The role of governance and government in the resilience of regions: the case of the 2012 earthquake in the Emilia-Romagna region in Italy

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Abstract

Resilience means the capacity of a territory to react to, reconstruct, adapt and learn from a shock. The shock can be an economic crisis like the financial crisis started in 2008, or a sudden and unexpected event such as a natural disaster. The earthquakes that affected the Emilia-Romagna region in Italy in May 2012 are a case in point. On the 20th and the 29th of May of that year two earthquakes of medium intensity affected the region, with limited impact on the health of people but dramatic impact on buildings, houses, schools and industrial plants.

The literature has stressed the importance of factors such as the magnitude of the natural disaster, the amount of available resources, tangible and intangible capital and endowments in favouring the resilience of places to disasters. The recovery governance has also been shown to be important, in particular democratic participation in the recovery process. We highlight through the analysis of the Emilia Romagna case that recovery governance is indeed a key aspect, and in particular the capacity of the government to rapidly set priorities and favour the cohesion of local communities. For this purpose, we argue that a key level of the recovery governance process is the meso-level of governance, namely the regional one.

Key words. Resilience, Earthquakes, Emilia Romagna, Industrial Districts, Industrial Policy

1. Introduction

The Emilia-Romagna region in Italy has in the past repeatedly shown adaptation and adaptability which are, according to Pike et al. (2010) and Boschma (2014), the key ingredients of resilience. The region was famous in the 1980s for its industrial districts in traditional industries. However, and thanks to a determined action of the regional government (Bianchi and Labory, 2011), the regional industry was able to upgrade and

[1] Sont également issues de cette table ronde les contributions suivantes :

- Fusco, Bertoncello et al. : ***Faire science avec l'incertitude : réflexions sur la production des connaissances en SHS.*** [https://halshs.archives-ouvertes.fr/halshs-01166287]
- Tuffery, Fernandes et al. : ***Evaluation des domaines d'incertitude et de leur éventuelle diminution dans un projet collectif de recherche interdisciplinaire : le cas du PCR « Réseau de lithothèques en Rhône-Alpes ».*** [https://halshs.archives-ouvertes.fr/halshs-01166167]
- Rinaudo : ***Le traitement de l'incertitude dans la relation d'enquête ethnographique en Sciences sociales.*** [https://halshs.archives-ouvertes.fr/halshs-01166270]
- Boissinot : ***Archéologie et incertitude.*** [https://halshs.archives-ouvertes.fr/halshs-01166149]
- Walker : ***Adapt or perish: an approcah to planning under deep uncertainty.*** [https://halshs.archives-ouvertes.fr/halshs-01166279]

reconvert, in other words, change industrial development path, so much so that the region is now often considered a model of regional innovation systems (Cooke, 2001).
Another example of this capacity for resilience is the reaction to the earthquakes that affected the region in May 2012. The earthquake consisted in a long serie of seisms, with two particular strong seisms arising in May 2012, one on the 20th with magnitude 5.9 on the Richter scale and one on 29th of May with 5.8 magnitude. The affected areas concerned a population of about 550,000 people, and an industrial core of the region and the country. 27 people died because of the seisms, while damages were estimated at about 12 billion euros in the ER region. The governance of emergency was made difficult by the fact the seisms continued in the following months, although of a much lower magnitude.

These earthquakes were sudden and totally unexpected: the region had been considered as very low seismic risk, even a non-seismic area.

The literature on resilience to disasters has raised a number of questions regarding recovery governance, including the role of different actors, such as government and non-government organisations, and local communities, as well as top-down systems versus decentralised coordination. It seems that consensus is growing in the literature on the appropriateness of decentralised systems and democratic participation in decision-making processes after the disaster (Boettke et al., 2007; Alexander, 2010; Cho, 2014).

While undoubtedly the magnitude of the natural disaster, the amount of resources, tangible and intangible capital and endowments, determine the resilience of places to natural disasters or other shocks, the political leadership and governance of the emergency also influence the outcome. In particular, the case of the ER region shows that the choice of self-government of the emergency appears to have been essential to the success of the reconstruction of the region after the earthquakes. Local and regional authorities indeed immediately reacted to the disaster, committing not only to quickly reconstruct for the well-being of people, but also to reconstruct better than before, using anti-seismic rules in rebuilding. The management of emergency was so successful that many firms, in particular multinational firms in the biomedical sector in the Mirandola cluster, which laid at the epicentre of the earthquakes, decided to take advantage of the need for reconstruction to increase productive capacity.

We argue that the capacity of the regional authority to both define objectives and paths for regional development and share this vision with regional stakeholders has favoured not only the adaptation to the shock (re-building after the earthquakes) but also the adaptability of the region, confirming its evolution along a sustainable development path.
The literature on regional resilience (for instance, Pike et al., 2010 and Boschma, 2014) 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 in new development path. The two might be in conflict: for instance a particular growth path may require industry specialisation while the development of new growth paths is likely to require industrial diversification.
A disaster such as an earthquake creates new tensions between adaptation and adaptability. Recovery requires adaptation, but may also spur adaptability in that the recovery process is used to favour the re-orientation of the economy towards new growth paths; it may also impede this re-orientation when some important resources necessary for this purpose are damaged. In the ER case, the earthquake induced mobilisation towards adaptation, leading to

strengthen adaptability, since the re-orientation of the region towards a new growth path was consolidated.
Besides, this case raises the issue of what is the appropriate level of government to manage emergency. The literature has tended to show that too centralised government process are neither effective nor efficient (Cho, 2014; Boettke et al., 2007, and section 4 below), while the advantage of the reaction of local communities have been stressed (Agder, 2000; Fois and Forino, 2014). Too local a reaction may not be effective however, because the local population is too emotionally and materially affected. A meso-level might therefore be more appropriate, such as the regional one, and this is what the ER case shows.

To make these points the paper is organised as follows. The next section examines the capacity for government and governance of the ER region prior to the earthquake, showing how it managed to re-orientate the region towards a new development path (adaptability). The third section analyse the impact of the earthquake and the recovery governance process implemented by the region. The fourth section derives insights on recovery governance comparing with other cases of disasters. The last section concludes.

2. The capacity for governance: long-term industrial policy and adaptability of the Emilia-Romagna region

- From industrial districts to a regional innovation system

Bianchi and Labory (2011) analyse the successful shift of the ER region from an industrial system essentially based on industrial districts in traditional sectors in the 1980s to a regional innovation system.

The ER region has been in the past a reference for development based on the consolidation of a civil society: Brusco (1982), Brusco and Sabel (1981), Putnam et al. (1993) have shown how industrial development (especially of SME systems and districts) was also based on social characteristics and values. Today the ER region is becoming an example of industrial development policies aimed at making the region a knowledge-based economy and society, a regional innovation system. Cooke (2001) shows how the region has moved towards a regional innovation system, building networks in a consensual way, although its financial capacity are limited. We show below more recent policy developments in the region.

The Emilia-Romagna region has a high level of development, being one of the leading EU regions in terms of GDP per inhabitants (in PPS). The social cohesion of the region is also relatively high, since the unemployment rate is low and around the natural rate, with a high participation of both women and young people in the labour force. The industrial system is characterised by the presence of many small firms, but these have a strong tendency to work in coordination. Thus many Italian industrial districts are located in the region (the Central Statistical Office ISTAT counts 13 districts in the region, out of 156 in the whole country). The main industrial sectors, representing about 90% of industrial employment in the region, are mechanical engineering, food processing, construction, housing and fashion. The first sector is also the most intensive in high technology. The main activity within mechanical engineering is that of industrial processes, which is highly complementary to the other sectors of the regional economy. The region has the highest rate of export per employee in Italy and is among the first fifteen European regions according to the same indicator. The rate of firm creation is the highest among Italian regions (ER Region, 2010).

The innovative performance of the region is good, since R&D spending by firms has more than doubled between 1997 and 2003 and the number of employees in R&D functions increased by 70% in the same period (against a growth of 9% for the whole country). The number of employees in R&D functions and the number of graduates (laureates) in scientific and technological disciplines is still low however relative to the Union average (ER Region, 2010).

Already in the late 1980s the regional government started to be concerned about industrial districts as models of industrial development, questioning their capacity to remain competitive in the changing environment. While the national government was implementing policies specific to industrial districts, providing regions with new competencies in terms of industrial policies for industrial districts (Law 317/1991), the ER region was already stressing that they only represented one type of a diversity of local productive systems which policy should help adapting. The ER regional government therefore argued in favour of policies aimed at wider types of local production systems and SME systems, which was adopted by the national government in the Bersani law of 1998 (n.114/1998).

In fact, the ER regional government has been able to build consensus and implement industrial policies in partnership with local actors as far back as the 1970s. Bellini (1989) characterised the ER region as one in which a strong state co-existed with a strong economy. One instrument of the definition of industrial policy as a long-term vision of industrial development has been the creation of a specific agency, the ERVET (*Ente Regionale per la Valorizzazione Economica del Territorio*), in effect a Regional Development Agency (RDA), created as a state-owned enterprise in 1973, in order to provide analysis and support to the definition of the regional policies. Industrial associations have been involved in the work of ERVET, especially since 1982, and thanks to this RDA, the ER region has been able to implement SME policies since the 1980s. In the 1980s and 1990s, the main instruments used were real services to firms, business services aiming at favouring their restructuring (professional training, the use of IT, provision of infrastructure, etc.). ERVET also provided policy advice, policy assistance and policy support[2] . After a reform of its statute in 2007 (Law 26/2007) ERVET is still state-owned, its shareholders being primarily the Region, holding 98.6% of its shares, and territorial public entities, holding the remaining 1.4% of shares, but it cannot take shares in other organisations. ERVET's mandate and role enable it to define industrial policy considering the regional territory in all its dimensions (social, economic, environmental, relational, cognitive and institutional) and involving all stakeholders in negotiations. As part of this, social policies have been strong since the 1980s (see for instance, Law n.27/1989 for the family), aimed at securing home, health and child assistance for families and working mothers, together with education to provide the regional labour market with adequate skills.

Industrial policy in the ER region is therefore characterised essentially by two aspects. First, it is proactive in that the region tries to anticipate the changes that industry is facing and to favour structural adaptation. Second, it is participative, in that policy is defined and implemented through discussion and consensus with all stakeholders, primarily firms, but also with other regional public entities such as towns and provinces.
The policy has been aimed at providing the conditions for business to prosper since the 1980s; increasingly emphasis has been put on innovation and on the need to transform

[2] http://www.ervet.it/mission.asp

industrial districts into technological districts, meaning the use of new technologies by old districts and the development of new districts in high tech sectors.

Once again the regional government created a specific agency to implement innovation policy. This agency is ASTER, a consortium composed of the Region, together with regional universities, other research organisations, chambers of commerce and business associations in order to increase innovation and its diffusion in the regional productive system. ASTER has favoured networking among these institutions through various initiatives. It evolved into the High Tech Network of the region in 2002 (Rete Alta Tecnologia) in order to increase innovation and technological transfer, around different technopoles gathering universities and firms around the main specialisation of the area. The regional innovation policy actions have been focused on research with potential industrial applications, involving universities and research centres undertaking such types of research together with firms. From 2007 these actions have been organised into technological platforms, corresponding to the strongest industries in the region, namely mechanical engineering, agro-food, biomedical, energy and construction. The aim of the high tech network is to strengthen interactions among regional innovative actors and raise the critical mass of research.

In 2000 the region also implemented an initiative aimed at favouring both the creation of new high tech firms and technological transfer towards existing firms, namely the Spinner project. For the first time in Europe, EU structural funds have been used within the framework of European Social Funds to finance this project creating an intermediary organisation, called Spinner, in charge of defining, implementing and managing projects helping (highly-skilled) young graduates (laureates) or researchers to create new firms or transfer technology to existing firms. Spinner is a consortium comprising Aster, Fondazione Alma Mater (an organisation of the University of Bologna aimed at creating links between the university and the society) and Sviluppo Italia, now Invitalia, a national agency promoting investment in Italy. Spinner helps young people in these initiatives by providing financial subsidies, technical assistance and consulting, as well as training.

Another phase has been the recent creation of Technical high schools (Istituti tecnici superiori), with the regional regulation of December 2010, GPG/2010/2427. These schools aim at training technicians useful for the firms operating in the region, according to the region's industrial specialisations. Thus a high school in Parma will form technicians with competencies and knowledge useful for the agro-food industry, in the area where this industry concentrates, while the Reggio Emilia technical high school will focus on competencies useful to the mechanical engineering industry.

The transformation of the ER region into a regional innovation system certainly is a sign of its high resilience, or adaptability.
The threat represented by the likely difficulties of traditional industrial districts in front of increasing competition resulting from globalisation was not a rapid and uncertain change to which the region had to adapt. It was a likely evolution that could have put the economic development of the region at risk and the regional authorities pro-actively decided to take measures well in advance to avoid the crisis.

The result of this long-term industrial policy process has been industrial development, and a sustained regional growth rate, as shown by Table 1.

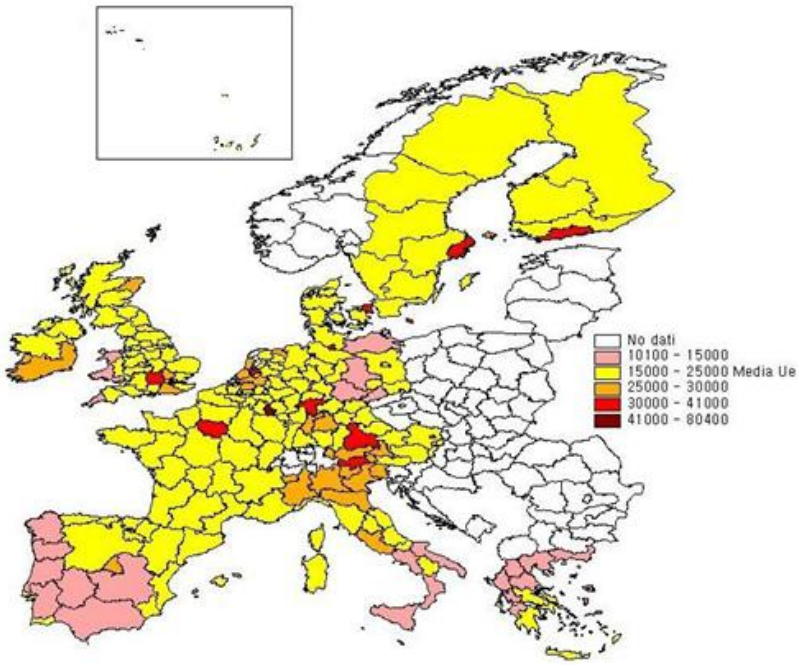
Table 1. Growth rates in some selected regions, %

	1971-80	1981-89	1990-99	2001-2012 (cumulated)
Emilia-Romagna	4.1	1.7	1.9	2.8
Piedmont	2.8	2.0	1.1	- 2.6
Lombardy	3.2	2.7	1.2	6.5
Veneto	3.7	3.1	2.2	0.7
Tuscany	3.3	1.9	1.1	3.8
Italy	3.8	2.3	1.4	1.6

Source: Istat, Industry Census, 1981, 1991, 2001, 2011.

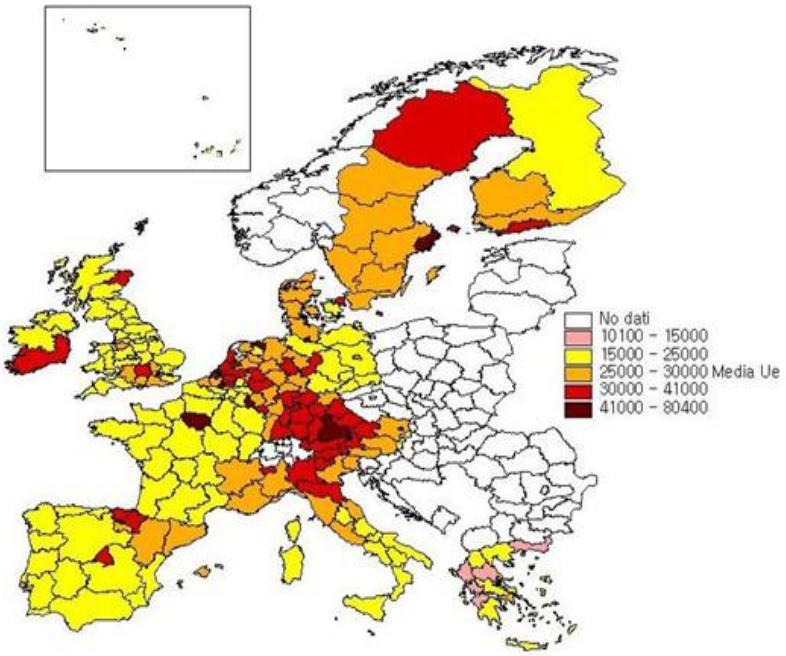
In 2000 the region was in the third group of European regions in terms of GDP per capita.

Figure 1. GDP per capita in EU regions, 2000
Source: European Commission (2011).



Source: European Commission (2000).

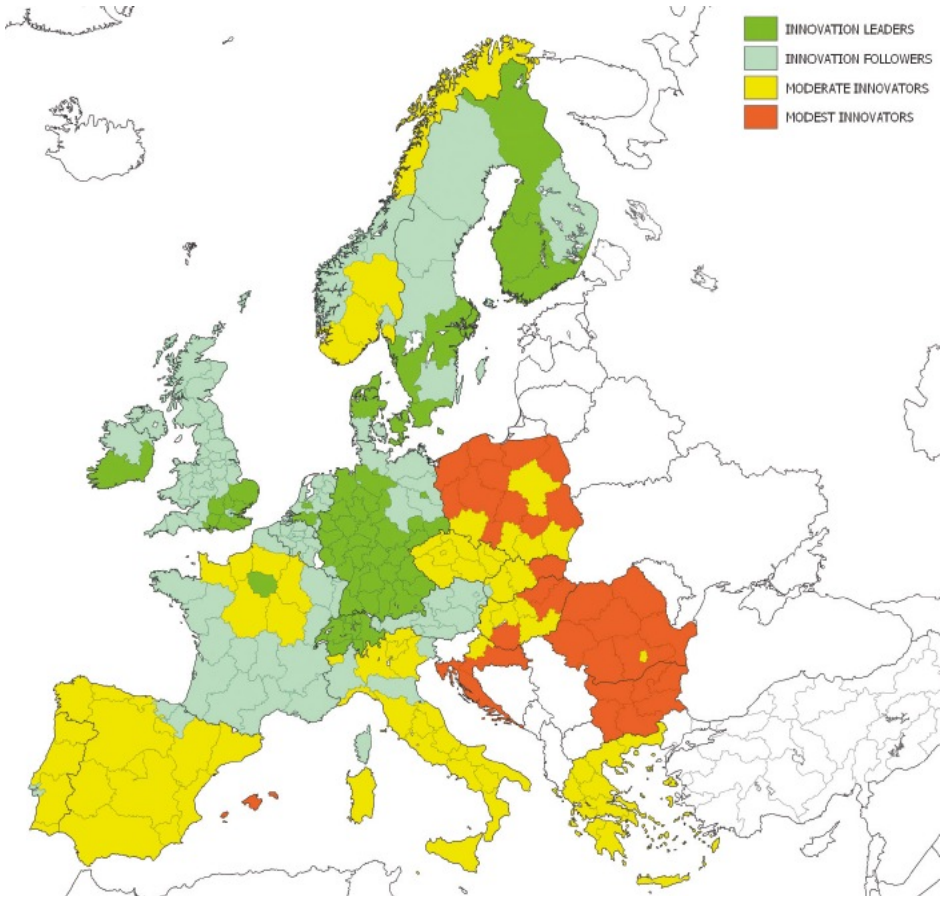
In 2011, the ER region is among the highest levels of GDP per capita in the EU.



Source: European Commission (2011).

In terms of innovation, the ER region became an innovation follower in the end of the first decade of the 21st century, according to the Regional Innovation Scoreboards of the European Commission (figure 2).

Fig. 2. Regional innovation performance in the EU, 2014.



Source: European Commission (2014).

The 2012 earthquake therefore affected a region with good economic performance and regional institutions devoted to the long-term development of the region. The regional government always fully used the structural and social funds received to implement innovation policy aimed at building a regional innovation system: the absorption rate of EU structural funds of the region is 100% (European Commission, 2014, p. 30).

The current industrial policy of the region is based on the region's most important sectors in terms of specialisation, namely mechanical engineering, food, building, health industry and cultural - creative industries. A competence map of the region in these various sectors has been carried out, in order to identify the need for support and the potential synergies and complementarities across sectors. Education and training policies are also closely integrated with industrial development policies.

Thus industrial development has been favoured in high tech sectors. One example is the biomedical cluster of Mirandola. This cluster is characterised by the presence of large multinationals which stayed and even increased their productive capacity even after the 2012 earthquake (Labory and Facchini, 2014). The regional industrial policy provides support to the development of this biomedical cluster by sustaining innovation, technological transfer and training. For instance the Democenter-sipe is a centre for technological transfer which brings together institutions, business associations, banks and more than 60 firms of the

cluster. It is part of the Rete Regional Alta Tecnologia (high tech regional network) which is based on the campus of the engineering faculty of the University of Modena, located near the cluster, and favours the collaboration between firms and university. It promotes innovation in existing firms but also new innovative firms creation by supporting the creation of spinoffs from universities. The "Tecnopolo" or technopole, which belongs to the regional high tech network, and acts together with Aster to favour collaboration and innovation in the sectors of life sciences, mechanical engineering and new materials, ICT and design, also favours the creation of new firms from university innovation. The regional government has also created a biomedical technical institute in life technologies, located at the heart of the cluster, in Mirandola, and is in charge of higher education to provide specific competencies required in the cluster.

Figure 3. Main specialisations of the ER region.

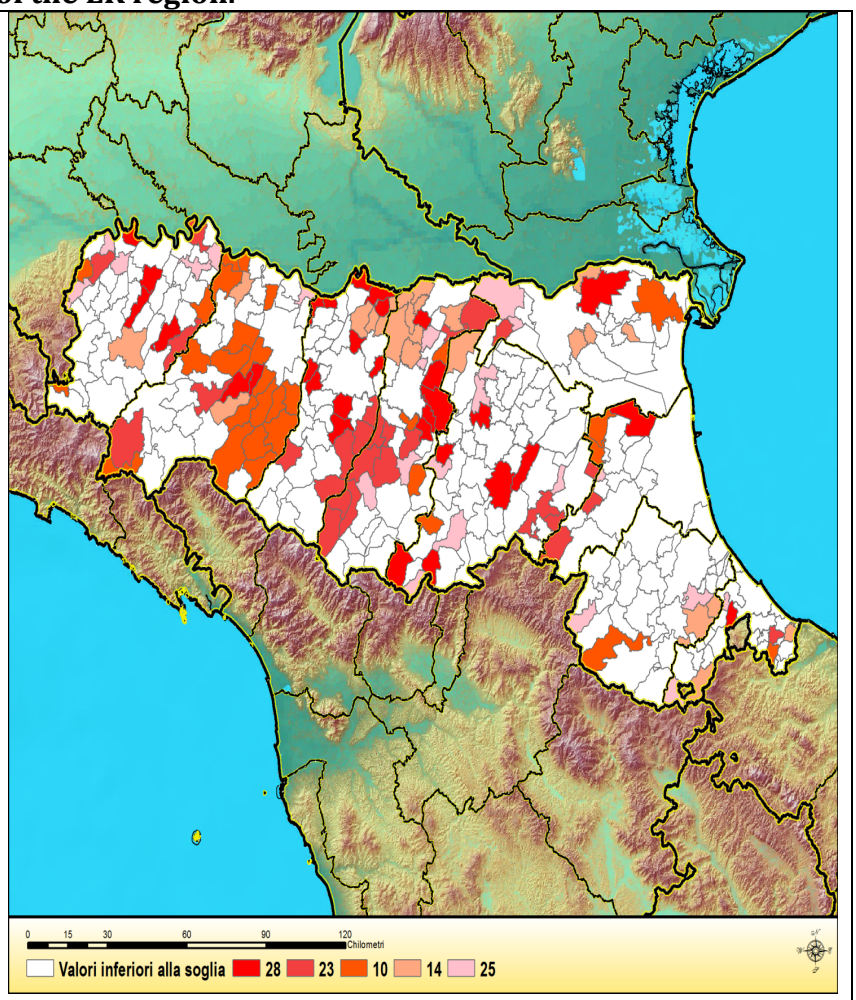
28 – Machinery and equipment (mechanical engineering)

23 – Other mineral non metal products (ceramics)

10 – Food industry

14 – Textile and clothing

25 – Metal products (non machinery and equipment)



Source: Emilia Romagna Region, 2014.

3. The governance of the emergency

The May 2012 earthquake consisted of a long series of seisms and two particularly strong seisms, one on 20 May with magnitude 5.9 on the Richter scale, and the other on 29 May with magnitude 5.8. The earthquakes affected an area between the cities of Reggio Emilia, Modena, Bologna and Ferrara, the core of the industrial system of the region, since the affected areas represented 1.8 to 2% of the national GDP, 48,000 firms and about 190,000 employees. Death and injuries were 27, relatively low, and the affected areas represent 550,000 inhabitants, namely about 14% of the regional population.

The industries concentrated in this area are food industry and biomedical in particular. The area comprises the world-wide excellence biomedical cluster, in Mirandola, employing about a third of all employees in this sector in Italy (Labory and Facchini, 2014). In this cluster, about 90% of firms were damaged by the earthquake.

The regional government immediately ordered a review of damages that was carried in June 2012. The schools appeared to be particularly damaged, since out of 1041 buildings 570 were declared damaged to different degrees (some declared completely impractible while others having only to be consolidated).

In the case of the ER earthquake, effective institutional leadership appears to have been essential to the successful resilience of the region. The regional authorities immediately mobilised to react to the natural disaster. A committee for emergency governance was immediately created, consisting not of outside experts but of local and regional government authorities: the President of the region was nominated as head of the committee and mayors of the cities affected by the earthquakes (54 towns were affected), together with presidents of the counties (provinces) were designated as members of the committee. The committee was able to immediately design a plan for reconstruction, putting the coherence and the involvement of the local communities at the heart of the plan. Thus the reconstruction of schools and the continuity of the education system despite the earthquake was a first priority. The completion of the schooling year was ensured, despite the earthquake took place in May and the normal end of schooling year is in June. Pupils and students were able to end their schooling year and pass necessary exams. In addition, the normal restart of the schooling year in September was set as a priority, because schools were seen as a centre of local communities' life and restarting normally the academic year would thus help maintaining the communities together. Pike et al. (2010, p- 68) stress that "literally making sense of the moment with credibility and authority should not be underestimated in what can be confusing, uncertain and fearsome circumstances for people and places". This is what the ER government ensured. In addition, nominating local and regional authorities and experts in the committee was key to ensure that the committee would have the appropriate knowledge of the effect of the event and the possible strategies to overcome it.

The governance of the emergency was based on the actions of both citizens and local democratic institutions. The assumption was that a vision, rules and objectives have to be built together with the civil society and its democratically elected representatives, in order to ensure consensus, mobilisation towards the objectives, efficiency, transparency and control. It was felt that only such a governance could simultaneously save the roots and identity of the society and allow it to move towards more security, preparedness to possible future events and innovation. The direct involvement of the local authorities induced them to rapidly react to respond to their voters' necessity. In addition, being so close to the affected communities allowed them to identify the needs and priorities of action.

The President of the region could directly negotiate with the various ministries and find the appropriate funds for the different necessities: schools, hospital and sanitary system,

industries, and so on. Italian regions also agreed to provide the ER region with a solidarity fund, accepting to transfer part of the European structural and social funds to the ER region.

The avoidance of dismantling of local communities was realised by mobilisation towards a common objective in the realisation of a clear programme: the school programme already adopted on 5 July 2012. This programme had 3 important features. First, a clear objective, that of re-opening all the school in the Region by 17th September 2012; second, involvement and consensus with the local authorities and population; third, clear and transparent rules for the reconstruction activities.
Reconstruction was ensured by two tenders allocating funds for reconstruction. Some important special rules were decided to ensure transparency and effectiveness. First, a firm could not apply to more than one call, and could apply to rebuild not more than two schools. This was adopted as a rule in order to allow the participation of SMEs in reconstruction as well as avoiding infiltration by criminal organisation such as Mafia. In addition, this rule increased competition so that the best available technologies would be proposed, minimising costs.
The Region became a laboratory for the most recent technologies for reconstruction and anti-seismic systems. The reconstruction showed that adapting buildings to anti-seismic rules is possible, as well as building new anti-seismic schools, at a sustainable cost.

Besides innovations allowing the introduction of anti-seismic features in the new buildings, the Region took the advantage of re-construction to favour innovations in educational methods. School and education have indeed substantially changed in the last years. Attention has increasingly shifted from a school solely dedicated to teach, to transfer knowledge to pupils (from Latin "instruere" meaning transferring information and instruments to pupils), to a school paying more attention to the relational aspects of education activities, with a strong stimulus of creative and interactive capacities of pupils. This new approach requires new school spaces, which substitute the old rooms where pupils were quietly listening to the teacher to spaces where interaction and active learning is possible.

The Operative School Programme adopted on 5 July 2012 had € 224 million, of which 25 million for the immediate reconstruction of the most damaged buildings, 35 million for the repair of buildings introducing anti-seismic features for other school buildings. In addition, 3.5 million were spent for the repair of schools already built with prefabricated buildings, 67 million for the construction of temporary schools and 25 million for the renting, assembly and removal of prefabricated buildings. 33 million were used to construct temporary gyms, 24 million for necessary infrastructural adjustments linked to the new schools, 1.5 million for the renting of (trasloco) structure and furniture, and 10 million for the creation of new school directions following the re-organisation of the school network.

Regional resources were also dedicated to the schooling authorities in the affected areas: 1.6 million of which 800 thousands in co-financing with the Ministry of Education to finance innovative education methods.
In addition, private funding was also mobilised, allowing for instance the reconstruction of school in two particularly affected towns, namely Sant'Agostino and Cavezzo. Private fundraising was transparently managed by the Region, with transparent and easy access to the amounts received and their use in reconstruction, so that each citizen or organisation which would have sent funds could easily reckon where the funds had been used.

During the summer of 2012 a large part of the population of the affected area was living in big tents. Specific recreation activities were organised for the children living in such precarious conditions, so as to make families more hopeful and better-off, so as to keep the community coherent and cohesive.
It is worth noting that the affected area is also the area with highest proportion of immigrants in the region. Re-starting school on time was also seen as and essential instrument to the successful social integration of these populations. The dramatic events of the earthquake were also used as an opportunity to improve the social inclusion of immigrants, allowing the local population to more easily accept diversity and realise the advantages of multi-cultural backgrounds.
The new schools were re-opened organising inaugurations and events, so that the community could feel unity and identity.
After the earthquakes, 45000 people saw their houses damaged and 16,000 had to be accommodated in 36 big tents or other structures prepared by the Civil Protection. On 19 July the assisted people were 7,000. On 20 September they were 4,100, and the camps closed down on 30 November.

The region could count on strong communities. The strength of the local communities in the region has been outlined since the work of Putnam on social capital in 1993 (Putnam et al., 1993), showing the high level of social capital in this region. Industrial districts are based on strong social capital, which is an essential ingredient of their functioning. The transformation of the region into an innovative system was performed in a long time period (10 to 15 years) using this social capital (Bianchi and Labory, 2011).

All this was possible thanks to the loyalty between central and regional institutions, the political will shared with the mayors of the affected areas, and an extraordinary collective participation. The objective of starting schools in September as usual and as non-affected areas, namely on the 17th, was satisfied, although some pupils had to start lessons in gyms, pavilions or other spaces while waiting to enter the new buildings. The last rebuilt school was inaugurated on 10 November, only 6 months after the earthquake.

4. Characteristics of the recovery governance process in other disaster cases

As shown in the previous section, the recovery governance process of the Emilia-Romagna region has three main characteristics. First, it included a rapid setting of priorities. The overwhelming priority was to maintain the cohesion of the local communities, and for this purpose actions were primarily orientated towards schools and work (allowing families to send their children to school and ensuring restart of economic activities so that people could continue their normal working life), besides of course providing shelters to homeless people. Second, the governance was democratic and participative, with regional authorities guiding the process but including the local authorities (mayors of the affected cities) in the process. In addition this democratic governance was also characterised by reliance on own forces: a call was made to engineers and experts from other regions to help the recovery process but the key priority-setting and decision-making was made autonomously by the regional stakeholders, in a self-government process. Third, governance was lead at the regional level: neither too local as would an action decided only at the level of the affected area, neither too broad as would be an action decided at national level.

Italy is regularly affected by earthquakes, although generally of a low magnitude. The previous important earthquake which affected Italy – not in terms of magnitude but in terms

of dramatic effects – arose in L'Aquilla (capital of the Abruzzo region in Italy) in 2009. This earthquake was not sudden, since it followed a long sequence of minor earthquakes starting in October 2008 and ending in the summer of 2009. The strongest tremor was felt in April 2009 with a magnitude of 6.3, with epicentre very near to the town. The town is characterised by a historic centre with very old buildings which did not resist the seisms. 380 people were killed, 1500 injured. 60,000 buildings were seriously damaged and 67,500 people left homeless.
After the earthquake the historic centre was cordoned off and access restricted. People were immediately sheltered in tent camps, in hotels on the Adriatic coast or in alternative solutions found by the people themselves (families). The earthquake was of medium intensity but occurred in vulnerable city.

In L'Aquila, like after most earthquakes arising in Italy before,[3] the emergency was managed by a commissioner nominated by the national government. The latter released important funds for reconstruction. Priorities for emergency and reconstruction were set at central level, without regard for the need and desires of the local communities. Priority was given to the provision of houses. The government rapidly decided to implement the so-called CASE (Complessi Antisismici Sostenibili ed Ecocompatibili – antiseismic, sustainable and eco-compatible complexes – note that case in Italian means houses) project, aiming at building new temporary buildings a few kilometres away from the centre of the L'Aquila city. The new complex was rapidly built, but lacked connection to waste and water treatment, creating problems (Alexander, 2010).
The result is that 15 months after the disaster 90% of the population was re-housed, but no action had been taken to favour the restart of economic activities and to help people return to their jobs or find new ones. The historical city centre was left full of rubbles for years.
As highlighted by Alexander (2010, p. 336), "the missing element in the Italian government's recovery policy is local participation"; "Moreover, the neglect of the economy and infrastructure failed to kick-start any indigenous form of recovery".

Fois and Forino (2014) analyse an example of what could have been a participative process, namely the self-built eco-village of Pescomaggiore near L'Aquilla where inhabitants refused to be re-housed away from their former village and decided to rebuild houses near the village. Inhabitants mobilised to find funds and resources for the construction of the new village and managed to realise the project. In this way the coherence of the local community was preserved and people were more satisfied by the reconstruction process. The CASE project in L'Aquilla ended in demonstrations criticising the action of the government.

As a conclusion, it appears that not only self-government is more effective in managing the emergency and the resilience to disasters, but self-government requires capacities that not all regions and territories have.

In fact, Italy has disaster response structure in place since the Irpinia earthquake of 1980, which the Civil Protection (Protezione Civile). Before that earthquake emergencies were managed by external commissioners appointed by the national government. The national

[3] For instance the Friuli earhtquake of 1976, arising in the North of Italy, caused 989 deaths. The reconstruction was successful once the regional authorities took the lead in priority-setting and decision-making. Another important earthquake was the earthquake in Irpinia in 1980, in the Basilicata region, was magnitude 6.9 and has a huge impact with 3000 deaths and 8800 injured. In Irpinia emergency rescue arrived late, worsening the number of victims. The national government provided huge funds but these were lost in corruption and criminal organisations' infiltrations. Funds were even diverted to towns which were not hit by the earthquake.

structure for civil protection was completed in 1992 with law n. 225. Civil protection is now a Department of the State. The structure is quite decentralised and make mayors of municipalities the executive heads of civil protection. Therefore in L'Aquila like in the ER region the structure was the same. However, reaction by local authorities widely differed. The ER regional government immediately took leadership to set up priorities and relevant actions. The Abruzzo authorities did not seem to have taken such a lead, leaving the national government making decisions, with the above-mentioned results.

A confrontation with other countries might also be enlightening. In Japan, the governance of the emergency after the earthquake and tsunami of 11 March 2011 was based on national institutions, with little space for local management. Local authorities identified needs for reconstruction and designed reconstruction plans which were sent to national institutions for control and funding, but the process took a long time.

The earthquake was localised in the east coast of Tohoku in japan, with magnitude of 9; the earthquake had limited impact on the land but the problem was that it was followed by a huge tsunami that hit the coast and damaged the Fukushima nuclear power plant. The tsunami waves hit more than 9 meters at local tidal stations and 43 meters in coastal areas (Cho, 2014). This disaster resulted in 15,870 fatalities.
Since 1945, the tendency in Japan has been to centralise power, with an increasingly top-down management of regions. Apart from factors such as the continuing threat of the nuclear power station of Fukushima and the extent of the disaster, recovery was very long because it was centrally managed, with little role and autonomy of regional actors and citizens. Needs and reconstruction plans were identified and defined at local level but then sent to the central government to be approved and receive financing. However, this process was very slow, taking months and years. In addition, local authorities did not act in a participatory process: local politicians tended to avoid talking to the citizens because of a belief that citizens would only try to favour their own interests. As a result, reconstruction is still not complete and not much advanced and the local community has been destroyed: many people left the area not only because of the threat represented by the failing nuclear power station but also because of the lack of progress in cleaning and rebuilding the area. Cho (2014, p. S168) concludes: "most importantly, reconstruction plans ignore communities and failed to include a system of public participation in recovery governance. Recovery from a tsunami involves more than road restoration: it is a community matter."

In the ER case besides neither the national level nor the very local one took the lead in governing recovery. Rather, it is the meso – regional – level which took the lead. Local communities are very close to the problems and can highlight the needs and desires of the local communities; however, they may also be too emotionally affected to be able to rapidly set priorities and decide on actions to take. In addition, there are far from national levels of governments and may not be so effective in negotiating resources and necessary funds for reconstruction.
The national level on the other hand is too far from the local realities to get appropriate information and make decisions that fulfil the needs and desires of the local populations. Many cases show this, such as the L'Aquila earthquake where priority was given to housing provision but without any regard to the social cohesion of the local communities.
The meso level – here, regional – may therefore be more appropriate. Not too far and neither too close to the affected population and space.
This is clear in the ER case, but the confrontation with other cases also point to conditions under which the actions of the meso level may be effective: democratic governance, self-

government, and attention to the coherence and cohesion of the local communities, but also to the restarting of economic activities.

6. Conclusions: resilience, adaptation and adaptability and development

Resilience means the capacity of a territory to react to, reconstruct, adapt and learn from a shock. The shock can be an economic crisis like the financial crisis started in 2008, or a sudden and unexpected event such as a natural disaster. The earthquakes that affected the Emilia-Romagna region in Italy in May 2012 are a case in point. On the 20th and the 29th of May of that year two earthquakes of medium intensity affected the region, with limited impact on the health of people but dramatic impact on buildings, houses, schools and industrial plants.
The literature has stressed the importance of factors such as the magnitude of the natural disaster, the amount of available resources, tangible and intangible capital and endowments in favouring the resilience of places to disasters. The recovery governance has also been shown to be important, in particular democratic participation in the recovery process.

This paper has examined the case of the May 2012 earthquakes in the Emilia-Romagna region in Italy. The analysis confirms that recovery governance is indeed a key aspect, and in particular the capacity of the government to rapidly set priorities and favour the cohesion of local communities. The governance of the emergency in this case has been characterised by three main elements. First, it included a rapid setting of priorities. The overwhelming priority was to maintain the cohesion of the local communities, and for this purpose actions were primarily orientated towards schools and work (allowing families to send their children to school and ensuring restart of economic activities so that people could continue their normal working life), besides of course providing shelters to homeless people. Second, the governance was democratic and participative, with regional authorities guiding the process but including the local authorities (mayors of the affected cities) in the process. In addition this democratic governance was also characterised by reliance on own forces: a call was made to engineers and experts from other regions to help the recovery process but the key priority-setting and decision-making was made autonomously by the regional stakeholders, in a self-government process. Third, governance was lead at the regional level: neither too local as would an action decided only at the level of the affected area, neither too broad as would be an action decided at national level.

While the literature on recovery governance has increasingly stressed the important role of communities in the success of the reconstruction after disasters, this paper points to a key issue regarding the inclusion of communities in the recovery process: should the communities involved in the recovery process only include populations in the areas affected by the disaster, or a wider area? If a wider area is considered, how wide should it be? The paper has discussed a few cases where it is the national government which took the lead in emergency governance. These cases show that the national government tends to be too far away from information about local needs and desires. Many other cases also show the problems associated with national intervention: for instance the Katrina Hurricane in the USA (Boettke et al., 2007). However, too local a community may be too emotionally and materially affected by the disaster to be able to take appropriate actions. As a result, a key level of the recovery governance process appears to be the meso-level of governance, namely, at least in the case analysed in this paper, the regional one.

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