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Inner Areas Regeneration and the Circular Economy Model



Università degli Studi di Napoli Federico II

Via Toledo, 402 80 134 Napoli tel. + 39 081 2538659 fax + 39 081 2538649 e-mail info.bdc@unina.it www.bdc.unina.it

Direttore Responsabile: Luigi Fusco Girard

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Inner Areas Regeneration and the Circular Economy Model



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Illegal settlements. An intervention model for integration into the urban plan

Insediamenti illegali. Un modello di intervento per l'integrazione nel piano

Federica Cicalese^{a,*}, Isidoro Fasolino^b

AUTHORS & ARTICLE INFO

- ^a Department of Civil Engineering, University of Salerno, Italy
- ^b Department of Civil Engineering, University of Salerno, Italy
- * Corresponding author email: f.cicalese10@studenti.unisa.it

ABSTRACT AND KEYWORDS

Illegal settlements

Illegal construction has often been the practice of large sections of the population falling within different geopolitical and economic frameworks. This has had a strong impact on landscape-environmental values, leading to disorderly and irrational urban development. The specificity of the different settlements makes it necessary to analyze the forgivable/to be demolished dichotomy, measuring the degree of habitability, the quality of the public space, the efficiency of the services present. It is necessary to adopt new tools that allow to support the legislator and the political and technical decision-maker in identifying the "destiny" of these properties. At present, a great urban recovery and redevelopment effort is required, in contexts generally lacking even primary urbanizations, taking the opportunity to increase the urban facilities at the service of the community for the purpose of raising the overall settlement quality. An intervention model is therefore proposed which has as its objective the identification and delimitation of an illegal settlement and the consequent recovery project of the same through the application to a case study.

Keywords: illegal settlement, unplanned settlement, settlement recovery, integration into the urban plan

Insediamenti illegali

Costruire illegalmente è stata pratica sovente da parte di ampie fette di popolazione ricadenti in quadri geopolitici ed economici differenti. Ciò ha fortemente impattato sui valori paesistico-ambientali conducendo ad un sviluppo urbano disordinato ed irrazionale.

La specificità dei diversi insediamenti rende necessario un'analisi sulla dicotomia condonabile/da demolire, misurando il grado di abitabilità, la qualità dello spazio pubblico, l'efficienza dei servizi presenti. Risulta necessario adottare nuovi strumenti che consentano di supportare il legislatore e il decisore politico e tecnico nell'individuazione del "destino" di tali immobili. Allo stato attuale, è richiesto un grande sforzo di recupero e riqualificazione urbana, in contesti generalmente privi anche delle urbanizzazioni primarie, cogliendo l'occasione per incrementare le dotazioni urbane a servizio della comunità ai fini dell'innalzamento della qualità insediativa complessiva. Si propone dunque un modello di intervento che ha come obiettivo l'individuazione e la perimetrazione di un insediamento abusivo e del conseguente progetto di recupero dello stesso attraverso l'applicazione ad un caso studio.

Parole chiave: insediamento illegale, non pianificato, recupero insediamento, integrazione nel piano urbanistico

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1. Framing of the phenomenon

Unauthorized building is a devastating problem, especially in many regions of the Southern Italy, and it is constantly fueled by the lack of demolition and, therefore, by substantial impunity. Among the problems associated with this illicit practice, we mention: soil consumption; the poor construction quality of the buildings and infrastructures subject to illegal practices; the landscape deduction; the complex and vague regulatory system on practical actions to combat the phenomenon. According to Cresme data, in 2019, there were about 17,7 illegal constructions for every 100 authorized by the municipalities (ISTAT, 2020).

In Italy the phenomenon has assumed proportions that are scarcely comparable with other continental realities, reaching a social significance which, in certain areas, is perceived as bordering on ordinary. In these same areas, the perception of illegality of the phenomenon is extremely low, to the point that the crime committed does not even lead to social disapproval. It is probable that this low perception is also connected to the significant portions of the population that have been involved in it, because illegal activity has not always had a merely speculative connotation, being also recognized as a so-called illegal activity of necessity. The need for housing represents «a basic human need which, if not adequately satisfied, reveals human poverty» (Max-Neef, 1991).

The Italian landscape is compromised by illegal transformations that modify the intended use of the land, increasing the settlement disorder of the city and the fragility of the territory (Fasolino, 2009).

It is necessary to restore centrality to this theme, as the consequences have repercussions on the development prospects of the entire country, considering «to what extent living in a neighborhood without collective facilities and public spaces in which to raise one's children contributes to the collapse of the fertility rate in the southern regions, with demographic consequences that spill far beyond their administrative borders? In the future, how much will the low building quality of the heritage produced by illegal construction and the consequent processes of landscape-environmental degradation affect the country's tourist attractiveness in a context of progressive evolution of demand? Finally, how much will the permanence on the national territory of a large share of residential assets that are in conditions of structural insecurity and exposure to risk precisely because they were built without planning or controls?» (Zanfi and Formato, 2017).

These are important questions, also supported in Goal 11 of the 2030 Agenda, "Sustainable cities and communities", which need to be answered through an integrated approach and concrete measures, to face a socio-economic paradigm shift and the numerous and complex environmental challenges and institutional (UN, 2015).

From a regulatory point of view, the actions envisaged by the legislator to combat the phenomenon are essentially three (Colombo, 2003): repressive approach, mitigating approach and comprehensive approach. The repressive approach, consisting in the demolition of illegal buildings (pursuant to article 31, paragraph 5 of the DPR 380/2001) has remained widely disregarded: partly due to the responsibility of the local administrators, partly due to the operational difficulties of proceeding in areas high social tension.

The mitigating approach, which can be adopted through the confiscation of assets and the redevelopment of sites, as provided for by art. 29 of the law n.47/1985 which introduced recovery plans for illegal settlements, obliging the regions to regulate in advance the formation, adoption and approval of recovery variants "within a framework of economic and social convenience". Finally, the comprehensive

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approach, envisaged when, due to the nature of the violation, both demolition and confiscation are excluded, subject to the payment of oblation and ritual concession fees, thus replenishing the treasury's coffers (De Mare et al., 2010).

Recourse to the amnesty had as a consequence the legalization of a phenomenon that should be released from political issues, opposed and managed in the front line by technical specialists in multiple disciplines (De Palma,1988; De Mare et al.,2010). Illegal buildings awaiting amnesty in Italy amount to over 5 million, in reality, illegal buildings demolished do not reach 20% of the total. In this condition of congestion, the illegal fabrics are in conditions of risk and degradation and lack land management tools. The restoration of legality for these fabrics requires a punctual and multicriteria analysis, which allows to reaffirm the method of urban planning, adapting to current regulations and reducing their vulnerability.

At present, after three building amnesty laws, and in the absence of a national framework law of territorial government, the need emerges to manage the past and the absence of decision support tools that the judge, the legislator and the technician responsible for the procedure can use in the management of the territory, to try, together with its inhabitants, to recover an idea of the city as a great collective design (Zanfi, 2017).

This implies the delicate question of the destiny which, more efficiently, would compete with the illegal properties acquired from the unavailable assets of the Municipality. For the latter, a more efficient assessment of demolition or maintenance for conversion to public or public utility functions would be desirable, filling a regulatory gap relating to the criteria that regulate the necessary decisions. The objective pursued is on the one hand to return to reflect on the phenomenon from a disciplinary point of view, on the other to try to formulate an approach to the issue of recovery planning for illegal settlements.

2. Recovery planning

Among the most significant predictions of law n.47/1985 was the responsibility – also confirmed in subsequent legislative interventions – on the part of the Municipalities to prepare "recovery plans" (pursuant to articles 29 and 30), also as a variant of the urban planning instruments in force to the urban redevelopment of the areas created "spontaneously" also through the use of the concession fees generated by the building amnesty, so as to compensate for the greater urban load not previously subject to planning. The implementation planning resulting from these measures had to be aimed at achieving three objectives, as governed by article 3, paragraph 3 of the regional law n.16/2004:

- carry out adequate primary and secondary urbanization;
- respect the interests of a historical, artistic, archaeological, landscape, environmental, hydrogeological nature;
- create a rational territorial and urban integration of the settlement.

These implementation tools take the form of the outcome of perimeters carried out preparatory to the approval, on the basis of the exercise of regional legislative power, of new general instruments, proposing a recovery model based on the detailed planning of the perimeter areas through the completion by sectors mainly residential and the acquisition of public areas for the realization of the standards. (Coppola and Chiodelli, 2019) In reality, however, the regions have not exercised their legislative power and the municipalities have issued concessions without bothering to prepare recovery plans. Currently, therefore, the impression is that of a failure of recovery planning, in the context of a more generalized deficit in terms of general planning,

which sees several italian municipalities being equipped, again and only, with a manufacturing program. From this brief examination, therefore, it emerges how the relationship between building amnesty and planning is very intricate (Coppola and Chiodelli, 2019).

3. Perimeter of illegal areas

The proposed intervention model arises from the observation of the lack of experiences of recovery of illegal settlements, typically characterized by the absence of secondary urbanization works such as the equipped public green area of the neighborhood, the civic center, the areas equipped for sport and cultural centers, social and health (Adinolfi et al., 2022).

We have seen how law n.47/1985 provides for the possibility, for the municipalities, of setting boundaries around the "spontaneously" arisen nuclei with a view to a subsequent elaboration of recovery plans aimed at their redevelopment. The perimeter is configured as a preparatory act for urban recovery, a delicate operation that does not allow, at present, i.e. through the sole application of current legislation, a clear and unambiguous identification of a border.

To support the identification of these settlements, therefore, the spatial analysis is applied to the properties subject to the application for building amnesty. These properties, weighted according to the volume, were subjected to the application of the Kernel Density Estimation (KDE) which returned a map of the densities and allowed, together with other considerations, such as the continuity of the settlement, to define the boundaries of the areas most connoted from the phenomenon.

Subsequently, one of the perimeter settlements was the subject of a recovery project elaborated pursuing as an objective the recovery of the building fabric through the provision of standards, the densification of the area, the settlement quality and the functional mixité, objectives moreover in line with the intentions of the Administration of the Municipality in which the settlement under study is located.

4. Application to a case study

4.1 Planning framework of the municipality of Pontecagnano Faiano

The municipality of Pontecagnano Faiano, with an extension of 37.19 km2, is located in the northern area of the province of Salerno, about 16 km from the provincial capital.

The Provincial Territorial Coordination Plan (PTCP), in the session of the Permanent Planning Conference of 17 July 2013, assigned to the future Municipal Urban Plan (PUC) of Pontecagnano Faiano a total urban load of 1750 dwellings.

The Municipality has a General Regulatory Plan (PRG) approved with DPGR n.18/1988, but has in its next programming the creation of the PUC (for which the study of the Preliminary Plan has already been carried out, adopted in 2016.

Although most of the building stock is concentrated in the portion of territory between the A3 motorway and the railway line, the presence of houses scattered throughout the agricultural territory is significant, a widespread phenomenon throughout the Campania Region.

Pontecagnano Faiano is included together with the Municipalities of Agropoli, Battipaglia, Bellizzi, Capaccio-Paestum, Castellabate and Eboli, in the drafting of the "Masterplan of the Campania Coast" referring to the coast of the Salerno coast. The Masterplan has as its objective the environmental and landscape regeneration of

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the coast, the redevelopment and strengthening of the overall system of the mobility network of the area, the strengthening of the assets of the tourist offer by focusing on the complete use and enhancement of the complex historical and environmental heritage, and finally the strengthening of policies and structures for the reduction of social unease and to promote actions of safety and legality. In particular, the regeneration of the stretch of coast relating to the municipality in question, focuses attention on the retreat of the provincial road 175 (SP175) which today constitutes the service road network of the coastal city, which would become a cycle/pedestrian path that connects the various public spaces, and on the demolition of the scattered building present near the Foce Picentino and the one in via Flavio Gioia.

In this way, the decongestion of the more densely populated areas, the reforestation of the areas vacated by demolitions and the overall reorganization of the built environment leads to an overall improvement in the quality of life over the entire area.

The municipal administration, in this reference framework, confirmed the will, already expressed in the Masterplan, to want to carry out the strengthening of the SP 417 Aversana, as an axis of high accessibility; the downgrading of the coastal SP 175 and the functional upgrading of the roads that connect the aforementioned SP 417 with the coast.

We also want to provide for a new urban organization of the coast that raises the quality level of services through a less precarious and fragmented management. Through these interventions, the Administration intends to give life to a new form of coastal tourism with the seasonal adjustment of the demand for tourist services through the integration of permanent residence, seaside, environmental, congress and recreational tourism.

4.2 Identification of illegal settlements

Approximately 3.000 amnesty practices were presented in the aforementioned municipality, of which approximately 200 were examined for the purposes of applying the model.

The indispensable information in order to consider the usable practices were the declaration of the map sheet and the number/s of parcel/s for which the application for amnesty had been presented and the address of the property (or, where present, the Gauss-Boaga coordinates), necessary for the perimeter of the lot in which the illegal building was located on the basic cartography.

We moved on to the delimitation of the lots on which the buildings subject to amnesty stand and to the numbering, in progressive order, of the latter, eventually obtaining 140 lots¹.

The next step saw the cataloging of individual practices by drawing up a table, per property, containing the main information of each application: holder, reference law, protocol number, address, sheet, parcel, sub (if any), usable area, non-residential area, covered area, volume, any constraints, type of abuse. In the absence of information relating to the covered area, we proceeded with the measurement by means of basic cartography and verification in the field.

If the volume present in the amnesty application refers to several properties located in the same lot, the calculation is made by verifying the number of floors of the buildings and multiplying the covered area by the height of the building, obtained by multiplying the number of floors by a inter-floor height assumed to be 3.5 m.

If it is not possible to define the number of floors, the volume is calculated by making a proportion on the covered area. For the purpose of identifying and perimeter the building aggregates, the KDE (Figure 1) was performed by setting the cell width to

10 and using a radius of 200m.

It should be noted that three areas thus identified were not bounded as they corresponded 2 times to industrial buildings with a high volume and once to several nearby buildings but insisting on the same lot, cases which therefore do not reflect a real concentration of illegal properties in the area such as to can be defined as settlements. The areas circumscribed by the perimeter involve a few regular buildings and a large number of illegal buildings or buildings that can be classified in this category as the complete procedure for obtaining the building permit is missing.

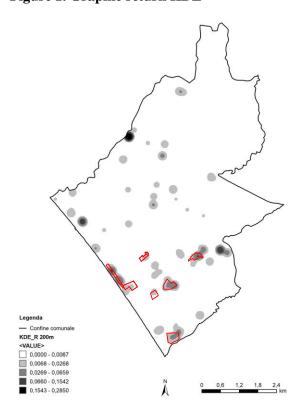


Figure 1. Graphic return KDE

Source: Elaboration by the authors, 2022.

4.3 Urban recovery project

Following the delimitation of the illegal settlements, the sector identified overlooking the sea was chosen as the object of a recovery project with the aim of giving life to an urban dimension of the coastal strip, through the recovery and redevelopment of the settlement, through the forecast of tourist-accommodation functions, equipment and services related to tourism, currently very lacking, and equipment aimed at the overall urban improvement of the area.

We thought of a project capable of redesigning the widespread and disorderly construction of second homes and spontaneous and poor quality built-up areas, aiming primarily at mending the built-up area and planning the new functions contiguously with the existing building, also defining margins recognizable to urban settlements.

We started by verifying the forecasts of the PRG and with the analysis of the risks and constraints present in the area.

The analysis phase led to the production of a series of documents, necessary to define in detail the knowledge of the intervention area, capable of framing from a physical point of view (territorial framework, context, risk, constraints, physical relief-functional) and real estate (ownership, recognition of the results of amnesty applications, lots) the area under study.

4.4 Analysis of the state of fact

The area subject to intervention is located along the SP175, develops for a road front of about 900 m and for a consistency of about 7 ha, of which about 5,7 ha are owned by the Curia (this specific condition simplifies the scenario of project compared to a settlement in which the properties were all private and different).

Nearby there are no exercises or activities of significant public interest, however, the presence of the coast less than 100m from the settlement should be noted.

The area is free from landslide and flood risk but partially subject to hydraulic risk. In terms of constraints, it appears to be subject to the protection of immovable property of landscape interest pursuant to Legislative Decree n.63/2008 and Ministerial Decree 22/02/1970 and to environmental constraints pursuant to law n.431/1985 and Legislative Decree n.42/2004. In the immediate vicinity, moreover, there is an extensive area which constitutes the buffer zone for airports and aerodromes and another subject to geological constraints due to soil subsidence. The analytical examination of all the buildings in the area made it possible to identify and outline 64 lots in the area in question, with an average surface area of 1.110mq.

Table 1. The covered surfaces in the state of fact

Weight	Weight of illegal activity in the sector in terms of Sc			
∑Sc of all buildings	ΣSc of lots affected by amnesty application	Illegal activity in the sector [%] 53,35		
[m ²]	$[\mathbf{m}^2]$			
11.000,82	5.869,00			

Source: Elaboration by the authors, 2022.

Table 2. The land areas in the state of fact

Wei	Weight of illegal activity in the sector in terms Sf				
∑Sf of all lots	$oldsymbol{arSigma}$ Sf of lots affected by amnesty application	Illegal activity in the sector			
[m²]	[m²]	[%]			
69.003,00	22.330,00	32,36			

Source: Elaboration by the authors, 2022.

For each building, the current use of the land was identified, from which it emerged that most of the buildings perform a residential function; 3 are the cases of uncultivated land; 1 lot has a tourist-accommodation function; there is also 1 private parking, 2 commercial activities and 1 land for agricultural use.

In the end, a mapping of building abuses in the area was carried out, highlighting the

buildings covered by the amnesty applications and providing information on the status/outcome of the measure. Six different scenarios were thus configured: refusal of the practice, demolished buildings, release of building permit, lack of a provision, release of authorization and buildings without an application for amnesty.

It was therefore possible to quantify the weight of illegal activity within the intervention area, both in terms of lot surfaces (Sf) and in terms of covered area (Sc).

4.5 The project

The project phase saw the implementation of a further model, of the flow chart type, not covered here, defined as verification (Del Gaudio et al., 2020; Fasolino et al., 2020), to define the most rational intended use for the type of abuse found, which can lead to two output results: the demolition and use of the area to increase surface standards; the maintenance of the work to be converted and satisfy the common good, allocating it to social housing (Ers).

In the absence of criteria for the distribution of the urban load assigned to the future PUC of the municipality of Pontecagnano Faiano, it was decided to assign a residential settlement load equal to 100 dwellings, 52 of which already exist.

This load is part of the perspective of densification of the area, a criterion at the basis of the project but other considerations also contributed to its definition. The intervention area is, in fact, located near the coast, so it is essential to make considerations about the urban paradigm that requires the densification of the area and the need for a landscape type that recommends not excessively tall buildings. The 100 lodgings therefore represent a reasonable point of balance between these two needs. We then proceed with the proportioning of the intervention area according to the following expression also used in the current state:

$$St = Sf + Sv + Sst$$

where:

St= Territorial surface [mq]

Sf= Lot surface [mq]

Sv= Road surface[mq]

Sst= Surfaces for standard [mq].

The internal road system was designed to obtain a road surface of 11.000 mq.

The standard surfaces are calculated using a per capita endowment of 28

mq/inhabitant. The PRG of Pontecagnano Faiano provides, in fact, an endowment of areas for public services and equipment equal to 28 mq/inhabitant divided as follows: 5 mq/inhabitant for education; 2,5 mq/inhabitant for equipment of common interest; 18 mq/inhabitant for equipped public green areas; 2,5 mq/inhabitant for parking.

The graphic elaboration of the project returned documents relating to the accesses, the functional subdivision, the building surfaces and the project plan.

The design of the accesses (Figure 2) to the area is carried out on the basis of the considerations emerging from the Preliminary Plan which envisages the construction of a service road behind the coastal settlements which makes it possible to eliminate the traffic flows along the SP 175, generated as well as from long-distance crossings, from the need to access the aforementioned settlements, and below which the transformation and regeneration interventions of the coastal area are concentrated.

The functional subdivision (Figure 3) aims to achieve a correct distribution on the territorial surface of all the types of land areas envisaged, taking into account their sizing that emerged during the proportioning phase. Furthermore, a new road inside

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the settlement has been introduced to serve all the lots.

Table 3. Urban building load

Urban building load					
		Slp [m²]	Slp [%]	N_{all} [-]	
Residential	Erl	7.000	35	70	
	Ers	3.000	15	30	
Non-residential	Commercial	3.000	15	-	
	Services	3.000	15	-	
	Tourist	3.000	20	-	
Total		20.000	100		

where:

Slp = Gross usable surface [mq]

Nall = Number of housing [n]

Erl = Private housing

Ers = Social housing

Source: Elaboration by authors, 2022

The result is an overall surface area of 17.333 mq in terms of urban planning standards, compared to a standard that is completely absent at present.

Table 4. Proportioning

Proportioning					
St	Sf	Sv	Sst		
$[m^2]$	$[\mathbf{m}^2]$	$[\mathbf{m}^2]$	$[\mathbf{m}^2]$		
71.103	42.770	11000	17.333		

Source: Elaboration by authors, 2022

Table 5. Breakdown of zoning standards

Urban equipments							
		N _{ab} [n]	Sst _i [m ²]	Sst _c [m ²]	Sst _p [m ²]	Sst _v [m ²]	Sst _{tot} [m ²]
Residential	Erl	233	1167	583	583	4.200	6.533
	Ers	100	500	250	250	1.800	2.800
Non- residential	Commercial	-	-	-	1.200	1.200	2.400
	Services	-	-	-	1.200	1.200	2.400
	Tourist	-	-	-	1.600	1.600	3.200
Total			1667	833	4.833	10.000	17.333

where:

 $N_{ab} = Number of inhabitants [n]$

 $Sst_i = Public facilities for education [mq]$

Sst_c = Public facilities for common interest [mq]

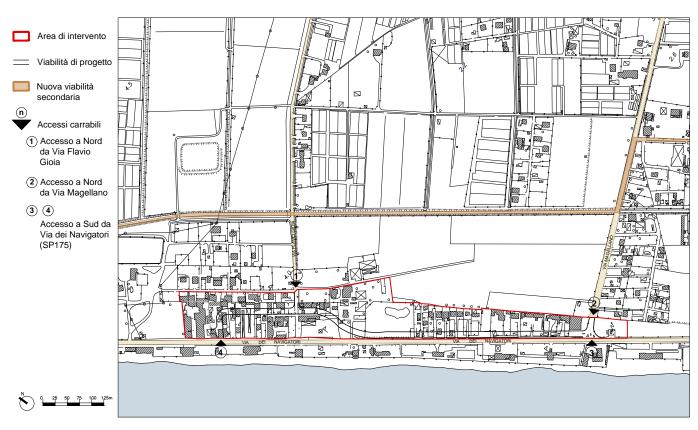
Sst_p = Public facilities for parking [mq]

Sst_v = Public facilities for green equipped [mq]

Sst_{tot} = Total surfaces by public facilities [mq]

Source: Elaboration by authors, 2022

Figure 2. Accessibility to the area



Source: Elaboration by authors, 2022.

Figure 3. Functional lots



Source: Elaboration by authors, 2022.

Area di intervento
Superficie pedonale
Superficie ciclabile
Edifici residenziali
Campo da basket
Campo da pallavolo
Superfici permeabile
Superfici semipermeabile
Superfici semipermeabile
Specchio d'acqua

Figure 4. Project plan

Source: Elaboration by authors, 2022.

The project plan (Figure 4) encompasses the design hypothesis with the distribution in the intervention area of 20 buildings in 3 lots, dedicated to fulfilling the residential function and 5 buildings, in 2 lots, dedicated to the non-residential. The construction of three public car parks is planned, using semi-permeable surfaces.

The whole is completed by the presence of public green areas, equipped for sports and equipment of common interest.

5. Conclusions

The problem of illegality is an entirely political issue (Fasolino 2009; 2011): it is essential to provide contrasting policies and make territorial and urban planning tools more efficient and effective.

It is necessary to relaunch the debate on urban reform so that a more organic and effective system of rules for the planned use of the territory can be put into operation, the only tool for the concrete prevention of unauthorized building. The multifaceted phenomenon of illegal building risks being regarded as a great episode of bottom-up management of a territory, with respect to which those in charge of planning give up to conclude that there is no better plan than the one created, piece by piece, spontaneously, by settled populations (Fasolino and Gerundo, 2003).

The model presented could represent a support in intervention decisions in cases of particular concentration of illegal buildings. Its use is subordinated to a multidisciplinary work in which several technicians can bring their own specialized knowledge in the urban planning, legal, environmental, structural and economic-estimating fields to restore denied conditions of legality, safety and urban decorum. It could also support the management of the growth of settlement fabrics, helping to

regulate the demand for urban surface endowments and buildings in areas where soil consumption has already occurred.

Indeed, among the critical points identified, the lack of definition of unambiguous criteria for the delimitation of illegal aggregates, the complexity due to ownership fragmentation and the limited number of recovery experiences of these types of settlements should be underlined.

With regard to the development prospects of the model, the need to define unambiguous criteria for the assignment of the urban load is considered, as well as forms of involvement of the local community to take part in the participatory processes in the recovery project. We should not forget one of the central issues of the urban planning debate, namely resilience. The redevelopment of these areas should include measures aimed at obtaining a settlement capable of adapting to climate change but also to social, cultural, economic, structural changes as well as global warming.

Notes

1. It should be noted that the number of lots is lower than the number of applications examined: some applications were excluded due to lack of data, others were connected to the same property but presented both pursuant to law n.45/1985 and pursuant to law n.724/1994.

Author Contributions

Conceptualization: I.F.; Formal Analysis: F.C.; Investigation: F.C.; Data Curation: F.C.; Writing: F.C. - Original draft preparation: F.C.; Supervision: I.F.

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Conflicts of Interest

The authors declare no conflict of interest.

Originality

The authors declare that this manuscript re-elaborates and supplements the contents of the following paper: Adinolfi V., Cicalese F., Pisaturo M., Fasolino I. (2022), "Modello di supporto alla pianificazione del recupero di insediamenti illegali", in Moccia F.D., Sepe M. (a cura di), XIII Giornata Internazionale di Studi INU - 13°Inu International Study Day "Oltre il futuro: emergenze, rischi, sfide, transizioni, opportunità - Beyond the future: emergencies, risks, challenges, transitions, and opportunities" (Napoli, 16 December 2022), *Urbanistica Informazioni*, n. 306s.i., INU Edizioni, Roma, pages 389-393.

The authors also declare that the manuscript is not currently being considered for publication elsewhere, in the present of any other language. The manuscript has been read and approved by all named authors and there are no other persons who satisfied the criteria for authorship but are not listed. The authors also declare to have obtained the permission to reproduce in this manuscript any text, illustrations, charts, tables, photographs, or other material from previously published sources (journals, books, websites, etc).

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