RESILIENT STRATEGIES FOR MARGINAL AREAS' DEVELOPMENT
The case of Avellino smart polis

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ABSTRACT

Many European inland territories often hold important cultural and landscape resources that have not been affected by the process of globalization and that preserve intact those features of authenticity and uniqueness. This kind of resources appears particularly suitable for developing alternative forms of tourism, to strengthen the knowledge of local communities and to capture the attention of an extra-regional audience. The paper presents the case of the Irpinia territory and of the city of Avellino in the Campania region, where the ITABC of CNR has developed a research project for the realization of an innovative model of integrated heritage management as a basis for the construction of a more general strategy for marginal areas' development.

KEYWORDS

internal areas development, social cohesion, resiliency, smart polis, urban regeneration

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As sentinels of the country, the internal areas of the territory live a condition of the natural wide-scale garrison, characterized by the presence of many attractive resources. At the same time, around this wide-meshed frame of potential, there is also a hardcore of economic fragility, geological weaknesses, a tendency to the abandonment. Although the existing resources appear fragmented and disorganized, local communities' inclusiveness and place attachment can be reinforced through re-launching strategies based on the particular characteristic of the resistant identity of these areas, which can act both for the strengthening of the social cohesion and the cultural tourism development. On one hand emerges the need to develop an integrated action system, at urban and territorial scale, acting as a synergistic matrix to tackle marginalization[1], on the other appears urgent the need to identify some key themes, cultural attractors, places of social acceptance through re-launching initiatives based on local identity.

The process of exclusion and the development strategies | The evolution of globalization and the increase in urbanization that affect our social, economic, cultural lives, had emphasized the exclusion of some inland areas, no longer affected by large tourist routes, technological innovations and strategic and economic development. This process has led to the progressive quantitative and qualitative reduction of the local offer of public, private and collective services that define, in contemporary European society, the quality of citizenship. In general terms, inland areas[2] can be defined as less accessible areas, as they are far from the centers offering essential services (education, health, mobility), but they are often rich in important environmental and cultural resources and strongly diversified by nature, following of age-old human settlement processes (Fig. 1). A significant part of the inland areas has gradually undergone a process of exclusion after the Second World War, following the decline in the population, the reduction of employment and land use, a decline in the local supply of public services and of the increase in social costs for the whole country due to hydro-geological instability and the degradation of cultural and landscape heritage.

In these areas intense phenomena of population reduction below the critical threshold and demographic ageing are increasing, as well as the reduction of employment and the decrease in the use of local capital (Fig. 2). These territories, however, are also characterized by a great range of environmental resources (water resources, agricultural systems, forests, natural and human landscapes) and cultural resources (archaeological heritage, historical settlements, abbeys, small museums, craft centers), but also inland areas with a great predominant of small municipalities. Cesare De Seta has recently underlined, the dynamic value, variable in time and space, of the dimensional data of a settlement: «Tiny cities are today – to make a familiar example – Urbino and Tours. Between the fifteenth and sixteenth centuries, they were large, not in terms of geographical and demographic dimensions, but certainly, by the role they played in Europe at the time. Greatness is a dynamic value, not always constant and not easily identifiable in a uniform way over the years: sometimes the parameters to refer to are

Fig. 1 | Irpinia heritage, an exemplum in Conza della Campania (credit: B. Di Palma, 2016).

variable not only in time but also in space. What seems small today was great yester-day: for political, religious or military, commercial, economic or artistic reasons» (De Seta, 2017, p. 135).

The strong gap between the presence of a high potential in terms of tangible and in-tangible cultural heritage and of historical landscape and the tendency towards the im-poverishment and abandonment of these settlements affects many inland areas of all Eu-ropean nations and emphasizes the need to launch proposals that also aim to integrate the production aspect to specific local characteristics (Fig. 3). This is why many initia-tives and political strategies have been launched in Europe to combat this depletion through actions aimed at economic recovery[3]. In France, for example, since 2015, the policy for the cities is flanked by a strategy for inland rural territories, which takes the name of Piano Nos Ruralités. The Plan establishes national and local strategies based on the one hand from the so-called village-cities (rural or peri-urban settlements with a pop-ulation of less than 10,000 inhabitants that represent territorial reference points) and then spread to larger internal areas and from another identifying a strategy for medium-sized cities (with a population of less than 50,000 inhabitants). For the French policy, the village-cities and the middle cities represent an element of equilibrium between the great urban agglomeration and the rest of the internal territory (Fig. 4) as such they are subsidized with support funds for local investment and with the rural contracts.

Fig. 2 | Artena, a small town in the internal territory of Rome (credit: B. Di Palma, 2017).

In Italy, the internal areas constitute about three-fifths of the entire national territory occupying a portion of the territory that exceeds 60% of the national surface. In recent years, attention has focused on national policies focused on enhancing the internal areas of the country. Law n. 158 of 6 October 2017 containing Measures for the Support and Development of Small Municipalities, as well as provisions for the redevelopment and recovery of the historical centers of the same municipalities, was recently issued to contrast the depopulation of internal areas' smaller municipalities, recognizing their role as 'territorial garrisons', above all regarding to the contrast of hydro-geological instability and the activities of small and widespread maintenance and protection of common goods.

Since 2013, on the drive of the Minister of Territorial Cohesion, the commitment to the development of these territories has been carried out through the National Strategy for Internal Areas (SNAI), coordinated by the Agency for Territorial Cohesion, initiated and governed by the Ministries responsible for the coordination of community funds in agreement with the Regions. For these areas, the national strategy pursues a final objective which is a local development summarized by an inversion of demographic trends through the achievement of 5 intermediate objectives: 1) increase in the well-being of the local population; 2) increase in local demand for employment; 3) increase in the use of local capital; 4) reduction of the social costs of depopulation; 5)

Fig. 3 | Brisighella medieval village, Florence (credit: B. Di Palma, 2005).

strengthening of local development factors. It therefore emerges «[…] that tourism can act as a flywheel for the most prearranged areas, only if it is linked to other local development chains (for instance agriculture and crafts) and essential quality services (transport and education above all)» (De Vincenti, 2016, p. 23) while Greg Richards argues that «[…] the resources associated with cultural tourism have expanded from largely fixed, tangible heritage of the past toward the mobile, intangible products of contemporary culture» (Richards, 2006, p. 2).

An interesting tool in this sense is the one developed in the 2015 Annual Report by the Italian National Institute of Statistics, where the 'cultural and attractive vocation' was measured based on the presence in a territory of material resources or activities that incorporate a high intangible value which, together, define the identity of the places and characterize their attractiveness and competitiveness. The two dimensions analyzed are the cultural/landscape heritage and the productive/cultural fabric (cultural and creative industries, production of tradition and quality products) and have allowed grouping the territorial systems in thematic areas: the great beauty, the potentiality of heritage, the flywheel of tourism, the cultural periphery (Fig. 5). While considering that tourism is not the only solution for the problems of non-development of internal areas, this analysis reveals that the cultural and attractive vocation has sometimes unexpressed identity characteristics to which multiple and targeted strategies must be adapted and declined.

Fig. 4 | The small medieval center of Entrevaux, Provence France (credit: B. Di Palma, 2018).

In 2011 the Italian Ministry of Cultural Assets and of Tourism MIBACT launched an initiative aimed to establish tourist districts at national and international level and to improve the efficiency in the organization and production of services, ensuring guarantees and legal certainties to the companies that operate in the sector[4]. Also, the Strategic Tourism Development Plan 2017-2022 proposes a greater diffusion of the visitors' flow on the national territory in terms of integration, through a series of actions such as: a) the use of cultural infrastructures (museums, theatres, libraries, archaeological areas, etc.) also as access to the surrounding territories to narrate and disseminate the history and to contribute to territorial development; b) the integration of tourism policies with the urban ones, linking the cultural and creative resources and activities of the territories; c) the activation of systemic intervention policies that are not bound to administrative boundaries; d) the enhancement of territorial excellences, such as current and potential UNESCO sites and national parks, to increase the attractiveness of the territory (MIBACT, 2017).

Besides, the Plan provides support for the national strategy for inland areas, for instance for those destinations characterized by an important endowment of territorial resources, but which have not yet developed an adequate tourism supply capacity. Tourism is an important lever for the revival of their economy, so it is essential to integrate with other supply chains present in the territories, with particular reference to:

Fig. 5 | Matera, 2019 European Capital of Culture (credit: B. Di Palma, 2018).

the landscape-nature-agriculture-culture supply chain that aims at the integrated en-
hancement of natural and landscape resources, of the quality agro-food production as
a recognized cultural heritage; the chain of social quality, according to which tourism
can become an effective tool for development when it crosses a vital society, a
widespread civil wellbeing and a welcoming community (MIBACT, 2017).

The territorial dimension shifts the attention from the urban to the network, a net-
work of local identities – environmental, artisanal, cultural, economic, landscape, pro-
ductive – that does not aim to underline the 'how we were', but much more 'how we
can and want to be in the future' (Bonomi and Masiero, 2014). Confirming this Italian
trend, the Italian Pavilion Archipelago of the 16th Venice Architecture Biennale 2018,
Free Space, presents projects for the future of the country's internal territories.

The editor, Mario Cucinella, focuses on the urban space that runs along the Ital-
ian ridge, from the Alpine arch, along the Apennines and up to the Mediterranean,
with a focus on the internal areas of the country, in relation with their history.
«Archipelago Italia presents an Italy composed by thousand small cities, made up of
centers and villages in the internal areas of our territory, the Italy of the quality of
life, of beauty, of knowledge, where people, with their knowledge and skills, are the
main resource of the territory» (Franceschini cited in Galloni, 2018, p. 4). More-
over, Archipelago Italia highlights the international community on the challenge of

Fig. 6 | Autumn festival at Santa Maria Tiberina, Perugia (credit: E. Gigliarelli, 2018).

reconstruction and enhancement of central Italy affected by the earthquake.

The culture is a strategic tool to stimulate quality tourism for internal and marginal areas, but also to strengthen their identity and stimulate the sense of place of the local communities (Fig. 6). An interesting research on these themes shows the promising links between (cultural and natural) heritage, in terms the historic environment, sense of place and social capital opening to future research areas about 'active place-shaping projects' (Graham, Mason and Newman, 2009). According to Cornelius Holtorf (2011, p. 13): «In a world dominated by the effects of globalization, strong collective identities carry the risk of exacerbating existing divisions» so culture can be identified as a fundamental element in contrasting the processes of emigration, isolation, depopulation, developing, on the contrary, a virtuous relationship between museums of identity, cultural infrastructures, cultural tourism and a local transformation through active smart projects for weak economic development communities. «These themes underline a profound change in the way of thinking about the development of the city, presupposing the need to tackle the construction of progress strategies in an inter-scalar, trans-disciplinary and osmotic way» (Gigliarelli, Cessari and Di Palma, 2017, p. 892).

Smart perspective for the resilience of consolidated inland areas | «Medium-sized
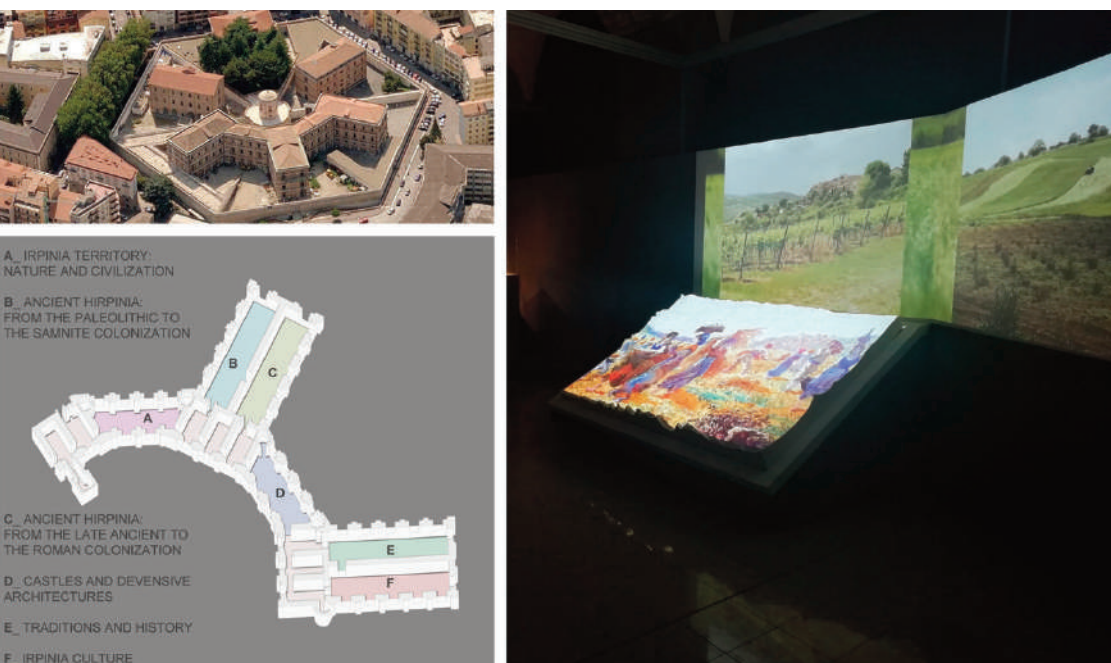
Fig. 7 | Enhancement of a network of local realities in Irpinia through the new Museo del Territorio Irpino in the former Bourbon prison of Avellino (credit: E. Gigliarelli and B. Di Palma, 2018).

cities form a fascinating targeted group. 120 million people live in around 600 cities of this size – this corresponds to almost 40 percent of the entire European population living in the city. Although these cities have enormous potential, they are often found in the shadow of large cities. They have difficulty in highlighting themselves, sometimes they have to fight against image problems and are ignored by the investors. Yet they have an important advantage: thanks to their small size, they are flexible and can score points with their smartness» (Politecnico di Vienna, Università di Lubiana and Politecnico di Delft, 2007).Within a wide range of possible variations on the concept of resilience and smartness, a specific framework of studies is represented by the capacity for renewal of medium-sized, consolidated and inland areas. In this case, the consolidated fabric life is the so-called «[...] great paradox of the impact of time on identity» (Segatori, 2015, p. 8). The fourth descriptive dimension of time, transformative of urban settlements, on the one hand, has consecrated the consolidated areas, electing them to places symbol of collective memory, on the other it placed them in front of the need to welcome new social, economic and environmental practices, in terms of global comparison and of network of local realities (Fig. 7): «[...] systems with local features and specificities, such as groups of people that, self-organized in networks, activate these potentials in development strategies» (Governa, 1997, p. 181).
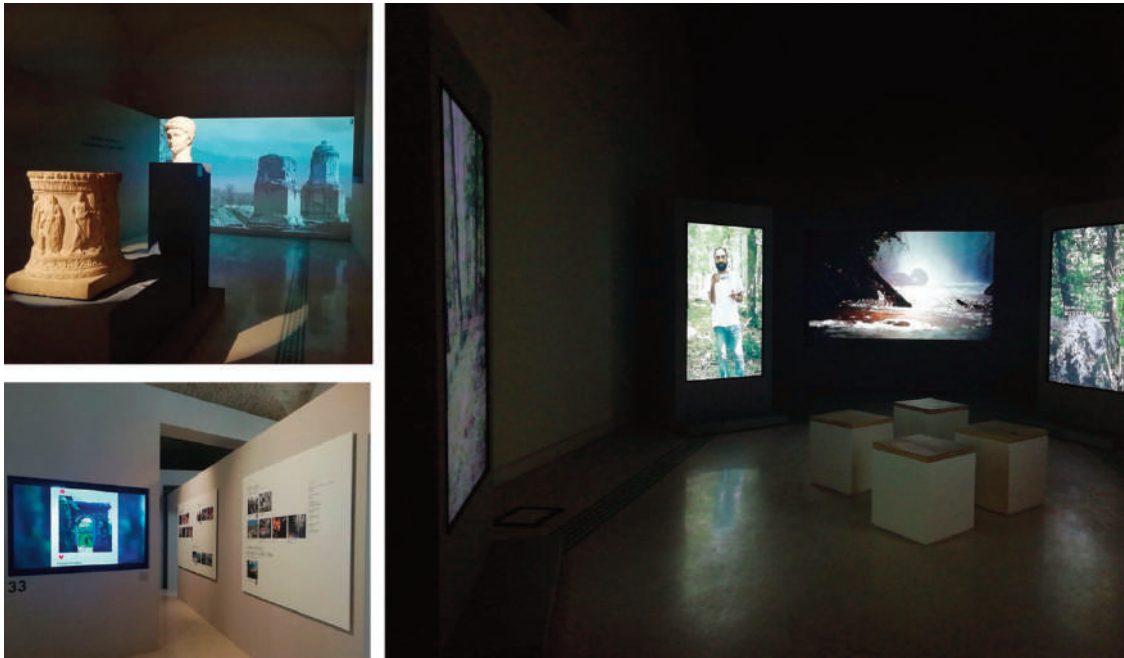
Fig. 8 | Digital strategies for the territorial enhancement in the new Museo del Territorio Irpino of Avellino (credit: E. Gigliarelli and B. Di Palma, 2018).

Subverting the concept of parallel worlds to those where the real-life of communities takes place, the concept of modernity of consolidated internal areas should be confirmed through plans and projects aimed at developing specific 'resilience reserves' (Carta, 2015) from which allow the consolidated settlements to remain in an urban life context, developing policies of balanced development between conservation and sustainability, in the short and long term, as proposed by UNESCO 2011[5] recommendations, through the definition of 'historic urban landscape'. In this perspective a 'resilient historical urban landscape' can be defined as a consolidated settlement able to renew its millennial structure, with specific artistic, architectural, urban and landscape features, welcoming the needs of contemporary livability, with economic and social cohesion. Identifying new strategies for the built environment development, one recent trend is the application of the 'smart'[6] concept to the urban environment (Fig. 8).

The widespread definition of smart city, coined on the first decade of the 21st century was often connected with the Information and Communication Technologies (ICT) to indicate, a digital re-qualification of the urban space. Most of the scientific literature has focused on a broader vision of the term, emphasizing the role of human capital, social and relational capital and towards the interest in environmental sustainability in the different phases of city's development. The 'economy, people, gover-

Fig. 9 | Enhancement of historical memory through new museum exhibition strategies in the new Museo del Territorio Irpino of Avellino (credit: E. Gigliarelli and B. Di Palma, 2018).

nance, mobility, environment, living' represent elements capable to evaluate and build urban smartness, they can be considered as the strategic, consolidated and synthetic axes to enhance the concept of smart city associated with the potential of 'sustainable development', a durable past, in a smart future. A smart strategy «[...] aims to identify problems and find solutions starting from its definition, intended as a gateway to the complexity of a multidimensional society focused on cultural growth, and not only as a city environment to be preserved. A vision in which the historic city, from being an ancient place, finds its charge of environment where implement the change of new communities, where establish the innovation network, establish collaborations, find funding and launch start-ups» (Cessari and Gigliarelli, p. XXVI)

Concerning the possibility of developing specific smart perspectives for resilient, historical and internal contexts, it seems necessary to outline strategies capable of linking the features of the smart city with the identity of the place, and identity inflected in actions defined case by case, depending on the specific local characteristics, 'being smart is feeding the difference' (Bonomi and Masiero, 2014). To promote the identity of existent heritage and inland historical territories and with the need to re-launch them smartly, according to Della Puppa, «[...] the becoming smart of cities and territory is a process that has three main objectives – to achieve intelligent, sustainable and inclu-

sive development – through actions that can optimize resources, or by making better use of resources (in this sense, not only investments but also time, for example, should be considered resources). In urban and territorial terms, it means, for example, acting on what has already been built, without consuming any more land, redeveloping the existing one, replacing what is no longer suitable for new needs and promoting new models of use of the city and the territory itself» (Della Puppa, 2015, pp. 145, 146).

According to Tim Ingold, «[...] we (can) rescue them (the monuments) from the cul-de-sac into which they had been cast and restore them to the current life» (Ingold, 2013, p. 12). Only in the most recent years, the smart outlook is becoming a key for the development of the consolidated inland areas, looking for the preservation of their physical dimension, the enhancement of their historical memory (Fig. 9), and for the definition of new forms of livability of the spaces, in a contemporary key and in terms of territorial network. In relation to the theme of identity and the need to re-launch an identity that is also smart, Federico Della Puppa and Roberto Masiero (2014, p. 82) identify some possible strategic actions for the existing cultural heritage:

– to enhance the cultural heritage, knowledge, places and traditions in order to return them to the network as a common good for citizens and visitors;

– enhance their identity by favouring the reuse and enhancement of the existing in a renewal that is based on the conservation and maintenance of the existing, making usable the environmental, landscape, cultural, social, architectural, historical, urban, productive and economic contents and any element that represents the territorial and community DNA, thus developing the themes of the smart community as indicated by the European Union;

– promote one's identity with an intelligent presence on the web and new media, using advanced techniques to create thematic itineraries, mappings the territory and making them easily usable;

– promote a coordinated and intelligent offer of its tourist presence on the web, with strategic and careful use of new media and in particular of social media.

The vision for Avellino Smart City | The proposals and solutions designed for Avellino are connected with the international debate on of the smart city, placed in a framework of studies that the Institute for Technologies Applied to Cultural Heritage ITABC of the Italian National Research Council CNR has been developing within the Smartpolis project (Smart Methodologies Applied to Urban Regeneration Trough a Platform of Open Data for the City Life Innovation and Sustainability). The Smartpolis project aims to identify problems and find solutions to the complexity of a multidimensional society focused on cultural growth. The project proposes a holistic approach to the problem of urban development, taking into account cultural, economic, social, but also technological and scientific aspects to mitigate the negative effects of global changes on environment and society (Fig. 10).

It is an approach that leads to a vision of urban restoration, where sustainability

means respect for the typological, morphological and constructive characteristics of buildings and cities, but also for architectural-urban cultures that they expressed them. «Place identity is an important dimension of social and cultural life in urban areas and continuity of place identity is strongly linked to place attachment and sense of belonging» (Kaymaz, 2013, p. 740), Smartpolis project investigates the territory, studying its historical-morphological features, developing strategies respond respecting specific identity characters and trying to solve problems of economic and social nature for those places.

The approach is focused on its medium-sized cities, as Avellino, helping to implement the ability to renew without losing identity[7]. In this framework, the project tries to link the visions of spatial planning at the human scale, as a tool for verifying the livability of spaces in transformation. The urban project moves between morphology and sustainability, as a point of connection between technologies and cultural, social and civil needs of the city. The city of Avellino is located on the central southern Italian Apennines, in the territory of Irpinia, the main internal area of Campania. Strongly hit by the earthquake of 1980, the city has a Lombardic origin, and represents a hub between the Tyrrhenian and the Adriatic areas. It had a very troubled history showed by the monuments connected in a stratified, old urban fabric.

For over a decade, the public institutions tried to overcome the disastrous effects of the earthquake, with a policy of recovery and enhancement of some excellences, acting on the creation and strengthening of cultural infrastructures and planning an integrated system of museums. The Museum System is constituted by five local museums, the main section settled in the monumental former Bourbon Prison of Avellino. On this basis, the CNR has worked on the design of the MIME (Museum of Irpinia, Memory and Evolution), to promote the cultural identity of Irpinia as a system of material and immaterial assets (Fig. 11). The general strategy for Avellino Smart City, therefore, integrates the museum project within a framework of broader thematic actions.

The proposal considers the driving role of medium cities, as Avellino is, and their potential ability to be nodes of a wide network capable to face the economic and social challenges and to improve the quality of life. Avellino is a city characterized by polycentrism and by the presence of diversified and recognizable territorial and social situations, both in the municipal area and to surrounding metropolitan area. The general objectives are to develop proposals aimed at combating poverty and hardship, to enhance the city's cultural and touristic identity, with particular attention to the historical center, to improve urban security and the accessibility of services for citizens.

The strategies developed are focused on the overall vision of the city through a transversal perspective, actions for regeneration and architectural and urban transformations have been identified for 'sensitive places'. The different objectives are connected the achievement of urban well-being and on the enhancement of the city's cultural and touristic identity. The strategic axes of the proposal aim at enhancing local quality segments of local production chains, also in terms of public-private partner-
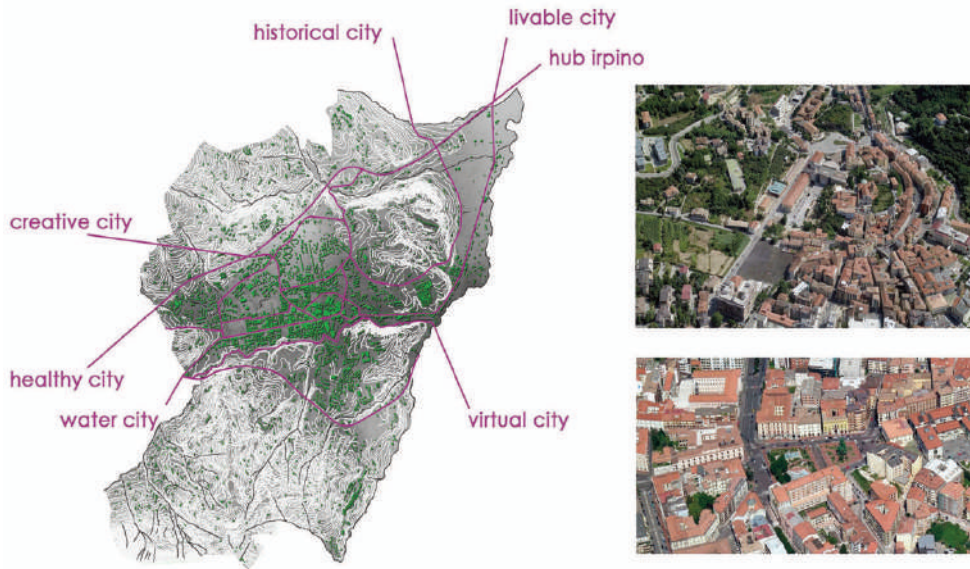
Fig. 10 | General strategy for Avellino Smart City.

Fig. 11 | The section of Irpinia Territory Museum dedicated to religious and fortified architecture: the Ariano Irpino Castle and the Goleto Abbey (credit: E. Gigliarelli and B. Di Palma, 2019).

ships and at the reconfiguration of open and abandoned open spaces through infrastructures and equipment that allow the aggregation and the inclusion of all the population groups. The application of Internet of Things (IoT), the technology that makes use of connectivity, big data, and analytics, has transformed lifestyles in the cities all over the world. IoT allows to remotely monitor, manage, and control devices, helping cities to generate insights and actionable information of real-time data.

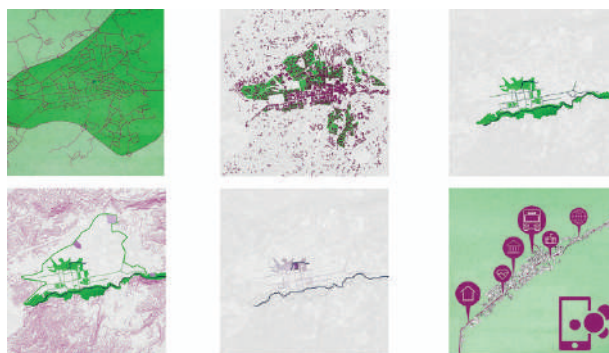The proposal intends to enhance public transportation, to improve infrastructure, to

Fig. 12 | Thematic strategy for Avellino Smart City (credit: E. Gigliarelli and B. Di Palma, 2018).

create more efficient and cost-effective municipal services, and at the same time keep citizens safe and more engaged in the community, by the use of several remarkable applications of IoT connected with digital technologies that integrate multiple systems. Accessibility to services for citizens is implemented and guaranteed through the development of Virtual Avellino, in which the three-dimensional model of the city is the platform were citizen can find the ongoing initiatives for the development of the city and all other useful information (transportation, tourist services, municipal initiative, etc.). Starting from the transformation programs already in progress for the city, the Avellino Smart City proposal works by intertwining the program of urban renewal and socio-economic regeneration of the territory, with an innovative and holistic vision of the city's future.

The starting point of the research was the results achieved by the Administration within the PIU European Urban Integration Program (such as the environmental rehabilitation of the Fenestrelle and San Francesco torrents and the urban and environmental requalification of the access and traffic areas of the Mercatone building). The proposal is organized in some salient issues: Avellino water city, Avellino widespread historical city, Avellino creative city for the gastronomy, Avellino creative city for the arts and culture, Avellino hub of Irpinia, Avellino livable city, Avellino healthy and well-being city, Virtual Avellino (Fig. 12). Avellino Smart City strengthen resources already present on the site: water infrastructure, the specific naturalistic landscape features, the specialization agri-food, aimed at resolving critical issues in terms of livability and improvement of life quality.

The Avellino Smart City proposal addresses, in line with some of the objectives of Horizon 2020, the theme of regeneration and renovation of inland centers in terms of increasing resilience. An innovative preservation of the identity, but also the safeguarding of the economic, social and environmental functioning of the city and, in particular, of its historical center, allows transmitting the complexity of the value of urban stratifications to the new generations. However, urban and architectural interventions in historical areas are rather complex and therefore expensive due to specific character-

Fig. 13 | The strategy for Avellino water city (credit: E. Gigliarelli and B. Di Palma, 2018).

istics associated with heritage, such as artistic values, the presence of denser urban fabrics, specific requirements for compatibility of materials, greater vulnerability of structures, potential difficulties of access, high symbolic value, traditional lifestyles, as well as often very long times in terms of realization. The main ambition of the proposal is that, in developing a strategy to enhance the cultural and tourist identity of the city, Avellino reconfigures itself as a city in which it is also desirable to live.

The results of the Avellino Smart City proposal will contribute to: 1) improve cross-sector collaboration, creating job opportunities and skills in the cultural and creative sectors and innovative production linked to historical heritage; 2) promote innovation linked to cultural heritage and culture, creativity, entrepreneurship for the historical urban areas and the local cultural landscape; 3) improve the economic and social recovery of historical areas by local authorities and communities through the use of new knowledge and tools; 4) protecting, conserving and enhancing cultural heritage for optimal use of its innovation potential for sustainable development; 5) develop detailed projects for the social and economic regeneration of the historic urban areas and the local cultural landscape, with an increase in wellbeing and quality of life, social cohesion and integration; 6) improve compliance with widespread urban safety standards; 7) fight poverty and hardship; 8) reverse the trend regarding the abandonment of urban space and the abandonment of historical heritage; 9) increase citizen's awareness of urban transformations and collective belonging.

Strategic themes and intervention proposals | The objectives indicated in the general strategy are achieved through the development of some specific thematic proposals that renew some identifying factors. In fact, the city has a stratified and complex history, characterized by the presence of water, a city of routes connecting the Tyrrhenian and the Adriatic areas of the country.

Avellino Water City (Fig. 13). The proposal aims to integrate the Municipal Urban Plan for the Fenestrelle park to the south, by introducing a network of ecological corridors into the dense urban fabric, connecting this larger park with the opposite side of the

Fig. 14 | Strategy for Avellino widespread historical city (credit: E. Gigliarelli and B. Di Palma, 2018).

city, towards the north, at a second trace of water. The proposal is referred to the model of Zurich and Stockholm, with equipped paths for sports and leisure and the recovery of architectural ruins, hydraulic machines and the so-called Sea Eyes, for cultural and social enhancement activities also in relation of a water museum as one of the new functions for the abandoned bus station. Inside and on the edge of the historical center, the identity of the city linked to water appears through the presence of some fountains to be enhanced thanks to a physical redevelopment of the space in which they are located.

The main interventions are: a) integration of the Fenestrelle park with another park to the north for the construction of a widespread system of green areas; b) realization, within the parks, of rest areas and equipped routes also designed on the theme of water; c) recovery of biodiversity linked to the presence of water through the reconfiguration of wetlands; d) recovery and reconnection of the ruins architectures constituting the nodes of the ancient economy linked to water (mills, and other factories); e) integration of the fragments of urban green widespread in the city with the two large parks on the edge; f) connection of the large parks and fragments of urban green through a green and blue network of ecological corridors thanks to a redevelopment of the public space along the arteries of driveway and pedestrian traffic; g) redevelopment of public urban spaces through interventions related to the presence of water, also considering it as a social element, as well as an identity element, of incentive for aggregation; h) identification of nodes such as the Bellerofonte fountain and the Grimoaldo fountain, for instance, as spaces in which to envisaging specific urban recovery interventions.

Avellino Widespread Historical City (Fig. 14). Inside the so-called Collina della Terra, the ancient part of the city, and the surrounding areas, in addition to the major urban redevelopment projects already in progress, it is possible to think about a redevelopment of the so-called minor spaces, more integrated into the ancient residential fabric. By making these spaces more welcoming and equipped, it will be possible to guarantee conditions of greater urban comfort for the inhabitants, but also better conditions for attracting and welcoming tourists. The Lombardic tunnels will be recovered and interconnected. Even the signage of the most significant monuments, such as

Fig. 15 | Virtual Avellino and the connected roads strategy (credit: E. Gigliarelli and B. Di Palma, 2018).
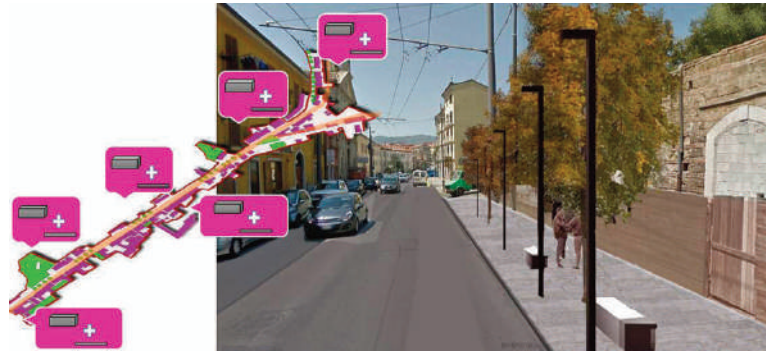
the Palazzo de Conciliis, today the Victor Hugo culture home, will be re-designed in terms of technological improvement following the necessary challenges of sustainability, but also of communication, tourist reception and widespread accessibility to cultural information.

The objective of enhancing the city's cultural and tourist identity, with particular attention to the historical center, concerns that part of Avellino that the Municipal Urban Plan identifies as the 'city to be handed down'. The historical heritage of the city is mostly concentrated in the area called Collina la Terra and the surrounding areas, the Cathedral, the Clock Tower, the Lombardic tunnels, the ruins of the castle, the Bellerofonte fountain, the De Conciliis building, but also the Custom building stand out in a predominantly residential fabric. Within this fabric, there is a connective weave composed by roads that, for ground-level reasons, develop both along the edge of the Hill (Umberto I, for instance) and transversely to it, with a trend in steep incline and with exclusively pedestrian access. Two large areas, one around the Cathedral and another around the castle's ruins identify the attractive poles of the historical center and the large nuclei of potential urban transformation, currently not exploited.

Avellino Smart City focuses both on the development of these large areas, and on 'urban acupuncture' operations in the 'in-between' areas on the side of the ruins of the church of San Nicola dei Greci. These public spaces, small areas very compressed within a dense residential area, can be regenerated by simplifying the pedestrian mobility towards the hill, offering equipped parking spaces with new digital technologies and resource-saving apps to keep citizens informed. Above a list of the actions envisaged: a) urban design of 'minor' but strategic spaces, as in the case of the Belvedere area towards the clock tower, through new seats, trees, floors, intelligent outdoor LED lighting solutions, integrated IoT systems; b) cultural communication through modular photovoltaic information panels disseminated in the historical fabric; c) installation of floor tiles that would convert the kinetic energy from a footstep into electricity.

Virtual Avellino and the Connected Roads Proposal (Fig. 15). To implement the services' accessibility to citizens, the city will be equipped with a virtual infrastructure

for real-time data management. A network of sensors is connected with a three-dimensional, semantic and dynamic model of the city, controlled by an operational center and updated by citizens. One of the performances of Virtual Avellino concerns the simulations for disasters prevention and urban pollution control. Open data can act as flywheels for a new form of economy and a new chain of values between data providers, data users and data developers. The open data included in this platform allow to: reveal more deeply how the city and the community work; increase the relationship between service providers to the city and the communities; improve planning and regeneration; re-design the services produced in the city; helping the sharing of political choices; stimulate innovation towards the creation of economic growth in the city.

The first virtual-green redevelopment action involves Via Francesco Tedesco, an artery of access to the historical center from the eastern outskirts. It is a mixed pedestrian and driveway, to be re-designing terms of a built and urban environment, with a set of interventions: on the built fabric (recomposing the facades along the road front, integrating and completing the interventions already carried out); on the green system; on the road system. The main idea is to re-design the open areas among the street offering livable spaces for people: for rest, relax, concentration, diffusion of information, playing, meeting and exchanging ideas, development of cultural and social activities. Parking areas for electric cars and bike-sharing or renting will be created as well as nodes where to leave cars and use ecological vehicles.

Also, the ancient Roman aqueduct Avellino-Benevento, a gateway to the Fenestrelle urban park, will be equipped as a green line with cycle and pedestrian path. In these areas, two integrated flooring systems will be installed: a classic and a smart one. The smart floor includes smart tiles (iPavement) for the wi-fi connection and the distribution of cultural, touristic, geographical and entertainment contents and with information on the road network, security another municipal services. This is complemented by an intelligent lighting system for the production of smart lighting, a promising technology which leads to cost reductions, energy efficiency, safety, and aesthetic improvement through art lighting.

Conclusions | In many regions of Southern Italy, without great vocations to heavy industry and with a largely uncontaminated environment, tourism can be a crucial resource if promoted without distorting the identity of places by providing a different image from reality. The projects planned in the Irpinia territory of the Campania Region, can be examples of an innovative model of integrated management of cultural heritage, both in the aspects related to the valorization and the process of cultural innovation as a base for social cohesion and place attachment by local communities. Irpinia has a cultural heritage able to regenerate and survive thanks to constant and tiring collective participation. Unfortunately, there are many weak points, such as an archaeological and museum heritage that is not fully valued. An awareness then arose that the cultural identity of Irpinia should be promoted as a system of material goods,

intangible processes and events, placing the emphasis on their non-reproducibility in other environments. Applying the guidelines developed with the Smart Polis research program, the ITABC proposed an Integrated Action Plan aimed at fighting poverty and hardship, enhancing cultural and tourist identity of the city, with particular attention to the historical center, to the urban security improvement and to citizen's services accessibility.

In the current globalization era, these marginal territories and inland areas are called to develop strategies for revitalization and cultural promotion that can translate the testimonies of the past into new forms of innovative identities, using the language of the present. The theme of regeneration thus assumes the arduous task of defending heritage in terms of a delicate balance between the past and the present, harmonizing tradition with innovation, the multicultural traces of vernacular architecture with trans-disciplinary technological advances, historical realities with the most contemporary discoveries. The internal and marginal areas present specific resources which appear to be particularly suitable for the development of alternative forms of tourism, useful for strengthening the knowledge of local realities and attracting the attention of an extra-regional audience interested in the excellent Italian cultural, naturalistic and environmental heritage widespread in the territory.

Notes

1) An interesting document to investigate the aspects of an integrated urban development strategy is the Toledo Declaration. On integrated urban regeneration and its strategic potential for smarter, more sustainable and inclusive urban development in European cities (final document from the meeting of European Ministers responsible for Urban Development of EU Member States of the EU, on the issue of integrated urban regeneration, 22 June 2010), which also shows that «[...] the city is a social construction. Integrated also means inclusive, such as working on the articulation of the social body of the city in a shared global project of cohabitation, to contrast social exclusion and spatial segregation». For more information see the document at the website: www.ccre.org/docs/2010_06_04_toledo_declaration_final.pdf [Accessed 5 November 2019].

2) To see the definition of the Technical Document linked to the draft of the 2014-2020 Partnership Agreement sent to the EC on December 9, 2013 – National Strategy for Internal Areas: definition, objectives, tools and governance, see the document at the website: www.miur.gov.it/documents/20182/890263/strategia_nazionale_aree_interne.pdf/d10fc111-65c0-4acd-b253-63efae626b19 [Accessed 19 November 2019].

3) In this sense, among other initiatives about it, the Horizon 2020 program provides for the theme 'Socioeconomic and cultural transformations in the context of the fourth industrial revolution' the call 'Transformations-04-2019-2020: Innovative approaches to urban and regional development through cultural tourism'. For more information see the website: ec.europa.eu/research/partici pants/portal/desktop/en/opportunities/h2020/topics/transformations-04-2019-2020.html [Accessed 20 November 2019].

4) Italian Law Decree n. 70, 13 May 2011, converted with amendments in the Law n. 106 of 12 July 2011. [Online] Available at: www.gazzettaufficiale.it/gunewsletter/dettaglio.jsp?service=1&data gu=2011-05-13&task=dettaglio&numgu=110&redaz=011G0113&tmstp=1305530529021 [Accessed 5 November 2019].

5) The UNESCO's 2011 recommendations reflect the definition of the historic urban landscape introduced by the 2005 Vienna Memorandum and are an integrative tool for national heritage conservation policies and practices built within a broader objective of sustainable urban development, respecting the heritage composed of the values of tradition of different cultural contexts, policies of balanced development between conservation and sustainability, in the short and long term. For more information see: whc.unesco.org/en/activities/638 [Accessed 5 November 2019]. The pilot cities that are developing practices and policies following UNESCO's 2011 recommendations are: 8 sites along the Hongkou River, Shuzhou (Jiangsu), Tongli (Jiangsu), Dujiangyan (Sichuan Province), Cuenca (Ecuador), Ballarat (Australia), Rawalpindi (Pakistan), Levuka (Fiji), Varanasi, Hyderabad & Ajmer-Pushkar (India). For more information see: www.historicurbanlandscape.com/ [Accessed 5 November 2019].

6) The first known use of the term smart has been in the form of an acronym to indicate a strategic form of management of the work objectives, which must be Specific, Measurable, Achievable, Relevant and Time-Bound. For more see: Doran, G. T. (1981), "There's a S.M.A.R.T. way to write management's goals and objectives", in *Management Review*, n. 70, pp. 35-36.

7) The proposal for Avellino Smart city responds to the requests of the Public Consultation banned by the Municipality of Avellino on 21 September 2017, for the collection of interest proposal to the drafting of the Strategic Guidance Document for the implementation of the Integrated Sustainable Cities Program PICS POR Campania 2014-2020 X Axis Medium City of the City of Avellino.

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