

Building a resilient local council: evidence from flood disasters in Italy

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Received 11 November 2014

Revised 26 February 2015

22 June 2015

Accepted 11 August 2015

Abstract

Purpose – The purpose of this paper is to investigate resilience to extreme weather events (EWE) in a sample of Italian local councils (LCs), impacted by flood disasters. Whether resilience as a concept is adopted by the affected councils and factors that promote or inhibit LC resilience are explored.

Design/methodology/approach – Using semi-structured interviews, the authors investigate seven Italian LCs that were severely impacted by the flood event. An interview protocol was developed and background information collected. A number of themes were drawn from the interview transcripts and relationships with the relevant literature were examined.

Findings – The findings highlight that the adoption of the concept of resilience is at an early stage in the LCs decision and policy making. The authors find that the financial resources and the external relations management with other public entities, NGOs and local communities, promote the LCs resilience during and after an EWE. By contrast, bureaucratic constraints and poor urban planning restrain resilience. The findings suggest that LCs resilience needs to be distinguished from local community resilience.

Originality/value – The paper contributes to the literature on public sector management and investigates the under-researched area of resilience within the context of the public sector, *vis-à-vis*, local government. In particular the realization that EWE are not the realm only of emergency personnel, but that local government managers have an integral role placed upon them during and especially after the EWE.

Keywords Resilience, Local authorities, Local council, Extreme weather event, Public sector accounting
Paper type Research paper

1. Introduction

In recent years, the management of disasters following extreme weather events (EWE) has become a key topic of concern. Increasing interest among managers, academics, professional bodies and communities has focused on whether more attention should be paid on how organizations can better equip themselves to guard against future disasters. Natural disasters can create abrupt changes to the organizational operating environment, significant damage to both the physical and natural landscape and pose a major threat to the survival of an organization. Recent examples of these types of EWE include the recent floods in the UK (2014); Typhoon Haiyan in the Philippines (2013); the earthquake and subsequent Tsunami in Japan (2011); wildfires in Russia (2010); monsoons and subsequent floods in Pakistan (2010); Bushfires in Australia (2009) and Hurricane Katrina in the USA (2005).

Given the expectation that governments are at the forefront (such as rescue and recovery) when natural disasters strike, it is important to understand if, how and to what extent, local councils (LCs) adopt the concept of resilience in their policy and decision making (Wilbanks *et al.*, 2007; Comfort *et al.*, 2010).



The term resilience is increasingly being used in public policy and management studies. These studies emphasize the need for new approaches to public sector management, since the public sector is increasingly exposed to several types of external shocks, such as the global economic crisis, terrorist attacks and EWE (Shaw and Maythorne, 2013). Resilience is put forward in these studies to investigate how public sector entities at any level (government, local authority) can cope, adapt and recover from such external shocks (Naess *et al.*, 2005; Shaw, 2012a, b). Most prior research dedicated to resilience is prescriptive and normative. Empirical research on the topic is quite scarce (Shaw and Maythorne, 2013; Boin and van Eeten, 2013).

In order to contribute to empirical research on the topic of resilience within the context of the public sector, we investigate the resilience to an EWE in a sample of Italian LCs. We investigated seven LCs inundated by flood events in the period 2011-2012. Four councils are located in the Tuscany Region (Massa, Orbetello, Vecchiano, Grosseto) and three in the Liguria Region (Genova, Monterosso and La Spezia). These regions border each other and are located in the North-West of Italy facing the Tyrrhenian Sea. The estimated cost of infrastructure damage caused by these floods amounted to 885 million Euro and 27 lives were lost.

With this study, we attempt to fill several research gaps in the literature related to the concept of resilience. We question whether and which concept of resilience in a sample of LCs is in fact used as a basis for decision making. Further, we investigate factors that promote or inhibit resilience to EWE (Linnenluecke *et al.*, 2012; Boin and van Eeten, 2013).

This paper adopts a qualitative approach using documentation and semi-structured interviews with seven Italian LCs that were affected by floods during the 2011-2012 period. In the sample of LCs investigated, the flood event caused sudden destruction to the natural landscape as well as damage to infrastructure, private households, businesses, as well as casualties among the population. The extraordinary intensity of the flood events was unexpected based on historical rainfall data (Regione Toscana Weather Monitoring Service, 2012).

Hence, the objectives of this study are twofold. First, we intend to investigate the extent to which the concept of resilience is actively used by LCs in their policy and decision making in the context of a natural disaster such as floods. Second, we examine the main factors, which promote or inhibit resilience.

This paper contributes to prior literature on resilience in public sector management studies and on crisis management. Our study builds on the emerging field of studies on resilience in local government (Shaw, 2012a). It provides empirical research on resilience and addresses the still under-explored topic of resilience within the context of the public sector. This study links resilience to EWE, answering prior calls for research given the significant social and economic costs associated with EWE (Linnenluecke and Griffiths, 2010). We investigate whether some of the known factors that promote or inhibit resilience, are applicable also to LC resilience to EWE (such as slack resources, external relations). Moreover, our study investigates if and how the LCs' resilience and the local communities' resilience need to be distinguished separately, even though both groups are interconnected.

The remainder of the paper is organized as follows. Section 2 includes a literature review. Section 3 describes the Italian government context. The research method is described in Section 4, whilst the empirical findings are presented and discussed in Section 5. Section 6 includes the conclusions and offers areas for further research.

2. Literature review

2.1 What is resilience?

The term resilience has a long history. It first appeared in the ancient writings of the classical time in which the terms *resilire* and *resilio* have been used to describe leaping, jumping or rebounding (Alexander, 2013). Resilience has been used with different meanings in several academic fields including psychology, ecology, engineering, management and organizational studies (Boin and van Eeten, 2013; Rose, 2004). It is recognized that much of the historical discussion and analysis surrounding the concept of resilience has been captured within the crisis and disaster management literature (Rosenthal and Kouzmin, 1996; Vallance and Carlton, 2014; Joerin *et al.*, 2012). This study assumes the social science perspective of resilience in the context of EWE. In the domain of the social sciences, the concept of resilience usually entails two elements:

- (1) the impact of a surprising sudden disturbance that is outside the set of disturbances that a social system is designed to manage; and
- (2) the effort (ability) of the social system to recover or to restore the pre-event state of affairs (Wildavsky, 1988; De Bruijne *et al.*, 2010).

According to Comfort *et al.* (2010, p. 9) resilience is:

[...] the capacity of a social system (e.g. an organization, a city or society) to proactively adapt and recover from disturbances that are perceived to fall outside the range of normal and expected disturbances.

Further, Davoudi (2012) distinguishes between engineering resilience, where the speed of returning to a pre-existing state determines the level of resilience, as opposed to ecological resilience, where the disturbance goes beyond a critical point and a new equilibrium is established in the natural environment. Engineering resilience appears to be suitable for the current study of resilience to EWE in LCs. Examples under the auspices of engineering resilience include natural disasters such as floods, earthquakes or wars. EWE are extreme events that may not be catastrophic, however, in any case, they still fall outside the range of normal or expected weather events.

In addition, the application of this definition suggests that resilience, as it applies to EWE, has two dimensions. First, pre-EWE, where systems, procedures and infrastructure are put in place prior to the EWE occurring, to mitigate against potential losses. In this case the mitigation plan includes the actions that are implemented to prepare LCs to reduce losses from severe weather events. Second, post-EWE, that is, the ability of an organization, community or system to recover from the disturbance (EWE).

Recent studies distinguish between resilience as recovery and resilience as transformation, that is, bouncing forward (Shaw, 2012b). The latter sees resilience as a dynamic process, which involves a rejection of the status quo and the undertaking of a radical change in the existing structures, which may lead to the absorption of future external shocks (Shaw and Theobald, 2011). It is worthy to note the political contrast between “recovery” and “transformation”. That is, in the aftermath of an EWE, much media attention draws on stories of destruction, injuries and loss of life. This follows immediately with a focus on the response from politicians. The public have a keen interest regarding the consequences of the natural disaster and have their own expectations about what governments ought to be doing. For example, questions relating to what immediate relief is being provided to the affected communities, the restoration of vital infrastructure and utilities such as water, power and communications are canvassed.

In this highly charged scenario, senior politicians need to be briefed adequately to ensure their message is direct, unambiguous and that they display a demeanour that their government is “in-control” of the situation.

In contrast, transformation is normally a longer-term process where political actors can “buy time”, in that government inquiries (e.g. a commission of inquiry) may be established and recommendations made to enhance the environment to a level that would protect the community in the case of a similar EWE. Subsequently, working parties, a taskforce or even a restoration authority may be established by the government where these groups are then charged with administering the recommendations. Whether the affected areas are then transformed to cater for a similar EWE will depend on, *inter alia*, the resourcing and political will of the government in power.

We conclude this section by highlighting that the social sciences perspective is suitable for a study in the public sector management field. We explore whether and which concept of resilience do LCs use in their policy- and decision-making activities within the context of floods. We then gauge the abovementioned definition to contrast the current LCs practices against a determined concept. An alternative approach in the public management studies is framing resilience as a discourse:

[...] to capture the contested nature of the term, its appropriation by a range of academic disciplines and policy practitioners, and to highlight the term’s political, ideological and normative underpinnings (Shaw and Maythorne, 2013, p. 45).

2.2 To whom does resilience apply?

To ensure our understanding of the concept is manageable, we set boundaries of who resilience refers to. For example, we can refer to an individual, organization, community or even country resilience to disasters produced by the EWE. In our paper, we refer to resilience in LCs as public sector organizations. Galaz *et al.* (2011) recognize the need for further studies in crisis management especially with respect to “fast-onset shocks such as floods” and how political institutions (among other stakeholders) respond to such a rapid event (Rochlin, 2011). This entails decision making in an environment of great uncertainty and significant ramifications and consequences where injury, loss of life and destruction of homes and infrastructure occur (Boin *et al.*, 2009).

The International Council for Local Environmental Initiatives, an international association of LCs, claims that resilient LCs are those able to recover their organizational functioning after an EWE disaster. The recovery includes emergency relief, restoration of infrastructure and public utility services to a pre-event level (Drennan and McConnell, 2007). Key to the recovery is appropriate decision making regarding the allocation of financial, technical and human resources (ICLEI, 2011). This activity may even start in the disaster response phase, being necessary for emergency relief activities.

LCs are concerned with the resilience of communities affected by an EWE as part of their mission. It is common to note a reference to resilience in the mission statements of LCs within their annual reports.

The factors affecting the local communities’ resilience may differ from the factors affecting the LC’s resilience (Morrow, 1999; Naess *et al.*, 2005; Cutter *et al.*, 2008). In a study on Hurricane Andrew, Morrow (1999) argues that the local community resilience depend on the households’ economic resources, personal and human resources, social resources, demographics (i.e. number of children, number of elderly people, physically or people affected by a mental condition). Kaluarachchi (2013) also found that elderly

people were highly aware of the risks from EWE, however, their actions carried out in light of this knowledge, did not significantly reduce their risks. Cutter *et al.* (2008) argues that there is a wide range of resilience indicators for communities, including: demographics, social networks and social embeddedness, community values-cohesion, non-profit and faith organizations, participation to policy making, relationship with local governments and local understanding of risk.

This brief discussion may suggest that the local community resilience should be distinguished from the LC resilience. A key issue is whether and how LCs can enhance the resilience of local communities to EWE. Shaw and Theobald (2011) highlight that local governments have a:

[...] huge potential to act as the coordinator/facilitator of a number of local networks and partnership (Shaw and Theobald, 2011, p. 10).

LC engagement with the community it serves provides an opportunity for a conversation whereby the LC can facilitate rather than lead strategies for the resilience of local communities. This process is akin to empowering communities to develop methods for increasing their own resilience because they are likely to be in the best position to identify their own vulnerabilities. This activity would be guided by LC expertise and advice. Such activity may increase and enhance the local community involvement in the development of a resilience culture, which could shift the approach from after-EWE recovery to addressing the community vulnerabilities and adapting to climate change.

In our empirical research, we investigate whether LCs consider local community resilience in their policy and decision making. In this respect, the LC “performance” during an EWE may be politically sensitive to the LC’s elected leadership and is without doubt an issue in the accountability process towards their communities. Even if LCs cannot control all the factors affecting the resilience of local communities (e.g. their salaries), the citizens may have expectations that the LCs support the community after an EWE and in preparation for future EWE.

2.3 Factors promoting and inhibiting resilience

Several studies suggest that the amount of slack resources is key to organizational resilience (Weick, 1993; Bruneau *et al.*, 2003; Vogus and Sutcliffe, 2007). The presence of slack resources *per se* might not be sufficient to promote resilience. Vogus and Sutcliffe (2007) suggest that how the financial, cognitive and relational resources are deployed and used is a key factor promoting resilience. The original usage of technical analyses, the adoption of different perspectives in decision making and the audit of on-going operations may also enhance resilience. In the case of resilience to extreme natural events such as earthquakes, Bruneau *et al.* (2003) suggest the allocation of resources has to be associated to the capacity to identify problems and establish priorities.

Decentralization has been also associated with promoting resilience (Bruneau *et al.*, 2003). Local knowledge of the characteristics of the population and living conditions are fundamental to ensure adequate recovery in the case of EWE. Ebi (2011) notes that local public healthcare systems are key to community resilience to health risks related to climate change and EWE.

Literature on crisis management suggests several factors promoting institutional and organizational resilience, which are also applicable to the public sector. A critical success factor is the presence of political leaders who have the capacity to facilitate resilient behaviour in times of crisis by being flexible, mobilizing outside assistance

from NGOs and other organizations, working with the media to provide a crisis rationale and creating expert networks to inform critical decision making (Hermann *et al.*, 2001; Post, 2004). Public managers are influential in developing a continuous and systematic diagnosis of vulnerabilities in order to capture signals indicating potential weaknesses and to effectively respond to them (Rosenthal and Kouzmin, 1996). Other factors promoting resilience, also noted by the literature on crisis management, are the competencies and preparedness of the so-called “first respondents” (such as the crisis/disaster manager, civil protection) and citizens.

The factors inhibiting resilience are often discussed in the literature as the lack of the factors promoting resilience. For example, the lack of redundant resources is considered as a key factor inhibiting resilience (Gittell *et al.*, 2006; Vogus and Sutcliffe, 2007; Dominelli, 2013). Dominelli (2013) claims that the lack of infrastructure and care services produced by austerity measures in public expenditures may harm the resilience of communities to EWE. Ebi (2011) suggests that excessive centralization may harm an effective local response to health risks, due to a lack of local knowledge. In a similar vein, Naess *et al.* (2005) argues that the Norway institutional framework gives weak incentives to proactive local flood emergency management. The centralized responsibility for disaster recovery prevents, for example, the provision of slack resources or effective decision making.

Linnenluecke and Griffiths (2010) suggest that the abovementioned literature is subject to some caveats. First, the factors promoting or inhibiting resilience may be context-dependent. The impact of EWE on organizations may depend on the size of the organization, the mobility and manageability of resources as well as by the abruptness of the EWE impact. Second, retrospective studies of past episodes of organizational recovery may provide limited insights into resilience to future unpredictable climate impacts.

3. Background

This study is context driven, investigating resilience to an EWE, which in this case is a flood event. A general overview of the political and governmental landscape of Italy is provided below as a frame of reference for identifying any distinguishing features that may be pertinent to the study of resilience.

Four levels of government characterize Italy: the central government, 20 regions, 107 provinces and 8,092 LCs (or municipalities) (Liguori, 2012; Greco *et al.*, 2012). Each level has a specific jurisdiction. The regions, the provinces and the LCs are addressed as local governments. The LCs play a key role with a wide range of powers and competencies, including: urban planning, local infrastructure building and maintenance, building authorization, utilities and waste management, commercial activity authorization, local police and security.

Generally speaking, Italian local government has embraced the themes of the new public management such as providing more managerial responsibility and authority to managers, extending the “user pays” principle and a greater transparency and accountability for services provided (Caccia and Steccolini, 2006; Greco *et al.*, 2013). Even though profound administrative reforms have been endorsed, on-going “political” influence continues unabated *vis-à-vis*, the role of the Mayor. It could be argued that in the climate of major cuts in public expenditure, economic recession and social disturbance that now, is not the right time for considering resilience to climate change and or EWE. However, political and managerial leaders have always been confronted with challenges, and not tackling the potential for natural disasters could be more costly in the long-run. Conversely, right-wing think tanks that support “individual”

rather than a “collective” ideology, may infiltrate the political lexicon that resilience is an individuals’ responsibility. This is where the normative emphasis of resilience is placed and needs to be clearly appreciated if this concept is to be seen as coherent and useful (Shaw and Theobald, 2011).

The Mayor of the LC serves as the risk manager, with powers ranging from the prevention measures to natural disasters, the emergency management and the after-event recovery. The Mayor is in charge of the preparation and update of the hydrogeological risk maps of the LC and of an emergency plan. For these activities, the Mayor is supported by other public authorities, such as Civil Protection and the Water Basin Authority, which provide the Mayor with on-going data and any new developments. The Civil Protection is a national government agency in charge of emergency management. The agency coordinates a national network of part-time volunteers, which is activated in case of emergencies, and manages the material resources funded by the government (e.g. vehicles, aircrafts, tents, technical equipment, first aid kits). The agency is in charge of communicating the hydrogeological impending risks to the population.

The Mayor also oversees the maintenance of the banks of water-courses flowing in the LC area. In case of an EWE, the Mayor serves as the local emergency manager and is in charge of coordinating the activities with the regional and national authorities. The Mayor also coordinates the activities of non-profit organizations involved in the assistance and relief of communities. After the event, the Mayor prepares an inventory of damages and decides the activities necessary for the recovery, establishing priorities and timing of interventions. Damage estimates are sent to the regional and national authorities to request funding for the losses incurred by the EWE. For this purpose, the Mayor decides the allocation of the LC financial resources and use of the additional financial resources transferred from the regional and central governments.

It is clear that in the case of EWE (and disasters *per se*) that the Mayor wields significant power and authority both during and after the EWE. This level of responsibility also alludes to the fact that EWE and resilience are played out in a highly charged political context quite separate from the rescue and recovery effort undertaken by emergency groups. Hence, we would argue that understanding the nature of and effort towards building resilience must be undertaken with recognition of the ideology and policy stance of the government currently in power.

4. Research method

In view of the expansive area that resilience can cover, a pragmatic decision was taken to investigate resilience only in the context of flood events occurring in Italy. Undertaking an analysis of all aspects of resilience such as from a psychological or ecological viewpoint, although equally valid, was beyond the scope of the current investigation. Hence, we focused on discreet management themes as canvassed in the literature and further discussed in the findings section. In this way the research project was discrete and manageable.

4.1 LCs investigated

Seven Italian LCs affected by flood disasters in 2011 and in 2012 were investigated. Table I provides an overview of the sample with key data about population, damage, casualties and the job titles of interviewees. In total, seven LCs were visited at their premises and 15 council managers participated in the interviews.

Council code	Population	Estimated cost of infrastructure damaged (euro)	No. of lives lost	Job title of interviewees
I1 (Monterosso)	1,521	38 million	12	Mayor, Administration and Finance Manager
I2 (Vecchiano)	12,472	112 million	0	Councillor in charge of territory management (including civil protection), Finance Manager
I3 (Massa)	31,128	6 million	1	Manager in charge for mobility, urbanization and civil protection; Manager in charge of Financial planning
I4 (Orbetello)	15,246	55 million	3	Councillor in charge of civil protection, Manager in charge of financial affairs
I5 (Grosseto)	82,616	170 million	6	General manager, Manager in charge of financial planning
I6 (Genova)	608,826	480 million	5	Manager in charge of general planning, Manager in charge of environmental affairs
I7 (La Spezia)	92,439	24 million	0	Manager in charge of financial planning, Manager in charge of the department "ground protection", Manager in charge of economic and financial affairs

Table I.
Sample overview

The LCs investigated are located in coastal areas and have major rivers within their municipality. In the case of Genova and Monterosso, the small rivers crossing the cities flow underground, and therefore, are covered by roads. In Monterosso, the flood destroyed the road built above it, hence, uncovering the water stream.

In six out of seven floods, the rivers overflowed their banks due to severe and rapid rainfall. All the interviewees pointed out that the primary causes were the unpredictable intensity of the rainfall associated with the vulnerability of the environment in which the rivers flow. Regarding the first variable (intensity of water flow), all the interviewees indicated the "extraordinariness" of the event in terms of the probability of occurrence. One interviewee provides a detailed explanation by highlighting that:

According to the historical data of rainfall we had a very low probability (less than 1%) to reach the severity manifested during the flood (Quoted from I7).

Such a consideration raises the question of whether climate change affects the reliability to predict future rainfall, which presently is undertaken using historical data only.

When considering the vulnerability of the environment, the interviewees indicate that the intensity of the rainfall has shown the absence of an effective prevention plan for floods. That is, according to the interviewees, the rivers overflowed due to torrential rain, but also because no action was taken to remove obstacles (such as tree trunks or landslides) that could have reduced the capacity of the watercourse to create alternative water channels (see Appendix).

5. Findings and discussion

As discussed in the research method section, an analysis of the interview transcripts was undertaken to develop themes. Some of the themes extrapolated from the interviews pertained to issues raised from the literature review, whilst other new themes were raised which enhanced overall understanding.

5.1 *The concept of resilience*

The findings suggest that the adoption of the concept of resilience is at an early stage in the Italian LCs decision and policy making. The term resilience is not mentioned frequently in the LC policy documents. Only in the three-year strategic plan drawn by the LC of Genova, the year after the flood event, has the term resilience been introduced and it refers to:

The capacity of the LC to rebuild the roads, the bridges and other public infrastructures damaged by flood (Quoted from I6).

The inclusion of resilience in the strategic plan intends to achieve two objectives:

Keep our decision makers focused on this goal and maintain our community informed by the action implemented and the progress of the recovery from flood (Quoted from I6).

This view highlights one facet of resilience, which refers to the recovery of physical infrastructure (e.g. roads, buildings, waterways) after the EWE in order to minimize the disturbance to the quality of life for the local community (Godschalk, 2003). Moreover this finding points out the important role the external communication between the LG and the public assumes to involve the stakeholders in the recovery activities. Studies on disaster management suggest that an effective after-EWE recovery requires the involvement of communities' both participating in formal recovery activities and programmes, in addition to their active participation in decision making (Manyena *et al.*, 2011; Vallance and Carlton, 2014). In this perspective, an effective communication system between the LC and the multiplicity of stakeholders is a key element to foster community participation in the recovery activities.

The other interviewees believed they understood the term, however, they felt uncomfortable in explaining its meaning. The resilience of the LC and the resilience of local communities were often not clearly distinguished by the interviewees during the interviews. Encompassing definitions were attempted, by referring to the Italian concept of "territorio" (territory). The following views were typical of the understanding and application of the concept of resilience:

Resilience is the capacity to recover after a traumatic and highly harmful event on the territory. There are however no explicit resilience policies or plans (Quoted from I3).

The concept of territory is used to address a wide range of issues relating to the local urban and economic development as well as to related environmental concerns. Harmonizing the potential conflict between urban and economic development as well as the safeguard of the environment is believed to be a key task for the LCs.

It was suggested that the concept of resilience has a broad meaning when applied to LCs:

The concept of resilience extends over different fields, it hasn't only to do with the [LC] functioning and the infrastructures, but it is necessary to engage on social aspects, considering even psychological interventions on the people (Quoted on I3).

There is a clear acknowledgement that resilience has several facets. Whilst the physical resilience of infrastructure following an EWE could be easily assessed by observation

and its technical operations, acknowledging the depth of resilience amongst the citizens is more problematic. Despite the unclear distinction between LC resilience and local communities resilience, the interviewees appeared aware that some of the factors regarding resilience in communities were outside their control:

The fundamental problem is inside the families; there we have the hands tied. The social fabric has to regenerate, exploiting the economic resources of our territory, because for example the consumptions fell, and the whole community suffers for it (Quoted from I4).

5.2 *The use of resilience as a driver for LG's decision-making processes*

A key component of resilience is the ability of an organization to absorb the impact of future significant disturbances (disasters). Both the LC political leadership and the employees recognize climate change and EWE as issues that need to be addressed and managed. This process seems to be extended to the community with additional demands placed upon the LC to take into account the protection of future EWE especially in their urban planning. Some examples are the request for stricter rules about building houses near river basins and for roads and bridges that can withstand future natural disasters:

A revision of the LCs' building rules (including construction techniques, materials, etc.) to increase the resistance of the new houses and infrastructures if these buildings are located in those areas featuring a high risk of floods (Quoted from I6).

The flood events produced a collective awareness that there are risks and that urban planning not taking into account the risks is unacceptable. We are reviewing tasks and procedures with the LCs employees. It seems that there is more proactivity by the employees, probably due to the awareness of their responsibility in case of extreme weather events. We also introduced a new organizational function, supporting the continuity of the utilities. They operate both in normal periods and have to be prepared to extraordinary situations (Quoted from I3).

After the event, the population showed more care and sensitiveness to the issues related to the care of the territory (Quoted from I2).

Also, more attention is dedicated to updating the flood risk maps and to the flood alert systems through the usage of updated technologies. Temporary flood barriers to be used in cases of heightened flood risk are taken into consideration:

We updated the flood risk map to include all sources of flooding with the aim to create a new flood alarm system of the rivers and its feeders. This includes hydrometers and underwater video cameras which will provide the LCs (and to other parties involved in the prevention system) with timely information to use property protection measures such as demountable flood barriers or eventually to organize evacuation (Quoted from I1).

These findings highlight how learning mechanisms can enhance resilience. The sample LCs take into consideration past disasters to plan future protection and improve risk-reduction measures (Folke *et al.*, 2003). In the crisis management literature, risk and resilience are seen as related and interactive (Magis, 2010). Adversity creates vulnerability in communities, exposing them to potentially harmful consequences. When faced with adversity, resilient communities develop material, physical, socio-political, socio-cultural and psychological resources to cope (Ahmed *et al.*, 2004). The results of our analyses confirm these interactions as after the EWE, LCs introduced a formal flood risk management system or updated the content of their pre-flood plans.

The interviewees suggest that the management of the LC external relationships is a key factor that may improve the absorption of future EWE impact. The LC undertook

actions to improve the communication channels and set up agreements with other institutional subjects and non-profit organizations. An example is given by the agreements with other LCs to share the emergency management by joining the human and technical resources. Most of these actions were taken within the current budget constraints and without adding new financial resources:

In recent flood alerts, there has been specific attention, constant contacts with the Region, the Province and the government. The communication has greatly improved (Quoted from I1).

Recently, we made an agreement with two other nearby local councils, to share the civil protection activity. After the flood, our officers were overwhelmed with requests to assist people and refund the damages. This was far beyond the ordinary workload for the offices. That is why we made the agreement. Also we are trying to involve the non-profit associations (Quoted from I4).

Several LCs plan to involve the community in the prevention of EWE disasters. The interviewees agreed that an active involvement of the citizens could improve both the LC and the community resilience. This involvement goes beyond the improvement of flood alerts to citizens (i.e. through automatic phone calls to households or through internet alerts) or through simulations, and extends to the care of the territory. An example is given by the plan to involve landowners in the minor water streams maintenance and care:

We will disclose our new Civil Protection plan to the citizens, through meetings and safety exercise programmes (Quoted from I2).

One of the reasons for the flood was the fact that many effluents occluded the river system. This happened because the owner of adjacent land did not clean the watercourse. We are trying to make these people aware of the risks in order to have their active contribution in the maintenance of the territory (Quoted from I4).

The findings suggest that the LCs recognize that the challenges posed by EWE go beyond emergency response and management and locate the LC at centre stage for their coordinating role during and after an EWE. The interviewees suggest that the assessment of past emergency management experiences may be useful to plan future actions to improve adaptation and absorption of future impacts. However, there is still no evidence of improved integration between emergency planning and climate change-oriented policy making by LCs. Thus, there appear to be two challenging issues. The first is to attempt to reconcile the short- to medium-term emergency management focus (which appear to be the current priority) with the medium- to long-term climate change LC policy focus. Grappling with long-term issues such as climate change will require a different LC mind-set; one that has for a myriad reasons, been ingrained with short-term fixations such as the annual budget (Shaw and Maythorne, 2013). The second issue centres on the power relationship and discourse between LC managers and emergency personnel. Prior to an EWE both groups appear to work collaboratively, however during and after a natural disaster, tensions build and what decisions are made and by whom, invokes intriguing observations of uncertainty, power and stress with an underlying political dimension. This concept was outside the scope of the current investigation, but it nevertheless is worthy of further exploration.

Taken together the findings highlight that LCs attempt to improve the resilience to future EWE through:

- (1) urban planning taking into account safety concerns;
- (2) building more resilient infrastructure (especially roads and bridges);

- (3) reinforcing the water streams monitoring systems and the flood alert systems;
- (4) managing the external relations with other institutions and LCs, to enhance the prevention activity and the emergency management; and
- (5) educating the community on how to react to flood alerts and involving the local communities in the maintenance of the territory.

5.3 *The factors promoting or inhibiting resilience*

Knowledge transfer and co-operation between all levels of government as well as with disaster rescue and recovery agencies appeared to be the most crucial facilitator of resilience (Hart 't 2013; Moynihan, 2012). For example, one type of external relationship facilitating resilience was the co-operation between entities involved in flood disaster management, public entities (the Region, the Province and the National Government Agency for Civil Protection) and non-profit organizations (i.e. the volunteers' associations active in care for the elderly). Effective sharing of information and local knowledge between LCs and other institutional public entities promoted both the emergency relief and the after-EWE recovery. The LCs provided the Civil Protection accurate information on how to reach and rescue isolated households. The communication of local knowledge was particularly useful in the face of unexpected situations:

An event like this has never been hypothesized. The hydrogeological risks map indicated that there was no risk for the municipality. We transferred information, because of our knowledge of the territory, to the regional and national authorities (Quoted from I4).

The frequent meetings during and after the event with all the institutional subjects including the province, the region and national government agency for civil protection led to an effective synergy (Quoted from I3).

Other types of external relations facilitating resilience were those with non-profit organizations. In this respect, the LCs engaged in coordinating activity and communications with partner non-profit organizations, which set up accommodation and meals for displaced people. The active participation by parts of the community that were unaffected by the floods in the emergency relief was promoted and spontaneous volunteer groups were coordinated.

Prior research (Cutter *et al.*, 2008; Nolte and Benigk, 2011) suggests that partnerships between public and non-profit organizations and community participation are vital to local community resilience. This is consistent with our findings that the participation of non-profit organizations and the population appear to facilitate both the LC and the local community resilience. The integration of non-profit organizations and volunteers in the LC operations also supported the LC organizational resilience at a time that the LC was under duress:

We intensified the contact with the population during the emergency and in the following months. Since the first hours of emergency we tried to involve the non-profit organization and the volunteers groups spontaneously formed in the relief activities and in the decision-making (Quoted from I4).

The LC coordinated the work of the volunteers coming from outside the municipality. The effort of non-profit organizations led to significant results (Quoted from I4).

Besides the effective contribution to resilience, our findings suggest that accountability concerns may drive the LC behaviour, with the need to explain the LC conduct to citizens and share some of the decisions. The interviewees agreed about the need to set

up a proper measurement system to demonstrate to the community their financial, operational and social accountability.

The availability of financial resources is seen as a key factor promoting or inhibiting resilience. As mentioned above, the amount of resources received (as opposed to the total requested) by the region somewhat acted as a proxy for the recovery capability of the LC in the opinion of the interviewees.

Other inhibiting factors mentioned in the interviews were: the excessive bureaucracy when requesting additional financial resources and urban planning not taking into account the hydrogeological risks. Some self-criticism emerged about past political choices aimed at achieving economic development at the expense of environmental safeguards:

The urban development did not take into account the hydrogeological risks. In the past, the buildings in the areas near to rivers did not have houses on the ground floor, only starting from the first floor. In recent years, building licences allowed houses on the ground floor. It was a political choice (Quoted from I4).

The economic development related to tourism brought wellbeing to the community. However, we lack the care of the territory (Quoted from I1).

What can be generally understood from these findings is that a comprehensive “conversation” regarding resilience has not yet occurred at any level of government. Sporadic understanding and knowledge exists, but it appears that unless a fundamental acceptance of the need to build resilient communities is agreed upon, then necessary adjustments to planning and other policies and strategies will be problematic.

6. Conclusions and areas for further research

This paper investigates the resilience to EWE in a sample of Italian LCs. An examination of whether resilience is used as a basis for decision and policy making, as well as the factors that promote or inhibit resilience to EWE was undertaken. There were a number of motivations for this study, not least, the paucity of empirical work on resilience undertaken in the context of the public sector, *vis-à-vis*, local government. In addition, with the current narrative on climate change suggesting that more frequent, severe EWE will occur in the future, it is imperative to gain an understanding as to what extent can the concept of resilience support policy making and operational decision making at the local level.

The findings highlight that the adoption of the concept of resilience is at an early stage in the sample LCs decision and policy making. Despite being aware of the importance of the concept in crisis management and in the after-EWE recovery activity, the concept appeared to be elusive and multifaceted in the interviewees’ opinions. Nonetheless, there was a clear awareness of the need to improve the organizational absorption of future EWE impacts and the after-event recovery activity.

A risk that needs to be acknowledged is that the concept resilience could follow the path of another related concept, that being sustainability. It appears that sustainability is being over-used by many organizations (both for profit, not-for-profit and government agencies) to justify their decisions and actions, however tenuous their link to sustainability. It is noticeably possible that the concept of resilience could follow the same trajectory as sustainability, that is, taken, used and abused to meet ulterior motivations. Hence, further refinement and clarity of resilience as a public sector management tool is necessary. The orientation of the concept of resilience towards “bouncing forward” could renew the public managers’ approach towards the challenges posed by the paucity of

economic resources, public expenditure constraints and climate change. The consideration of resilience as transformation is either an opportunity or a threat to the LCs' political leadership. On the one hand, climate change and EWE may provide an opportunity for public managers to undertake significant policy- and urban-planning changes oriented towards sustainable development. This may lead to political gains, as the LC "resilience performance" from the occurrence of an EWE may be politically sensitive to the LC's elected leadership. Moreover, it is without doubt an issue in the accountability process towards the communities. Alternatively, political leaders interested in maintaining the status quo may confine resilience to mere emergency management, attributing the lack of financial resources and budget constraints to avoid policy changes. Our findings suggest that the resilience of the LCs as an organization needs to be distinguished from the local community resilience. The LCs political leaders and managers appeared aware that some of the factors affecting the local community resilience were out of their control (i.e. the private financial resources of households). Yet, the LC leadership displayed accountability concerns and awareness about the expectations from the local community. Citizens need to know that their LCs care about the community relief and after-disaster recovery. Accountability concerns may also drive the LC behaviour, with the need to explain the LC conduct to citizens and the obligation to share some decision and policy making, especially after the EWE. The findings also suggest that LCs are developing the idea to involve local communities into resilience initiatives, such as responsible use of water streams and resources. There is evidence of an emerging awareness that the LC can play a role in promoting the understanding of risk and climate change adaptation within local communities.

Overall, our findings show that adaptation and absorption of future EWE impacts is expected to become a primary objective for the LC leadership in the near future, extending beyond contingent emergency planning. The assessment of past emergency management is being used in the policy discourse regarding resilience to future EWE. However, an effective integration between emergency planning and LC policies aimed at tackling future EWE impacts appear to be still evolving.

This paper provides empirical evidence that some of the factors promoting or inhibiting organizational resilience, suggested by prior literature, may be transferred to resilience to EWE disaster (Linnenluecke *et al.*, 2012). We find that financial resources, external relations management with other public entities, NGOs and local communities promote resilience during and after an EWE disaster. The importance of external relations management is to be related to the specific role played by the LCs, which is at the very centre of the disaster relief activity and the after-event recovery activity. By contrast, organizational constraints posed by bureaucracy and poor urban planning set severe obstacles to resilience to EWE.

The investigation contributes to the literature on public sector management in several ways. At a fundamental level it adds to the available empirical evidence on resilience in the under-explored field of the public sector. With reference to EWE, the paper provides empirical evidence that factors promoting resilience may be transferred to EWE. The study also highlights the importance of external relations management, with evidence that they can facilitate or inhibit organizational resilience. Finally, the study suggests that, despite being interconnected, LCs resilience and community resilience need to be distinguished. This is to ensure that outcomes from resilience strategies can be targeted and appropriate measures developed to examine whether the LC or the communities it serves are able to cope better to EWE.

This study acknowledges some limitations. First, we use a resilience concept from the field of the social sciences and we did not take into consideration the concepts of resilience as recognized in other fields such as crises and disaster management. Adopting the perspectives of resilience from other disciplines could bring new insights on resilience in LCs. Moreover, the adoption of other resilience perspectives could assist to expand knowledge of community resilience.

Second, we focus our investigations on the LC and do not consider how EWE impacts on the wider social system. We understand that an EWE adversely affects a wide area and that LCs outsource many service areas that were once the sole domain of LCs. Further research is warranted on how service providers (on behalf of council) are affected in fulfilling their contractual obligations.

Our paper suggests that resilience in LCs and in the public sector, more widely, is a promising area for future research. Future research may undertake longitudinal studies to ascertain whether and how the concept of resilience is embedded in the public sector decision and policy making at all levels of governments. Also future studies may explore the role of political leadership in the LCs and the local communities' resilience.

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Further reading

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Appendix

Research questions

In order to achieve the research objectives set, the key research questions addressed by this paper are:

RQ1. To what extent the concept of resilience is adopted as a basis of the LG's decision-making processes?

RQ2. What are the main factors promoting or inhibiting the LG's resilience?

Practicalities of research design:

Semi-structured interviews and documentation

Semi-structured interviews with 15 managers were initiated with the "key" players of the local council who had a direct role during the floods. Some of these participants were approached based on their publicly available job descriptions, whilst others were recommended to join the panel (interviewer plus participants) by other senior managers within the local councils. In addition, high-level managers also formed part of the interview group as they would have knowledge of the council's policies and strategies, especially with respect to the concept of resilience. The objectives of the interviews were twofold. The first was to gain "factual" information regarding the flood event, whilst the second was to elicit the beliefs and perceptions of the interviewees on the role of (if any) resilience (Tucker and Parker, 2013). Senior managers and recovery managers were deemed to have the greatest insights into the strategy and operations of the councils. Other suitable informants included managers who had budgetary authority and those who are heavily involved in decision making during critical events such as EWE.

An interview protocol was developed commencing with open-ended questions regarding general themes regarding the councils operations and key challenges. Furthermore, specific questions relating to the flood event and how resilience was drawn into the belief system of managers was also examined. A sample of some of the questions posed were:

- (1) What does the term resilience mean to you; to your local council?
- (2) Is resilience a term that is actively used in your local council? Why or why not? In what context?
- (3) Is resilience used in the context of floods? If so, how? If not, why not?
- (4) Does the literature on climate change influence how resilience is used in your local council?
- (5) What do you believe are the facilitators and inhibitors of resilience as a management tool?

Documents such as the annual report, the emergency plan, the river basin management plan, flyers, newsletters and other publicly available information were read through to gain a general understanding of the location, demographics and significant contextual factors pertaining to that particular council. Documents were also perused for any indication of reference to climatic events and any other significant challenges facing the council and its constituents.

Analysis

The interviews ranged from one to two hours duration, held on location at the respective council offices and were tape recorded. Additional hand written notes were also taken. The interviews were then transcribed and read through several times to identify themes. Because interview questions were categorized under headings prior to the interview, this process itself helped align themes drawn from the literature with the answers to the questions. The analysis included having the transcribed verbatim summarized, classifying the quotes and making interpretations. The general themes extrapolated from the transcripts included broad concepts of resilience, the recovery from an EWE, measuring resilience, factors promoting or inhibiting resilience (including the role of leadership) and mitigation and adaptation as they relate to future flood events. This process leads to the detailing of possible explanations for current or future practice (Shank, 2006).

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