	The area was created for military and industrial purposes. It played a key role in supplying the Spanish army with weapons and ammunition during periods of war, such as the wars against France and the Carlist wars
Age of construction:	Built by order of Charles III of Spain in 1784, it remained operational until 1884
Dimensions (range): < 1000 mq > 1001 e < 10.000 > 10.001 mq	< 10.000
Relationship with the urbanised context: Interior Exterior near urban areas Exterior in suburban areas	The area of the former Orbaizeta weapons factory is located far from urban centres, within the Irati forest its proximity to the French border favoured sieges and raids
State of disuse: Abandoned Underused	Despite its status as a cultural asset, the complex has long been regarded as a structure at risk due to its state of neglect
Conversion implemented or in progress:	The redevelopment project, which saw the reconstruction of the bakery building and the opening of "Aezkoako Kultur Ola" in 2023, represents a significant breakthrough
Mixite with prevalence of:	The new association/reception space not only allows the site to reopen to the public, but also promotes the sharing of heritage with the community and visitors, contributing to local economic revitalisation
Monofunctional:	No
Environmental criticalities and vulnerabilities of the study area and context:	Increased tourism in the area in question could compromise the ecological value of the nearby Irati Forest, endangering biodiversity and the integrity of the natural habitat
Contaminated site:	No

(*continued*)

Table 1. (*continued*)

Widespread urban decay:	No
Management complexity:	An increase in tourism in the area requires careful management to preserve the ecosystem. The design and management of roads, tourist facilities and other infrastructure must be oriented towards sustainability in order to prevent harmful impacts on the forest and surrounding natural areas

3.2 Regeneration Process of the Case Study of the Disused Military Area of Gefate (Madrid, Spain)

The decommissioned military area of Getafe, located in the autonomous community of Madrid, is a significant example of the regeneration of a former military area. This air base, which was once of strategic importance to the Spanish Air Force, was decommissioned in 1996, leaving a disused and unused area [12]. The decision to regenerate the Getafe military area was motivated by several factors. First, the decommissioning of the air base left a void in the local community in terms of employment and economic development. In addition, the decommissioned area was an environmental problem, with the need to address decontamination and redevelopment of the land. Finally, the regeneration of the area was seen as an opportunity to promote sustainable development and improve the quality of life for the local community [13]. The regeneration process of the Getafe military area was guided by a forward-looking vision that embraced innovative strategies for the transformation of the area. The process was divided into several phases, including decontamination, denaturalization/environmental rebalancing, and refunctionalization [14].

The first phase of the regeneration process was decontamination of the area. Extensive investigations were conducted to identify and manage the presence of residual toxic materials and substances from past military activities. Measures were taken to clean up and dispose of contaminated materials in accordance with current environmental regulations. This phase was critical to ensure that the area was safe for reuse.

The second phase of the regeneration process focused on denaturalization and environmental rebalancing of the area. Actions were implemented to restore biodiversity and ecological balance, such as creating green areas, reintroducing native plant species, and promoting habitats for local wildlife. Sustainable management systems for water resources and green areas have been adopted, thus contributing to improving the environmental quality of the area. Subsequently, the focus was on the refunctionalization of the area. Strategies were developed to redevelop existing facilities and create new spaces for different purposes. The Getafe military area was transformed into a multipurpose center, housing not only residential, commercial, and recreational activities, but also spaces for education and research. Pedestrian and bicycle paths have been created to promote sustainable mobility within the regenerated area.

This regeneration has had a significant impact on the local community and the surrounding environment. The area has become a hub for sustainable development and quality of life, contributing to job creation and promoting environmental sustainability. In addition, this regeneration has transformed the area into a meeting and exchange place for the local community, improving social cohesion and quality of life [15].

The case study of the Getafe military area provides several lessons learned and best practices for the regeneration of disused military areas. First, it is crucial to have a forward looking and integrated vision that considers economic, social, and environmental aspects. In addition, collaboration between public, private, and local community entities is essential to the success of the regeneration process. Finally, environmental sustainability and the promotion of quality of life must be at the heart of regeneration strategies (Table 2) (Fig. 5).

Table 2. Analysis of the case study of the former Getafe air base (Madrid, Spain).

Region:	Madrid
City:	Getafe
Name:	Ex military area of Getafe
Initial destination:	The area was originally intended for military purposes, used as an airbase and training centre for the armed forces
Age of construction:	1950s–1960s
Dimensions (range): < 1000 mq > 1001 e < 10.000 > 10.001 mq	> 1001 e < 10.000
Relationship with the urbanised context: Interior Exterior near urban areas Exterior in suburban areas	Southern suburbs of Madrid. The military area of Getafe is located within the urban context of Getafe, a city on the southern outskirts of Madrid
State of disuse: Abandoned Underused	Abandoned. The military area of Getafe was decommissioned by the Spanish armed forces
Conversion implemented or in progress:	Undergoing reconversion to be reused for civil purposes
Mixite with prevalence of:	Creating a functional and dynamic urban space offering services and opportunities for the local community
Monofunctional:	No
Environmental criticalities and vulnerabilities of the study area and context:	No environmental criticalities or vulnerabilities of the Getafe military area or its surroundings are specified

(*continued*)

Table 2. (*continued*)

Contaminated site:	No
Widespread urban decay:	Urban decay following its decommissioning, lack of maintenance and transition from military to civil use
Management complexity:	The management of the former military area of Getafe can be complex due to the size and characteristics of the area. It requires careful planning and management to ensure optimal use of the area and maximise benefits for the local community

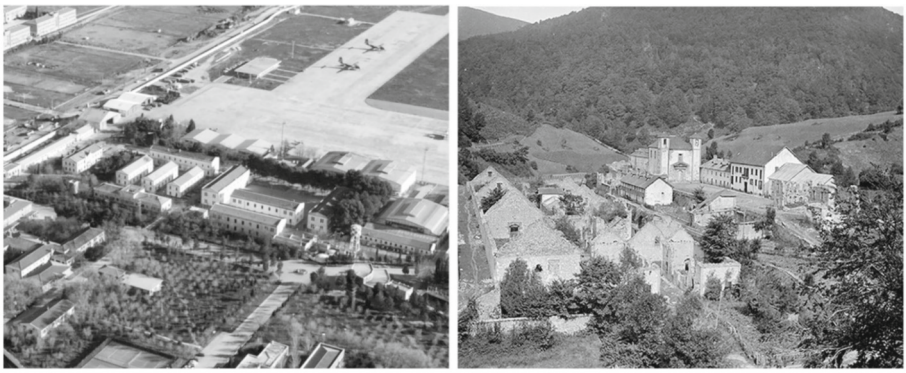

Fig. 5. Left image: Aerial view of the former military area of Getafe, Spain. Source: https://ejercitodelaire.dfensa.gob.es/EA/centenariobasesaereas/getafe/multimedia.html. Right image: Aerial view of the "Real Fábrica De Armas De Orbaizeta", Spain. Source: https://nabarralde.eus/la-real-fabrica-de-municiones-de-orbaizeta/

4 Conclusions

4.1 Strategies and Opportunities for the Sustainable Redevelopment of Disused Military Sites[2]

The issue of rehabilitating brownfield sites, considered as fragments that make up the urban fabric, has been the subject of extensive debate in the urban planning field until the late 1990s. However, with the process of "de-demanization" of military sites, attention

[2] Research carried out as part of the activities of the "SS_Consumption Convention. Stop soil consumption: between reuse and regeneration" coordinated by Celestina Fazia as Scientific Responsible and Coordinator of the activities related to urban, territorial and landscape planning in relation to soil consumption, urban strategies for reuse and regeneration of land, also with reference to case studies of international level. Members of the research group are: Giulia F.G. Catania, Federica Sortino.

has also shifted to provincial realities, where military voids appear as real "micro-cities". Reclaiming these areas requires innovation and sustainability, as it often means doubling the space available to local communities, changing the balance and dynamics existents [16]. As of today, for example, the Banne site is disused, the large size of the areas and parts of which it is composed make initiatives and proposals for the recovery and enhancement of the entire area particularly challenging in terms of economic feasibility. In this context, Sara Carciotti's (2021) article [17, 18] proposes new networked governance tools that activate urban regeneration as a key lever to counter land degradation and promote a social and economic project that includes different settlement, environmental, landscape, institutional and participatory dimensions. The strategic location of the area, at the center of a territorial system (Italy-Slovenia-Austria-Croatia) favorable to the union of different cultures, represents an opportunity for experimentation to be included in Friuli-Venezia Giulia's regional plan for the use of European funds 2021–2027, which provides for the funding of territorial regeneration projects proposed by municipalities. The adoption of the network paradigm and the collaborative approach among different stakeholders are key to addressing the complexity and dynamism of a problem such as the redevelopment of a portion of a city. It is important to consider the entire territorial network and involve all stakeholders.

The proposal is based on viewing the city as a complex system involving economic, social, environmental, spatial and architectural aspects. It also promotes open networks for experimentation and innovation, taking into account possible external shocks. It is essential to involve local people, who have historical knowledge and contemporary needs related to the area in question, as well as urban planning at different levels. This involvement makes it possible to create an integrated plan that overcomes the divisions and walls that have demarcated the area over the years. The goal is to create new connections and foster collaboration among all stakeholders in order to achieve a sustainable and inclusive redevelopment of the former Banne Barracks. For the former Mardichi Barracks. La Spezia, the collaboration with the Superintendence for balancing conservation and innovation is an important step to ensure respect for the historical and architectural heritage. The rehabilitation and restoration of three buildings within the complex, along with the demolition and reconstruction of the central building to house the new offices of the Internal Revenue Service, will help breathe new life into this urban area. The creation of a public park open to citizens, with new wooden flooring for events and demonstrations, will help revitalize the area and make it usable for all.

The project will be in line with sustainability protocols such as LEED or similar, which focus on energy efficiency and the use of sustainable materials. The BIM approach will ensure efficient management of all phases of the project. In addition, the focus on office adaptability to current trends such as the smart office is very relevant as well as innovative, especially considering the needs that may emerge in the post-pandemic era. In the former maritime port of Trapani, the projects hypothesized for the recovery of the area are various: from the possibility of transforming it into a school or a sports citadel, to the possibility of converting it, changing its intended use, to create hotel facilities for new employment outlets, but also the proposal to build a scientific pole.

There are many interesting proposals and solutions[3] [19], but the complexity of the site, related to environmental dimensions, urban planning issues and the cost of the intervention, does not encourage the implementation of even partial regeneration projects.

The redevelopment of military spaces can be a contribution to the "overall redevelopment of the neighborhood and a sign of the important results that are achieved through collaboration between institutions," as in the case of the former Palermo hospital. It will be an opportunity to redevelop the Corso Calatafimi area (which has widespread urban decay and numerous abandoned artifacts that significantly reduce expectations for development and social growth) and to raise service delivery levels for the benefit of the entire community. The analysis of the reactivation of the Industrial/Military Heritage of the Royal Orbaitzeta Arms and Ammunition Factory allows us to understand how redevelopment interventions in these areas operate on two levels: a physical one and a theoretical one. There is a fruitful interpenetration between the ability to create productive landscapes within cultural environments capable of bringing the architectural identity of the specific place into dialogue with the broader sphere of historical and cultural heritage, allowing for an investment that is not only commercially profitable, but also socially rewarding. The case study of the Getafe military area provides several lessons learned and best practices for the regeneration of disused military areas. First, it is essential to have a comprehensive vision that considers economic, social and environmental aspects. In addition, collaboration between public, private, and local community entities is essential to the success of the regeneration process. Finally, environmental sustainability and the promotion of quality of life must be at the center of regeneration strategies.

Several issues related to the costs/investments for transition contribute to the "redesign" by obtaining as a result indicator the achievement of 5 objectives:

- overcoming the territorial and social gap;
- job creation;
- the multi-temporal and multi-spatial strategy (strategy of tangible and intangible networks);
- the use of operational tools for urban, territorial and social regeneration;
- the promotion of policies for proximity.

These aim to modify urban development so that services are accessible in less than 15 min (Carlos Moreno), It will be necessary to introduce, at the urban scale, criteria for

[3] Andrea Rizzardini's Twin Hangar project proposes: Coastal Cultural Park. The park takes advantage of the landscape and environmental heritage to enhance the area's territory consisting of the typical landscapes of the coastal area washed by the Stagnone lagoon, salt marshes, and typical Mediterranean scrub. Sports and educational activities. The structures of the former seaplane base will be partly demolished and partly restored; the Nervi hangars, like a monument, will be the relics of modern architecture, housing new functions. Connections - The landings at the new cultural sports center mean that the area can be reached by: car; bus; rail (the passage of the Palermo-Mazara del Vallo railroad next to the former seaplane base makes it possible to insert a stop, paying close attention to the connection with Trapani, from which it is possible to embark for the Egadi Islands, Africa or Sardinia).

the preservation of the natural structure of places, vegetation patterns, the surface hydrographic system and its ecological structures and ecosystem services. In order to strike a good balance between sustainable development and the abatement of land consumption, we need to abandon the expansionist policies and strategies that guided 20th century planning and redirect our interest to the abandoned areas of the city. The repurposing of "urban voids", such as disused military areas, can ensure multiple benefits in this regard. We need to consider disused military assets as a system composed of variable-geometry citizenship networks, knowledge networks, ecological and environmental networks, cultural heritage, tourism offerings, and infrastructure systems.

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