

D.3.3.2 White Paper on governance model methodology for reconstruction after a natural disaster

**Modelling a practice from the Emilia - Romagna 2012
earthquake**

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0. Abstract

This document has been drafted with the intention of reconstructing the history and methods of the management of the reconstruction process, with an "evaluative approach" aimed not only at understanding its positive characteristics and possible criticalities, but also at systematising the knowledge and, since this was a "new" experience for the Region (at least in terms of the extent of the phenomenon and the breadth of its effects), better understanding the aspects of learning from experience and the overall replicability of the process.

The overall picture of the earthquake is reconstructed in its various facets, from the scenario immediately following the events of May 2012 to the strategic choices made to ensure, through collaboration between the national and regional governments, effective governance of the emergency and an equally effective start to the reconstruction. In particular, it considers the choices that have, more than others, ensured an overall 'fluidity' of the work process, starting from the identification of the President of the Region as the Deputy Commissioner for reconstruction, and the creation of the various instances, both institutional and technical, that together have made it possible to ensure both a solid legal-administrative basis and effective technical support for a continuous decision-making process, which has spanned the 10 years since the 20th of May 2012.

A summary is then presented of the state of the art of reconstruction in the various sectors - private residential, private industrial and public - along with as exhaustive as possible a picture of the "toolbox" of regulatory, technical, planning and economic tools that have supported the reconstruction management.

Making use of analytical and evaluative contributions from other natural disasters in Italian history, a synoptic reading of the characteristics of the management of each one is attempted, in order to derive useful elements for the design of a governance model which, although it has many common features between events, shows a substantial level of dependence on the political-administrative, social and geographical context in which the disaster itself occurs. An attempt is made to identify the fundamental pillars of this model, at a time when a draft delegated law on the subject was due to be approved by Parliament and has unfortunately run aground due to recent political events.

Lastly, an attempt is made to draw some elements for reflection from the experience of "earthquake governance," to define effective strategies for the relaunch of the territory affected by the disaster, also considering the new crisis factors that have heavily complicated the situation in the territory, starting with the increasingly critical effects and impacts of climate change.

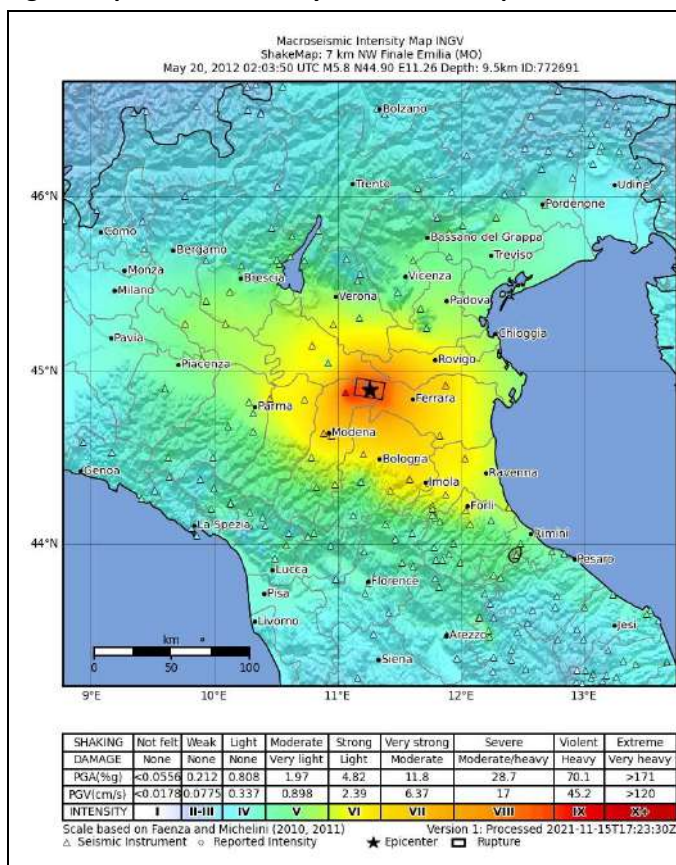
In view of the need to increase that "*adaptability*" of the regional territory which, when faced with crisis factors and real shocks, as in the case of the earthquake, has ensured the ability to change, innovating social behaviour, governance methods, characteristics of the production systems, etc., which over time have given Emilia-Romagna the attractiveness and competitiveness that made it a leading region in the national and European context.

1. Intro: a resilient land facing a catastrophe

The earthquake of May 2012 severely hit the regions of northern Italy and in particular a large area of Emilia, including the provinces of Ferrara, Modena, Reggio Emilia and Bologna (as well as the Lombardy province of Mantua and the Veneto province of Rovigo). The earthquake came unexpected to most people, as the collective memory had forgotten what had happened with the 1570 earthquake in the Ferrara area, in which the city of Ferrara itself was half destroyed. That event during the Renaissance caused, among other things, the first documented episode of soil liquefaction phenomena and one of the oldest known occurrences of similar events. This liquefaction, in the areas of river humps in the plain, was again in 2012 among the causes of significant damage to buildings .

The seismic swarm that began on the 20th of May contained 8 tremors of a magnitude of at least 5 on the Richter scale and reached its maximum intensity with the tremors of 20th and 29th May 2012, respectively at 5.9 and 5.8. They hit a large territory, with a population of about 550,000 inhabitants (excluding the capital municipalities of the four provinces hit, Ferrara, Modena, Reggio Emilia and Bologna), which is highly industrialised. There were 59 municipalities involved, concentrated in an area with a high density of agricultural, artisan and industrial production activities and the presence of highly internationalised production districts (such as the biomedical sector in the Mirandola area), where 2% of the national GDP is produced,¹ with exports amounting to 12.2 billion euros and 19.6 billion euros of added value .

Fig. 1: map of the area hit by the 2012 earthquake²



¹ Excluding the contribution of Bologna

² Source: <http://terremoti.ingv.it/event/772691>

The damage - often collapses or serious destruction - affected historical centres, especially public and private buildings of historical and cultural value, as well as industrial and artisan buildings in suburban and industrial areas. The final toll of the disaster was 28 victims, with about 300 people injured, almost 21,000 homes damaged, and 45,000 people - 19,000 families - forced to temporarily leave their homes, 16,000 of whom were accommodated in tent camps set up by the Civil Protection (see box no. 1).

72 municipal buildings, 653 schools and university buildings, 27 libraries, 102 health facilities, and 456 churches and places of worship were damaged. A further 754 public buildings, including 33 theatres, as well as numerous structures from the land reclamation system, suffered serious damage.

In addition to this, 10,000 companies also very serious damage, with widespread collapses, and 3,748 of them had to lay off more than 40,000 workers; there were also almost 14,000 farms and livestock holdings affected, covering an area of more than 200,000 hectares. The overall damage estimate certified by the European Commission reaches 12.2 billion euros. When faced with a disaster of this magnitude, the public and private actors in the territory become - all together - protagonists of the reconstruction. Attention is immediately focused on social cohesion: schools and the industrial sector resumed their functionality in a short space time, avoiding the displacement and depopulation characterising other events in Italy's long seismic history. From this standpoint, the leadership exercised by the Region in the Inter-Institutional Committee – established specially for the purpose and composed of members of the local and regional governments, under the leadership of the regional President, appointed Deputy Commissioner of the Government - allowed the region to prepare a plan for the reconstruction in a short space of time that relied on the involvement of local communities.

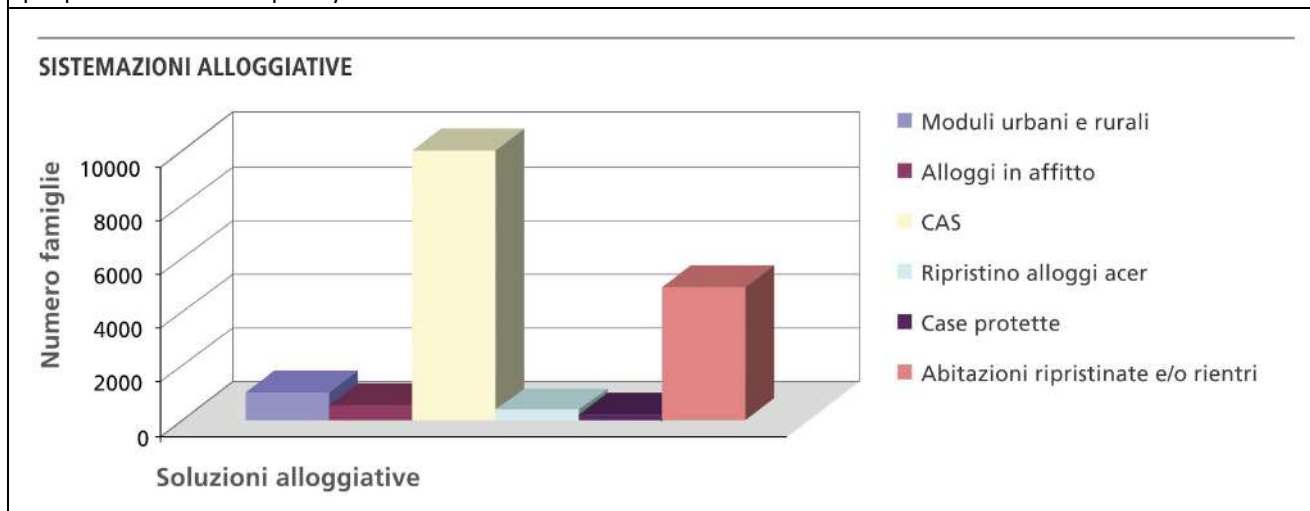
Given the strategic need to ensure the maintenance of social cohesion, the focus was immediately placed on reducing as much as possible the precarious conditions that the community would have to face. In agreement with the national government, legislative decree 74/2012³ was drafted, with the immediate objective of ensuring the recovery of the functionality of schools, services to citizens and the agricultural and industrial sectors as soon as possible.

³ Legislative decree n° 74, June 6 “*Urgent measures in favour of the populations affected by the earthquakes that hit the territory of the provinces of Bologna, Modena, Ferrara, Mantua, Reggio Emilia and Rovigo on 20 and 29 May 2012*”.

Box 1: The management of the emergency of people left homeless⁴

Of the 19,000 people forced to leave their homes, 16,000 were housed in tent camps set up by the Civil Protection (all in the province of Modena, except Cento). On 19th of July 2012, the number of people assisted dropped to 7,000, on 3 October to around 4,100, and in November, when the tent camps closed, to 2,900.

The tent camps were gradually closed: after the closures of the San Felice camps, all the others followed at the beginning of October, until the final closure in the last days of October in Carpi. The closure was made possible by the finding of hotel accommodation solutions for all the displaced people who had no other option (about 2,200), while waiting for the construction of 755 prefabricated housing modules, intended to accommodate 2,300 people. In the first few days, there were about 2,200 people in the hotel, then an increase in requests favoured by the migration of people from other temporary situations.



The programming approach

The centralisation of decision-making functions in the figure of the *President, appointed as Deputy Commissioner of the Government*, allowed the Region to ensure a continuous connection with the national level, and at the same time to exercise strong leadership within the *Inter-Institutional Committee* - composed of members of the local and regional governments⁵. This led to the preparation, in a very short space of time, of a path articulated in operational plans for reconstruction, adopted by means of the *Commissioner's ordinances*, with the direct participation and consensus of the local communities. This led to the main strategic choices for the immediate future, from the adoption - as early as 5th July 2012 - of the *Schools Operational Programme*, which enabled its timely reopening on 17th of September, to the adoption of clear rules for starting and managing reconstruction in a transparent manner.

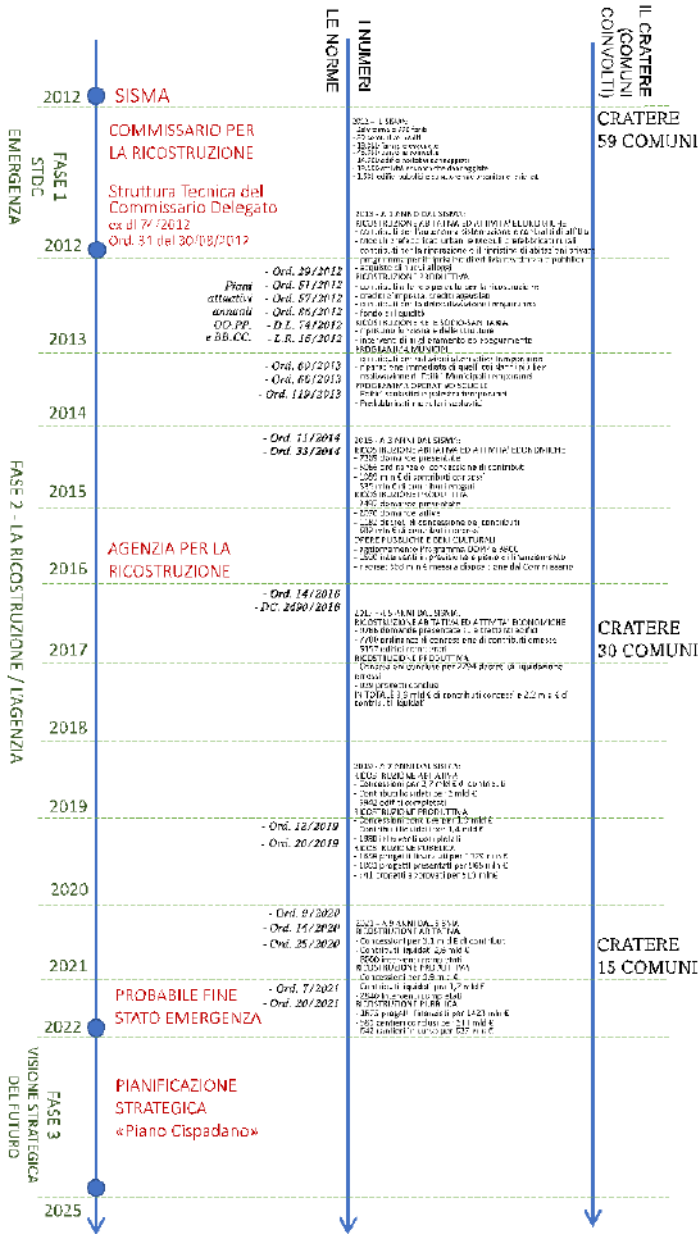
The governance of the emergency was therefore based on the convergent action of local democratic institutions and citizens, based on the principle that the vision, objectives and rules for the reconstruction must be built together, ensuring consensus, common mobilisation towards the objectives, efficiency of management, capacity for control, and transparency of processes. All this while the direct involvement of local administrators guaranteed a closeness to the community that was the only way to ensure the rapid identification of immediate priorities. With the awareness that only such an approach could ensure that local

⁴ See Report "Six months after the events of 20 and 29 May 2012 - the earthquake damage and the policies put in place to deal with the emergency and reconstruction. First assessment", and Report "One year after the earthquake" (by Emilia-Romagna Regional government)

⁵ The Inter-Institutional Committee is composed of the President of the Region, also in his capacity as Delegate Commissioner of the government for the emergency, the mayors of the affected municipalities and the presidents of the provinces.

identities were not rigidly conservative but open, and used as a resource - the key to innovation aimed at guaranteeing more security and better preparation for possible future events.

Fig. 2: the Emilia – Romagna earthquake, ten years of reconstruction



From this point of view, a fundamental choice coincided with the allocation - by means of Decree Law 74 - of the decision-making to a “medium” institutional level - the Region, with its President as Deputy Commissioner (fig. 3), endowed with a Technical Structure set up *ad hoc*⁶, to carry out the temporary public works (schools, town halls, temporary housing, etc.) so that the population affected by the earthquakes of

⁶ The Delegate Commissioner’s Technical Structure, established by legislative decree No. 74/2012, was then regulated by Commissioner’s Ordinance No. 31 of 30 August 2012. As of 2015, it has merged into the Agency for Reconstruction - Earthquake 2012, established for the purpose of managing the completion of the reconstruction.

May 2012 could continue to enjoy the necessary public services.

This was based on the conviction that, by consistently applying a criterion of *vertical and horizontal subsidiarity*, this was the best option among the alternatives of an all-national direction 'far' from the territory, or of a management potentially too close to the local dimension of the territory, to ensure balance in the choice of priorities and effectiveness in the implementation of interventions.

Fig. 3: The President of the Region, Deputy Commissioner for Reconstruction



In general, the three regions affected - and Emilia-Romagna in particular - had already shown a significant capacity to adapt to the challenges of change, especially if we look at the history of its industrial districts and their progressive integration into the regional innovation system that has its backbone in the *Regional High Technology Network*⁷.

In the event of a disaster, the ability to respond is largely linked to the magnitude of the destruction and the size of the financial resources needed to rebuild; in the case of the Emilian earthquake, the importance of the choice to self-manage the emergency and the reconstruction, reacting with immediacy and aiming for a better quality of adaptation, especially in terms of seismic safety and the energy performance of buildings, now seems clear.

The approach proved effective and several companies - both multinational and local - located in the area of the epicentre (first and foremost the companies in the biomedical district), rather than relocating their plants to other countries, looked at the event as an opportunity to develop plant and organisational innovations and increase their production capacity.

Several researchers, in analysing the history of the event, developed the conviction that the ability of the regional government to define together the objectives and the path of reconstruction and to share it with its own institutional interlocutors and those in civil society, has not only favoured reconstruction in the strict

⁷ See: <https://www.retealtatecnologia.it/>

sense of the word (as a reaction of "adaptation" to the shock of the earthquake) but also allowed them to strengthen the basis for a new evolutionary model of sustainable development of the territory. In other words, it reinforced the "adaptability" of the territory, by understanding how to seize, even in dramatic conditions, the opportunity to reinvent itself, favouring the principle of "where it was, how it will be" that is needed for a new development path⁸.

Also going in this direction is the new *Regional Strategic Document* for the unitary programming of European Funds⁹, approved by the Regional Council and addressing the crisis triggered by the COVID-19 pandemic in the regional economy, to re-launch a more sustainable regional development, working towards the European goals for 2030 and 2050, within the strategic framework of the *Pact for Jobs and Climate* (June 2021) and the *Regional Strategy - Agenda 2030 for Sustainable Development* (November 2021).

Within the framework of the tenth anniversary, this document therefore intends, on the one hand, to highlight the work of the Emilia-Romagna Region, carried out first by the Deputy Commissioner's Technical Structure, then by the Agency for Reconstruction, emphasising its effective governance in the face of the immediate social and economic challenges posed by the earthquake. At the same time, this document is intended to represent the framework for the challenge of the new development phase prompted by the forthcoming exit from the earthquake emergency. This is a challenge that must necessarily take into account the new global risks, in particular the "syndemic" that science is talking about today, made up of Covid-19, the harmful ecological and social effects of climate change (and now also the economic and social impact of the new armed conflict involving Europe), a sharp increase in social inequalities, along with the general population decline in the western world and the risks of economic 'peripherality' and new social fragmentation¹⁰.

Within the framework of its participation in the Firespill project, with this document, the Regional government and the Agency for Reconstruction place themselves in a position of accountability with respect to their political - institutional responsibilities of planning, management and control, towards those who are at the centre of the effects of the exercise of such functions - i.e. citizens and social and economic actors - to report on how resources have been used, on how the choices made have or have not turned out to meet needs, on the sustainability of the results achieved, and also on the problems still to be solved, with a view to representing the evolution of the affected community over the decade since the event.

This involves promoting open and interactive communication with and between the actors in the territory, providing all stakeholders with a picture of the territory's performance - economic, social and environmental -, performing reasoned evaluations of what has been achieved, and designing the framework for future programmes and projects. All this must be carried out according to the principles of relevance and

⁸ "A natural disaster such as an earthquake generates new tensions between adaptation and adaptability. Recovery requires adaptation but can also inspire "adaptability" in which the recovery process allows the economy to be re-oriented towards new paths of growth", see Bianchi P., Labory S.: *The role of governance and government in the resilience of regions: the case of the 2012 earthquake in the Emilia-Romagna region in Italy*; HAL, 2015

⁹ *Regional Strategic Document 2021 - 2027*, approved by resolution of the Legislative Assembly on 30 June 2021, provides a unified framework of the Region's strategies and priorities for development policies financed by the European Funds for Cohesion (ERDF, ESF), the Development and Cohesion Fund (FSC) the European Agricultural Fund for Rural Development (EAFRD), the European Maritime, Fisheries and Aquaculture Fund (EMFAF) and the National Recovery and Resilience Plan, in the framework of the objectives and lines of action of the Jobs and Climate Pact approved in December 2020

¹⁰ The social economist Stefano Zamagni, Professor of Political Economy at the University of Bologna (Faculty of Economics) and Adjunct Professor of International Political Economy at the Johns Hopkins University, Bologna Center, expressly speaks of a "syndemic" as a summation of closely related factors, such as the current Covid-19 health crisis, the climate crisis and its ecological effects, and the increase in social inequalities.

transparency of the information provided, balance in representing the picture, documenting both positive and negative aspects, and clarity, using language that is as accessible as possible even to citizens without specific technical skills.

Far from an approach to the results obtained that merely involves reclamation, it is a matter of seizing the occasion of the tenth anniversary to launch a phase of development that aims to increase skills and capacities, strengthen relationship systems, and contribute to regenerating the social capital that is essential for a sustainable territory, economically, socially and ecologically, giving a concrete form to the “*ecological transition*” for which the need is increasingly evident today.

In short, the aim is to enable a step forward in managing such types of crises, which will be useful for the Italian and European communities, for the Italy-Croatia programme stakeholders and, last but not least, for all our Firespill partners.

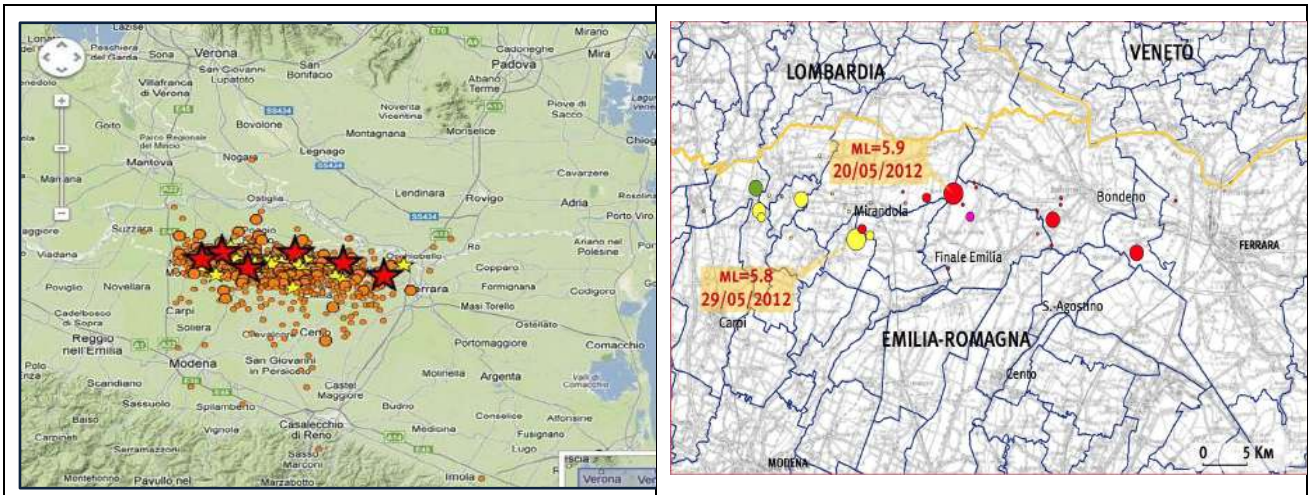
2. Governing the catastrophe

“The literature on regional resilience has stressed that resilience consists in both adaptation and adaptability. Adaptation is the capacity to react to a shock and remain on a particular development path already engaged in before the shock. Adaptability is the capacity to favour the creation and engagement of new paths of development. (...) A disaster such as an earthquake creates new tensions between adaptation and adaptability. Recovery requires adaptation, but may also inspire adaptability in that the recovery process is used to favour the re-orientation of the economy towards new paths of growth (...). In the Emilia-Romagna case, the earthquake induced mobilisation towards adaptation, led to increased adaptability, since the re-orientation of the region towards a new path of growth was consolidated.”¹¹

2.1 The events and the territory hit

The "earthquake of 2012" was made up of a "swarm" of earthquakes that occurred in the district of the Emilia, Lombardy and Veneto plains (fig. 4), corresponding to the provinces of Modena, Reggio Emilia, Ferrara, Bologna, Mantua and Rovigo. The major tremors were felt in the whole of Central-Northern Italy and in parts of Switzerland, Slovenia, Croatia, Austria, Southern Germany and South-Eastern France. The 2 major quakes, of magnitude Richter 5.9 (Mw 5.86), recorded on 20 May 2012 (04:03 a.m.), and magnitude Richter 5.8 (Mw 5.66), on 29 May (09:00 a.m.), carried Ground Peak Accelerations of 0.31 g and 0.29 g, respectively.

Fig. 4: the 2012 earthquake: location of the epicentres



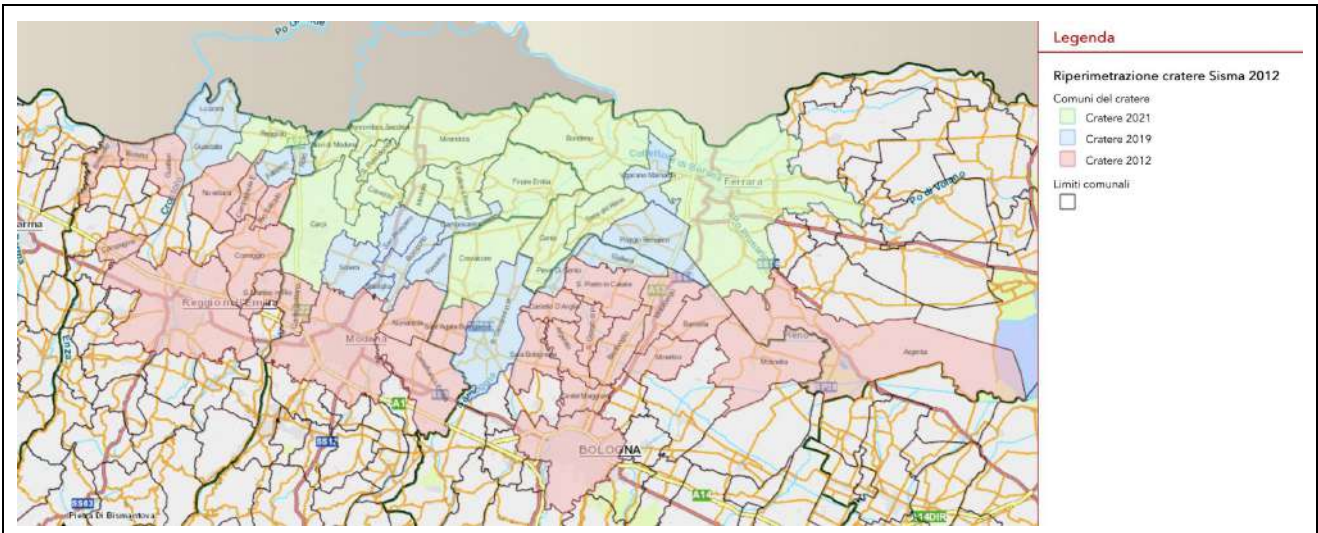
The earthquake affected a large area, involving 59 densely populated municipalities with a total of 1.24 million residents; of these, about 550 thousand resided in the 33 directly affected municipalities in the area of the epicentre (the "crater"). Out of the 59 municipalities hit, only 7 do not belong to one of the 10 Municipal Unions. Except for the four municipal capitals (including Bologna, the regional capital), most of these are small municipalities with reduced operational capacity in their technical structures.

The Emilia earthquake was the first in the history of Italian disasters to hit an area with a high level of industry. The damage was very serious, and spread over a very large territory, including one of the most

¹¹ Bianchi P., Labory S.: *The role of governance and government in the resilience of regions: the case of the 2012 earthquake in the Emilia-Romagna region in Italy*; HAL, 2015

important areas of production in the country, with the presence of industrial sectors of great importance, such as textiles and clothing, precision mechanics and biomedicine. Due to this aspect, which differentiated it from the earthquakes of the past, the event has been described as the "earthquake of the warehouses". After the first phase, in which all the 59 municipalities were declared to be in a state of emergency, the perimeter of the so-called "crater" was re-defined twice, until the present situation, defined in 2021, with only 15 municipalities still included, the most hard hit (fig. 5).

Fig. 5: The 2012 earthquake: the municipalities affected and the progressive re-definition of the "crater"¹²



Guaranteeing continuity of services to citizens and businesses

The continuity of schools, town halls, health services, business and employment was the priority for institutions' strategic response: in this sense, the effort to guarantee full continuity for public services, to support the citizens affected by the event, as well as supporting the continuation of the productive economic system, immediately became the primary objectives of the Emilia-Romagna Region, and with it, the entire institutional and social system of the territory hit by the earthquakes. A concrete example of this - as we will see in the section on the operational tools adopted - was the action taken on the school and education system, aimed at completing the current year with grades and exams, in order to allow enrolment in the next school or university cycle the following year and reopen schools in September 2012. It was therefore decided to give schools the role of "community space" that libraries, theatres and other public spaces located within the "red zones" and declared unfit for use¹³ could no longer play for the time being.

In general, the behaviour of the people of Emilia was to immediately roll up their sleeves: in this respect, the citizens' contributions facilitated the work of mayors, the Civil Defense and Public Administration in general, as well as that of volunteers, within the framework of constant dialogue between the Deputy Commissioner, local institutions, associations and citizens.

The concern was to adopt an approach from the outset that ensured continuity between emergency, transition and reconstruction, restoring the 'normal living conditions' envisaged by legislative decree 74/2012 right from the emergency phase, and avoiding the creation of the conditions of social precarity that

¹² Source: Emilia – Romagna Region - <https://www.regione.emilia-romagna.it/terremoto/webgis/webgis-cratero-2012-2022>

¹³ The so-called "red zones" are generally established by order of the city mayor.

characterised other Italian earthquake emergencies, with the population confined to shacks for an indefinite period of time¹⁴.

In this way, a plan took shape for the reconstruction process that set some clear objectives and principles: no to “*new towns*”¹⁵, no to settlement spread across the territory, yes to safeguarding the identity of places and recovering historical and cultural assets.

Let us briefly review below the phases and choices that marked the management of the disaster, from the emergency to the start of reconstruction.

2.2 The first phase: immediate emergency and assistance to the population

On the date of the earthquake, legislative decree 59 (May 17, 2012)¹⁶, which intervened in the organisation of Civil Defense, had just come into force, establishing that the duration of a state of emergency could not exceed sixty days, extendable for a maximum of another forty. During that time, in addition to initiating damage assessment and rubble clearing, the priority was to assist the approximately 16,000 citizens left homeless, for whom different solutions were prepared:

- approx. 9,850 were housed in the 34 tent/caravan camps set up¹⁷;
- over 2,300 in 53 indoor facilities;
- over 2,400 in hotels.

Aware of the potentially very negative impact of the event on social cohesion, from the moment of accommodation in the tent camps, recreational activities for children and actions to promote social integration, in particular for the many immigrant families in the area, were organised.

In general, population assistance policies were structured in such a way as to link assistance to displaced families and the restoration/reconstruction of damaged or destroyed housing units. The construction of Prefabricated Modular Provisional Housing Units (PMARs)¹⁸ began, distributed in the seven municipalities (Cavezzo, Concordia, Mirandola, Novi, San Possidonio and San Felice sul Panaro in the Modena area, and Cento in the Ferrara area) where the earthquake caused the most damage and the availability of undamaged housing stock was insufficient to cope with the emergency; at the end of the project, the number of PMARs would reach 755, and would house approximately 2,300 people. A Contribution for Autonomous

¹⁴ Starting with the paradoxical example of Messina, where the descendants of some families affected by the 1908 earthquake are still living in shacks.

¹⁵ The so-called “*new-town approach*” resembles the reconstruction of the previous great Italian earthquake, that of L’Aquila (2009). With a view to speeding up the management of the emergency and avoiding families staying in tent camps for too long, the national government implemented a rapid installation of new, prefabricated buildings, far from the damaged village centres and not fully provided with services. Although relatively effective from a technical point of view, the policy presented some technical inadequacies and, overall, had a strong social impact on local communities, damaging social cohesion.

¹⁶ Legislative decree No. 59, 15 May 2012 “*Urgent provisions for the reorganisation of Civil Protection*”

¹⁷ The municipalities that housed tent camps were concentrated almost exclusively in the province of Modena (except for one in Cento, in the province of Ferrara), namely: Medolla, Mirandola, Camposanto, Finale Emilia, Cento, Concordia, Carpi, Cavezzo, Bomporto, San Prospero, San Possidonio, Novi di Modena.

¹⁸ PMARs were of different surface areas, depending on the number of people to be accommodated: 30 sq. m. for 1-2 people; 45 sq. m. for 3 people; 60 sq. m. for 4-5 people; 75 sq. m. for family groups of more than 5 people. The 755 PMARs occupied a total area of 212,855 square metres and were built in specially prepared areas. The construction cost was €55,906,760.

Accommodation (CAS – Contributo di Autonoma Sistemazione)¹⁹ was granted to families who were able to provide for their own accommodation. There was also the possibility of temporary rental accommodation, which was used by as many as 550 families.

Instead, in the rural area, more than 200 Prefabricated Modular Removable Rural Shelters (PMRR) were made available, placed mainly in the Modena area and intended for groups of owners or employees of farms who needed to remain near their damaged homes in order to continue their activities. The PMRRs would host a total of around 600 people including farmers, their families, and farm employees.

The financial resources available for the initial management of the emergency were made up of the *National Civil Protection Fund* and the *Reserve Fund of the State Budget*²⁰, the possibility for the Regions to increase the regional tax on petrol, the coverage of the postponement of tax and social security contribution payment deadlines through spending cuts and excise duties, and the possibility of accessing loans paid by the State. Resources from donations were also added to these²¹. However, the timing, procedures, and resources appeared to be totally inadequate to deal with the situation in Emilia, particularly the emergencies in services for citizens - starting with schools - and problems in the production sectors. Hence a number of “*earthquake policy*” choices - concerning schools, services for citizens, places of worship, and productive activities - which will be discussed in chapter 3.

The Civil Protection Department's action in all three regions involved ended on July 29, while in early August, with ordinance No. 17, the handover took place to the government's Deputy Commissioners, with the Presidents of the Regions identified as the subjects capable of responding to the need to rebuild with a comprehensive vision and common rules and objectives, built together with civil society and democratic representatives.

From that moment, the responsibility for assistance to the population passed on to the Regional Directorates of Civil Protection. Requests for authorisation of expenses by mayors and provincial coordination centres, concerning assistance to the population and the execution of urgent provisional works, were also transferred to the Deputy Commissioners. However, to ensure continuity of assistance, it was also envisaged that the Civil Protection Department - through a technical unit assigned to the structure of the Deputy Commissioner²² - could provide support in managing the assisted population in accommodation and hotel facilities.

¹⁹ Three years after the earthquake, Commissioner's Ordinance No. 20 of 8 May 2015 organically reviewed all the measures to assist the population that had to leave their homes due to the need for repair, restoration and reconstruction work. As of 1 July 2015, the CAS was replaced by two instruments, namely the *Contributo per il Canone di locazione* (CCL, a contribution for renting a house), granted to those who were incurring large expenses from temporary accommodation (rental, hotel, RSA) and a *Contribution for temporary housing discomfort*, a lump sum, for those who, at the date of the earthquake, were not incurring charges for housing and were temporarily accommodated free of charge. The so-called “*documented re-entry*” was also introduced, i.e. the commitment, from all households with assistance, to demonstrate re-entry into their home after the restoration works.


²⁰ To be replenished by spending cuts and the increase of excise duties on fuels.

²¹ See par. “*The solidarity network: the donations*”.

²² For a limited time and on the basis of an agreement to be concluded with the regional government.

The survey of damages

Box 2: the survey of damage - the AeDES (Fitness for Use and Damage in the Earthquake Emergency) form.



Of the more than 67,000 homes inspected, more than 31,000 were declared uninhabitable due to structural damage, including those partially or temporarily uninhabitable, while another 2,700 homes were declared as such due to hazards related to unsafe exterior elements, the collapse of which could affect them.

Based on the extent of the damage, buildings were classified as

A: *habitable*

B: *temporarily uninhabitable*;

C: *partially uninhabitable*, subject to "light reconstruction" through local seismic strengthening interventions;

or

D: *temporarily uninhabitable, to be reviewed*;

E: *totally uninhabitable* (in turn divided into subcategories of increasing intensity, from E0 to E3), subject to "heavy reconstruction", involving seismic improvement or retrofitting or demolition and reconstruction, aimed at reducing vulnerability, ensuring a degree of safety equal to at least 60% of that of a newly constructed building;

F: *uninhabitable due to external risk* (risk of collapse of neighbouring buildings)

The impact of the earthquake on historical and cultural heritage

As we have seen, the impact of the earthquake on historical buildings has been dramatic, in many cases due to the fact that they are often monumental complexes that have been continually modified and adapted to new uses, or buildings with religious purposes, built with poor materials that have made them very vulnerable.

The presence of hundreds of prominent buildings and architectural complexes in the urban and rural territory, of particular historical-architectural value and important functions in terms of identity, implies the need to consider their system of relations within the framework of the connective-historical fabric, as a place of daily life that was interrupted by the trauma of the earthquake.

In a great many cases, these are churches and buildings with large halls, which show characteristic, seismically non-homogeneous behaviors: the wall panels are expansive, with only a few cross-connections formed by facades, back walls, sometimes by arches; these elements, however, are often at such a distance from each other that their restraining action is almost worthless in the absence of intermediate floors and connections and - often - in the presence of vaults, domes or thrusting roofs.

Securing these buildings through provisional works and damage surveys therefore represents a true "zero phase" of the reconstruction, starting with the removal and cataloguing of rubble, which was supported by the availability of codified assessment tools, in the form of the survey sheets prepared by the Civil Protection and the MiC (Ministry of Culture²³), and categorised into:

²³ Formerly the Ministry for Cultural and Environmental Heritage.

- churches
- palaces
- works of art²⁴.

While, on the one hand, it was a matter of jointly assessing the usability and economic impact of the damage on a parametric basis - with respect to emergency works, structural restoration, finishing, plant engineering and seismic improvement - on the other hand, more general objectives were pursued in terms of information, such as the study of the damage mechanisms actually activated by the earthquake, the calculation of a damage index for each building, and the interpretation and quantification of the severity of the effects determined.

With this in mind, on May 29, 2012, the day of the second quake, the MiC decreed the establishment of the Crisis Unit - National Coordination and Regional Crisis Units (RCUs²⁵), the central organisation for the collection of all data and all information inherent to the survey of damage. In fact, in Emilia - Romagna, the RCU-ER had already been established by the Regional Directorate, calling together all the Superintendencies of the affected area to carry out the work of organisation and reconnaissance of the damage, in collaboration with municipalities, provinces, dioceses, private individuals, Civil protection, the Fire Brigade, police forces, etc.

Historical centres

Historic centres, along with rural built-up areas, have undoubtedly been the parts of the territory that have required the most attention, in order to best meet the needs for the reorganisation and redesign of spaces while safeguarding the historical and cultural identities of the centres and their communities.

The earthquake was "*an extraordinary opportunity to make them even more attractive and livable: an identity that will have to be stronger than the collapses*"²⁶. This was the approach with which the reconstruction of historical centres and the creation of the regulations that governed it were addressed from the beginning. Thus, historical centres became the subject of Plans for Reconstruction, characterised by the possibility of rebuilding complex aggregates, the subject of targeted funding aimed not only at rebuilding but also at regeneration and revitalisation.

There was a need to inject new life into the pre-existing urban morphology without diminishing its material and symbolic value, with a quality of design that would bring out new values and possibilities for reuse. To underscore its importance, as soon as the acute phase of the emergency was over, the Region commissioned ANCSA - the National Association of Historic-Artistic Centres - to carry out a study aimed at investigating settlement issues in their various forms present in the affected area: from the physical aspects of buildings, to public spaces, from functional to economic and social.

²⁴ Cfr.: Decree of the President of the Council of Ministries 23/02/2006 «*Approval of the models for damage survey, after disasters involving cultural heritage*»

²⁵ Presently, at the MiC the RCUs have become a permanent body, to be activated in case of emergency

²⁶ As declared by Stefano Bonaccini, President of Emilia-Romagna and Deputy Commissioner

Box 3: The forms of reconstruction in the work of the National Association of Historical-Artistic Centres (ANCSA)²⁷

Having overcome the immediate emergency, it seems clear that reconstruction must be inspired not only by a criterion of expeditiousness, in view of the need for a rapid resumption of community life and productive activities, but also by the need to overcome the inconsistencies in settlement stratified by planning rules. With the "Reconstruction Law"²⁸, the region has focused on qualified urban planning and building reconstruction. The research entrusted to ANCSA initially focused on the active protection of historical centres, then broadening its gaze to the whole territory. It was measured by the destruction of historical centres "as contexts with respect to which to question possible strategies of reconstruction, not only physical but also social and functional," with attention to design and the various possibilities of redefining the urban context. ANCSA therefore investigated a series of historical urban contexts affected by the earthquake - Concordia sulla Secchia, Medolla, Reggiolo, Crevalcore, Mirandola, Cavezzo and Finale Emilia - deriving case studies in which the nature and distribution of damage was analysed, and a strategy for the regeneration of the urban fabric, involving both open and built spaces, was outlined. The figure to the right shows the strategic urban regeneration scheme for the town of Mirandola.



The focus was thus placed on the overall vitality of the affected centres, interpreting the city as a place of relationships, exchanges and the lives of the inhabitants, according to a principle of respect for the heritage that the earthquake devastated and leading to funding public city redevelopment works as well as open calls for the establishment or improvement of commercial activities.

"The reconstruction of historical centres, the soul of our communities, is not just a matter of stones to be raised or the summation of individual interventions to be done (...) the reconstruction of historical centres will have to be a workshop of safety, restoration and innovation", Councillor Peri would declare.

It also became necessary to distinguish different scenarios: for assets that had suffered even relatively serious damage and collapses of limited extent, there was no doubt that the reference should be the Code of Cultural Heritage and Landscape. Instead, the case of assets that had suffered extensive and very serious damage was different: for these, the courage was found to question the idea that the only possible plan for their reconstruction was "as it was and where it was," as is forcibly present in national governmental measures, knowing that rebuilding cannot restore what is no longer there to being identical to its former state .

Therefore, while reusing salvaged materials, more-than-reliable surveys, and traditional techniques, we already began to think about reconstruction from the perspective of "what and how it will be", looking at the re-functionalisation of the urban landscape, the improvement of accessibility and proximity services, and the reorganisation of public and relational spaces, in order to strengthen the identity of places and preserve urban morphology, in the wake of local building traditions, creating new conditions of safety and livability.

²⁷ ANCSA (Various authors): "Le forme della ricostruzione – Terremoto Emilia", Alinea, 2013

²⁸ Regional Law 16/2012, "Regulations for reconstruction in the territories hit by the earthquakes of May 20 and 29, 2012"

Ultimately, this aimed to counter the risk of losing the attraction of the urban structure for the resident population itself, right from the outset.

Provisional works and securing

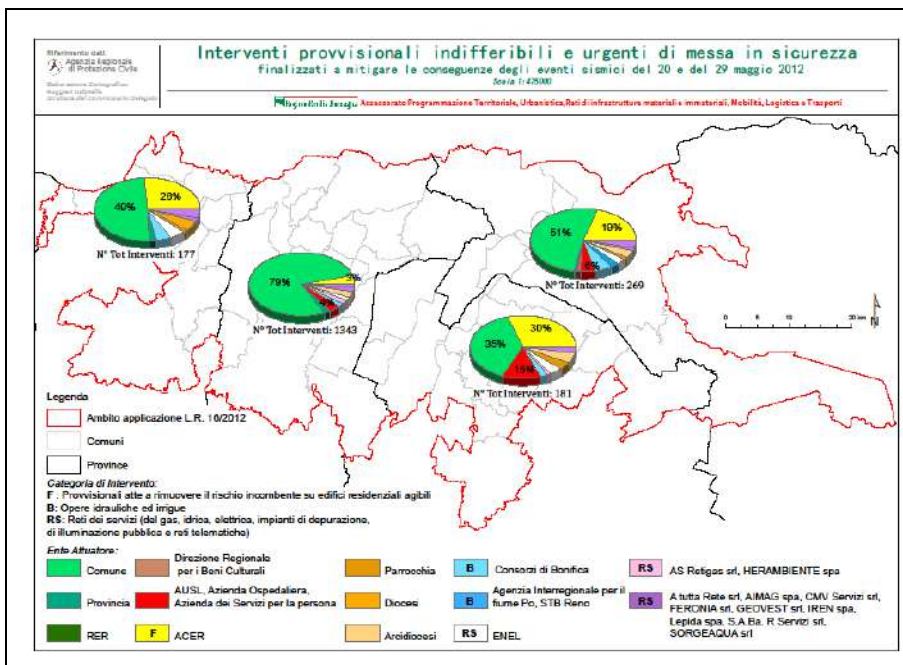
Safety interventions, together with damage surveys, represented the zero phase of reconstruction, which had to already be able to consider the restoration of damaged buildings. The objective of this fundamental line of action was to carry out as many provisional and emergency interventions as possible, with the aim of reopening the "red zones," restoring full viability, and facilitating, where possible, the return to homes. In this regard, the commissarial structure, once it took over from the Civil Defense, continued and coordinated the activities already started in the first two months of the emergency.

A total of 1,994 interventions were financed, for an expenditure of more than 207 million euros²⁹, defining priorities according to the following criteria:

- unavoidable and urgent provisional interventions for safety;
- interventions for the urgent restoration of the functionality of essential services, compromised by the seismic events;
- interventions designed to prevent the irreversible impairment of a public asset or public function, also taking into account its social function;
- interventions designed to safeguard the intrinsic value of the asset, also taking into account its social function.

Most of these interventions concerned cultural property, as well as public property: cemeteries, hydraulic safety, schools, roads, social and health facilities, sports facilities, and the securing of "red zones", which were barred from access. Fig. 5 tries to provide a comprehensive overview.

Fig. 5: distribution of the urgent interventions³⁰



²⁹ Data as of May 2013; interventions mostly carried out in the provinces of Modena, then in Ferrara, Reggio Emilia, Bologna and Mantua.

³⁰ Source: Regione Emilia-Romagna, "Ricostruire l'emergenza", 2014

The rubble

The earthquake also generated 695,000 tons of rubble, collected at 1774 construction sites, resulting from both collapses and the demolition of unsafe buildings. In the wake of decree 74/2012³¹, which classified them as urban waste, ordinances from the Deputy Commissioner³² regulated their removal, treatment and possible final destinations, accurately assessing the costs and arranging to cover the expense³³.

32,000 transfers would be carried out to deliver the rubble to the 8 destination sites, identified in the first weeks. After one year, about 70 percent of it had already been removed, while after 18 months this was up to 90 percent. Final treatment entailed a significant cost, amounting to 35 euros per tonne, for a total of almost 19 million euros, almost 80% of which was financed with European funds, and the remainder with national resources.

A different matter involved the rubble from protected and historical buildings, which was classified and treated according to the types indicated in the specific Directive of the Ministry of Culture pertaining to the procedures for the removal and recovery³⁴ of rubble from protected and historical buildings .

The job done by the volunteers

In the first nine months of the earthquake emergency following the May 20th and 29th tremors, a total of 7 thousand volunteers from the Emilia-Romagna Mobile Column and about 14 thousand from other Italian regions were involved. Volunteers from Emilia-Romagna put in 68 thousand days of work, and those from other regions 132 thousand days.

From the first day, until October 30, municipalities (including several capital municipalities) and Unions outside the earthquake area initiated a system of "*long-distance adoptions*", aimed at ensuring continuity in the delivery of services by providing their own technical, administrative and social services, accounting, and IT staff, guaranteeing the "*administrative continuity*" of the affected municipalities. With this twinning operation, more than 4,500 man-days were guaranteed to support the administrations. More than 9,000 man-days from local police were guaranteed by the system of regional local authorities and the rest of Italy, at local police headquarters.

Finally, to provide support to those municipalities with a very high number of damaged building, which had to issue hundreds of Union Ordinances, ANCI and UPI representatives proposed the activation of the regional (AGV-ER) and national (A.Ge.Pro.) Associations of Volunteer Surveyors to assist municipal offices in the preparation of Ordinances. This was also the first case in which volunteer technical personnel were included in support of public administrative procedures.

In January 2013, a special call for applications was opened, entitled "*For Daniele: extraordinary like you*"³⁵,

³¹ Art. 17, Chapter III "Urgent measures concerning waste and the environment"; except for insulation sheets containing asbestos, rubble is classified as urban waste (cod. 20.03.99) pursuant to legislative decree 74/2012, and managed by those in control of the integrated management of urban waste.

³² Commissioner's Ordinance No. 34, September 3, 2012

³³ The smooth running of the operations was guaranteed by a weekly reporting model of the transport and treatments carried out at the destination plants. Six operators were involved in collection operations, and eight treatment plants. With almost 400,000 tonnes of rubble collected, the operator with the most involvement was Aimag S.p.A, the multi-utility company to which the municipalities most affected by the earthquake, Mirandola, Medolla and Cavezzo, belong.

³⁴ Cf.: Directive concerning procedures for the removal and recovery of rubble from protected heritage and historical buildings of 15.09.2016 (Mibact, General Directorate for Archaeology, Fine Arts and Landscape). In: arch. Carla Di Francesco, "*Le chiese nei terremoti*", Advanced training course "Churches and architects", Modena, 19 March 2021)

³⁵ Dedicated to the memory of Daniele Ghillani, a young civil service volunteer that lost his life in Brazil, on October 16, 2012.

for the selection of 450 young volunteers for the earthquake-affected areas. An excellent result was achieved for the municipalities affected by the earthquake, which, together with third sector entities, participated in the design of the call, which became operational in March. In two months, nearly 2,400 applications were submitted, distributed throughout the four provinces involved (Modena, Ferrara, Reggio Emilia and Bologna), for only 450 places available (350 in the National Civil Service, available to Italian citizens, and 100 in the Regional Civil Service for citizens of other countries).

A few days after the closing of this call for applications, another special one opened, consisting of three projects in the cultural and artistic field, for the selection of 100 volunteers to begin their civil service in 2013 in the earthquake-affected areas of Emilia-Romagna, Lombardy and Veneto. In particular, the project "Restarting from culture and artistic heritage" would involve 50 young people in Emilia-Romagna.

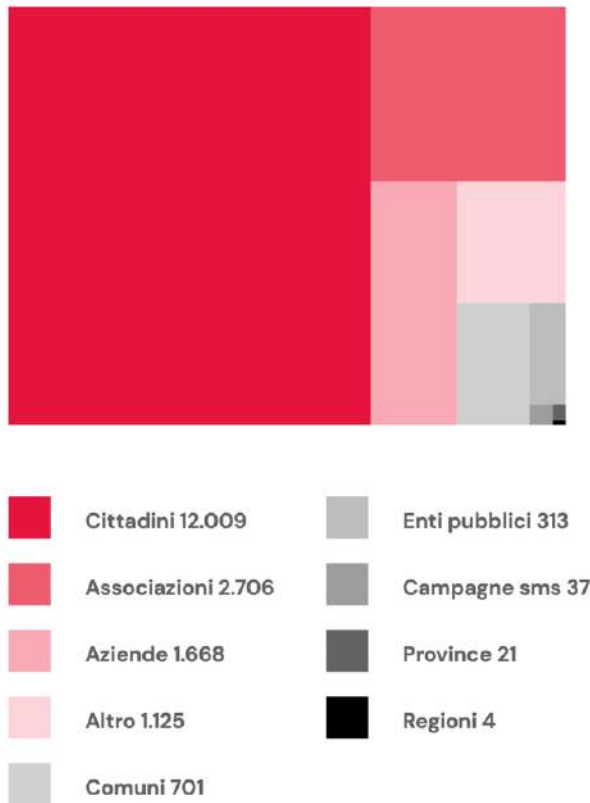
The network of solidarity: donations

From citizens to labour unions, from institutions in other parts of the country to the great moral authorities (the Pope, the Dalai Lama), from the world of the press to the world of culture and music, to large companies such as Barilla and Ferrari Motors, the mobilisation of the community to cope with the aftermath of the disaster was immediate and very effective (see fig. 6).

First through dedicated portals and later through the *Open Ricostruzione* platform, it became possible to reconstruct the picture of the solidarity networks that were set in motion immediately after the events, which were also regulated by Decree Law 74/2012, establishing a special account for their collection, in the name of the President of the Region.

Open Ricostruzione reports 18,584 donations, collected in a wide variety of ways (solidarity sms, dedicated current accounts, concerts, non-profit trusts, etc.), totalling more than 60.5 million euros. Figure 5 provides a unified picture of the donors and the destination of the resources collected, now mostly allocated.

Fig. 6: donors, by category



2.3 The second phase: the governance of reconstruction

Reconstruction governance choices must leverage the participation of citizens and local institutions, based on the principle that the vision, goals, strategies and rules of reconstruction must be built together with civil society and democratic representatives³⁶. The underlying assumption is that consensus is also a factor of efficiency, transparency and control. This is the conceptual framework in which all governance choices fit, starting with the construction of an effective regulatory framework .

2.3.1 The regulatory tools

Legality, to prevent organised crime from entering the territory and gaining access to public funding; *transparency*, so that the reconstruction is a glass house, in which all money transfers are traceable; *fairness*, so that all those who are entitled can access aid on equal terms, with no one left behind. These were the criteria used to build national and regional legislation, essentially from scratch, to support emergency management and reconstruction.

In the absence of a regulatory framework to govern reconstruction processes after major natural disasters, the laws for the reconstruction of Emilia, with funds for aid for families, businesses and the reconstruction of buildings and public services, were drafted through the collaboration of the government, Parliament and

³⁶ Consultation with the local autonomy system took place in compliance with Decree Law 74/2012, co-empowering the various levels of government to decide and operate on the territory in the most effective manner possible.

the Regional Assembly, during the emergency, without being inspired by a stable framework³⁷.

National and regional regulations were implemented through *ordinances* of the Deputy Commissioner, the most streamlined tool available to speed up the recovery and reconstruction process. The ordinances made it possible to intervene efficiently and effectively, both for provisional and safety measures, and for schools and basic services for citizens. The ordinances for allocating grants to individuals, for the reconstruction of housing and industrial properties, were constantly updated and improved, taking into account the experience and comments of technicians, citizens and local authorities.

The main instrument for regulating reconstruction was the aforementioned Regional Law No. 16 of Dec. 21, 2012, which aimed to facilitate the speedy implementation of interventions, encouraging the resumption of community activities and the regeneration of living and working conditions, "*in coherence with the general choices and strategic objectives defined by territorial and urban planning and in compliance with the discipline of environmental, landscape and historical-cultural constraints in the territory*"³⁸.

The regulatory framework made it possible to focus public interventions on two aspects: the qualification of urban-building structures and the relocation and re-functionalisation of spaces and the built environment. To this end, a series of precise criteria was defined, including the implementation of interventions for 'UMI - Minimum Intervention Units', relative to autonomous buildings and building aggregates in the municipal territory, the possibility of renovating and/or extending building units, care taken to accompany reconstruction interventions with the improvement of seismic safety and urban quality, and the recovery, protection and enhancement of the cultural heritage, and the rural landscape and environmental heritage³⁹.

2.3.2 The structure of the governance system

Social capital and the ability of territorial actors to cooperate represent the pillars of regional territorial cohesion. The governance of reconstruction therefore had to be oriented towards their preservation, but at the same time it had to be interpreted as an opportunity for innovation, in order to improve safety, environmental quality and community well-being.

Starting from the diagram in fig. 7, in the following pages we attempt to reconstruct the roles of the actors and the main functions forming the governance system that presided over the management of the emergency, and still presides over the completion of the reconstruction, with particular attention to the role played by the Deputy Commissioner, the Institutional Committee and the Agency for Reconstruction, the three pillars of the system.

The defining element of the governance system for post-earthquake reconstruction was the *role of Deputy Commissioner of the central government*, performed by the Presidents of the Regions involved (Emilia, Lombardy, Veneto). This cemented the reconstruction process with the communities involved, enabling full coordination between the territorial offices of state administrations and agencies and the local institutional levels: Regions, Provinces, Municipalities, and the Agencies reporting to them.

Within this framework, the regional government played a central role from the point of view of subsidiarity, as the intermediate body between the local level of government (Municipalities and Provinces) and the national and EU levels of government. The regional government was in the best position to maintain a dialogue with the territory, being close enough to understand its peculiarities and welcome its requests, but

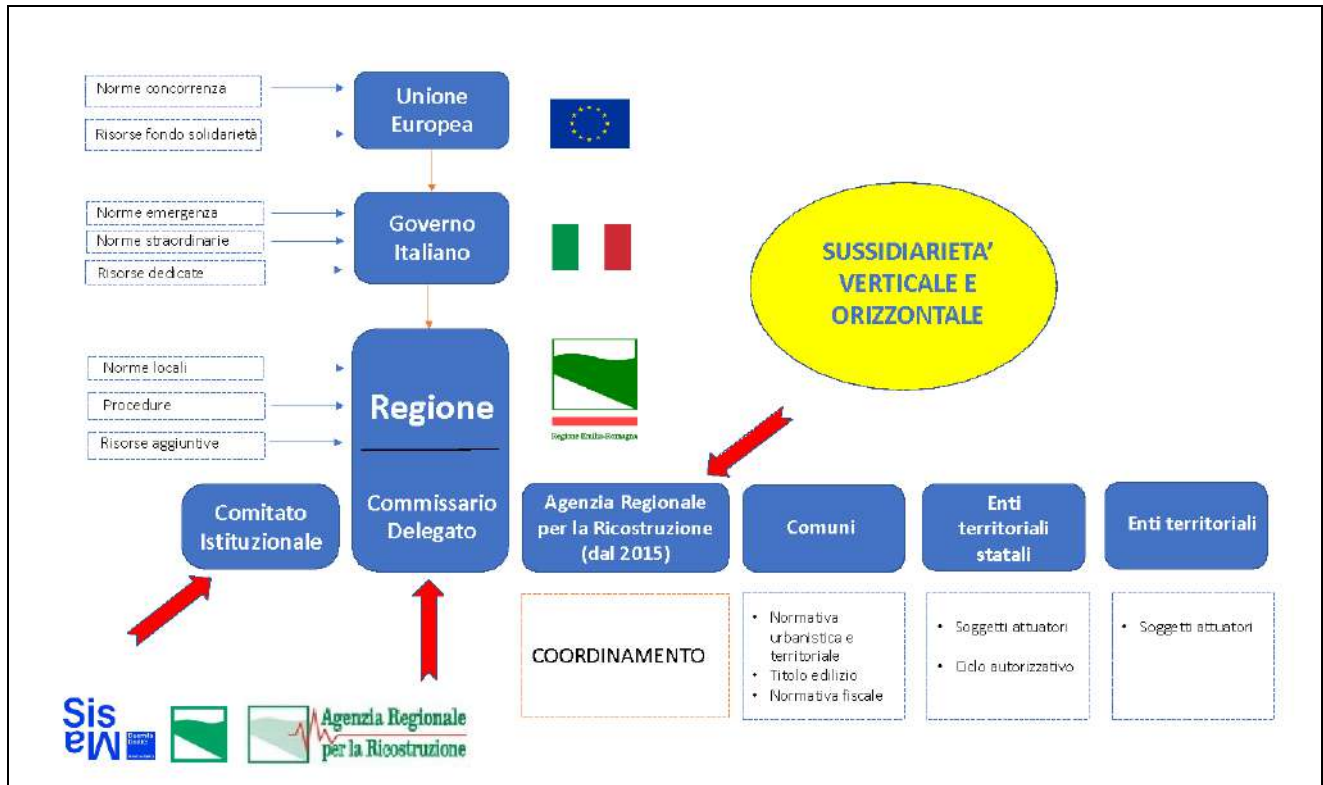
³⁷ Even today, at the time of writing, there is still no approved national regulatory framework, as the draft law-delegation to the Government for the adoption of the "*Reconstruction Code*", is currently on stand-by, due to the recent political crisis.

³⁸ Cfr. l.r. 16/2012, art. 3 "*General principles for the reconstruction*"

³⁹ For further details, see par. 3.2

also having the appropriate "critical mass" to deal, using its own specific expertise, with confrontation and cooperation with the higher institutional levels.

Fig. 7: the earthquake governance system, after the creation of the Agency for Reconstruction



Considering the territory's historical roots of social capital and capacity for cooperation, the governance of the reconstruction was therefore oriented towards their preservation, but at the same time interpreted as an opportunity for innovation, to improve safety, environmental quality, and community well-being.

From the operational point of view, the Deputy Commissioner was supported by:

- the *Presidency of the Region*, as the reference entity for the coordination of all activities at the various levels, in particular the connection between the governmental and territorial levels
- the *Institutional and Steering Committee for Reconstruction*, established by order of the Deputy Commissioner⁴⁰, which represented the pivot of the governance system and was aimed at ensuring assistance to the population, the full resumption of economic activities and the restoration of essential public services. Chaired by the President of the Region and made up of the Presidents of the Provinces of Bologna, Modena, Ferrara and Reggio Emilia and the Mayors of the affected municipalities, the Committee meets periodically to plan guidelines, activities and intervention choices.
- The *Agency for Reconstruction – Earthquake 2012*, established in 2015 according to Regional Law No. 6/2004, an operational body with managerial and organisational autonomy, within the framework of the guidelines of the Council, with the task of overseeing the "complex of activities related to the earthquake, realising all possible synergies, coordinating the activities of external professional contributions and ensuring support for the network of local authorities involved";

⁴⁰ Ordinance No. 1, June 8, 2012

- the *Joint Technical Commission*, chaired and coordinated by the Regional Agency for Reconstruction, the Regional Geological, Seismic and Soil Service (for aspects related to seismic authorisation), the Regional Directorate for Cultural and Landscape Heritage, (for authorisations under art. 21⁴¹), with advisory functions to support the Deputy Commissioner and the Institutional Committee, and to provide technical assistance to Municipalities, Dioceses and other implementing bodies; ;
- The *Joint Technical Table*, consisting of representatives of:
 - The Regional Agency for Reconstruction
 - ANCI Emilia-Romagna
 - Unions of Municipalities and Municipalities
 - Professional Associations and Colleges (architects, engineers, geologists, agronomists, surveyors)
 - Trade Associations for Professionals and Companies.

Technical and administrative staff were also hired on a temporary basis, through a temporary employment agency, to support the reconstruction procedures, located in the Region and the municipalities of the affected area, in dedicated offices whose responsibilities were not incorporated into the Unions of Municipalities.

2.3.3 The Institutional and Steering Committee for Reconstruction and the design of the ordinances of the Deputy Commissioner⁴²

In order to fully understand the meaning of governing emergencies by means of ordinances, it must first be understood that, taking into account the specific nature of every natural disaster - specifically, in this case, an earthquake - it is difficult to use general models, since the specific characteristics of the territories, from the geological-morphological aspects to the social and economic ones, to the needs expressed by the affected communities, vary from situation to situation. Consider, in the case of the Emilia earthquake, the strategic importance of safeguarding social cohesion in a highly industrialised and internationalised context.

From this point of view, the ordinances of the Deputy Commissioner⁴³, far from dropping a theoretical framework on the affected territories, intended to consider the specific characteristics of the affected territory and the needs of the community. The promulgation of ordinances by the Commissioner follows the desire to adhere as closely as possible to the needs emerging from the territory.

It was the *Institutional Committee*, with its function of linking territorial requests and levels of government, that worked in the area of developing the ordinances, where the territory was discussed, where the requests from the various social and economic actors were collected and then the intervention priorities defined, informing the commissioner's ordinances and offering a concrete operational outlet to the expression of community participation.

Within this framework, the Commissioner's ordinances first of all outlined a process aimed at ensuring, as a priority, respect for the criteria of legality, transparency, equity and safety in reconstruction, aiming as far as possible to reduce the time and administrative procedures necessary to concretely implement such a process. In this sense, the ordinances also indicated the timeframe, what some authors have defined as the 'pace of reconstruction' that established the terms, including the timeframe within which it was to be implemented.

⁴¹ Law Decree No. 42/2004, art. 21, on authorisations to carry out works on cultural heritage .

⁴² The juridical basis for the Commissioner's ordinances is set in art. 1, par. 2 and 4 of the Law decree 74/2012.

⁴³ See also: Valeriani E., Bertelli A.: "L'attività del Commissario Straordinario e il futuro della ricostruzione del Centro Italia – una strategia sostenibile", Settembre 2017 (<https://sisma2016.gov.it/>)

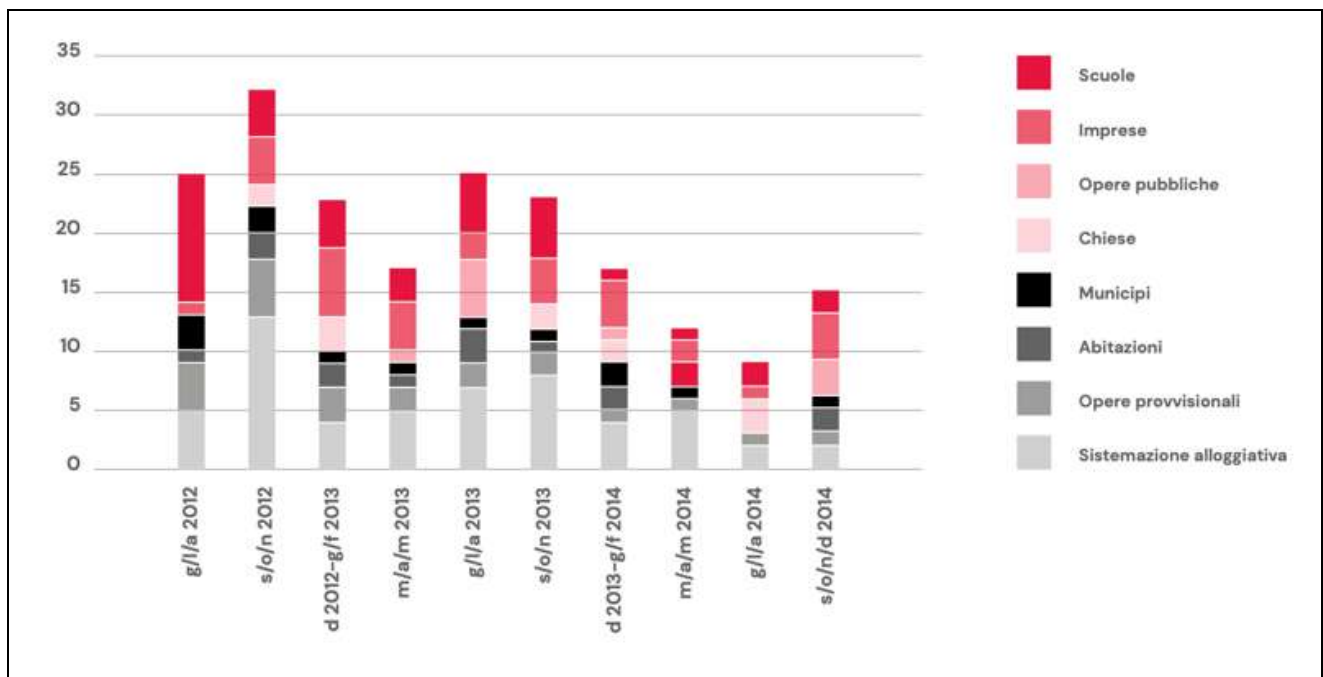
Therefore, if on one hand, the general themes of reconstruction were similar from place to place - private reconstruction, production systems, historical-cultural heritage, public works and infrastructures - on the other hand it was precisely the ability to reflect the specificity of the context that made the use of ordinances an effective implementation tool. These specific aspects were expressed by the Institutional Committee.

The main areas of intervention of the ordinances were the following:

- organisation and methods of reconstruction management, including the organisation of the Deputy Commissioner’s Technical Structure;
- reconstruction methods and techniques, and transversal aspects (safety, regulation of the behaviour of professionals and enterprises, management of future territorial development processes, etc.);
- discipline of private reconstruction (housing and production sectors);
- discipline of public reconstruction (public buildings for the provision of services, cultural heritage, buildings of worship).

Figure 8 provides an overview of the areas of intervention of the Commissioner’s ordinances issued between June 2012 and December 2014.

Fig. 8: topics addressed by the Commissioner’s ordinances (June 2012 – December 2014)⁴⁴



⁴⁴ Source: Regione Emilia-Romagna, “Ricostruire l’emergenza”, 2014, cit.

2.3.4 The Agency for Reconstruction

In order to better organise the operational governance of the reconstruction, as of 2015 the above-mentioned instances have been taken over by the Agency for Reconstruction - Earthquake 2012, established by Council Resolution no. 2084/2015, whose purpose is to work alongside and support "the Commissioner in the implementation of interventions related to the emergency situation caused by the 2012 earthquake". Its main functions include:

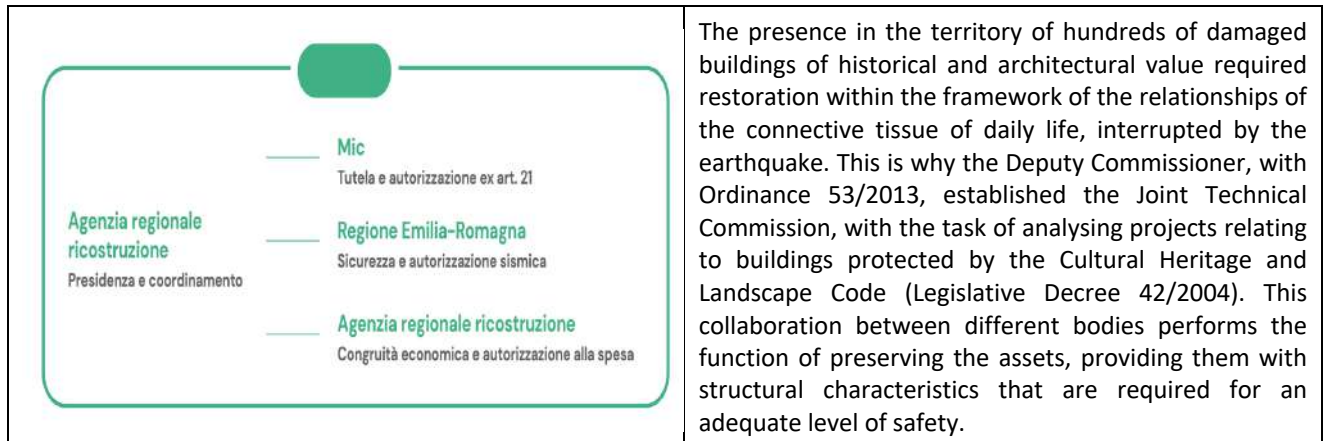
- the implementation of the Programme and Plans for Public Works and Cultural Heritage;
- the management of procedures related to temporary structures purchased by the commissioner and granted to municipalities for residential use, for private individuals or public functions (schools, town halls, etc.);
- support, mentoring and training for all contracting authorities, starting with the municipalities, for the management of contracts related to reconstruction;
- the stipulation of conventions to ensure services to support the activities carried out for the Commissioner in connection with the competent structures;
- the management of litigation in connection with the Attorney General's Office;
- support for activities aimed at restoring normal living conditions to the populations affected by the earthquake and accompanying the recovery and development of the socio-economic system of the area concerned;
- the coordination of the activities carried out by the entities operating in agreement with the Region.

Since its start-up - in 2015 - the staff in service at the Technical Structure of the Deputy Commissioner have been made available to the Agency. Within this framework, two services have been established within the Agency, called:

- *"Service for the technical management of reconstruction interventions and the management of contracts and litigation";*
- *"Service for the financial-administrative management of the interventions and relations with the local authorities".*

The Agency presides over and coordinates the Joint Technical Commission (box no. 3), which includes the Regional Geological, Seismic and Soil Service (for aspects related to seismic authorisation), the Regional Directorate for Cultural and Landscape Heritage, with advisory functions in support of the Deputy Commissioner and the Institutional Committee, in particular with regard to the verification of economic congruity and authorisation of expenditure. The Commission also provides technical assistance to Municipalities, Dioceses and other implementing bodies for the management of the reconstruction of cultural heritage.

Box 4: structure and functions of the Joint Technical Commission^{45 46}



The Agency also has the task of preparing for the takeover of the Region's ordinary structures in these activities, when the Commissioner's management comes to an end, operating for a further three years as the operational tool of the Council for the completion of the reconstruction work.

2.3.5 Information-management portals serving the reconstruction process

Transparency in the collection, processing and communication of reconstruction data is entrusted to the Open Reconstruction platform (<https://openricostruzione.regione.emilia-romagna.it/>), in which all available information is broken down by macro-chapter:

- public reconstruction
- housing reconstruction
- reconstruction of production activities
- other types of intervention (for which the Deputy Commissioner is the contracting authority).

Reconstruction is therefore designed and implemented in a participatory manner, involving local authorities and citizens on the basis of the assumption that an overall vision, with common rules and objectives, is built together with civil society and its democratic representatives, ensuring the consensus that is also a factor of efficiency, transparency and control.

At this stage, a number of resolutions of great organisational importance are taken:

- in order to enable the handling of reconstruction files, Legislative Decree 95/2011⁴⁷ grants the possibility of hiring personnel on an exceptional basis for the benefit of municipalities affected by the earthquake and the Region;
- the preliminary inquiries are divided between those relating to the production and commercial sector and those that are mainly residential: the former remains under the management of the Region (with the allocation of contributions signed by the CD), while the mayors of the municipalities - as local Deputy Commissioners - are entrusted with the responsibility for the orders for the allocation of contributions.

⁴⁵ The officials assigned to the investigation by the competent Administrations participate in the work of the Commission, on the basis of an evaluation carried out in their relative areas of responsibility, with the aim of providing a joint summary of their opinions on the project proposal. The commission carries out a joint examination and expresses a preliminary opinion, providing a single direction for the aspects regarding structural interventions and the cultural interest of the asset.

⁴⁶ Fonte: Regione Emilia-Romagna, "Emilia più di prima", 2022

⁴⁷ Converted into l. 135/2012, art. 3 bis

Information - management portals have been created, two of which are dedicated to private reconstruction and one to public reconstruction, allowing the digital upload of the files, from which it is possible to extrapolate open data, statistics on the progress of the various procedures and various queries aimed at planning the process and expenditure. These are:

- *MUDE - Modello Unico Digitale per l'Edilizia* (Single Digital Model for Construction)⁴⁸ for practices related to residential reconstruction, at the service of municipalities and professionals; it is financed through the Cassa Depositi e Prestiti (Deposit and Loan Bank)⁴⁹, without affecting the budget of Administrations.
- *SFINGE Sisma*⁵⁰, an IT application for reconstruction in the production sector, serving the Region and private technicians; practices in this case are financed through European Funds.
- *FENICE*⁵¹, an information portal for public works, to monitor their progress⁵².

In particular, with regard to the submission of applications for access to the funds provided by the various commissarial Ordinances - through Sfinge Sisma - through the *mechanism of notification to the European Commission*, for the first time it has been possible to *grant compensation for damages not only with respect to buildings, but also with respect to damaged or destroyed movables, stocks, finished products, and reimbursement for temporary relocation costs*. In addition, alongside the resources for reconstruction, *funds are allocated for research and technological innovation* to support the production system affected by the event, with the aim of encouraging companies in the area to promote large research projects to strengthen supply chains.

2.3.6 Agreements and Conventions

With the aim of giving operational articulation to multi-level governance and the principle of subsidiarity, the Region has signed a large number of collaboration agreements, memorandums of understanding and conventions on the most diverse topics from the outset, with the aim of supporting and facilitating the reconstruction process. Among these instruments, we will briefly mention the most important ones:

- a. Collaboration agreement with the *Agency for the Territory* (6 November 2012) for activities related to the possession and construction of temporary buildings - school, municipal, worship and housing

⁴⁸ *MUDE - Modello Unico Digitale per l'Edilizia (Single Digital Model for Construction)*, is the IT platform used for the implementation of Commissioner ordinances 29, 51 and 86/2012 relating to reconstruction. It brings together in the same procedure both the building files for carrying out repair, restoration or reconstruction work on buildings, and the files relating to the request for contributions. The technological platform was created with the technical support of the IT structure of the Piedmont Region and the Municipality of Turin, within the framework of the cooperation agreements between Emilia-Romagna, Piedmont and Umbria, approved by the Regional Council in December 2011.

⁴⁹ The Cassa Depositi e Prestiti (CDP) is an Italian financial institution in the form of a joint-stock company, approximately 83% owned by the Ministry of Economy and Finance and approximately 16% by various banking foundations. In the pursuit of its tasks, CDP cooperates with the main economic and financial institutions operating internationally and coordinates with entities that play a similar role in other European countries, such as the German KfW[5] and the French Caisse des dépôts et consignations. CDP fosters sustainable development in Italy, using the country's savings to support growth and boost employment, supporting innovation, competitive business, infrastructure and local development.

⁵⁰ The *SFINGE* web application is the IT system through which companies in the Emilia-Romagna region can apply for funding or contributions, according to the procedures set out in Ordinance No. 57/2012.

⁵¹ *FENICE - Financing to Public Entities for Building Reconstruction Interventions* is the system for the management of reconstruction interventions as part of the Public Works and Cultural Heritage Programme prepared by the Regional Agency for Reconstruction - Earthquake 2012, in agreement with the Emilia-Romagna Regional Directorate of the Ministry of Culture (MiC).

⁵² With the recent activation of the ParER - Regional Archival Pole - the digital upload of public works transactions has also become possible.

- in the specially identified areas;
- b. Memorandum of Understanding with the Ministry for International Cooperation and Integration (28 December 2012), concerning the implementation of National Civil Service projects in the provinces affected by the earthquake;
- c. Convention with Fintecna S.p.A. (20 February 2013), for technical-engineering support activities, aimed at meeting the needs of the populations affected by the earthquake;
- d. Agreement with the National Association of Italian Municipalities - Emilia-Romagna (ANCI) (5 June 2013), for support to the municipalities affected by the earthquake: this allowed for the support of some Municipal Operations Centres. Among other things, through the Help-Desk created, ANCI Emilia-Romagna provided technical and IT support for the compilation of MUDE files and answers to questions from municipal technicians and professionals⁵³;
- e. Collaboration agreement with the Department of Civil, Chemical, Environmental and Materials Engineering - DICAM - of the University of Bologna (21 June 2013), for the management and recycling of post-earthquake rubble;
- f. Agreement with INVITALIA (an in-house company of the Ministry of Economic Development) (11 September 2013, still in force), aimed at supporting the management of applications for grants to businesses (on the SFINGE portal). With 160 engineers and architects located in the regional offices, INVITALIA provides technical assistance and performs the functions of administrative procedure manager in the grant disbursement phase, assessing applications and checking implementation. It also manages an information desk for enterprises and organises meetings in the area with beneficiaries both prior to the submission of the grant application and during the preliminary investigation phase;
- g. Agreement with ERVET (Emilia-Romagna Valorizzazione Economica Territorio spa - an in-house company of the Region - now ART-ER SpA) (27 September 2013; 22 April 2014) for support activities to the Commissioner and the Agency for Reconstruction, divided into three macro-lines: i. technical assistance to the commissioner's structure for the management of technical and legislative questions on private residential building reconstruction posed by public and private technicians and citizens of the territories affected by the earthquake; ii. support to local authorities and contracting authorities operating in the earthquake area through training interventions and the establishment of a help desk for procurement issues; iii. monitoring, information, transparency, supporting the processing and dissemination of information on contracts and construction sites operating in the earthquake area.

Added to these are conventions signed with the Municipalities for the management of specific reconstruction interventions, and with the dioceses, to regulate the public enjoyment of the structures subject to funding

2.3.7. Sharing knowledge: technical-scientific dissemination

In the ten years since the earthquake, a rich heritage of knowledge has been developed, made up of best practices, data, and technical information on emergency management and reconstruction. By means of technical-scientific dissemination activities, the idea has been to accompany the reconstruction process, in particular that concerning heritage of historical and cultural value, with actions aimed at enhancing the capital of experience and skills acquired.

To this end, opportunities for collaboration, comparison and knowledge sharing have been set up with the

⁵³ By participating in the management of the emergency from the very beginning, through representation activated by ANCI Emilia-Romagna, led by the Deputy Civil Protection Delegate, ANCI strongly facilitated the joint action of the Commissioner and the municipalities. In addition to this, it promoted training and information activities so that the municipalities in the area affected would operate in a uniform manner in the evaluation of practices.

academic and research world, in order to model, disseminate and make use of the lessons learnt from the reconstruction in Emilia.

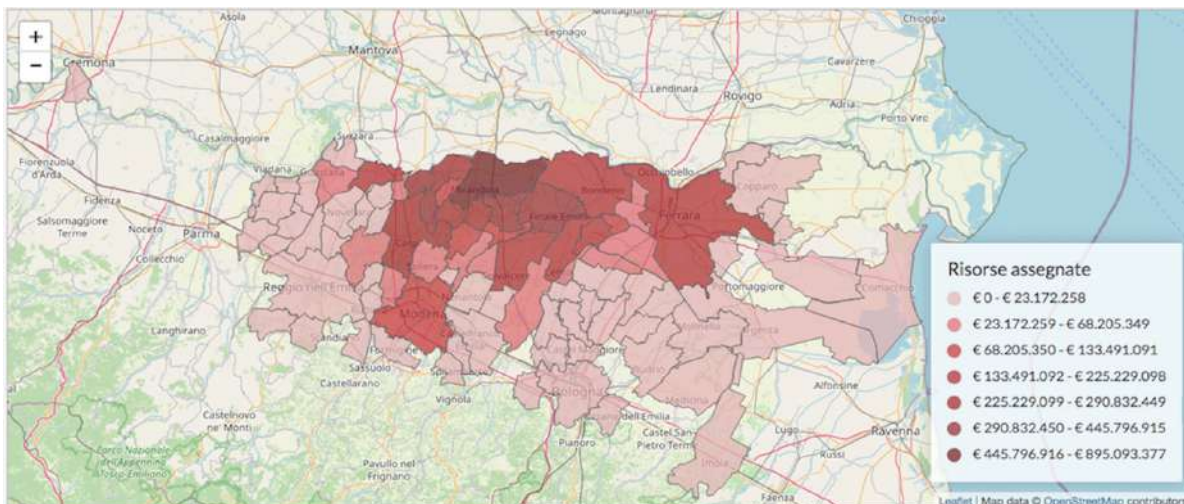
The starting point is the management of the databases implemented and collected over the years, which provide the tool for the extraction of numbers and analysis of the state of the art of reconstruction, but which must also play the role of knowledge base, for reasoned elaboration in light of the technical experience regarding the technical-administrative path managed. The objective is to achieve not only a faithful, advanced statistical representation of the data, but also to recognise the primary role played by the Region in managing the entire process.

2.4 The territory today: the reconstruction in figures⁵⁴

In this section, we will provide a snapshot of the general state of reconstruction for the different areas of intervention; namely private dwellings, businesses, and elements of historical and cultural heritage. Sources of data (updated as far as February 2022) and graphics are the reports produced by the Regional Agency for Reconstruction and the Open Reconstruction platform.

To date, the total resources allocated for reconstruction measures exceeds EUR 6.5 billion. Of these, 5 billion has already been disbursed, to individuals and enterprises, with over 8,400 housing reconstruction interventions and over 3,000 production sector reconstruction interventions already completed. As far as public reconstruction is concerned, more than 1,700 projects have been financed. Fig. 9 provides an overview of the resources allocated for reconstruction measures in the territory.

Fig. 9: Territorial distribution of resources allocated to reconstruction measures

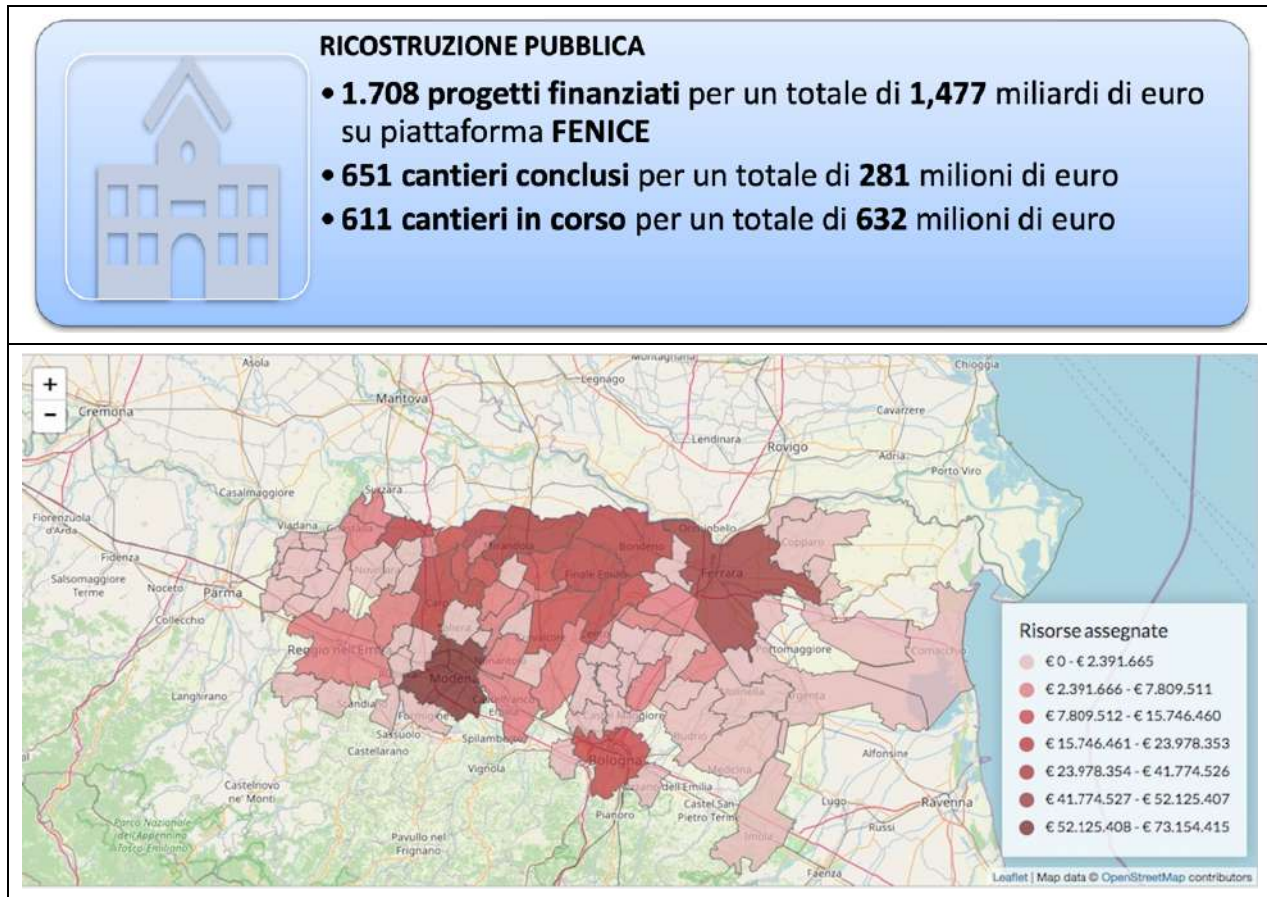


⁵⁴ Figures up to date as of February 28, 2022

The reconstruction of public assets

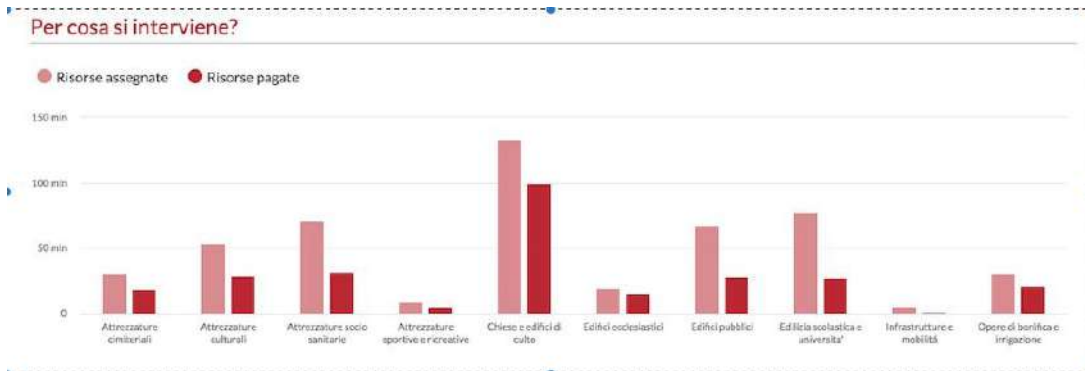
In Figures 10 and 11 we provide an overview of public works reconstruction interventions and types of intervention.

Fig. 10: Resources allocated and paid for public works interventions



Added to these resources are those dedicated to other interventions for which the Deputy Commissioner has acted as contractor: these are 512 interventions, relating to temporary town halls, temporary schools, temporary churches, and in general all temporary building interventions, as well as post-emergency safety interventions in some churches. As of 28 February 2022, approximately 321.2 million euros had been allocated for 509 interventions, of which approximately 264 have already been paid.

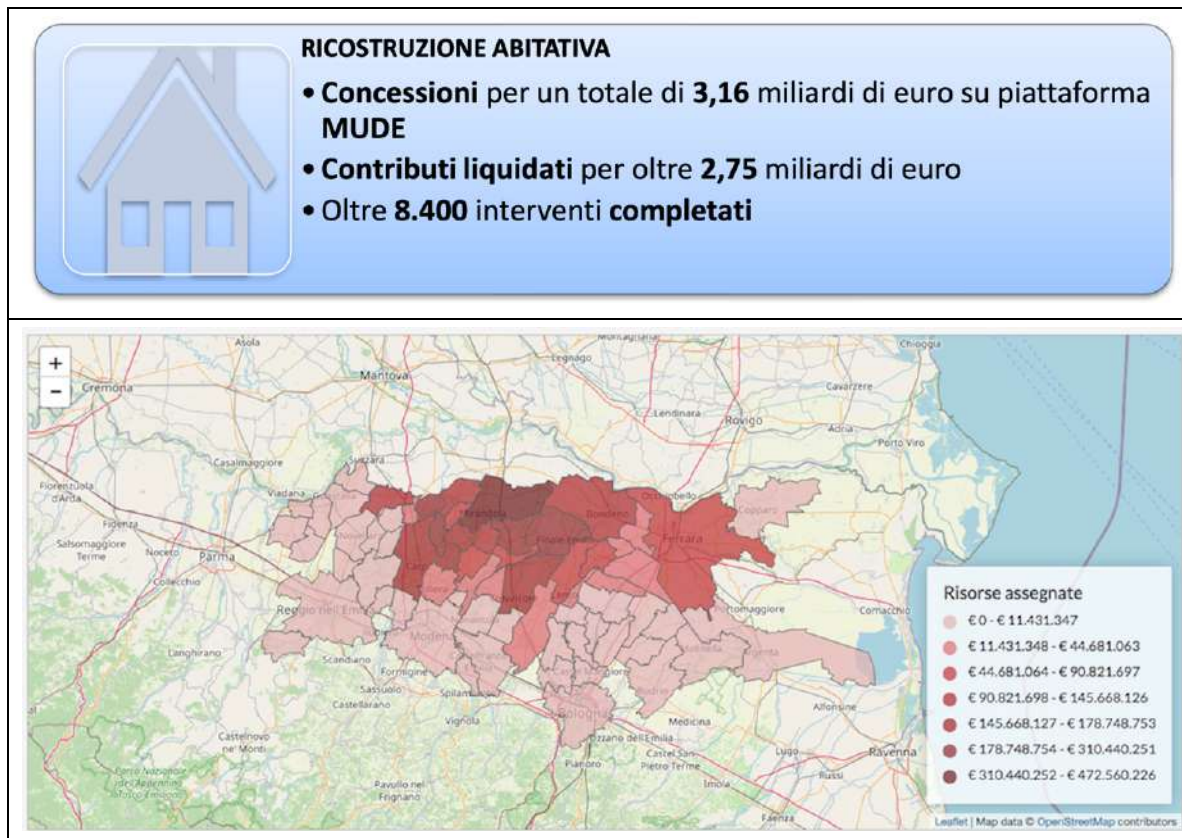
Fig. 11: Public Works and Cultural Heritage - types of intervention



The reconstruction of private assets

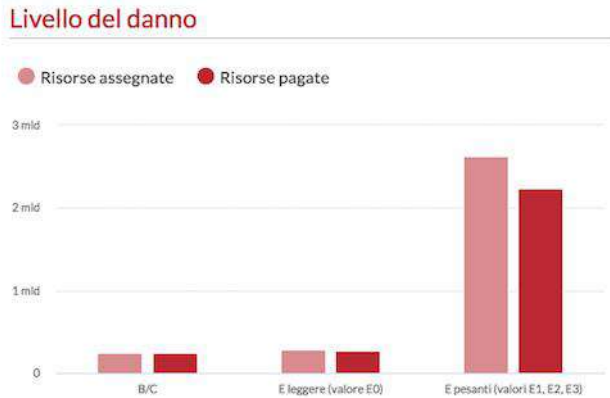
The following section (fig. 12) shows data on the reconstruction of predominantly residential buildings. The data is extracted from the MUDE platform, through which applications for assistance are submitted.

Fig. 12: Reconstruction of buildings mainly for residential use



As of 28 February 2022, resources amounting to approximately EUR 3.16 billion had been allocated for 9,833 interventions, of which approximately EUR 2.75 billion had already been disbursed. The interventions involved more than 27,350 residential and commercial properties, mostly affected by type E damage (Fig. 13); ¼ of them were used as primary dwellings, with areas of over 2.25 million square metres and over 30,700 citizens affected.

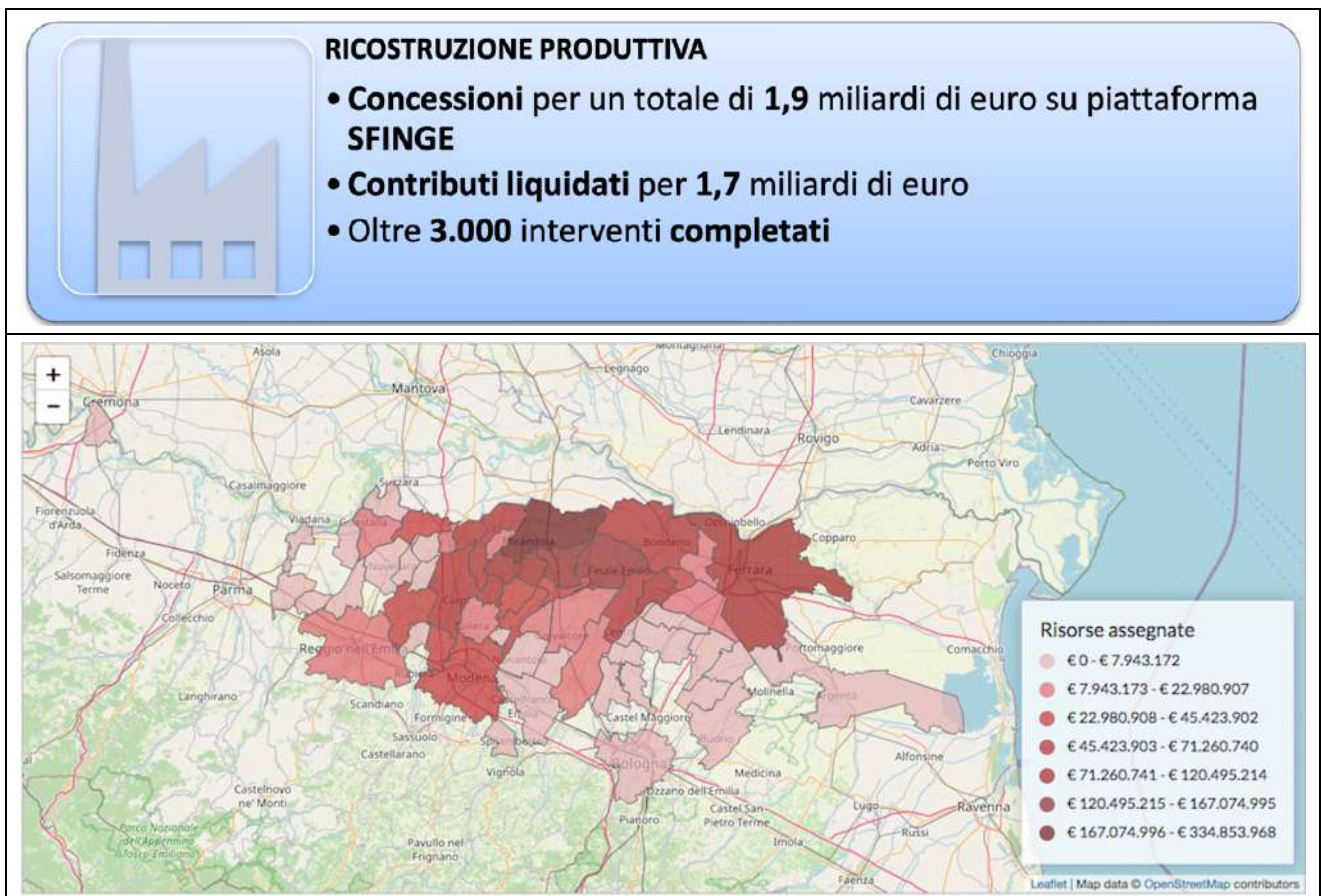
Fig. 13: shares of allocated and paid resources by damage level



The reconstruction of enterprises

Presented below is the data on the reconstruction of enterprises, extracted from the SFINGE platform, through which applications for assistance are submitted. Figure 14 provides a representation of the state of the art of reconstruction of production facilities, which has allocated approximately 1.9 billion euros to 3,466 interventions, all of which have already been admitted for financing, and for the most part already completed.

Fig. 14: reconstruction interventions for enterprises - admitted interventions and allocated resources



3. From the first emergency to reconstruction: the “toolbox”

3.1 Defining an "earthquake policy"

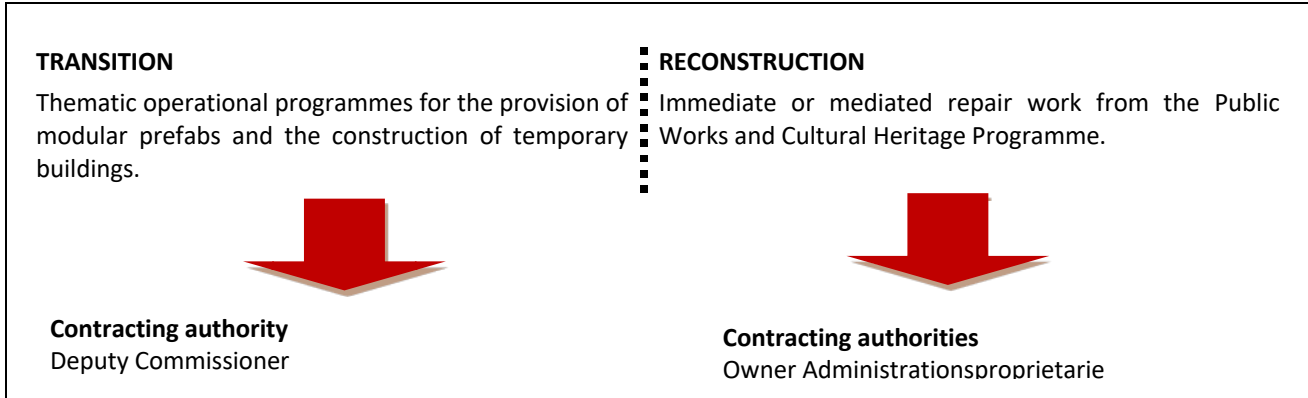
Faced with the devastation caused by the earthquake, quick and precise choices were needed. The first, perhaps the most strategic, concerned schools: the regular opening of the school year in September had to be guaranteed in order to reduce the social impact on the community, especially the risk of dropout. And it had to be done in just three months.

Immediately after that came labour: the many collapses that occurred in manufacturing plants meant a major impact on employment, which had to be contained and countered. Then came homes and factories, for which the focus was on measures to regulate funding for rehabilitation and reconstruction, improving the rules through continuous dialogue with the government. This was a very effective action, which made it possible to raise reconstruction grants from 80 to 100 percent of the damage, broadening the pool of beneficiaries and simplifying the procedures for obtaining grants.

Last but not least, it was important to restart essential public services in a timely manner, to ensure, at such a difficult time for the community, the restoration of community identity and places providing services, including by setting up new temporary town halls where historical ones were severely compromised. Finally, it was also necessary to ensure at least one place of worship for each community.

This was a very complex process, which can be divided into two phases – “transition” and “reconstruction” - shown in figure 15, from which one can also appreciate the direct role of the contracting authority, played by the Deputy Commissioner in the first phase of the emergency, in order to put in place the necessary strategic responses.

Fig. 15: Transition and reconstruction



The process of managing the emergency then led to the passing, on 21 December of the same year, of the regional law for reconstruction (regional law 16/2012), which regulated the reconstruction of town centres, allowing for the rapid implementation of articulated interventions, including a discipline aimed at developing unitary plans for aggregated urban sectors.

In the pages that follow we attempt to give a concise account of the characteristics of the instruments that the regional government has equipped itself with in order to deal with the various critical issues posed by the emergency.

3.2 The Regional Law 16/2012 on reconstruction

Regional Law 16/2012 represents a significant innovation in the regulatory landscape on disaster management, remaining to this day the only such legislation enacted at the regional level. Designed to ensure

consistency between the planning of reconstruction interventions and ordinary urban-territorial plans, this law was created with the intention to combine the need for urgency and simplification of procedures with the need to improve the seismic and energy performance of buildings, according to criteria of architectural and landscape quality of the urban fabric, rural settlements and in general, the places important for the identity of local communities. The law is characterised by an approach that looks beyond reconstruction, because of its stated goal of "*encouraging the resumption of activities of settled communities and the regeneration of living and working conditions*"⁵⁵.

It introduced the Reconstruction Plan (art. 12), which regulates urban transformations contextual to the reconstruction process itself, urban incentives, variants to cartographic and regulatory forecasts, as well as identifying Minimum Intervention Units (UMI)⁵⁶ or the special discipline according to which unitary urban sectors affected by damage could be recovered through a unitary design, aimed at structural strengthening, energy saving and qualification of urban planning. The Reconstruction Plan is also an example of regulatory innovation because of the possibility of using it as an operational urban planning tool, supplementing the existing urban planning instrumentation with unitary design rules and criteria.

Among the innovative elements introduced by Law 16, it is worth mentioning:

- the aforementioned possibility of carrying out interventions using "*UMI - Minimum Intervention Units*": autonomous buildings and building aggregates in the municipal territory could be repaired, restored with seismic and energy improvement, or rebuilt within the framework of a unitary design, implemented through a single building intervention, also articulated in several phases or lots;
- the possibility of renovating and/or extending building units, in compliance with the urban planning in force or the reconstruction plan, allowing *reconstructions, repairs and restoration with seismic improvement*, without increasing the maximum contribution ceiling recognised for earthquake damage;
- attention to accompanying reconstruction work with improvements to seismic safety and urban quality, "*both in terms of recovering or creating the places of aggregation and public services that connote the identity of each urban centre, and in terms of the quantity and quality of equipment and collective spaces and infrastructures for mobility, accessible and fully usable by all citizens, of all ages and conditions*" as well as *improving the energy performance of buildings*, in accordance with the provisions of Legislative Decree 115/2008;
- *the recovery, protection and enhancement of the cultural heritage* of the municipalities affected by the earthquake, in terms of culture and landscape, in cooperation with the Ministry for Cultural Heritage and Activities, the municipalities, the authorities and institutions of the Catholic Church and other religious denominations, and the respective authorities;
- the possibility of carrying out *redevelopment planning according to new functional, social and economic needs*;
- the criterion of *protection, enhancement and reconstruction of the rural landscape* and environmental heritage, within the framework of the promotion of the resumption of agricultural activities, in compliance with the principles of recovery of productive agricultural land and the realisation of works and infrastructures in accordance with the planning provisions.

⁵⁵ art. 3, General principles for reconstruction.

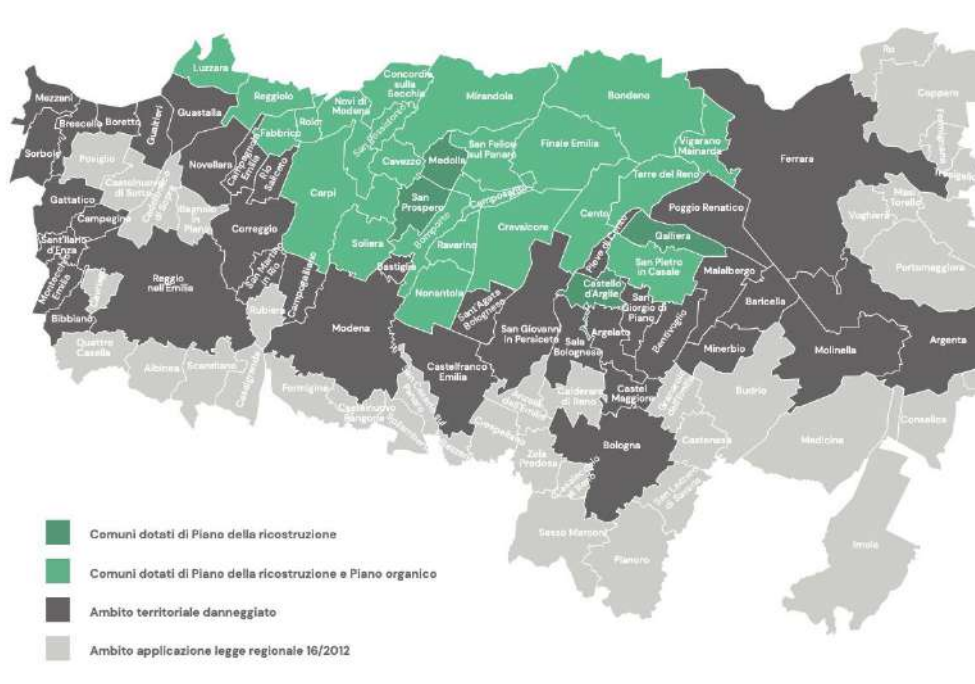
⁵⁶ art. 7, Identification and implementation of the Minimum Intervention Units

3.3 The reconstruction and revitalisation of historical centres

Special attention has been paid to the reconstruction of historical centres. Regional legislations and ordinances have provided the regulatory framework useful for reconstruction activities, combining the needs for urgency and simplification of procedures with those aimed at improving seismic performance and the quality of the architecture and landscape of the urban fabric. This set of provisions, integrated with the elaboration of the Reconstruction Plans (and the Organic Plans, introduced by the 2014 Stability Law (Annual State Budget law), which will be discussed below), as well as the delimitation of the Minimum Intervention Units, has supported municipalities in improving the built environment and redesigning spaces, safeguarding the historical and cultural identity of historical town centres and the rural landscape.

The *Reconstruction Plan* is a voluntary and flexible urban planning tool used by 28 municipalities that, by integrating with the planning tools already in force, provides for the variation of forecasts in relation to the needs or problems generated by the earthquake, guaranteeing legal certainty, simplified procedures and rapid, reliable timescales. As Figure 16 shows, 28 municipalities have equipped themselves with such reconstruction planning tools, mostly concentrated in the restricted earthquake area.

Fig. 16: Municipalities with a Reconstruction Plan and/or an Organic Plan



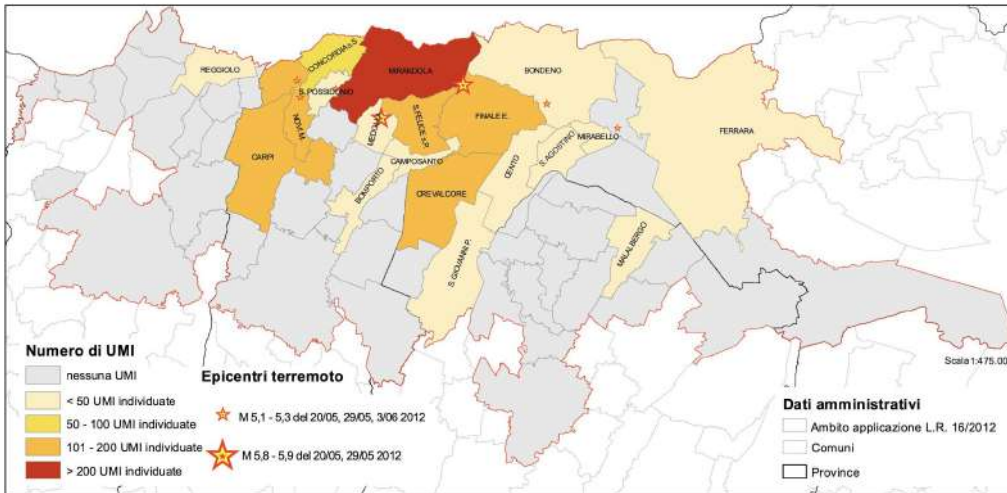
Within this framework, the qualification of the urban structure was carried out through three actions:

- reconstruction and re-functionalisation of the urban fabric, improving accessibility and proximity services in the context of the reorganisation of public and relational spaces;
- reconstruction and reinforcement of the identity of places to preserve their urban morphology and to recreate conditions of safety and liveability;
- counteracting the loss of attractiveness in the urban structure, the static nature of spatial and functional relations, and the fragmentation and partiality of intervention methods.

Reconstruction has been measured against the need to reduce vulnerability and improve the quality of inhabited centres; to this end, an important function has been played by the use of Minimum Intervention Units (UMI) which, while maintaining the building/structural unit as a basic reference, have favoured unitary

planning and efficient implementation of interventions from a structural, architectural and urbanistic point of view, which are particularly frequent in historical centres and require a single design. A total of 21 municipalities have taken steps to delineate the UMIs (fig. 17), also establishing the rules for implementation, particularly for historical centres, which by nature need to operate in a unified manner to ensure the improvement of seismic safety and faster interventions.

Fig. 17: the use of the Minimum Intervention Units tool in the earthquake-affected municipalities ⁵⁷



Urban Free Zones

A further measure for the recovery of the economic system in the earthquake area, undertaken in 2015 in newly reopened historical centres, was the so-called *Urban Free Zones* (ZFU), in which special tax exemptions were granted to micro-enterprises located in the historical centres and urban centres of 20 municipalities.

In particular, the measures involved Income Tax, IRAP⁵⁸ and municipal tax. The total resources made available amounted to 39.2 million €, subsequently supplemented, during 2019, by additional funds from the 2014/2020 ERDF OP for economic revitalisation, research and the promotion of start-ups, activated through two dedicated calls.

The first of these provided for an allocation of EUR 4 million to support industrial research activities of SMEs (technological development of products, production diversification), with the aim of promoting economic revitalisation. The second announcement financed the consolidation of innovative start-ups with an additional 2 million €. The average grant per beneficiary micro-enterprise was approximately 22,000 €.

Calls for tenders for the revitalisation of historical centres

The rebirth and revitalisation of urban centres in 2019 also benefited from specific measures for the municipalities in the restricted earthquake area, namely calls for tenders aimed at facilitating the resettlement, redevelopment and modernisation of business activities, both for-profit and non-profit.

Starting with an initial endowment of 35 million euros, the calls were met with much interest in the area, which led to a gradual increase in resources to over 58 million euros. With the six calls for tenders for the revitalisation of historical city centres (2019, 2020 and 2021), 955 projects have been financed for an amount

⁵⁷ Source: *InForum* review, n° 48/2015

⁵⁸ IRAP is the regional tax on business activities

of over 53 million euros in contributions, for interventions worth about 79 million euros. Of these, 763 (80 per cent of the funded projects) have already been completed, while 663 (70 per cent of the funded projects) have already received the grant payment.

Tab. 1: Calls for tenders for the revitalisation of historical city centres⁵⁹

	Domande presentate e concessioni				Finanziamenti attivi		
	Domande presentate (unità)	Progetti finanziati (unità)	Investimenti ammessi (euro)	Contributi concessi (euro)	Progetti finanziati (unità)	Totale investimenti (euro)	Contributi concessi (euro)
1° Call (2019)	400	318	25.083.468	17.901.267	297	22.508.043	16.323.747
2° Call (2019)	195	169	16.700.736	11.922.455	165	15.553.873	11.252.396
Bando straordinario (2019)	276	170	14.410.626	9.301.539	132	10.919.211	7.360.027
3° Call (2020)	111	95	8.478.124	5.606.978	87	7.801.697	5.109.213
2° Bando straordinario (2020)	152	111	8.930.349	5.779.766	101	7.865.148	5.277.455
4° Call (2021)	233	162	14.802.819	6.218.972	173	14.088.795	7.833.976
Totale	1.367	1.045	88.406.126	58.730.980	955	78.746.771	53.156.819

Thanks to the savings generated, a new call for tenders is planned for 2022 with a budget of 5 million euros.

3.4 The Organic Plans and the Special Area Programme

The 2014 national Budget Law⁶⁰ intervened in this framework, opening up interesting fronts for the policy on historical centres, asking municipalities for an approach that was consistent with urban planning and integrated with other economic policies; one aspect going in this direction was the “*Organic Plans*”, aimed at restoring living conditions, resuming economic activities and reducing the vulnerability of buildings and the urban landscape, on the basis of the provisions issued by the Region.

According to the regulations, the Organic Plan is a “*programmatic-operational document that, on the basis of the resources actually available, outlines the general strategy and defines the systematic set of activities, interventions, projects and programmes that are compatible and consistent with the provisions of the Reconstruction Plan that the Municipality (...) intends to activate in order to achieve the objective of promoting quality reconstruction, aimed primarily at the historical centre, to be integrated with initiatives and interventions aimed at the regeneration of urban areas and public and private spaces, the revitalisation of economic, social and administrative functions and the increase in residents*”.

By adopting these through Ordinance 33/2014, the Region transformed Organic Plans into documents of a programmatic-operative nature⁶¹, configuring them “... as a tool for governing regeneration processes, which systematises the projects that can be financed and are compatible with the Reconstruction Plan, orders them in time and space, and indicates for each of them the most appropriate way to implement it, entering into the aspects of economic feasibility, real estate, availability of contributions, specific planning for individual

⁵⁹ Source: report “*Emilia più di prima*”, 2022, cit.

⁶⁰ L. 147/2013

⁶¹ Abandoning the idea that they would become new urban planning instruments, the Region decided to leave the task of designing the future layout of the territory to the Reconstruction Plan alone (ex regional law 16/2012).

cases ...".

The OPs essentially aimed to reconstruct the identity of the territories through interventions that generate new urban value and functions capable of promoting quality and reactivating an attractive, vital role for the area. The proposed transformations intended to rethink urban structures in order to overcome the major issues, e.g. in accessibility systems (new public spaces, new road networks and "slow" mobility), to qualify services (redevelopment of sub-services, smart services) and to reorganise economic activities (markets, private activities). All this was done by putting the main centres in relation with their territories, both in reference to their historical and environmental heritage and to the strategic location of some municipalities in the context of the Cispadane area⁶².

The complex and articulated objectives that reconstruction has brought into play have required extended listening processes, implemented at different stages of the OP's formation, involving the various social and economic components of local communities.

The Organic Plan therefore operates by taking into account the framework of the regulations and the State and regional resources that can be used for this purpose, and identifies the administrative and financial tools necessary to implement specific interventions, using all the available instruments, including the urban incentives defined by the Reconstruction Plan, the Urban Redevelopment Programmes (ex L. R. 19/98, refinanced with the 2014 regional budget) to be used mainly in the regeneration of the public city, the opportunities for the relocation of heavily damaged buildings, to be rebuilt in suitable areas, and the redevelopment and commercial improvement of urban areas with the promotion, in smaller historical centres, of "natural shopping centres"⁶³ in order to reverse the trend of depopulation.

The Special Area Programme (PdA), a territorial coordination tool for reconstruction

The regulatory framework that accompanied the reconstruction of Emilia-Romagna aimed not only at the immediate objective of restoring conditions of "normality" in the affected towns, but also, in the medium term, at raising urban quality and strengthening the identity of places, also by qualifying public space. This led, during 2014, to the development of a Special Area Programme⁶⁴, intended as a negotiated programming tool to promote and coordinate the implementation of the Municipal Organic Plans on a vast scale, enhancing the cooperation of public and private actors and the integrated management of actions⁶⁵.

Starting from previous experience of the tool's use in different regional contexts, the PdA has been identified as the instrument capable of guiding reconstruction according to principles of social cohesion and environmental sustainability, through the coordination of initiatives and cooperation between local authorities. The intention is to enhance, from among the interventions proposed by the Organic Plans, those that, due to economic, social, cultural and environmental peculiarities, could be more significant at the scale of a more extensive area⁶⁶.

⁶² By the December 2014 deadline, a total of 24 Organic Plans had been approved, compared to the 28 that, with the Reconstruction Plan, could have made use of the instrument. There were 11 interventions included, with a total value of 148 million euros.

⁶³ Ex Regional Law No. 41/97

⁶⁴ Directive of the Regional Government No. 1094/2014

⁶⁵ Introduced by Regional Law 30/1996, the Special Area Programme supplemented the regional resources available under Sector Laws 41/1997 (on trade and the qualification of minor enterprises), 19/1998 (on urban regeneration) and 16/2002 (on the recovery of historical-artistic heritage and the promotion of architectural and landscape quality). Regional Law 30/1996 was subsequently repealed by Regional Law 5/2018 on territorial interventions for the integrated development of local areas.

⁶⁶ The definition of the Programme and the supervision of its implementation are entrusted to the Programme Conference, composed of representatives of the local authorities and social partners involved, and chaired by the President of the Regional Government.

With regard to the Organic Plans proposed by the municipalities, the PdA indicated the area concerned, the regional resources available, the general objectives and the top priorities. Historical centres, the ultimate places bearing witness to history and identity, are recognised as having a strategic function in the field of reconstruction, and the consistent intention was to favour in particular those most affected by the effects of the earthquake, i.e. the 13 municipalities contained within the so-called “red zones”⁶⁷.

3.5 The Schools Programme

The damage to schools was very serious and, although mostly concentrated in the municipalities most affected by the earthquake, was also present in areas relatively far from the epicentres. As many as 653⁶⁸ school buildings were affected and, although fortunately no students or teachers were injured, more than 70,000 students were deprived of their school, a true centre of community gathering. This made the Emilian earthquake the most serious the country has ever had to face, from the point of view of damage to school property.

In order to allow the school year to start by September, a Regional Operational Programme for Schools was quickly drawn up, and implemented through various commissioner’s orders that made it possible to find the necessary resources (approximately 230 million euros). In a short time, many different solutions were implemented (fig. 18), such as 38 Temporary School Buildings (ESTs), to replace schools that were taking a long time to repair, choosing suitable building systems to guarantee construction times compatible with the opening of the 2012-2013 school year and appropriate for prolonged use, while awaiting the restoration or reconstruction of damaged buildings⁶⁹. All ESTs, capable of accommodating around 10,000 students overall, were completed by October 2012, on average within 50 days. The first school was opened in Castelfranco Emilia on 15 September 2012.

For the schools that could be reopened within a shorter timeframe, 32 Modular Prefabricated School Buildings (PMS), made by assembling modular steel prefabricated elements, even on two floors, were purchased instead. The prefabs, now dismantled, were able to accommodate more than 8,000 students. In addition, 28 school gyms were also built - also directly by the Deputy Commissioner .

Fig. 18: Overview of emergency interventions for schools



⁶⁷ The municipalities of Camposanto, Carpi, Cavezzo, Cento, Concordia sulla Secchia, Crevalcore, Finale Emilia, Mirabello, Mirandola, Novi di Modena, Reggiolo, San Felice sul Panaro, Sant’Agostino and San Possidonio.

⁶⁸ Including schools and university buildings.

⁶⁹ The criteria for choosing solutions included aesthetic-formal quality, landscaping, optimal use of space, increased teaching surfaces, modularity and flexibility, quality of materials, sustainability, and the possibility of equipping the buildings with photovoltaic systems.

3.6 The Municipalities Operational Programme

The immediate reconstruction of the damaged municipalities was the condition for the administrations to continue to serve their communities. Thus, temporary town halls were built using prefabricated structures, starting in parallel with the repair or reconstruction of the damaged premises. Launched with an ordinance in August 2012 and subsequently reshaped, the *Municipalities Operational Programme* allowed the location of the areas to be defined and facilitated the approval of the tender documents, with a total planned expenditure of 50.5 million euros. In particular:

- grants were provided for temporary alternative solutions for renting, moving, and purchasing furniture;
- the repair of category B or C buildings in terms of fitness for use was started immediately;
- *Temporary Municipal Buildings* (EMT) were constructed in nine municipalities, and *Modular Prefabricated Municipal Buildings* in three other municipalities, based on the estimated time needed to repair each damaged municipal building;
- grants were provided for the execution of urbanisation works, outside and inside the areas where the Temporary Municipal Buildings and Modular Prefabs were located, necessary to allow them to operate, as well as for the demolition of buildings and foundation works necessary for the construction of the new temporary structures.

3.7 The Programme for the Repair of Public Works and Cultural Heritage

The *Programme for Public Works and Cultural Heritage* is the system in which all seismic rehabilitation and improvement interventions on buildings owned by public and religious entities intended for public use have been included. The municipalities, the Regional Directorate of the Ministry of Cultural Heritage and Activities and, due to the very high number of damaged places of worship, the Emilia-Romagna Bishops' Conference, collaborated on the preliminary survey of the public works and cultural assets affected, from churches to theatres to health facilities. This led to the approval of the *Programme for the Repair and Restoration of Public Works and Cultural Assets*, consisting of more than 1,700 interventions with a total value of 1 billion 480 million euros. This is a programme in which project proposals comply with the technical provisions, namely the *Guidelines for the Evaluation and Reduction of Seismic Risk of Protected Cultural Heritage*⁷⁰.

Subsequently implemented by annual plans, the Programme was approved in its first draft in June 2013⁷¹ and has since been updated on several occasions to take into account changing needs, and to improve its content. Its formation required a thorough reconnaissance of all damaged properties. The work carried out by the owners and the Ministry of Culture for properties subject to protection, has made it possible to formulate estimates of the economic resources needed for each of them, in order to carry out interventions of damage restoration, local reinforcement or seismic improvement, in relation to the level of damage.

From the operational point of view, first of all, several hundred provisional and emergency works were carried out to reopen the "red zones" where citizens were banned from entering, restore the road network, and facilitate the return of those whose homes were exposed to external risk. Then, from the second half of 2013, reconstruction began, essentially based on two types of action:

- *interventions of repair, restoration with seismic improvement and reconstruction of public buildings intended for public services, public infrastructure, territorial amenities and public equipment*

⁷⁰ Approved by Ministry Decree January 14, 2008

⁷¹ DGR no. 801 of 17 June 2013

damaged by seismic events;

- *interventions of recovery, restoration and conservative renovation, with seismic improvement, of cultural heritage damaged by seismic events.*

The Operational Plans for Public Works and Cultural Heritage were then prepared based on the Programme - this was divided into two sections, one concerning Public Works (23%) and one Cultural Heritage (77%). It had a significant number of implementing entities: as many as 125, including 76 local authorities (municipalities and provinces), 13 religious entities (dioceses and parishes), 36 other entities (Reclamation Consortia, Health Boards and Hospital Boards, the Ministry of Cultural Heritage, the Superintendency of Public Works, ASP⁷²). They worked with the Commissioner's Technical Structure to apply for grants through the FENICE platform, created specifically to facilitate the flow of funds⁷³.

One of the most noteworthy characteristics of the system of rules prepared by the Deputy Commissioner was undoubtedly their inclusion of the obligation for the implementing entities to carry out the bidding procedures for all interventions exceeding 300 thousand euros using the method of the most economically advantageous offer.

The objective pursued, in agreement with all implementing entities, was to achieve the highest level of quality in the execution of reconstruction works⁷⁴. This was the most important aspect: to reach, in the design phase, the best technical solution that would be able to achieve the dual objective of greater safety and protection of the property⁷⁵.

3.8 The Housing Programme

Launched with an ordinance in August 2012, the *Housing Programme*⁷⁶ aimed to minimise the period of housing distress⁷⁷. The programme envisaged the disbursement of contributions for the repair and restoration of private homes, focusing on quality reconstruction, characterised by reduction of vulnerability and higher levels of safety, based on the principle that prevention is the only way to contain damage and the number of victims.

In order to get the reconstruction of buildings started, it was necessary to quickly define the rules for granting contributions, first regulating those for homes that had suffered damage classified as B or C, and then the more complex interventions for homes that had suffered damage classified as E.

⁷² ASPs (Aziende di Servizi alla persona), are public companies delivering social and health services to citizens.

⁷³ The implementing entities coincided in most cases with the owners of the damaged buildings or users. The funds allocated by the Government to finance the interventions included in the Programme for Public Works and Cultural Heritage could only be used to carry out works for the restoration of damage, local reinforcement of structures and improvement of the building against possible earthquake stresses. Therefore, in order to obtain the actual allocation of funds, the implementing entities prepared the projects and submitted them to the Commissioner's Technical Structure, which approved them after a careful preliminary investigation, including the opinion of the Ministry of Cultural Heritage (for protected assets) and the seismic authorisation of the Regional Service in charge.

⁷⁴ This regulatory provision was optional in the previous Contracts Code and is now mandatory in the new Code only for interventions exceeding 1 million euros.

⁷⁵ In addition, for public authorities, a further difficulty coincided with the need to maintain compliance with the financial limits imposed by the internal stability pact, which often made balancing cash flows problematic.

⁷⁶ Commissioner's ordinance No. 23/2012

⁷⁷ The three main commissarial ordinances that regulate access to contributions for the recovery, restoration and reconstruction of housing were issued in 2012: no. 29, which deals with light reconstruction (damage levels B and C); and no. 51 and no. 86, which deal with heavy reconstruction (damage levels E0 and E1, E2, E3, respectively). The funds available for private residential and production sector reconstruction were allocated by art. 3bis of Decree Law 95/2012.

With the promulgation of Regional Law 16/2012 on reconstruction, exclusively for the municipalities in the crater and neighbouring areas, the rules were integrated and strengthened to facilitate the restoration and reconstruction of damaged buildings, focusing on the free-of-charge nature of the interventions, the implementation of reconstruction based on the criteria of safety and efficiency, and ensuring that reconstruction was fast-tracked, streamlining the procedures for starting work, while safeguarding planning rules and environmental, landscape and historical-cultural constraints.

Within this framework, the MUDE (Modello Unico Digitale per l'Edilizia) represented the electronic “door” through which professionals, appointed by citizens whose homes were damaged by the earthquake, were able to carry out all the building practices necessary to carry out the interventions and obtain grants for the work. The digitisation of procedures allowed professionals to communicate remotely with authorities and institutions, access forms, spreadsheets and regional price lists, and receive continuous assistance through a dedicated help desk. Through the MUDE, it was possible to complete all the necessary construction paperwork for the renovation or restoration of buildings for private residential use, and at the same time apply for the grants for the work⁷⁸.

The *Programme for the Restoration of Public Housing* was activated with Ordinance 49 of October 2012 with the objective of providing for the restoration, repair and enhancement of the public housing stock, "to promptly guarantee the recovery of the largest possible number of dwellings in order to bring back as many households as possible, as soon as possible, in order not to have to find alternative long-term temporary accommodation for them".

The Commissioner's ordinances that implemented this provided for funding to repair the damage to buildings and housing classified as B, C and E, as well as the reimbursement of costs incurred for emergency repairs carried out in the weeks immediately following the earthquake.

3.9 The Health and Welfare Programme

The Regional Health Service was also hard hit by the earthquake: the AUSLs of Modena, Ferrara, Reggio Emilia and Bologna, and the Hospital-University Agencies of Ferrara, Modena and Bologna were involved. Among hospital facilities, the greatest damage was reported in the Modena area by the hospitals of Carpi, Mirandola, and Finale Emilia; in the province of Ferrara by the hospitals of Bondeno and Cento; and by one of the pavilions of the Sant'Orsola-Malpighi Polyclinic in Bologna. The most affected territorial health facilities were Crevalcore and Pieve di Cento.

A total of 117 facilities - including hospitals and territorial facilities - were affected, then becoming recipients of interventions worth a total of 55 million euros, financed by the European Solidarity Fund. Approximately another 29 million euros was added to this from insurance premiums, donations, and state and regional funds, provided before the earthquakes and aimed at seismic reinforcement and improvement interventions.

In the immediate aftermath of the earthquake, staff were engaged in emergency management, for the hundreds of patients evacuated from hospitals and the many elderly who had to leave their homes or nursing homes that were declared uninhabitable; work continued during the summer of 2012 to provide assistance to people displaced in camps.

The first phase was managed through ordinances regulating provisional works and the restoration of health,

⁷⁸ Small productive activities in historical centres and agricultural residences in rural areas were also managed with the same platform. The public resources were granted through the tax credit mechanism, which has made it possible to be certain of the funds available since 2012.

social and healthcare infrastructures and equipment. At the end of October 2012, in the most damaged hospitals - Carpi and Mirandola - healthcare activities were largely resumed, while in 2013 functional restoration was completed throughout the affected territory.

3.10 Support to enterprises

In the immediate aftermath of the earthquake, using the European resources of the EFRD 2007 – 2013 Regional Operational Programme (ROP), the Emilia-Romagna Region financed a series of projects aimed at facilitating temporary relocations for production activities and supporting research activities in the biomedical sector, in general supporting the recovery of the business community in order to maintain a high level of competitiveness in the economic system of the affected areas. In the agricultural sector, similar action was taken, activating a dedicated measure of the Rural Development Programme, aimed at supporting the reconstruction of mobile equipment and the seismic improvement of rural buildings.

To supplement these funds, as a solidarity contribution, the Italian regions of the Centre-North devolved to Emilia-Romagna 4 percent of the resource share of the funds provided for its operational programming in 2013, for a total of 176.2 million euros. These resources constituted an additional stimulus for the reaction of the entire production system, which added more than 280 million euros of its own funds, bringing the total funds for activities carried out to 456.2 million euros.

In addition to this, Decree 74/2012, with funds from the Ministry of Education, University and Research, financed industrial research projects in the areas of biomedical, mechatronics and motor, agribusiness, fashion, ceramics and construction, ICT and multimedia productions. Finally, starting in 2013, the region called for research and development projects from companies in the earthquake area, aimed at developing employment growth and new research and experimentation services, for a total value of 31.5 million euros in grants provided to companies in the area.

Reconstruction activity has also been an opportunity to review and improve the logistical, technological and productive set-up of affected enterprises. The triggering of a virtuous circle among local businesses, expanded to include all the technical professionals in the area, has made it possible to help the system grow, both in terms of skills and size.

Safe work policy

In addition to grants for the reconstruction of enterprises, other forms of support were provided, including grants with INAIL funds to enterprises with structural deficiencies in their warehouses, for which the level of safety needed to be improved. For this purpose, a dedicated call for tenders was specially opened with INAIL⁷⁹, through which contributions were granted to several hundred enterprises which carried out ad hoc safety measures.

3.11 Hydraulic safety management

The safety of a territory historically exposed to the risk of flooding - and even more so today, due to the effects of climate change - required rapid restoration of the functionality of the hydraulic infrastructures for soil defence affected by the earthquake, in particular the water drainage systems, as their loss of functionality put the entire plain at risk of flooding .

The earthquake caused major damage to both strategically important water drainage facilities, hydraulic structures, service buildings and hydraulic defence works, including some sections of embankments, in

⁷⁹ INAIL is the National Institute for insurance against accidents at work

both the drainage network and the main hydraulic network. Securing and restoring the functionality of hydraulic works for soil defence was a primary policy objective. For this reason, from the first days after the earthquake, the Reclamation Consortia, the Reno River Basin Technical Service and AIPO⁸⁰ started interventions for risk reduction and safety of the territory, and the development of the irrigation season (especially on structures for the regulation of water flows and flood lamination strategies, such as water-supply systems, embankments, culverts, etc.)⁸¹.

These interventions were also accompanied by non-structural measures, through the development of a special risk scenario and an intervention model related to the specific activation methods of the regional civil protection warning system. This resulted in an Emergency Plan detailing the procedures for the coordinated management of the interventions of agencies and operational structures, as well as the necessary human resources and means.

Shortly thereafter, the implementation of the provisional works and measures contained in the Interregional Emergency Plan would make it possible to successfully cope with both the flooding events related to the intense rainfall of March and April 2013 - which involved a vast area of the territory already affected by the earthquake, mitigating the extent of the damage - and the flood of January 2014.

3.12 Legality and transparency

Since before the earthquake, the Emilia-Romagna Region had been engaged in promoting legality and responsible citizenship, and activities to prevent organised crime, in the form of the mafia and in other forms. The 2012 earthquake introduced the need for significant acceleration in the identification and adoption of regulatory tools, including those of a regional nature, suitable to allow the resumption of activities as quickly as possible, in full compliance with the law.

From the outset, *legality* and *transparency* were the key words on which to base reconstruction, implemented through the adoption of numerous tools:

- *Protocol for Legality* between the Emilia-Romagna Region, the UTG Prefectures present in the territory of the Emilia-Romagna region and the Deputy Commissioner for Reconstruction, aimed at the prevention and repression of attempts at mafia infiltration in the sector of public works, services and supplies contracts and concessions, and urban planning and construction activities.
- *updates to the regional price list for public works* in Emilia-Romagna, and the establishment of a merit list for companies (on a voluntary basis).
- introduction of *mandatory white-list registration* for companies involved in reconstruction.

Within this framework of legality practices, the Deputy Commissioner and his structures worked in close connection with the Ministry of the Interior, with the Inter-force Reconstruction Group⁸², implementing activities in the area of anti-mafia controls.

On the public communication side, effective and easy-to-use monitoring tools were used to guarantee real transparency for citizens: these are the DURER (Unique Database for Reconstruction of the Emilia-Romagna Region), the MIRic system (Monitoring Reconstruction Interventions) and the Open Ricostruzione platform.

⁸⁰ AIPO is the special Agency for the Po River

⁸¹ The Deputy Commissioner has allocated, through various ordinances, over 22 million euros to carry out 89 provisional interventions in the four affected provinces.

⁸² Gruppo Interforze Ricostruzione Emilia-Romagna (GIRER)

White Lists against mafia infiltration and the Legality Protocol.

In the area of anti-Mafia controls, activities were carried out within a regulatory framework that included, among other things, the so-called White Lists, established by Law 190/2012⁸³, consisting of lists of suppliers, service providers and contractors not subject to attempted mafia infiltration.

The Legality Memorandum of Understanding for the reconstruction of the areas affected by the earthquake was signed on June 27, 2012, by the Emilia-Romagna Region, prefects and the Minister of the Interior, the Authority for the Supervision of Public Contracts, the Union of the Italian Provinces (UPI), the National Association of Municipalities (ANCI), the Union of the Chambers of Commerce, INAIL (see note 79), the National Social Security Institute (INPS), the Regional Directorate of Labour, the national Trade Unions (Cgil, Cisl, Uil, Fillea-Cgil, Filca- Cisl, Feneal-Uil), the National Building Contractors Association (ANCE), the Emilia-Romagna Industry Confederation, national associations for artisans (Cna, Confartigianato), the Cooperatives Confederation and other enterprise associations, the Third Sector Forum, and the professional associations in the construction sector.

The protocol, aimed at increasing measures to counter attempts to insert organised crime into renovation and reconstruction works in the provinces of Reggio Emilia, Modena, Bologna and Ferrara, aimed to improve mutual exchange of information, and ensure greater effectiveness of prevention and control actions through the commitment to extend anti-mafia audits to all interventions financed with funds earmarked for reconstruction.

The contractor registry to connect databases

Among other tools, the *Registry of Contractors*⁸⁴ aims to meet specific systemic information requirements for anti-mafia purposes. It is a unified data warehouse that contains all the information present but dispersed across different databases, including: Sitar (regional information system for public contracts), the aforementioned MUDE and SFINGE, the Merit List, and the transportation of rubble (information system of the Chambers of Commerce). See also section 3.13 in this regard.

This was first model in Italy, and thanks to the way it has been structured, the system allows for a comprehensive overview of the economic operators operating in the territory and the identification of the activities undertaken. This is intended to avoid the risk of mafia infiltration in procurement.

The merit list for the construction sector

The Emilia-Romagna Region has also established a merit list of economic operators in the construction sector. Registration is voluntary, not subject to expiration and open to all construction operators. For the purpose of registration, the regularity of social security contributions (DURC), the absence of promissory note and/or check protests in the last five years and the anti-mafia notice are checked for each company. The purpose is twofold:

⁸³ The *White List* was created by Law No. 190 of 6 November 2012, 'Provisions for the prevention and repression of corruption and illegality in public administration'. The D.P.C.M. of 18 April 2013, which came into force on 14 August 2013, provided for the establishment, in each Prefecture, of a list of suppliers, service providers and contractors not subject to mafia infiltration attempts, operating in the sectors considered most at risk. Subsequently, d.l. 90/2014 (art. 29) amended l. 190/2012, providing for the compulsory registration of companies in sectors at risk of mafia infiltration (already identified by the same l. 190/2012) in the lists of companies not subject to the risk of mafia infiltration kept by the prefectures and periodically checked to confirm that the original requirements are still met.

⁸⁴ Tool provided for by the "*Antimafia guidelines*" of CCASGO – the Coordination Committee for the High Surveillance of Large Scale Works.

- to establish a database that contracting authorities, municipalities, principals, professionals and citizens can draw on when awarding contracts to companies;
- to implement the principle of simplification, offering the possibility of not having to resubmit the same documents required for compliance with other procedures⁸⁵.

During the implementation of interventions, the Commissioner's Technical Structure carries out specific controls on the procedures adopted by the implementing entities receiving grants, on a sample size of 10% of the number of interventions. It also carries out final controls on the reporting of expenses incurred for 100% of the funded interventions.

3.13 Reconstruction monitoring

In order to ensure the effective implementation and transparency of the reconstruction process, national and regional regulations have provided monitoring to verify:

- the implementation of reconstruction plans and programmes;
- the progress of the practices of repair and reconstruction interventions;
- the traceability of contributions disbursed.

To this end, the Single Reconstruction Database (DURER) was created to manage and integrate a multitude of databases:

- arising from actual reconstruction: private reconstruction (MUDE), reconstruction of businesses (SFINGE), public works (FENICE), temporary buildings, donations, transportation of rubble;
- from other areas monitored in their own ways related to ordinary activities: preliminary notifications, public contracts, regional and national business register, etc.

In parallel with populating the DURER data, interventions were geo-referenced, creating a geo-database that can be consulted through a Moka WebGIS application, "Monitoring Reconstruction Interventions (MIRic)," at the level of the territory (Reconstruction Plans, Special Area Programme), put in place for reconstruction activities in the territory. The DURER also feeds into the portal aimed at external communication, Open Reconstruction, which, for the purpose of transparency and public communication, precisely describes the reconstruction, intervention by intervention. All citizens can therefore access detailed information about reconstruction interventions.

Again with the aim of creating a tool for monitoring the effectiveness of the reconstruction operation, that is available to everyone and ensures maximum transparency with regard to the grants provided and the interventions carried out, it was decided to publish on the website www.regione.emilia-romagna.it, in the Transparent Administration section, the open format data on the funds allocated to beneficiaries for the reconstruction of private building stock (intended for any purpose) damaged by the 2012 earthquakes.

⁸⁵ As of May 2017, more than 1,300 companies are registered in the Directory. Also with a view to simplifying construction practices, the Sistema Informativo delle Costruzioni (Sico – Information System for the Construction sector) has been in place since 2012. The Sico system makes it possible to acquire and share information with the authorities responsible for the supervision and control of legality, and protection and safety at work. The system also provides useful data for the Registry of Contractors and has issued special credentials for the Anti-Mafia Investigative Directorate.

4. From Friuli – Venezia Giulia to Central Italy: fifty years of earthquakes and reconstructions⁸⁶

Friuli, 1976

In Italy, one of the most interesting cases of reconstruction is that of Friuli-Venezia Giulia, which was hit in 1976 - in May and September - by two violent earthquakes of magnitude 6.5 and 6.0 respectively, which caused very serious material damage, destroying more than forty municipalities and claiming almost a thousand victims. This was the first case in which reconstruction was inspired by the “*where it was, as it was*” principle. For more than 60,000 people, the 1976 earthquake meant more than a year in temporary accommodation on the Adriatic Riviera, before they were able to access the temporary facilities set up at the same time as the actual reconstruction began in 1977. At the time, the affected area - a very significant part of which was mountainous - represented one of the least developed territories, at least as far as the north of the country was concerned.

Also by virtue of Friuli-Venezia Giulia's position as a region with a special statute, the governance of the emergency and subsequent reconstruction was entrusted to the Extraordinary General Secretariat, established by the regional government for the task of directing and coordinating all activities aimed at reconstruction.

More than half a century later and appropriately placed in the historical context of the time, the Friuli reconstruction represents a virtuous case in various respects:

- a) reconstruction as an opportunity: the first lesson of the disaster was to understand how it could also be interpreted as an opportunity for development, to promote economic and social progress and safeguard the identity and cultural heritage of the population;
- b) decentralisation of powers from the state to the region and to mayors: by emphasising Friuli-Venezia Giulia's character as an autonomous region, the mayors became de facto commissioners with full powers;
- c) first the factories, then the houses and then the churches: the decision to first rebuild production facilities was made with the conviction that only by resuming the economy and the production of income, thereby giving citizens the resources to face the individual costs of the reconstruction of the housing stock, would it be possible to prevent their exodus and therefore the depopulation of the territory⁸⁷;
- d) “where it was, as it was”: the primary objective was to give all the households affected a home. The Region, partly on the basis of the population's suggestions, decided to rebuild villages where they were before the earthquake, and as much as possible with the same building types, restoring all recoverable buildings;
- e) Schools and infrastructure: the choice was to restore and expand the network of social services for citizens, starting with schools, and then to provide the region with those infrastructures that would allow Friuli to emerge from marginality - the motorway towards Trieste and Udine, the modernisation of the Pontebbana railway, and the establishment of the University of Udine;
- f) Civil Protection: from this experience, the regional Civil Protection was created, which was the model for the national one as it is today, which was finally implemented after the 1980 Irpinia earthquake disaster,

⁸⁶ Section drafted on the basis of information from different sources, among which was primarily: Ufficio Speciale per la Ricostruzione dei Comuni del Cratere (Special Office for the Reconstruction of the Municipalities in the crater of the L'Aquila 2009 earthquake, ex law. 134/2012), “*Citizens' rights compared in some post-earthquake reconstructions in Italy*”. Cfr.: <https://www.usrc.it/>

⁸⁷ This allowed for a small but significant economic boom that anchored an entire population to its territory, also acting as a driving force for housing reconstruction and effectively preventing the migration effect

organised on a municipal basis and characterised by a widespread network of volunteers.

Ultimately, the Friulian earthquake of 1976, with the ability demonstrated by the institutional system to effectively manage the physical space and anchor reconstruction to economic development objectives, brought with it the opportunity to spread as far as Friuli - where it was unknown at the time - the model of industrial districts that later made its economic and social fortune.

Campania and Basilicata, 1980

The earthquake that struck the regions of central Campania, Basilicata and - to a lesser extent - Apulia on 23 November 1980, with a magnitude of 6.9, was one of the most powerful and disastrous to affect the Italian peninsula during the 20th century. The area affected was huge (over 17,000 square kilometres), with almost 3,000 people killed and over 8,800 injured, over 300,000 homes destroyed or damaged, 280,000 people made homeless, and 687 municipalities affected⁸⁸. The building heritage of the “*crib-scene villages*” was structurally weak (and also partially compromised by the earthquakes of 1930 and 1962), while the extensive damage to the infrastructure network made it difficult for relief services to reach the affected area. They would only arrive five days later, and in a fragmentary and unorganised manner, due to the lack of any organisation such as the present-day Civil Protection that was capable of coordinating resources and means. The vigorous intervention of the former President of the Republic, Sandro Pertini, led to the appointment of a Special Commissioner - Giuseppe Zamberletti - to coordinate the rescue operations. He was responsible for some of the innovations that most improved the institutions' ability to intervene in the event of natural or man-made disasters⁸⁹:

- the establishment of the Council Presidency's Civil Protection Department
- the introduction of the concept of forecasting and prevention as distinct from rescue activities;
- the organisation of the national service in all its components;
- the enhancement of local authorities and voluntary work.

At the beginning of 1981, shortly after the event, the Extraordinary Earthquake Committee was set up, made up of technicians and ministers, with the role of guiding and coordinating all reconstruction activities, entrusted to the government.

Apart from the extent of the earthquake, which was much larger than in Friuli a few years earlier, partly due to the fact that the 1980 event took place in a territory of regions with ordinary statute, the governance of the Irpinia earthquake was characterised by the absence of intermediation at the regional level between State and Local Administrations; this function was exercised directly by the State authorities in direct connection with the Municipalities, while the Regions were only responsible for the definition of detailed regulations, implementing the regulations in turn promulgated at the national level. With Law 219/1981, the Parliament allocated funds for reconstruction, which were never quantified in detail, and their use is also remembered for its corruption scandals, which led to an exponential increase in appropriations from the initial 8,000 billion old lire to over 60,000 billion.

Following the Friuli model, the reconstruction in Irpinia was focused on industrial revitalisation, despite the

⁸⁸ 37 municipalities classified as “devastated”, 314 as “severely damaged”, and 336 as “damaged”. Source: Report of the Parliamentary Commission of Inquiry into the implementation of reconstruction and development interventions in the territories affected by the earthquakes of November 1980 and February 1981. Tenth Legislature, Parliamentary Acts.

⁸⁹ Under Mr. Zamberletti, the reform of the sector began, culminating in the approval of Organic Law 225/1992 on Civil Protection, which was entrusted directly to the Presidency of the Council of Ministers.

absence of similar economic characteristics in the area. The 'scattered' disbursement of contributions caused considerable difficulties in expenditure, a situation that led to the revocation of a very high number of grants for industrial purposes, often without the effective ability to recover the allocated funds, due to the weakness of the monitoring and control systems⁹⁰.

Umbria and Marche, 1997

The September 1997 Umbria and Marche earthquake hit a 50 km strip of the Umbria-Marche Apennines, reaching a moment magnitude of 6°, causing 11 deaths, over 100 injuries, and leaving 22,000 people homeless. It affected the area's historical building heritage extensively, with more than 50 percent of homes being declared uninhabitable in numerous municipalities. Among over 80,000 damaged buildings were the Basilica of St. Francis of Assisi and the historical centres of Foligno, Nocera Umbra, and Norcia. The number of buildings of historical and cultural character affected led to the event becoming known as the "cultural heritage earthquake".

The governance of the reconstruction was based on subsidiarity and integration between public and private actors, where:

- a. the central State, with law no. 61/1998, established the guiding criteria for reconstruction, entrusting the Regions with the task of setting the detailed rules⁹¹;
- b. Regions, Provinces and affected Municipalities issued their own regulations for the planning and coordination of reconstruction, delegating the individual implementation phases to Local Authorities suitably reinforced with personnel and tools;
- c. the Reconstruction Observatory was established, on a digital basis, with the functions of monitoring the reconstruction process and processing and disseminating data and information on the relative state of implementation. Free access was granted for institutions and citizens within the framework of effective transparency;
- d. technicians (engineers, architects, geologists, etc.) and construction companies provided - in online forms - a certified estimate of the damages, restoration projects and costs, structured according to standardised items;
- e. the owners of damaged buildings - individual citizens, companies, curias, etc. - were made responsible for and assisted in freely choosing solutions for repair or reconstruction work. New zoning of the affected territory was also carried out, analysing and cataloguing the seismic events, in order to make the criteria for financing restoration work more objective⁹². Based on this classification, reconstruction aimed to preserve historical-environmental identity and urban-architectural integrity, according to three categories:
 - light reconstruction in buildings with a level of damage and vulnerability within limits set by regional regulations, and the presence of at least one main dwelling occupied at the time of the earthquake and declared uninhabitable;

⁹⁰ To revitalise twenty industrial zones between Campania and Basilicata, 7,762 billion lire (about €8 billion in 2010) was allocated, with a final cost twelve times higher than expected in the province of Avellino, and seventeen times higher in the province of Salerno. According to the final report of the Court of Auditors, infrastructure costs grew to peaks "of about 27 times those envisaged in the original agreements". 48.5% of industrial concessions (146 cases) were revoked. The Court of Auditors accused 'the superficial nature of the investigations and the absence of appropriate checks'. In 2000, 76 companies had already gone bankrupt, but only a small part of the subsidies (21% in the province of Salerno) had been recovered. Source: Report of the Court of Auditors of 15 December 2000, 'Realisation of new industrial areas for productive settlements in the areas damaged by the earthquakes in 1980 and 1981.

⁹¹ Law No. 61/1998

⁹² For this purpose, the Keffer method was used, which correlates the magnitude of the seismic event with the epicentral distance of the activated earthquake phenomenon.

- heavy reconstruction in isolated, severely damaged buildings located outside the Integrated Recovery Programmes (PIRs);

- integrated reconstruction - through the PIRs - of centres and settlements of particular historical, landscape and economic interest, where the proportion of destroyed or damaged buildings exceeded 40%.

When the more recent earthquake hit the area - in the summer of 2016 - light reconstruction was entirely completed, and heavy reconstruction was approximately 90% complete. The situation of the RIPs was more complex, as, given their technical-planning and logistical complexity, they presented more diverse budgets. This also depended on the actual operating capacity of the municipalities, with an average of completed interventions in the order of 60%, ranging from situations of excellence, such as that of Assisi, and significant delays, as in the case of Nocera Umbra.

L'Aquila, 2009

The L'Aquila earthquake of 2009 was a series of seismic events, beginning in December 2008 and ending in 2012, with epicentres across the entire area of the L'Aquila basin and more generally in the northern part of the province of L'Aquila. They affected not only Abruzzo, but also Lazio⁹³ and, although to a much lesser extent, the provinces of Ascoli Piceno and Terni. The name refers to the main quake, which occurred on 6 April 2009, which had a momentum magnitude (Mw) of 6.3⁹⁴, and affected to varying degrees much of the territory straddling central and southern Italy.

The final toll was 309 dead, more than 1,600 injured, about 35,000 private and public buildings declared uninhabitable or temporarily unusable, about 50,000 people with homes destroyed or heavily damaged, 95 municipalities affected, and more than EUR 10 billion in estimated damage. In addition to this was the significant damage to L'Aquila's production sector: numerous businesses were put out of action, with short, medium and long-term repercussions on employment, as well as companies in the electronic technology hub (e.g. Alenia, a high tech aeronautic company) that, due to uninhabitable structures, partially relocated their activities to their Rome offices⁹⁵.

By decree of the President of the Council of Ministers, a state of emergency was declared, with the appointment of the Head of the Civil Protection Department as Deputy Commissioner until December 2009⁹⁶.

After the immediate relief efforts, the management of the emergency by the Civil Protection included a phase consisting of the construction of tent camps and the building of temporary houses to cope with the housing emergency. In this context, for safety reasons, the Civil Protection closed off several areas, both in the historical centre of L'Aquila and in the neighbouring centres most affected, labelling them as "red zones".

In terms of governance following the first post-earthquake phases, in February 2010 the Emergency Management Structure was entrusted to the *President of the Abruzzo Region, as Deputy Commissioner*⁹⁷. The state of emergency ended on 31 August 2012, as established by law no. 134/2012 (art. 67 bis), which at

⁹³ Among others, the villages of Amatrice and Accumoli were also hit, and were later completely destroyed by the earthquake of August 2016.

⁹⁴ 5.8 – 5.9° on the Richter scale.

⁹⁵ L'Aquila, a university city, seriously risked the withdrawal of a large proportion of its students and the loss of all economic income from them: in response to this, the university, in agreement with the Ministry of the University, launched measures such as a freeze on enrolment fees, while new provisional student facilities were built in areas of the city not particularly affected by the earthquake.

⁹⁶ Then extended until January 31, 2010.

⁹⁷ Some residual activities for the construction of Provisional Housing Modules and Provisional School Modules remain the direct responsibility of the Civil Protection Department, while on 31 March 2010, the management of all the buildings of the Housing Project was transferred to the Municipality of L'Aquila.

the same time established the Special Office for the Reconstruction of the Municipalities in the Earthquake Area (USRC), operational since April 2013. The USRC - which is still operational⁹⁸ - provides technical assistance and support to the municipalities involved in public and private reconstruction processes, promoting quality, carrying out monitoring, and acting as an interface between the central Administrations (by whom it is coordinated), and local ones.

The L'Aquila earthquake is also known for the solutions adopted for the accommodation of the citizens left homeless, including the New Towns, new earthquake-proof towns, to be built outside the affected centres, in order to contain the housing emergency and avoid the exodus of the population. These were then implemented through the CASE (Complessi Antisismici Sostenibili ed Ecocompatibili – Eco-friendly and Sustainable Antiseismic Complexes)⁹⁹ and MAP (Moduli Abitativi Provvisori – Provisional Housing Modules¹⁰⁰) projects. Rejected by the municipality and the inhabitants of L'Aquila due to the fear that the historical centre could be turned into a “*museum city*”, the New Towns were implemented in several municipalities in the L'Aquila area.

Central Italy, 2016 - 2017

The seismic sequence in Central Italy in 2016-2017¹⁰¹ began in August 2016, with epicentres located between the upper Tronto valley, the Sibillini Mountains, the Laga Mountains and the Alto Aterno Mountains, with a tremor with a momentum magnitude (Mw) of 6.0. It continued with two powerful aftershocks in October of the same year, with epicentres at the Umbria-Marche border, and with Mw equal to 5.9 and 6.5 respectively, and then again in January 2017, with a new sequence of four tremors with Mw greater than 5, with epicentres located among the municipalities of the North-Aquila area. The complex of events hit four regions - Abruzzo, Lazio, Umbria and Marche - causing 303 deaths, 388 injured and about 41,000 people left homeless. Of the 140 municipalities affected, several were almost completely destroyed (Amatrice, Accumoli, Arquata del Tronto, Pescara del Tronto), while many others - including Norcia - recorded very serious damage to their historical and cultural heritage.

In terms of governance, the national coordination of relief operations was undertaken by the Civil Protection (transferred almost immediately to Rieti, to the Command and Control Directorate - DI.COMA.C). The government also appointed a Special Commissioner for the reconstruction¹⁰², made operational in Rieti while the DI.COMA.C. continued its activities until April 2017, and then transferred the post-earthquake management to the four regional administrations.

This required the establishment of a Coordination Cabin as a point of collection for the requests coming from the four affected Regions, and connection with the central level (Commissioner), while the Institutional Committees - established at the regional level and composed of the President of the Region (as Vice-Commissioner), the Presidents of the Provinces and the Mayors of the Municipalities involved - became the place for discussion and sharing of strategic choices (under the command of the Vice-Commissioners). This level, in turn, was technically supported by territorial Special Offices for Reconstruction, with the task of collecting and managing local requests.

It was during this earthquake that the government opted to resort to ordinary administrative procedures,

⁹⁸ The USRC was organized with a Front Office near L'Aquila and four regional branches .

⁹⁹ Literally, “CASE” in Italian means “Homes”

¹⁰⁰ Pre-fabricated modules in wood.

¹⁰¹ Defined by the INGV – the National Institute for Geology and Vulcanology – as the Amatrice-Norcia-Visso seismic sequence

¹⁰² Four Special Commissioners have been in this position, from Vasco Errani (the first Deputy Commissioner during the Emilia – Romagna 2012 earthquake emergency), to Giovanni Legnini, presently in charge.

decentralising decisions to the territories and avoiding overly centralised management with frequent recourse to extraordinary powers. Aware of the not entirely positive outcome of the experience of the L'Aquila earthquake of 2009, the mayors of the affected area expressly requested that the towns be rebuilt where they were, avoiding the construction of New Towns.

5. Elements for a disaster governance model

This section attempts to systematise the elements which emerged from the excursus on the Emilia-Romagna experience, also in relation to the other reconstruction experiences in our country, evaluated comparatively (section 5.1). Subsequently, the reconstruction event in our region will be considered from the point of view of both the strong elements that made its positive outcome possible, and the problems that emerged in the earthquake area, some of which preceded the event, with others emerging over the course of the past decade (section 5.2).

Without any claim to being exhaustive or attributing absolute value, section 5.3 attempts to systematise all the factors whose convergence can facilitate the implementation of an effective post-disaster governance system.

5.1 A comparative reading of Italian reconstructions

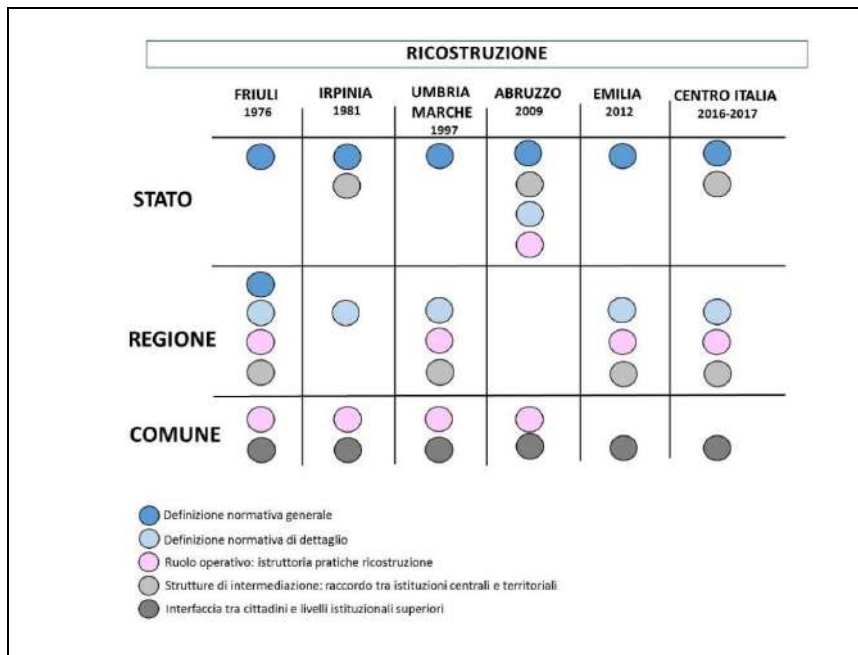
A recent document produced by the aforementioned Special Office for the Reconstruction of the Earthquake Area Municipalities (URSC, linked to the 2009 L'Aquila earthquake) proposes - among other things - a comparative reading of the governance models adopted in the event of the earthquakes that have affected our country during the forty-year period from 1976 to 2016, identifying the actors and subjects involved in various capacities in the reconstruction processes, within the framework of their relationship with the respective territorial communities. It is believed that this is a useful contribution for an evaluation that is as balanced as possible of the management of the emergency and the reconstruction process following the 2012 earthquake in Emilia, also in terms of its possible modelling.

In general, the key evaluation question appears to be linked to the *consideration of the effective weight of the "governance"* of emergencies and reconstruction, compared to the results actually achieved. Starting from the aforementioned contribution, supplemented by other literature sources, what is proposed below is an analysis of the organisational models implemented in the different contexts to manage the respective reconstructions, highlighting the differences in the actors involved, their responsibilities and functions. Figure 19 on the following page gives an account of some substantial differences in the responses to different events, also highlighting their evolution over time.

In particular, for the various seismic events, multiple aspects characterising the regulatory and management methods are identified, some of which, although they cannot be interpreted univocally, allow a useful comparison of:

- the "actors" involved in various capacities (authorities, entities, structures delegated to define and implement regulations)
- the "roles", responsibilities and functions exercised by these actors in the processes carried out.

Fig. 19: Actors, responsibilities and functions in the management of Italian earthquakes 1976 - 2016



In all circumstances, the organisational models for managing these events make it possible to identify two macro phases, one linked to the emergency in the strict sense (immediately following the event), and the other to reconstruction in the broader sense. They are characterised by different temporal articulation, each time aimed at housing reconstruction, recovery of production, and settlement development.

In general, a standard subsidiarity scheme in the distribution of responsibilities should envisage

- centralised State management of the first phase of the emergency, corresponding to the passing of general legislation;
- the involvement of the Regions in the reconstruction phase, with the issuing of detailed regulations and the preparation of organic programmes for the processes;
- the implementation of operational interventions, delegated to the municipalities, regulated by urban planning instruments.

In the reality of the events considered, the different “models” diversify where the 'standard' phases of this scheme intersect, overlap, integrate or alternate. Indeed, we observe, for example, when compared against the very decentralised method that characterised the Friuli earthquake (certainly also linked to the Region's special statute), the very strong centralisation from the state authority in the case of the L'Aquila earthquake, which literally 'skips' the regional level (although with a partial overlap with the municipalities, in terms of the operational functions connected to reconstruction practices). On the contrary - and taking into account the ordinary statutory character of the Regions in question - in the cases of Umbria - Marche 1997, Emilia 2012 and Central Italy 2016 - 2017, the central role exercised by the regional level clearly appears, only partially 'mitigated', in the case of Central Italy, by the inter-regional character of the earthquakes and the need for the central State to exercise stronger coordination .

Below, we attempt to identify some key points.

a. Governance structures related to the same type of calamitous events (earthquakes, in this case) have changed over time as the reconstruction phase has progressed, differentiating themselves. Generally speaking, there seems to be a sort of “path dependency” of governance schemes from the management

choices made in the immediacy of the event, linked to the specific conditions of the context, e.g. the actual extent of the event in terms of extension and damage, the organisational capacity of the regional and local administrative levels, the degree of proactivity of the actors in the economic system, etc.

b. However, the comparative reading of the choices that accompanied the different events seems to give account of an evolution of management models in the direction of a gradually stronger role played by the regional level, at a "meso"-scale, corrected if necessary by greater involvement from the state level when the supra-regional scale of the events requires stronger coordination (this is the case of the Institutional Committees set up in the four regions of the 2016 - 2017 Central Italy earthquake, whose function is to support the strategic choices of the respective presidencies, in their capacity as Vice-Deputy Commissioners of the Government).

c. In general, there is a growing consistency between the functions exercised at the various levels and the distribution of responsibilities dictated by the Constitution, at least as far as the Regions with ordinary statutes are concerned, taking into account the progressive evolution of the structure and operations of the Regions themselves, starting from their effective establishment in 1970.

d. With the definition of a *Technical Mission Structure* of the Presidency of the Council of Ministers, the case of the 2009 L'Aquila earthquake appears to be in contrast, with the almost exclusive role of the central State, to the opposite extreme of the picture offered by the 1976 Friuli earthquake, in which the Region - also strengthened, as mentioned, by the prerogatives of the special statute - played a leading role even at the level of defining the legislation, both general and detailed.

e. With the 2012 Emilia-Veneto-Lombardy earthquake, precise choices were made, of both a strategic and operational nature. On the one hand, there was the leadership of the Presidents of the Regions as Deputy Commissioners of the Government for the management of the emergency and reconstruction, and on the other, the positioning of the operational functions inherent to reconstruction practices, which were no longer delegated to the municipal level but firmly anchored to the regional level, with all the positive implications in terms of a greater organic unity in the governance of the actors involved, the definition of policy priorities for the emergency and the start of reconstruction, the creation of simplifying tools for its implementation (e.g. telematic tools), and the monitoring of processes.

f. The 2016 - 2017 Central Italy earthquake took up the overall organisational approach of the Emilia-Veneto-Lombardy experience, adapting it to the more markedly multi-regional scale of the event, establishing the figure of the Deputy Commissioner, delegated by the Government for the reconstruction, who is reported to by the Presidents of the regions involved, as Vice-Commissioners, who are in turn supported by Special Offices for Reconstruction, decentralised regionally and organized in various provincial offices.

g. What is naturally common to all the events is the 'interface' role played by municipal administrations, as a connection between citizens and higher institutional levels, but where the additional attribution of an operational role in the management of reconstruction practices must reckon with the frequent weakness of technical structures, which are not always accompanied by technical-managerial 'coverage' from the regional administrative level (except for the last two earthquakes, in which the municipalities were not called upon to directly carry out the management of reconstruction practices).

h. With regard to this last aspect, the degree of integration of local actors and communities differed in the various circumstances considered: whereas in the case of Friuli the strong focus on the local social context was undoubtedly favoured by the territorial decentralisation of the reconstruction, which made it possible to enhance the self-organising capacity of citizens and local administrations, on the opposite front, in the case of L'Aquila 2009, the predominance of the national level resulted in poor cooperation with the Region and Local Authorities, which were only able to enjoy very limited space, e.g. in the definition of regulations,

only partially mitigated - in 2012 - with the establishment of the Special Office for the Reconstruction of the Earthquake Area Municipalities, organised locally partly to allow better coordination between central structures and municipalities.

i. Equally interesting is the comparison between the case of Irpinia in 1980 and that of the Po Valley in 2012: in the first case, great decision-making autonomy was granted to municipalities and communities in the management of the reconstruction - a process which, however, in the absence of an effective strategic direction, led to frequent relocations of destroyed settlements and great difficulties in activating an effective recovery. In the case of the 2012 earthquake, on the other hand, in addition to the organisational and technological choices (certainly also made possible by the very different technological conditions that characterised the time when the events occurred¹⁰³), the role of strategic direction played by the regional level, together with the cooperative capacity of local actors, became a keystone of the positive results achieved so far. Thus, in the context of the emergency, and within the framework of the Joint Technical Commission¹⁰⁴, consistent collaboration and dialogue was established between the Damage Assessment Unit, the Deputy Commissioner's Technical Structure and the Region, which among other things led to the preparation of the *Programme for Public Works and Cultural Heritage*.

In terms of ongoing trends, recent regulatory developments seem to be taking steps in the direction of greater standardisation in governance methods: the so-called *Reconstruction Decree*¹⁰⁵ assigns to the Presidency of the Council of Ministers the functions of guiding and coordinating the activities carried out by the competent institutional authorities on the subject of restoration and reconstruction in the territories affected by calamitous events of natural origin, i.e., not resulting from human activity. Added to this was the Prime Ministerial Decree of 4 April 2020, where the Department of Casa Italia was assigned the additional responsibilities of *“coordinating the work of the competent institutional authorities for the activities of restoration and reconstruction of territories affected by calamitous events of natural origin or resulting from human activity, following civil protection interventions”*, in continuity with its original mission aimed at increasing the seismic safety of the national housing stock¹⁰⁶.

Finally, at the time of writing this report, it is worth mentioning the Draft Law delegating the adoption of the *“Reconstruction Code”* to the Government, which is aimed at defining a uniform regulatory framework to coordinate the procedures and activities for reconstruction and economic recovery in the territories affected by seismic events, without prejudice to the responsibilities and activities attributed to the National Civil Protection Service¹⁰⁷.

5.2 Strengths and weaknesses in the Emilian experience

Understanding the replicability, or at least the transferability of the Emilia-Romagna reconstruction experience certainly implies considering the specific conditions whose occurrence, at different territorial scales, enabled its realisation. This leads us to return to a consideration of our initial conceptualisation

¹⁰³ It was only from the earthquake of Umbria – Marche 1997 that it became possible to establish an online Observatory on reconstruction.

¹⁰⁴ Cfr. cap. 2.3.4

¹⁰⁵ Law No. 156/2019

¹⁰⁶ However, the subject matter needs to be reviewed to define clear governance, overcoming legislative fragmentation in order to create a structure with clear, standardised powers and tasks that can implement long-term interventions.

¹⁰⁷ The Code is currently on standby due to the ongoing political crisis and the forthcoming general elections.

regarding the territorial system's properties of "*capacity to adapt*" and "*adaptability*"¹⁰⁸. The former can be understood as the capacity for immediate response to a shock, aimed at restoring previous conditions, and the latter as the capacity to proactively use the shock itself as an opportunity to take innovative paths.

This is an interpretation of the concept of 'resilience' with strong territorial connotations, in which context-specific conditions weigh heavily on the definition of possible solutions to emerging problems. In this sense, the effectiveness of any decision-making process in responding to an immediate and critical emergency (an earthquake, in our case, but also a flood or an environmental or social emergency), depends significantly on the ability of decision-makers to make appropriate decisions according to the conditions of the context, with an approach that can be likened to the concept of "*place-based*" local development¹⁰⁹.

Placed in relation to the context of Emilia-Romagna faced with the effects of the earthquake, this approach leads us once again to highlight the *pillars* of regional development, namely:

- the *high administrative and institutional capacity* at the level of the regional government, capable of producing choices designed on the basis of a strategic vision of the territory
- the *capacity for collaboration between institutional, economic and civil society actors*, which has grown at all levels within the framework of a strong aptitude for participation and cooperation between actors with different characteristics and even potentially conflicting interests
- the *prior availability of programmatic and territorial planning* tools (at least to a certain extent the "offspring" of the above-mentioned aspects) that have made it possible to delegate choices to the territory, first relating to the management of the immediate emergency, and then to reconstruction.

It is in this context that great choices of governance are made, starting with the - fundamental - assignment, in agreement with the national government, of the President of the Region as the government's Deputy Commissioner for reconstruction, identifying the meso-institutional level, "*not too far, not too close*" to the territory, as the most appropriate for making fast and effective operational decisions, starting with dedicated programmes - for the restoration of schools, municipal services, etc. - as well as creating a climate of cooperation with the private sector that has led to the rapid recovery of economic activities and jobs .

It is again this context that makes it possible to express important innovations in the management of the reconstruction process, both on the planning side and on the social innovation side. On the first front is the use of a consolidated tool such as the Special Area Programme¹¹⁰, used here to manage public resources for reconstruction in an integrated way with those from private investment, bringing the interventions of both parties into a system, within the framework of the Organic Plans; on the second, the use of participatory methods to channel and organise citizens' contributions to the definition of reconstruction choices, in particular with regard to the recovery and revitalisation of historical centres¹¹¹.

¹⁰⁸ See Bianchi P. and Labory S., cit. and Pike A., Dawley S. and Tomaney J., "*Resilience, adaptation and adaptability*", Cambridge Journal of Regions, Economy and Society, 4 - 2010

¹⁰⁹ There is extensive literature on the "*place-based*" approach to local development. As an example, see: Barca, F., Carrosio, G. (2020) "*Un modello di policy place-based: la Strategia Nazionale per le Aree Interne*", in Osti, G., Jachia, E. In "*Attivaree. Un disegno di rinascita delle aree interne*", Il Mulino, Bologna

¹¹⁰ Cit.

¹¹¹ As an example, it is worth mentioning the practices of Novi di Modena ("*Fatti il centro tuo*" - <https://www.osservatoriopartecipazione.it/scheda-processo/562>); San Felice sul Panaro ("*piùSanFelice*" - <https://www.osservatoriopartecipazione.it/scheda-processo/560>); Mirandola ("*Immagina Mirandola*"; Reggiolo ("*Facciamo centro*" - <https://www.osservatoriopartecipazione.it/scheda-processo/730>); Unione dei Comuni della Bassa Reggiana ("*Dopo il terremoto: più vicini / più sicuri*" - <https://www.osservatoriopartecipazione.it/scheda-processo/414>). See also Mashiko T., Guarino M., Franz G., Satoh S. "*Collaborative Planning for Post-Disaster Reconstruction in Italy: Community Participation in four Small Towns, Focusing on Novi di Modena*", paper presented on the Java based distributed learning platform, 2018

On another front, and with a view to the now urgent need (not only due to the explicit political mandate) to consider which development path to choose once reconstruction is complete, it seems equally important to identify the territorial and economic limits and gaps that the earthquake area has been showing in recent years.

- The first and most important of these is the scarce urban mass of the area, with settlements whose demographic weight becomes more and more limited as one moves away from the axis of the Via Emilia and approaches the Po River, where demographic decline can be observed when compared to the pre-earthquake phase. From this point of view, although, as mentioned, the entire earthquake area is characterised by the significant presence of Unions of Municipalities, it should be noted that some of these are going through a phase of crisis and fragmentation; a process that runs counter to what would be desirable for the design of an effective territorial development strategy.
- Secondly, the affected area still shows a relatively weak level of infrastructural development, with roads at an essentially local level, from which there is access to the larger road networks and, more generally, the main logistics platforms (Bologna, Verona and, as far as maritime transport is concerned, Ravenna and Venice). This element undoubtedly represents a limitation from the point of view of the competitiveness of the territorial system of the earthquake area as a whole.
- Thirdly, if on the one hand we find ourselves in the presence of a territorial production district characterised by strongly internationalised sectors (especially the biomedical sector) and a relatively rapid response capacity in the face of the earthquake damage (and then also to the pandemic), on the other hand there is a fabric of local businesses belonging to different sectors (including wood and furniture, paper and publishing, metal products, and above all the agri-food industry¹¹²) of small dimensions and, above all, a much more limited financial capacity. In particular, for the latter, support from the administration was fundamental, especially in order to cope with the inevitable drop in turnover and added value that occurred during the first two years after the earthquake¹¹³.

Regarding the latter aspect, an in-depth examination of the dynamics at work gives an account of the diversified dynamics triggered by the earthquake and the reconstruction process, also in relation to the role played by the public aid provided. Some key points emerge¹¹⁴.

First of all, the intervention of support for the territorial system as a whole was able to stimulate the capacity for adaptation and immediate reaction to stimuli that has always been the strength of the regional system. Within this framework, it is the most damaged enterprises that most readily seized the earthquake as an opportunity for innovative investments, particularly in digital and sustainability technologies, proactively using the contributions received¹¹⁵.

In addition, it should be noted that ten years later, more than 90 per cent of the companies damaged and restored through regional contributions are still active, while the percentage of companies in the same area that did not suffer damage or have not made use of regional contributions is around 67 per cent. By way of useful comparison, the ten-year survival rate in the rest of the region is 56 per cent, and for Italy it is 50 per cent.

This is a rather interesting piece of evidence of how the relief system first acted as a shock absorber, and then had a “*leverage effect*” on companies’ investment capacities. This evidence, however, also tells us how

¹¹² Agri-food was the sector most affected, both in terms of the number of companies affected and the absolute value of the damage.

¹¹³ See: G. Caselli/Unioncamere, “*Sisma ed economia. Cambiamenti strutturali e traiettorie di sviluppo*”, prime riflessioni a uso interno, 2022; “*Terremoto dei capannoni, dieci anni dopo: ricostruzione e trasformazione del sistema produttivo*”, 2022

¹¹⁴ See: G. Caselli – Unioncamere, cit.

¹¹⁵ In reality, the number of companies affected was much higher than the number that actually applied to the regional government for grants, as a significant proportion was covered by insurance policies.

the capacity for a “resilient” response is not uniformly distributed, but is instead taken advantage of by those with a “long-term vision”, with a greater and better propensity to invest and a focus on their ability to trigger innovative processes.

Without prejudice to the natural drop in turnover in relation to the extent of the damage, which occurred in the immediate aftermath of the earthquake, if we look at the dynamics of investments, it is the companies with the highest level damage that, in the years from 2012 to 2015, invested the most¹¹⁶, showing not only a different propensity to invest, but above all their focus on the new drivers of growth, from digital technology to all aspects related to sustainability. This phenomenon is confirmed by the economic data from the following years: companies with limited damage and low investment in the 2015-2019 period increased their turnover by 3 per cent, while those with medium or high levels of damage grew by 34 per cent.

5.3 From experience to model

In the introduction to this chapter, with regard to the factors that condition the implementation of effective responses to emergencies, we use the relative verb “to facilitate” (and not “to allow”, which has the most absolute meaning), since the regional experience, placed alongside others in the national history, as well as in the governance of disasters much more distant from us (also dealt with in other documents produced within the framework of the European Territorial Cooperation project, “Firespill”, within the framework of the Italy-Croatia programme¹¹⁷), leads us to consider “local conditions” (from the degree of decentralisation of decision-making processes to the presence of effective prevention policies, from the organisational capacity of institutions to the ability to activate effective cooperation between all actors, both institutional and private, and in civil society) as the variable that most of all conditions the ability to respond to a disaster of any origin. And it is also the main factor in what makes true “modelling” difficult.

Moreover, emergency management and reconstruction modelling (“GER” in the literature), being based on lessons learnt from past disasters but only rarely comparatively evaluated based on real cases according to standard criteria, has generally been measured very little on any concrete post-disaster reality. In this respect, although limited here to its most relevant aspects, in relation to the objectives of this work, the aforementioned document produced by the Special Office for the Reconstruction of L’Aquila¹¹⁸ certainly represents a novelty.

According to scholars Okuyama and Sahin¹¹⁹, this is the framework that seems to us to most effectively contextualise the statement that “a natural disaster throws the economy against the wall. How much the economy manages to bounce back depends on the elasticity of the ball, i.e. the resilience of the economy. In this metaphor, the assessment of the impact of a disaster is to measure how hard the ball is smashed against the wall”¹²⁰.

Emphasising how it is the entire social structure that is slammed against the wall, and not just the economy, the “crushing of the ball” concerns the territorial system in all its aspects: it is also what makes “governance” indispensable as the capacity to implement decision-making processes that involve all stakeholders, ensuring a transparent response to their needs and respect for everyone’s rights .

¹¹⁶ On average, an amount corresponding to about 8 per cent of their assets, compared to 2.5 per cent for those with medium losses and one per cent for those with moderate losses.

¹¹⁷ E.g. the earthquakes and tsunamis in Indonesia (2004), Chile (2010) and Japan (2011).

¹¹⁸ See USRC, cit.

¹¹⁹ Okuyama S., Sahin S., *Impact estimation of disasters*, World Bank, 2009

¹²⁰ In Labory S., cit.

According to this conceptualisation, summarised in the diagram in figure 20, all levels of governance must work together, coordinating their actions so that the management of an emergency is successful.

Fig. 20: Emergency and reconstruction management ¹²¹

			National level	Regional level	Local level	Other actors
Phases: from the disaster to the management of the emergency and reconstruction	Before	Prevention / mitigation	Attribution of roles and responsibilities Coordination of actions			
		Preparation / planning / early warning				
	After	Response				
		Reconstruction				

In concrete terms, borrowing - from the Floods Directive - a graphically effective operational diagram (fig. 21), the actors in an effective risk governance process should participate, each with their own prerogatives, in all the different phases of the risk management process.

Fig. 21: Phases of the management of flood risk, according to the Floods directive (2007/60/CE)¹²²



In this case we are dealing with hydrogeological and flood risk, as interpreted by the Autonomous Province of Bolzano; a type of risk that, although strongly influenced by local morpo-climatic conditions, is certainly characterised by a higher degree of statistical predictability compared to seismic risk. This makes its mapping even more important, depending on the actors, resources, historical-cultural discoveries, artefacts and infrastructures that must be protected.

¹²¹ Petak, 1985, in Labory S. cit.

¹²² See Provincia Autonoma di Bolzano: *Piano di Gestione del Rischio di Alluvioni*, 2016 (according to Law Decree No. 49/2010)

According to the UNDP (United Nations Development Programme)¹²³, generally speaking, good governance is characterised by a series of criteria that distinguish effectiveness and sustainability, and can be traced back to the following aspects:

1. subsidiarity in the allocation of functions and responsibilities;
2. equity, both in preparedness policies and in access to reconstruction resources;
3. accountability and transparency in decision-making processes;
4. civil commitment of citizens, with much emphasis on democratic participatory processes, as creators of consensus around choices.

Adopting this key of interpretation - and adding a fifth criterion, relating to the efficiency of the administrative apparatus, and a sixth, corresponding to the capacity for leadership - we can affirm that, on the whole, the experience of managing the emergency first and then the reconstruction in Emilia-Romagna has shown a good degree of efficiency and effectiveness. It was managed without creating new institutions, but rather by organising collaboration and cooperation between the existing ones, from the central to the local level, and with the actors in the affected communities, within a framework of networked rather than strictly hierarchical relations, in which the decision-maker first of all listened, gathering information and creating a synthesis, together with the local communities that could best convey information on the damage suffered and needs, on which to base adequate decisions. This - we believe - was the real added value of the role played by the Institutional Committee and its President/Deputy Commissioner .

Therefore, all things being equal, the story of the earthquake in Emilia can actually be considered, rather than a "model", as a method proposal, which came about as a need to create a path capable of providing answers even to the most complex aspects of the emergency and the reconstruction, with an open approach and with the concreteness of "learning by doing", accumulating experience that will be valuable from the point of view of future seismic prevention, and, if we consider the problems of religious and monumental buildings in general, probably replicable in the rest of the regional and national territory.

In this regard, however, if we consider the experience of the earthquake as a whole, it should always be remembered that the regional community's "discovery of its vulnerability"¹²⁴ was linked to the under-consideration of the actual extent of the risk to which the earthquake area was exposed, in relation to its historical seismic activity: indeed, a change was only made to the seismic classification of the area after the event. In the same way, today, this experience suggests that we should also work on significantly increasing citizens' awareness, so that when a risk turns into a real event, their "role" is less and less that of "victims" and more and more that of proactive actors, who contribute to making the principle of damage minimisation more concrete.

Ultimately, the 2012 Emilia earthquake tells us how complex it can be to have a prepared emergency management structure in place before emergencies occur, as disasters are very unpredictable in terms of probability of occurrence and actual magnitude. This is for the many reasons mentioned, and also because preparing for the worst is expensive, as it necessarily requires adopting a multi-risk approach. However, we know from experience that this is an approach that "pays off", as good management capacity on the part of a functioning institutional and social context reduces the scale of impact, including in terms of costs. This is even more the case in a context in which the capacities for both monitoring and forecasting, and emergency management in the strict sense, are improving considerably.

It is therefore good to remember that even 'models' need to learn from experience, especially at a time

¹²³ UNDP, "Strengthening disaster risk governance", 2015, in Labory S., no date

¹²⁴ See: Regione Emilia-Romagna, Sisma 2012 – Emilia più di prima, 2022, cit.

when, once the emergency has been resolved and homes and factories have been rebuilt, it becomes necessary to think to the future in an innovative way, translating into policy choices that spirit of “*adaptability*” that has so far made this region capable of seizing the opportunity to change what was useful to change: for example, abandoning obsolete spatial planning choices and preparing for the new challenges that the territory poses today. Here, while remaining silent on the tragic effects of the return of war in Europe, we refer first and foremost to climate change, especially to the local effects of global warming, which involve the issues of energy, water, food production methods, civil protection, and public health, which has proved more vulnerable than expected.

6. What resilience and for whom: new governance challenges for territorial sustainability

Securing the territory, once again, must be considered a political priority, an investment made in the present with an eye to the future of a country. In this sense, the human capital and the legacy of knowledge and skills accumulated in the reconstruction process must be put to good use, precisely because of the opportunity to structure a stable form of governance from this, reducing fragmentation, maximising resources and public investment, and guaranteeing community participation.

Alongside governance established at the central state level, local governance must be rethought, ensuring adequate support from the territorial level to capitalise on knowledge gained at that scale. In this sense, the identification of a specific responsibility for risk management, alongside the local authority level, would be a significant step forward. In this respect, the experience developed by Emilia-Romagna can represent a resource for the system of the entire country.

In general, reconstructions can be seen as opportunities for urban regeneration, in the broadest sense of the term: in this regard, we can consider the famous example of the reconstruction of south-eastern Sicily following the violent earthquake of 1693, which gave rise to the “*Sicilian Baroque*”. Today, in the territories affected by the 2012 earthquake, this opportunity finds the ideal grounds for experimentation and innovation, giving concrete form to the principle of a reconstruction process that, while safeguarding its historical-cultural, economic and social heritage, looks to the future.

The historical centres, the productive settlement systems, the open spaces of agricultural production in the setting of the reclaimed land, represent not only the history of the communities that created them, but each piece of territory to be returned to the productive and reproductive processes of local systems and their actors. In this sense, the role of communities in the processes of rebuilding their own spaces emphasises the importance of *social capital*, of the role of networks of cooperation, reciprocity and trust, already highlighted by Robert Putnam in his famous essay on Italian regions¹²⁵, which enable individuals and groups to carry out actions that would not be possible on their own.

It is a “property” of the territorial context that also constitutes the cornerstone of the “*identity*” of places and communities, which has allowed them to become what they are today. It is not, however, a property with univocal characteristics: it can produce positive effects when used as a basis for innovation and building a better quality “future territory”, but also negative effects, when it results in a localist defence of pre-existing assets and interests. This is what makes the discussion on the choice between “*adaptation*” and “*adaptability*” - and thus on the concept of “*resilience*” - anything but academic.

The earthquake represented - and still represents - an epochal rupture, for the mending of which the numerous public participation processes we have mentioned were carried out, centred on the direction and objectives of local reconstructions, in which the needs for immediate physical restoration were superimposed on the objectives of regenerating wounded identity and social cohesion.

However, if on a local scale one thinks of historical town centres or the need to re-functionalise “doubled” public buildings (e.g. damaged schools and town halls rapidly replaced by modern, functional prefabricated structures), one realises that this is a break that has not yet been fully resolved, which requires that the traditional tools of the urban project be accompanied by strategic and programmatic actions that look at the territory in its entirety, based on a unitary approach and within a framework of shared choices with local

¹²⁵ Putnam R., *La tradizione civica delle regioni italiane*, 1993

communities.

But today's territorial framework also speaks of other challenges, which in themselves transcend the choices of reconstruction and re-functionalisation of damaged structures, while pointing out new risks, linked to the issues of territorial "sustainability" (although this term appears to be largely worn out). For example, the quality of the landscape as a paradigm of a territory's attractiveness, energy models to support communities, and - last but certainly not least - how to manage water, hitherto treated in the purely emergency-based terms of its seasonal scarcity in relation to growing demand, and not as the structural problem that - like energy - characterises the present, now for most of the year, rather than a more or less near future.

In all contexts in which there is a scarcity of strategic resources, whether of a quantitative nature or more linked to cost factors, there is a significant risk of the emergence of competition over access to the resources themselves, both among the actors in a specific territorial community (e.g. agriculture vs. industry and/or vs. standard civil uses), and between distinct and sometimes distant territories. And it goes without saying that patterns of use considered as "sustainable" within a given territory can produce unsustainable externalities in other territories, even those that are not nearby. An example of this is the current water crisis in the Po River, linked not only to the rainfall deficit, but also to excessive use, in relation to the supply, by the strong production systems located upstream: a dynamic that determines the rise of the so-called "salt wedge" in the entire delta area.

Even if this is at least potentially much more conflictual terrain than the different options for the reconstruction of artefacts in a single urban system, the practice of multi-level governance put in place for the management of the emergency and post-earthquake reconstruction represents an important legacy and experience to support new collective actions for the so-called "ecological transition" of territories. By enhancing the capacity for interaction between social and economic actors and the different levels of government, it may also be possible to design new solutions for the strategic problems linked to today's risks, which are more than ever characterised by unpredictability and uncertainty, especially with regard to the crisis in relations between territorial communities and ecological systems.

Faced with the onset of a crisis, communities often demand speed in decision-making, but just as often, the improvement of environmental sustainability conditions (or, if you like, ecosystem 'resilience'), requires more knowledge and thus more time. And this makes it the right terrain for more robust coordination of the different sectors and levels of public policies - including research - and the actors that contribute to their design, which ensures territorial equity in the distribution of the effects of policies to combat crises and adapt.

It is important to consider that, unlike an earthquake, the effects of the climate crisis represent a "slow burn" that, unlike shocks, tends to corrode territorial cohesion, exacerbating divisions when it is perceived that the allocation of resources creates winners and losers, especially when availability and supply does not keep pace with demand. This brings with it the risk of flight for those who do not have sufficient resources to keep up in the competition for resources (e.g. weaker companies), tensions in the fabric of institutions and organisations, between generations and social and political factions, and between different geographical areas.

Therefore, addressing the question of what kind of resilience and for whom highlights the importance of understanding what kind of territorial system adaptability to actually pursue, and according to what time perspective. Pursuing a higher level of resilience encourages consideration of both short-term, reactive responses to shocks, and long-term, proactive strategies. The short-term necessarily addresses the quantitative aspects of immediate emergencies, such as post-disaster reconstruction or the crisis of production systems with possible job losses, caused by cost overruns related to energy and/or water

shortages, with “fire-fighting” measures aimed at mitigating their negative effects. A longer-term vision can instead better address the qualitative aspects, drawing possible structural exit routes from the immediate crisis situations, with more suitable paths to respond appropriately to the recurrence of the manifestations of the crisis itself (following our example, promoting an ecological transition that secures the territory not only from the seismic point of view but also, for example, reducing the demand for energy and water from the territorial system as a whole).

The pursuit of a more crisis-resilient territory, in the above-mentioned sense, emphasises the need for intelligent institutional leadership, with the sensitivity and preparedness to manage rapid and pervasive changes, capable of contextualising the nature of events and constructing a narrative of strategic adaptation involving regional and local actors. This is a need for which the experience of managing the earthquake, the relative “*institutional memory*”¹²⁶, if properly taken advantage of even in the uncertain circumstances of this phase, can be very valuable.

As attested by the extensive literature on the subject, Emilia-Romagna has so far proved to be a model of a “resilient” system, oriented towards adaptability and not just adaptation to the effects of a shock. The paradigm of *ecological transition* poses a central question to governance: how to ensure that “sustainability” - understood as the capacity to preserve and improve the shaky equilibrium of the territorial ecosystem - does not become mere 'compensation for the damage' produced by a development model that is certainly economically and socially 'successful', but whose negative effects we are limited to continuously “patching up” with short-term, emergency measures¹²⁷.

For Emilia-Romagna (but definitely also for any area affected by such an extensive disaster), the earthquake can represent a real testing ground for a new season of development and transformation of the territory, in which the recovery of places of identity, the need to relocate functions, to define new urban polarities with better quality public spaces and better connections with the rural space, to re-launch and innovate production activities and services, will have to measure themselves not only against the challenges of the digital and technological transition, but also, and perhaps above all, against ecological challenges. In this sense, the challenge of the earthquake represents an open territorial system that, having learned from the experience of an earthquake as catastrophic as it was unforeseen, in principle has also learned to learn.

The regeneration of urban *historical centres*, the improvement of the ecological conditions of the land *reclamation system*, the strengthening of *connection networks between urban polarities and the rural space* and the development of territorial energy communities represent so many areas on which to measure our ability to move in the direction of a more “adaptable” territory. We use this term to mean the ability to select, among the many possible innovations, those that will enable the territory to achieve greater internal “sustainability”, minimising its negative externalities.

This is a scenario that today also implies greater “*attractiveness*”, for citizens as a place to live and work, for businesses as a place to maintain and multiply their investments, for everyone as a place to discover. For the Region, it also represents an opportunity to use its institutional prerogatives to build, with the communities - starting with those in the earthquake area - a common reading of the things to be done, according to the spirit and objectives of the Pact for Work and the Climate.

¹²⁶ See: Pike A. Dawley S., Tomaney J., cit.

¹²⁷ See: “*Sustainable governance – reclaiming the political sphere – reflections on sustainability, globalization and democracy*”, Wuppertal Institut für Klima, Umwelt und Energie, 2005

7. Methodological note

This document has been drawn up with the intention of reconstructing the history and methods of the management of the reconstruction process, with an "*evaluative look*" aimed not so much at simply understanding its positive characteristics and possible issues, but rather at systematising the knowledge and, since it is a "new" experience for this Region (at least in terms of the extent of the phenomenon and the breadth of its effects), better understanding how to learn from the experience and the overall replicability of the process.

Therefore, in addition to simply putting such experience to good use, the objective is to capitalise on it in view of the management of other possible crises and, in any case, to promote a new phase of development in the area, based on more innovative and sustainable methods.

To this end, the authors consulted all available sources of information, from the periodic reconstruction progress reports produced by the Region, to the ordinances and decrees of the Commissioner for Reconstruction, from internal progress documents to official online sources (e.g. the Open Reconstruction platform).

Various national and international sources of analysis and commentary on the management of emergencies were also consulted, including various works of analysis and criticism carried out in the academic and professional spheres, not limited to the Emilia-Romagna earthquake, as well as conceptual works related to the analysis of the capacity of territorial systems to respond to shocks and crises of different natures (earthquakes, floods, etc.), especially in terms of the governance methods implemented.

Each reference considered, in addition to the footnotes, is duly reported in the chapter on the bibliographical references used.

To complete the framework, a wide-ranging discussion was developed among the professionals working at the Agency for Reconstruction - 2012 Earthquake, starting with its director, Dr. Enrico Cocchi.

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