

# After the Earthquake: The Resilience of the Territories and Communities in the Emilia Romagna Crater

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**Abstract:** Almost ten years after the 2012 earthquake in Emilia Romagna, which devastated the municipalities of the crater, we can begin to evaluate the effects of a reconstruction process that begins to restore a new landscape and a new urban image. The reconstruction plans have taken on an unprecedented multilevel and multidisciplinary structure, an integrated territorial project that seeks to overcome the drama of the disastrous event by seizing the opportunity for socio-economic revitalization and for the safety of the settlements affected by the earthquake.

**Key words:** strategic planning, decision making, urban resilience, urban regeneration, social inclusion

## 1. The Reconstruction: Guiding Visions for New Development Processes

The experience of the Plans for the municipalities of the Emilia Romagna crater — Ferrara, Bondeno, Cento, Mirabello, Sant’Agostino, Vigarano Mainarda object of study and research since 2012 starting from the identification of urban boundaries — is the testimony that things can work, when the will of the institutions at different levels meet each other in the search for common goals. However, with the disaster caused by the earthquake, a season of fruitful collaboration seems to have started, based on the capacity for dialogue and reflective learning of the different actors involved — Region, Provinces, Municipalities, Stcd, Prefecture, local communities, Departments and research centers — and on the construction of shared paths with the aim of good governance of decision-making processes (Fig. 1).

The objective set out immediately it was to guarantee the socio-economic recovery of the Ferrara



**Fig. 1 Ferrara: Church of S.M. Visitation (Madonnina) - The recovery of the churchyard as a public square near the walls.**

area; promote the redevelopment of the built-up area, also according to the density, quality and complementarity of local services and public services on an urban scale. The reconstruction plans have taken on a multilevel and multidisciplinary structure, an integrated territorial project that has tried to overcome the tragedy of the disastrous event by taking the opportunity for the socio-economic revival and for the safety of the settlements affected by the earthquake. In the activity carried out, the traditional separation between urban planning and seismic risk mitigation

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seems to result in a tool — the reconstruction plan — which integrates the themes of historical heritage recovery and enhancement in a single design phase aimed at social recovery — economic, landscape enhancement and environmental prevention, also pushing to define the economic needs in terms of costs and times. Of course, there is still a lot to do to fully develop the innovative potential of this extraordinary — not ordinary — tool that the legislator has designed to intervene in the areas affected by the earthquake. It is appropriate to reflect on the possible repercussions that the work carried out in recent years and in these conditions in the Emilia-Romagna crater may have on ordinary regional urban and territorial planning practices.

Despite some difficulties encountered in harmonizing the strategies of all sixty municipalities affected by the earthquake of 20 and 29 May 2012, today it can be said that the reconstruction plans introduced by the L.R. 16 of 21/12/2012 “Rules for the reconstruction of earthquake-stricken territories” represented an important test bench for the innovation of intervention procedures in the areas of the “Emilian seismic crater” and, more generally, allow to start a reflection, and also an interesting debate of both a methodological and operational nature, on the subject of post-seismic public initiatives in our country [1]. The plans are configured as an unprecedented tool that combines strategic planning and urban planning (Fig. 2), through which it was intended to accelerate the return of populations to their original homes and to promote, at the same time, the process of socio-economic recovery of the historic centers damaged by the earthquake. The timely and immediate approval of planning tools — both reconstruction plans and organic plans for historic centers — is proof that, when the approach supported by specialist knowledge prevails, when plans are the true expression of social participation, and when there is the commitment of local government institutions, then the results cannot be lacking.



**Fig. 2 Ferrara: Palazzo Schifanoia — The recovery of the building and its garden as a place of social inclusion.**

## **2. Resilience: Policies and Actions for Fragile Territories**

Faced with the increasingly acute and perceptible problems induced by climate change, the hydrogeological and seismic fragility of the territory, social transformations, the need to reduce land consumption, energy inefficiencies, the responses of urban planning have often been those of a factual continuity with the expansive logic of the past, even when new tools would have made it possible to take alternative paths. With respect to the complexity of the emerging issues, it has often been easier to re-propose models of evolution of the urbanized land-intensive settlement system, which have turned their backs on an urban organism called to carry out most of the activities functional roles without being able to do it. Thus a circuit was fed which in the most serious cases led to situations of conflict, crisis and degradation [2]. Today the awareness has been acquired that that model is no longer sustainable, from an environmental as well as a socio-economic point of view. The new characteristics and needs of the reconstruction plan thus become those of resilience, that is, the capacity of the urban organism to adapt to environmental and social challenges and also to react positively to traumatic emergencies; the study of urban metabolism, aimed at creating or strengthening virtuous circuits in the use of resources and in the

growth of well-being; of the transformability of urban fabrics, to make them participate in a new urban design in which the social dimension of public and private spaces represents the guideline for generating a condition of quality of life and sustainability of choices. The term resilience therefore means the ability of a system to respond adaptively to more or less traumatic external stresses or changes. In particular, the management of disasters and that of climate change are two fields in which the notion of resilience has an ever greater explanatory power as it indicates the ability of the territorial system to respond to these types of pressure, adapting to events and evolving towards new ones, states different from the initial ones. In urban planning, the concept of resilience is directly connected with that of the built environment, and today it represents the most coherent and concrete approach to describe the transition from the crisis to the rebirth-regeneration of the city [3]. Resilience, circular economy, sociality of the urban space are the key words around which the drafting strategy of the plan is articulated, accompanied by evaluation and monitoring tools. Actions for the mitigation of seismic risk begin, in the reconstruction plans, with the identification of the vulnerability of the urban system through the analysis of pre-seismic urban planning, and the assessment of future scenarios. In this sense, the prevention process started has characteristics of multiscalarity and is connected to the double level of reconstruction activated for the municipalities of the Emilian crater: the material one, aimed at restoring, if not seismic improvement, the structural conditions of urban aggregates, and the economic and social one, promoted through the Area Plans, of strategic value, and the Reconstruction Plans, of implementation value [4]. The Emilia Romagna Region — following the earthquake of May 2012 — to implement the redevelopment and revitalization of the historic centers affected by the earthquake, has identified the programmatic-implementation tool of the Reconstruction Plan, configuring it in all respects

as a strategic urban project to rebuild and protect the territory. It is important to highlight that the organic plans were immediately aimed at restoring living conditions, the resumption of economic activities and the reduction of building and urban vulnerability, on the basis of the provisions issued by the Region.

### **3. The Regeneration: Projects for the New City**

The complexity of natural and anthropogenic risks is an unmissable opportunity for rethinking and incremental modification for the resilience of the city. The multiplicity and articulation of risks constitute fertile contents of a growing cultural, social and technical awareness of an increasingly vast field of actors in the face of the precariousness and uncertainty of the future that those risks feed. The few risks that we can consider of exclusively natural origin intersect and overlap with the many of an anthropic nature, that is, produced by the ways in which the city was built and its metabolism was consolidated. At stake is the ability to integrate the traditional dimensions of seismic and hydrogeological risk with the environmental ones connected to the hydraulic one, seismic vulnerability, soil, water and air pollution, ecosystem impoverishment, to which social and scarce marginality is associated cultural awareness. These risks are amplified by the effects induced by climate change which affect not only the dynamics of floods and storm surges but also the slow rise in sea level. This presupposes a substantial change in the methods of knowledge and interpretation and in the adaptive and proactive responses that place the environmental question at the center of the processes of urban regeneration and environmental protection, in continuity with the experiences already underway. The dimension of the risks must therefore be faced in an interpretative and operational perspective of integration and not of sectoriality and fragmentation, in order to understand the mutual solicitations and to foresee credible planning programs and actions [5].

An indispensable cornerstone of this change of perspective and of the very form of the plan is the construction of an incremental network of green and blue infrastructures — starting from the heritage of the green belt of the city walls, existing urban parks, large natural basins and the network itself. of the historical territory — capable of constituting the widespread system of the open spaces of the city and of carrying out a pervasive function of urban and territorial regeneration, outlining a landscape connotation in which the environmental and cultural dimensions are deeply intertwined. In the crater of Emilia Romagna, the obligation to use the Reconstruction Plans, pursuant to art. 12 L.R. 16/2012, as a condition for the disbursement of public contributions to repair private and seismic damage improvement interventions has led to a paradigm shift by many public administrations (Fig. 3).

The Municipalities, after the earthquake, would have preferred to stick to traditional urban planning, and intended the reconstruction as a simple building and public works strategy, in compliance with the old PRG still in force. A vision that is decidedly more open to innovation and territorial sustainability was instead practiced by the municipalities of the crater which followed the settings of the Technical Structure of the Delegate Commissioner, equipping themselves with adequate reconstruction and planning tools. The reconstruction plan [6] will in fact give voice and shape to the awareness that has been emerging in the city in recent years through: a) awareness of the risks and fragility of the territory; b) awareness of the economic and environmental potential, at all scales, of the city's vast agricultural heritage; c) awareness of the competitive opportunities linked to an increasingly qualified infrastructure and re-urbanization; d) awareness of the necessary multifunctionality of the city and its port; e) awareness of the opportunities offered by a widespread and concentrated demand for regeneration and re-functionalization of the existing city. The plan will be matched by the development of



**Fig. 3 Ferrara: Revedin Chapel — The recovery of the building as the fulcrum of the equipped public space.**

guidelines, rules, programs and projects capable of pursuing growing and necessary integrations of actions, characterized by concreteness, effectiveness and quality, such as the integration of risk adaptation with landscape quality, urban and ecological-environmental; how the integration of industrial agricultural production 4.0 with the zero km agri-food chain; how the integration of flows of raw materials, goods and tourists with widespread accessibility to the city; as the integration of the manufacturing economy, logistics and “heavy” industry with the economy of culture, capable of also driving that of creativity and relational tourism; and the integration of the regeneration of the existing city with the contrast to land consumption also through the consolidation of a network of quality open spaces. In fact, there was a strong belief that reconstruction, in order to be successful, needed a shared policy on an adequate scale to make effective the interventions for the recovery of social inclusion and for the relaunch of competitiveness, particularly necessary for the peripheral territories that already they suffered from marginal conditions and underdevelopment even before the earthquake.

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