Sustainable Rural Landscapes of the Late 20th Century: The Italian Land Reform Villages in Basilicata Between Rediscovery and the Valorisation of Inner Areas

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Abstract. The recognition of the historical and testimonial value of land reform settlements in Basilicata plays a crucial role today in envisioning potential strategies for the regeneration and functional reinvention of internal agricultural territories. This contribution aims to reinterpret several emblematic cases located in the mid-valley of the Bradano River in Basilicata region, areas characterized by long-standing abandonment and, more recently, by a renewed interest in sustainable development. The study adopts a multiscale methodological approach, spanning from district-level planning to architectural and settlement analysis. Investigating the existing built heritage serves as the foundation for outlining strategies of protection, recovery, and reuse in line with principles of environmental sustainability and in harmony with the original agricultural vocation of both the villages and the surrounding rural landscape. The systematic documentation of these modern-era agricultural settlements has been explored experimentally through the integration of ICT (Information and Communication Technology) tools and methods. Selected case studies include Santa Maria d'Irsi, Taccone, and La Martella are all located in the province of Matera. From on-site surveys to the creation of interoperable databases and digital models, the research investigates these rural colonization projects, assessing their current state of preservation and use. Based on these findings, the article proposes a set of actionable strategies aimed at urban and architectural regeneration, aligned with current territorial cohesion policies and the broader objective of revitalizing inner areas.

Keywords: Modern Rural Heritage · Environmental Sustainability · ICT · Inner areas · Territorial Cohesion

1 Introduction. Rethinking Modern Agricultural Landscapes within the Framework of the National Strategy for Inner Areas (NSIA)

Almost seventy years after their establishment, the settlement and production systems created through the 20th-century land reform processes in Italy call for a critical re-evaluation. These areas, often the result of large-scale planning interventions carried out

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between the First and Second World Wars, especially in Southern Italy and the islands, constitute fully anthropized landscapes, distinct from premodern rural configurations. As artificial contexts of new foundation, they embody both the physical and intangible legacies of national policies of colonization and local development, aimed at reshaping agrarian economies and stabilizing rural populations.

Over time, these landscapes have experienced significant transformations, often shifting in meaning and function depending on their continued reuse or abandonment by the local communities. What were once proposed as cohesive rural systems are territorial landscapes that have fallen into marginality. However, their strategic position within national and regional planning frameworks suggests new opportunities for reactivation, particularly in terms of recovering their original agricultural vocation and re-establishing their relevance in contemporary territorial dynamics. In this regard, the National Strategy for Inner Areas (NSIA) offers an opportunity through which to interpret and potentially revitalize these territories. Developed as part of Italy's spatial Cohesion policy and aligned with broader European directives, e.g. the EU Long-Term Vision for Rural Areas (2040) and the Rural Action Plan, NSIA promotes a place-based, integrated approach to development. It explicitly targets internal areas that are distant from essential services, and where demographic and economic decline threaten long-term sustainability [1].

Moreover, the recently introduced National Strategic Plan for Inner Areas (NPIA), as defined by Article 7 of Law Decree 124/2023, reinforces this vision by proposing a unified and coherent framework for coordinating interventions across 128 selected areas (72 from the 2014–2020 programming cycle and 56 new areas for 2021–2027). The objectives are clearly stated in this document: the need to simplify governance, strengthen local administrative capacities, and ensure the efficient use of national and European resources. The main results of the participatory process behind the drafting of the NPIA further informed policymakers' pressing demands for digitization, streamlining of procedures, and targeted investments in essential services and economic revitalization. According to this policy architecture, the modern agricultural landscapes of the 20th century can be reinterpreted not as residual territories, but as strategic territorial assets. Their potential reactivation, especially through sustainable agriculture practices, cultural heritage valorization, aligns closely with the objectives of NSIA and the renovating regional planning tools, such as the forthcoming Landscape Plan of the Basilicata Region [2]. These landscapes thus offer promising ground-both literally and figuratively-for experimenting with new models of rural development, rooted in memory but oriented toward the future resilience of territories often over-exploited for agricultural purposes.

2 The Reference Framework: The Land Reform of Rural Landscapes in Italy (1950)

The land reform of rural landscapes in Italy in the mid-20th century marks one of the most significant periods in reshaping and repopulating agricultural areas particularly in southern Italy. This transformation was driven by a series of laws and initiatives still influencing the current Italian rural land tenure system. The introduction of the three major land reform laws (the "Stralcio Law" No. 841, the "Sila Law," and the "Sicilian Region Law" of 1950), the establishment of the Cassa per il Mezzogiorno by Law

No. 646 of 1950, and the initiatives led by UNRRA-Casas with funding from the U.S. Marshall Plan (1947–1962) [3] was a critical part of this process. Before these reforms, large areas of underpopulated agricultural land, mainly characterized by the latifundia system, underwent extensive infrastructural transformations. These phenomena became significant only after World War II and the aim was twofold: first to repopulate rural areas in need of housing and the second aspect was to reorganize the agricultural land to address socio-economic development in rural areas. Numerous projects were initiated in eight major land Reclamation districts, covering almost 500,000 hectares by 1965, with land parcels allocated between 10–15 hectares for the large holdings and 0.5 e hectares for small holdings. During this period, more than 50,000 farming families were resettled, and over 40,000 rural buildings, including homes and agricultural facilities, were constructed. The main concern was what kind of settlement patterns to adopt to the transformation of the land, and the major contributors at the national level were Mario Bandini, Nallo Mazzocchi Alemanni and Manlio Rossi Doria. On one hand, a dispersed settlement model was proposed, with farmhouses located on plots with basic service centres situated a few kilometres away to optimize agricultural productivity. On the other hand, an integrated settlement model, favoured by urban planners' perspectives, involved residential centres with assembly buildings located within a 3.5 to 5 km radius to accommodate rural communities. A third, hybrid model, known as 'semi-dispersed,' combined elements of both, with farm buildings clustered at intersections of rural roads.

The Land Reform Authority was particularly active in Puglia, Basilicata, and Molise, counting the creation of more than 60 new centres, see Fig. 1. These settlements varied in type, with 20 residential villages, 30 service centres, and many semi-residential or

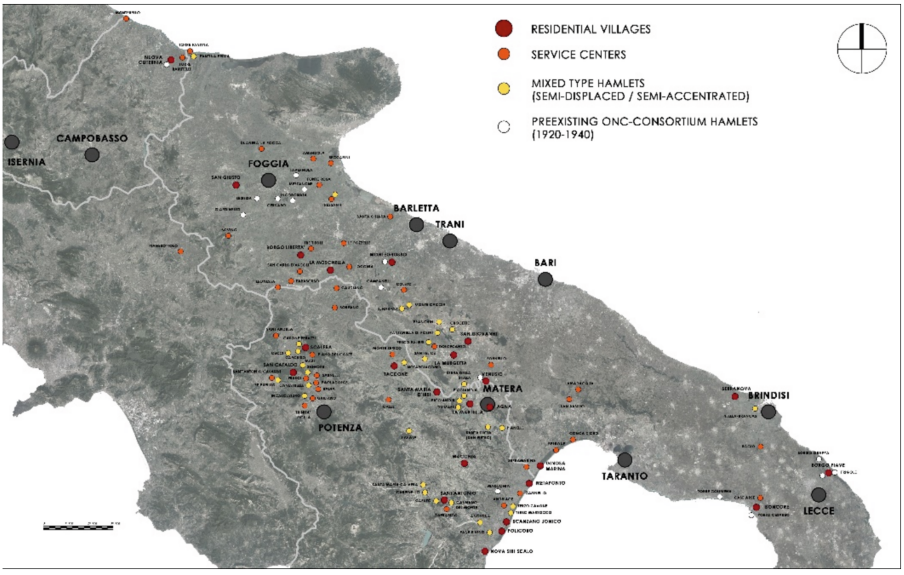

Fig. 1. Mapping of major residential, service, semi-displaced, and preexisting hamlets (made by ONC and consortium) in the reform area of Apulia, Lucania, and Molise. Source: authors' elaboration, 2023.

semi-dispersed units. Moreover, key essential infrastructure facilities including irrigation and road networks, were developed alongside the construction of nearly 20,000 farm buildings.

3 Study Area: The Middle Bradano Valley in Basilicata

The focus of this study is the Media Valley of Bradano in Basilicata, an area of nearly 110,000 hectares, that has experienced considerable land reform efforts. A comprehensive land and population settlement plan, developed by Mazzocchi Alemanni and Enzo Calia between 1948 and 1955, was inspired by the American Tennessee Valley Authority model [4]. Like the relocation of the Sassi of Matera, the project aimed to provide new settlements in rural areas that had previously been uninhabitable. Several prominent architects, including Ludovico Quaroni, Michele Valori, and Luigi Piccinato, contributed to the design of about thirty new rural settlements, though some were never completed due to the early failure of the reform initiative. Notable completed settlements include Santa Maria d'Irsi (1948), La Martella (1951), Taccone (1952), Venusio (1954), Picciano (1957), and Serramarina (1955).

Among the different case studies, two small rural settlements with historical and cultural value were identified in this area. These examples come from different academic research projects, carried out in different time periods and with different approaches. Each project focused on studying historical documents, surveying the existing buildings and settlements, and developing ideas for their sustainable restoration and reuse, respecting their original agricultural purpose. Among these, the case studies of Santa Maria d'Irsi (1948), Taccone (1952), and La Martella (1951) in the province of Matera provide useful case studies into the rural settlement and architectural legacy of the land reform. These examples are the subject of a deep academic research on archival sources, on-site surveying the existing settlement and scattered heritage, to explore possibilities for sustainable rehabilitation and reuse while maintaining their original function.

Santa Maria d'Irsi, designed by Mazzocchi Alemanni and Calia, was the first settlement in the Irsina area. It featured row housing for farming families and a central civic centre with communal facilities. Although the settlement was quickly abandoned due to the collapse of the reform, parts of it were later restored and used as a recovery community for drug addicts between 2007 and 2013 [5].

The Taccone settlement was the second case study. It was designed by Plinio Marconi in 1952 and constructed the following year between Irsina and Genzano di Lucania. Initially, only a few service buildings, the social centre and a church, were built near the Calabro-Lucana railway station, and the original plan included 480 agricultural units, each of nearly 7 hectares. In addition to basic civic facilities (such as a cinema, a clinic, a school, and housing for artisans), the project also included a colonization centre and around thirty two-family houses, each with a single floor, various sizes, and agricultural outbuildings behind them for individual gardens. The uniqueness of this village lay in its layout, which integrated the rural landscape with the new agricultural buildings. However, like other settlements from the land reform, the Taccone settlement quickly faced severe abandonment due to the failure of the land transformation and rural colonization project. Since the late 1980s, several plans have been proposed to revitalize

the village, but none of these have been implemented. The only change in this area has been the construction of an agro-industrial plant next to the original buildings in more recent years.

Finally, the La Martella settlement is the first agricultural village established by UNRRA-CASAS in collaboration with the Land Reform Authority, following the evacuation of the Sassi of Matera. After an initial proposal by architect Ettore Stella, the project was committed to a group of Roman architects led by Quaroni and Gorio, including Valori, Luigi Agati, and Piero Maria Lugli. The project represents an important attempt to reshape traditional neighbourhood units using a simple. It responded to the needs of the farming community that had relocated there, following an interdisciplinary approach inspired by post-war Anglo-Saxon planning practices [6]. Alongside residential units along neighbourhood streets, the project included a church, a civic centre, and various collective services centrally located within the settlement. However, due to strong disagreements between the two promoting organizations, the settlement was left incomplete and partially abandoned within a few years of its construction. Although some expansions occurred in the 1990s, and there have been efforts to recover collective facilities and public spaces, many of the residential and service buildings have been altered from their original design, despite retaining their neighbourhood character (Fig. 2).

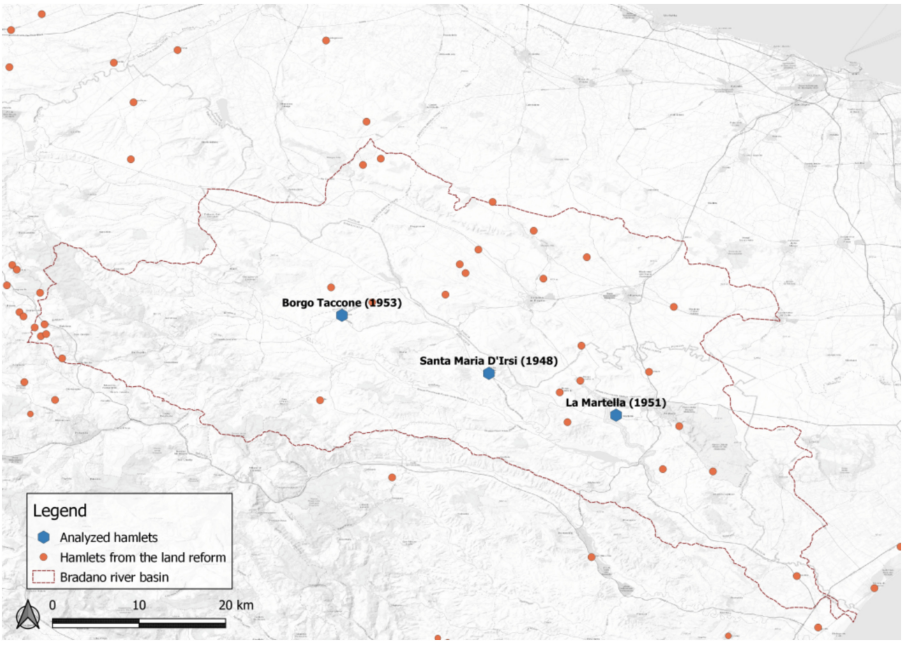

Fig. 2. Map of the Middle Bradano Valley showing the main existing hamlets. The map distinguishes between hamlets analyzed in the study and those established through the land reform.

4 Current Usage and Different State of Conservation

Looking beyond the three case studies analyzed, many of the rural villages were gradually abandoned just a few years after their construction, mainly due to the early failure of the hoped-for land transformation process in Southern Italy. The unfinished outcome of this colonization effort both in terms of infrastructure facilities, collective services, and agricultural plots, could be attributed to several factors. Firstly, incompatibilities quickly arose between the Land Reform Authority and other organizations involved in the process (including UNRRA-CASAS and the Cassa per il Mezzogiorno) of planning territorial transformations and shaping the new villages, particularly regarding different idea on settlement models (centralized vs. dispersed). Secondly, delays in providing collective services and redistributing agricultural plots, often too small (even below 1 hectare in some cases), led to the rapid depopulation of large areas in the Bradano Valley. Furthermore, a sudden wave of migration of farming families to industrial districts in the north, driven by rapid economic and construction growth in the 1950s, also contributed to this abandonment. Today, many of these settlements have evolved differently over time. In most cases, disuse and abandonment of buildings in the villages and service centres have led to their gradual deterioration, especially of the scattered farmhouses. In some specific cases, such as La Martella, unplanned expansions and alterations have resulted in the loss of the original urban and architectural characteristics of the village.

Specifically, in Taccone, nearly all buildings, both public and service-related, are abandoned, except for a few farmhouses near the centre. In contrast, Santa Maria d'Irsi presents a different situation, with all the row houses at the village entrance completely uninhabited and in advanced material decay. Only the civic centre at the highest point of the rural settlement has been partially restored and repurposed by a rehabilitation cooperative for drug addicts. Finally, La Martella's settlement presents a heterogeneous situation: on one hand, it has maintained much of its original layout over the decades, while on the other hand, it has undergone various transformations and expansions that have partially altered its initial urban and architectural structure (Fig. 3).



Fig. 3. Recent views of some of the original residential types for peasants in the villages of Santa Maria d'Irsi (on the left) and La Martella (on the right). Source: photos by R. Pontrandolfi, 2022.

5 The Multiscalar Process: GIS Databases and HBIM Digital Models

Given the complexity of the ongoing research topic, ranging from territorial-scale planning to the settlement level, typological aggregations, and down to individual buildings, a methodological approach that is both integrated and multiscalar has proven necessary to analyse the existing rural heritage in the selected case studies. In this regard, the combined use of digital systems such as Geographical Information Systems (GIS) and Historical/Heritage Building Information Modelling (HBIM) has played a crucial role in systematising knowledge on these examples, alongside the application of traditional techniques are the basis of the study. As the research revealed, the application of these information technologies from the field of urban and regional planning to the architectural heritage perspective proves to be challenging, especially because of the inherently multiscale nature of these building complexes, see Fig. 4. This applies both to their alphanumeric attributes and to their respective geometric models, all of which are managed through a constantly updatable database [7].

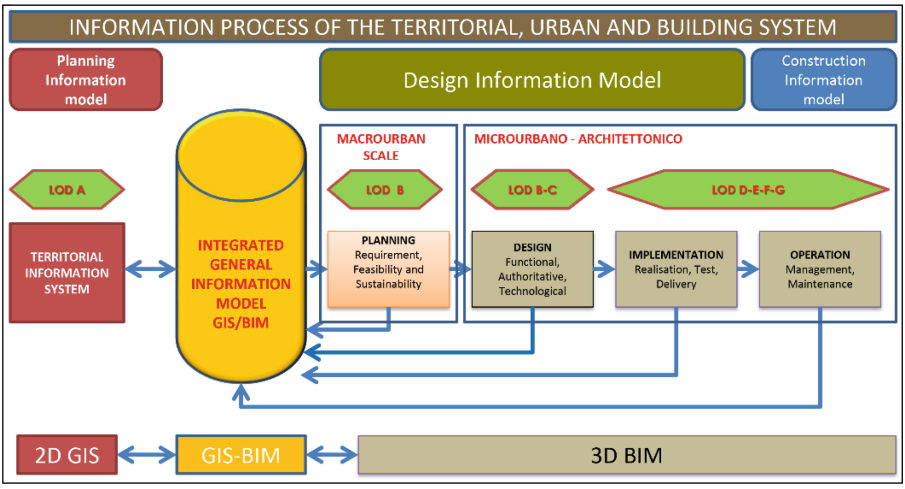

Fig. 4. Methodological scheme of multiscalar structuring of information apparatus through an integrated GIS-HBIM database. Source: R. Pontrandolfi, 2021.

Despite the evident analogies and differences in the methodologies, their use and dissemination—whether in terms of chronology, intended goals, scale of intervention, level of detail, or information development—recent sector studies have highlighted the increasingly necessary integration between GIS and HBIM, particularly with regard to historical analyses of the built heritage. From this perspective, the integrated methodology applied in the selected case studies has been decisive for understanding and analysing the existing built environment, while simultaneously verifying the alterations that have occurred over time in both urban fabrics and original structures. An initial and preliminary application within this research involved the georeferenced cataloguing of the

main types of rural settlements present in the study area. In addition to the proper identification and updating of the foundational agricultural settlements, specific attributes were assigned to each village, covering aspects such as settlement typology (residential, service-based, or hybrid), year of construction, municipality and province of location, state of conservation, degree of alteration, and current ownership (public or private). These analyses were carried out on the settlements located in the Middle Valley of the Bradano, with specific reference to the three selected case studies.

Based on previously gathered information, archival research, and field surveys on the existing heritage, the main data were subsequently processed and organised into dedicated GIS databases [8]. These tools enabled territorial- and urban-scale analyses to achieve an initial categorisation and documentation of the primary original building types, as well as their respective states of conservation and alteration, see Fig. 5. Following these initial digital elaborations, further informational layers were developed and embedded into localised models within a single interoperable BIM platform, in accordance with the national regulations in force at the time. Specifically, while in the first two case studies the analyses mainly focused on the philological study of individual public buildings, in the third case, concerning the village of La Martella, this multilayered approach was applied to selected residential and service buildings originally intended for farming families.

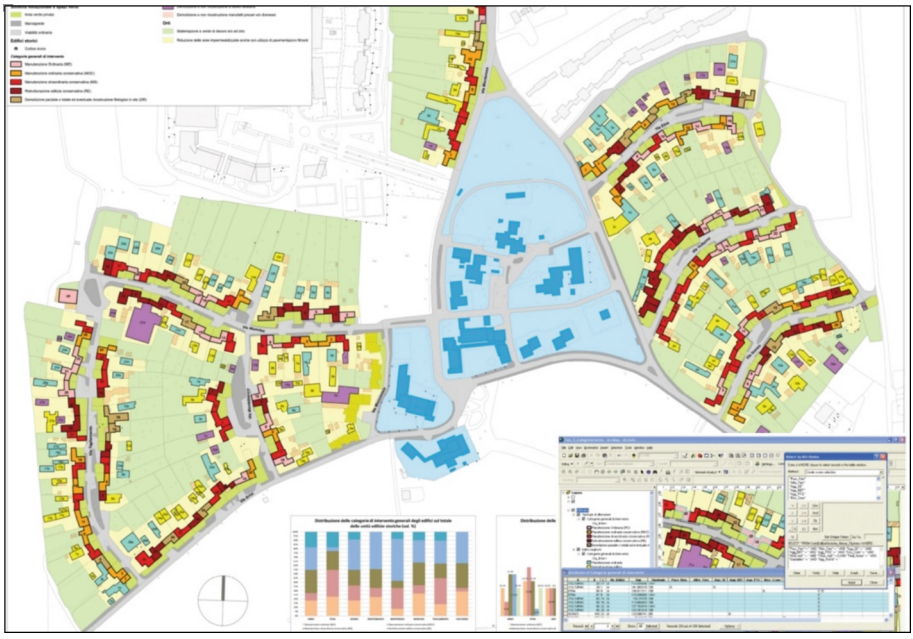

Fig. 5. Mapping the main categories of intervention underlying strategies for urban regeneration of the settlement fabric of La Martella hamlet. Source: R. Pontrandolfi, 2020.

From the territorial scale (level 0)—functioning as a georeferenced information container in which various sub-models are connected—to the settlement scale (macro-urban, level 1), specific attributes (metadata) were linked to simplified geometric "masses" modeled using a shared parameter set, useful for analyses on historical evolution and maintenance status. The third level of investigation (micro-urban, level 2) focused on neighborhood-scale building aggregates, where libraries of basic parametric objects were introduced to identify the key original typological and architectural elements. The final informational layer developed (architectural, level 3) refers to individual buildings, involving the implementation and refinement of previously introduced parametric components. This entire information management process was developed following a precise methodology of "architectural disarticulation" and "digital reconstruction" of the existing urban and architectural heritage [3] (Fig. 6).

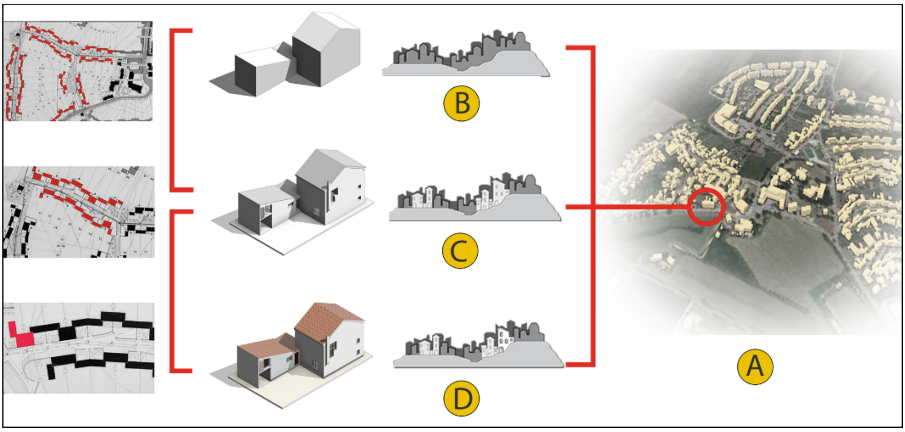

Fig. 6. Multi-scalar analysis of a residential building typology with attached barn in La Martella hamlet through digital models developed in HBIM environment. Source: R. Pontrandolfi, 2020.

6 Proposals for the Recovery, Reuse, and Completion of Existing Rural Settlements

Following the multiscalar analyses of the original heritage of the selected settlements, several proposals and intervention hypotheses were developed aimed at the recovery, regeneration, and completion of these examples of rural colonization in Basilicata. These design proposals are the result of various academic works carried out over the past few years, particularly focused on the villages of Santa Maria d'Irsi and La Martella. In the first case, the work concentrated on the recovery and functional repurposing of the original school building in the civic centre. Starting with a study on its current use and existing alterations, a restoration and reuse project was proposed that would be compatible with the original function, both in terms of layout and the technologies and architectural language used. In the second case, following an in-depth survey and analysis

of the original building types, a proposal was made for the redevelopment of the civic centre and the historic residential clusters along the streets of the village. Specifically, potential development options were envisioned for the three areas already identified in the original project by Quaroni and Gorio: in the southern area, below the church, two-level residences that follow the land's slope; in the central area, a multifunctional complex (mixing services and housing) near the civic centre; in the northern part, a production-commercial structure with urban gardens and educational farms (Fig. 7).



Fig. 7. Masterplan and views of the three project proposals planned for the La Martella suburb in Matera. Source: elaboration by R. Pontrandolfi, 2018.

7 Conclusions. Achievements and Research Prospects

In summary, this contribution aimed to highlight the importance of understanding and rediscovering some paradigmatic examples of rural settlement colonization in Basilicata, which form the basis for their possible protection through recovery and enhancement of existing heritage. Achieving these goals was mainly possible thanks to the use of methodological approaches and digital tools, through the creation of specific, holistic, and continuously updatable databases. Even though it is still experimental, the use of these information technologies allowed for the development of an integrated multiscalar workflow, creating hierarchical system structures and specific informational levels that

serve as the foundation for conducting various analyses and project proposals at different intervention scales, based on the data previously collected and processed. Additionally, the use of these methodologies and informational models in digital databases has highlighted both the potential and the challenges involved in the development and management of GIS and BIM platforms, which are still under experimentation [9]. In this regard, greater integration between the two technologies is recommended, with enhanced interoperability that would allow for better organization and management of information, thus facilitating the systematization and dissemination of knowledge about the analyzed heritage. Finally, the design hypotheses developed for some of the selected case studies have underlined the need to consider possible recovery and functional repurposing interventions on existing settlements, ensuring compatibility with their original agricultural purpose. This would allow for the implementation of actions aimed at the protection and enhancement of rural heritage, particularly in relation to environmental sustainability and valorisation of Inner Areas [10, 11].

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