doi:10.1111/disa.12080

The self-built ecovillage in L'Aquila, Italy: community resilience as a grassroots response to environmental shock

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The paper applies the community resilience approach to the post-disaster case of Pescomaggiore, an Italian village affected by the L'Aquila earthquake in 2009. A group of residents refused to accept the housing recovery solutions proposed by the government, opting for autonomous recovery. They developed a housing project in the form of a self-built ecovillage, characterised by earthquake-proof buildings made of straw and wood. The project is a paradigmatic example of a community-based response to an external shock. It illustrates the concept of 'community resilience', which is widely explored in the scientific debate but still vaguely defined. Based on qualitative methodologies, the paper seeks to understand how the community resilience process can be enacted in alternative social practices such as ecovillages. The goal is to see under which conditions natural disasters can be considered windows of opportunity for sustainability.

Keywords: community resilience, disaster recovery, earthquake, ecovillage, Italy, L'Aquila, sustainability

Introduction

On 6 April 2009, an earthquake with a magnitude of 6.3 on the Richter scale strongly affected the Abruzzo region in Italy, specifically L'Aquila city and its 14 outlying villages. As Adriana Volpini (2009) puts it, 'It killed 308 people in the main shock and injured 1500 people, 202 of them seriously' (in Alexander, 2010, p. 326). One of the most problematic consequences was the damage to more than 60,000 buildings, of which '18,000 were judged as unsafe for occupancy' (Akinci, Malagnini and Sabetta, 2010; cited in Papanikolaou et al., 2010, p. 15). The Italian government declared the historical centre of L'Aquila off limits—a 'red zone'; by late April 2009, about 67,500 people needed food and health care (ICPD, 2009).

In view of the urgent need to provide shelter for survivors, the Italian Civil Protection Department (ICPD)—with strong support from the Italian government—opted for emergency management, which led to reconstruction strategies aimed at 'a direct transition from homelessness to secure accommodation' (Alexander, 2010, p. 334). The first step was the recovery of 22,000 survivors in tent camps and another 21,000 in tourist accommodations on the Adriatic coast (Alexander, 2010). Afterwards, between September 2009 and February 2010, the Italian government implemented two different relocation strategies. The first, temporary housing prefabs (*Moduli Abitativi*

Disasters, 2014, 38(4): 719–739.
Published by John Wiley & Sons Ltd, 9600 Garsington Road, Oxford, OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA

Provvisori), consisted of infill in damaged urban settlements; the second involved large 'new towns' of earthquake-proof, sustainable, eco-compatible housing complexes (*Complessi Anti-Sismici Eco-compatibili*), referred to as the CASE Project. About 15,000 inhabitants were moved to 19 sites of the CASE Project, which included 184 buildings and 5,736 residential flats around L'Aquila (Alexander, 2010; 2011a). Another 8,500 people were housed in the temporary housing prefabs in 54 localities, including 26 sites within the L'Aquila municipality (Alexander, 2011b).

This paper investigates an autonomous housing solution promoted by a group of affected people from historic Pescomaggiore, a small, isolated mountain village in the vicinity of L'Aquila. Its population has decreased over the years, passing from 227 inhabitants in 1967 to today's total of 40–45, the majority of whom are elderly (Borghi Attivi, 2013). The earthquake caused serious damage to Pescomaggiore: 50% of its buildings were deemed unfit for use. After the earthquake, the government solution proposed to the inhabitants of Pescomaggiore was relocation to one of the CASE areas, more than 8 km away. Some residents refused to accept this solution as they were unwilling to leave their homes and lose their community identity. Sceptical of the motivation guiding government recovery plans, a small group of residents launched a community resilience initiative: they created an autonomous ecovillage as close as possible to the destroyed village (Tomassi, 2011). The ecovillage comprised earthquake-proof buildings made of straw and wood; its development was managed via a participatory decision-making process and oriented towards supporting the local economy.

The paper applies a community resilience approach to the case of Pescomaggiore to investigate the community-led reaction to the environmental shock. The aims are, first, to clarify the definition of community resilience in disaster studies; second, to understand how the community resilience process relates to ecovillage practices; and, finally, to interpret the disaster as a 'window of opportunity' for sustainable trajectories (Birkmann et al., 2010).

The research questions were the following:

- How does the Pescomaggiore ecovillage enact community resilience processes towards sustainable trajectories?
- How does the creation of an ecovillage stimulate processes of community resilience?
- How can this case study contribute to an understanding of community resilience?

The paper is divided into two main parts. The first part presents a theoretical framework of how scholars use the concept of resilience to investigate community reactions to disasters. It reviews the most common definitions of community resilience within disaster studies and proposes a new approach and definition. The second part focuses on the case study of the Pescomaggiore self-built ecovillage—the *EcoVillaggio Autocostruito*, or EVA. It integrates empirics with the literature on ecovillages to explain how the disaster can be viewed as a window of opportunity for sustainability. The conclusion reviews the application of the theoretical framework to the case study to examine how, and under which conditions, ecovillage practices can stimulate processes of community resilience.

Literature overview

From disaster resilience to community resilience

Several scholars have discussed the role of communities in disaster resilience, often considered the main element needed 'to withstand external shocks to their social infrastructure' (Adger, 2000, p. 361). This paper adopts a definition that views disaster resilience as 'the capacity of the hazard-affected bodies [. . .] to resist loss during disaster and to regenerate and reorganize after disaster in a specific area in a given period' (Zhou et al., 2010, p. 28). Hazard-affected bodies are all the elements affected by the disaster in a given space, including individuals, organisations, infrastructure, economic activity, institutions and the environment.

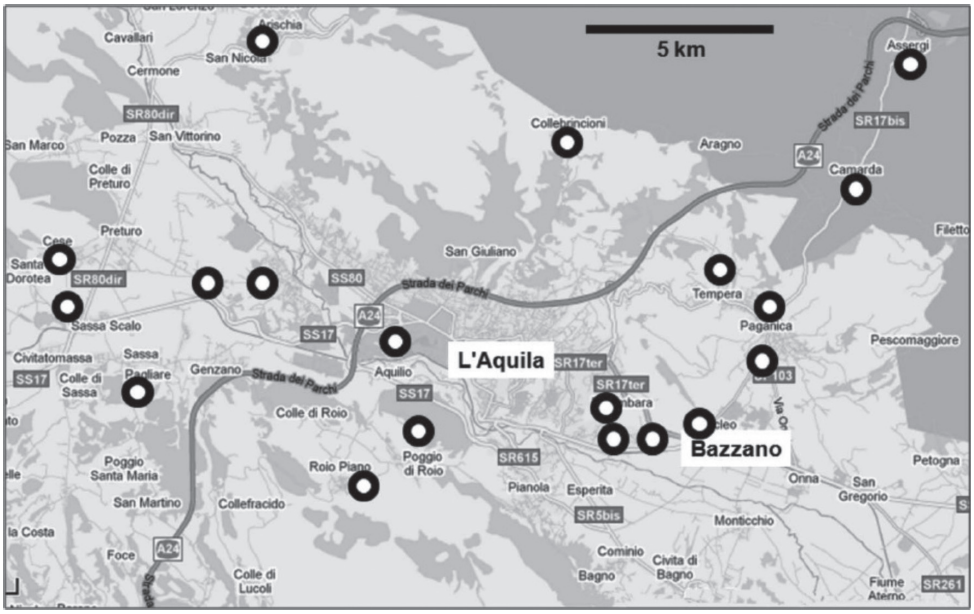
With respect to the role of the community and its relevance, however, this paper asks whether, in disaster resilience studies, the community refers to hazard-affected bodies, including institutions, and whether it includes spontaneous collective action. More specifically, this paper examines whether 'community resilience' is a disaster response informed by the balance between top-down institutional interventions and grassroots expectations, or whether it is intended only as a grassroots, bottom-up response.

Although numerous scholars have adopted the concept of community resilience,[1] most do not define 'community' or identify its components, generating vagueness in the meaning of the concept. Norris et al. (2008) explain this vagueness by referring to the complexity and variation of relevant definitions. For them, community resilience 'can be understood and addressed at different levels of analysis [. . .] from grassroots groups and neighborhoods to complex amalgams of formal institutions and sectors in larger geopolitical units' (Norris et al., 2008, p. 128). Although several authors use the term 'community resilience', it seems that most simply focus on the concept of resilience, without examining the complexity of the word 'community'.

This paper argues that understanding resilience is fundamental to differentiating between top-down and bottom-up processes and interventions. On the one hand, resilience to a disaster can take the form of paternalistic, general plans proposed by formal institutions. On the other hand, it can be an autonomous response, place-sensitive and based on collective grassroots skills, capacities and actions (Cutter et al., 2008a; Lewis and Kelman, 2010; Murphy, 2007; Olshansky, 2006). In fact, as Vale and Campanella (2005, p. 347) argue, the significance of 'community' within resilience processes is that a community-based recovery enhances resilience by exploiting 'the power of place' as it is based on 'local' material and immaterial resources. Within this framework, the process towards resilience is based on strengthening self-organising skills, local autonomy and community empowerment.

In light of this, disaster resilience should not be interpreted as an outcome but as a process (Manyena, 2006). According to Manyena, a resilience approach that is driven by formal political actors tends to result in top-down solutions to post-disaster recovery. The outcome is a paternalistic choice 'that can lead to the skewing of activities towards supply rather than demand', instead of the 'deliberate process [leading to desired outcomes] that comprises a series of events, actions or changes,

Figure 1 CASE Project areas



Note: The 19 black circles indicate where the Italian government built new housing complexes in L'Aquila Municipality.

Source: Alexander (2010, p. 336).

to augment the capacity of the affected community when confronted with singular, multiple or unique shocks and stresses' (Manyena, 2006, p. 438).

With respect to top-down resilience strategies, it is relevant to point out that in the case of L'Aquila, the institutional reconstruction solutions aimed to provide a paternalistic, established supply. In fact, the recovery plan, exemplified by the CASE Project, represented a paradigmatic top-down and emergency-led disaster recovery approach, focused primarily on achieving a quick response. The CASE Project was approved by legislative decree just 22 days after the earthquake. The Italian government's priority was to find a timely solution to housing recovery needs, a task undertaken without consideration of long-term consequences. The reconstruction strategy followed two parallel lines of intervention: the closure of L'Aquila's historic centre, still partially declared off-limits after more than five years, and the creation of new peripheral settlements in predominantly rural areas used for agricultural activities (see Figure 1).

Although the Italian government promoted this strategy as a successful recovery plan, observers have pointed out emergency and reconstruction mismanagement—from both an environmental and a social perspective (Alexander, 2010; 2011a; 2011b; Calandra, 2012; Microdis, 2011). The rapidity of the decision provoked a misallocation of resources both in terms of an excessive expenditure of funds (Alexander, 2010) and of farmland consumption (Frisch, 2010). In fact, governmental proposals were not based on sustainable or ameliorative aims.

One of the most significant critiques of government initiatives in response to disasters is the lack of involvement and participation of residents from the affected areas in the decision-making process (Alexander, 2010). Regarding reconstruction, this weakness has been perceived as a lack of attention to the needs of the affected population (Calandra, 2012). In addition, the displacement of residents from their former homes to the new CASE Project areas caused a fragmentation of former communities and a loss of the sense of belonging (Microdis, 2011).

In conclusion, the case of L'Aquila cannot be considered 'a deliberate process'; in fact, the government did not take residents' needs into consideration, nor did it encourage the 'power of the place' (Vale and Campanella, 2005). This paper argues that, in applying an institutional recovery strategy, the Italian government undermined processes of community resilience.

Interpreting the role of 'community' within resilience processes

Resilience as a deliberate and autonomous process is strictly embedded within the capacity of the affected communities to regenerate social infrastructure, to create bottom-up initiatives and to manage human and local resources. Disaster sociologists define emergent organisations as groups of 'private citizens who work together in pursuit of collective goals relevant to actual or potential disasters but whose organization has not yet become institutionalized' (Stallings and Quarantelli, 1985, p. 94).[2] These groups are created spontaneously, and although they are not institutionalised, they can 'reveal the most basic characteristics of what conventionally are considered to be established organizations' (Saunders and Kreps, 1987, pp. 443–44). As argued by Solnit (2009), disasters can lead to the creation of spontaneous and volunteer communities that implement solidarity mechanisms independently from formal institutions. Even if an autonomous community does not have enough resources to face a disaster or is not officially institutionalised, collective actions oriented towards exploiting local resources in an independent way can offer a relevant contribution to withstanding a shock. Thus, this paper considers 'community resilience' a grassroots and spontaneous reaction to an external shock. It also draws on the following definition of 'community':

> *people at a local (that is sub-municipal) level who are not organised by emergency services but have skills, resources and an organisational capacity or structure that allows them to provide services to people at risk or actually affected by disasters* (Coles and Buckle, 2004, p. 7).

Hence, the community can be understood as a group of people who, in precarious conditions and autonomously, are able to collaborate and generate trajectories for sustainable recovery. In line with this view, Ganor and Ben-Lavy (2003) identify the 'Six Cs'—the basic ingredients of community resilience:

- **communication** requires the flow of information, in real time, about the situation in the community, the threats it confronts, the services it can provide, the resources it can recruit;

- **cooperation** requires enhanced degrees of responsibility on a local level: relying on ourselves, rather than waiting for outside help;
- **cohesion** requires high sensitivity and mutual support, particularly for the weaker members of the community;
- **coping** refers to the community's ability to take action;
- **credibility** requires a new type of leadership: one that is not built on old political or partisan lines, but rather an authentic, grassroots leadership that comes from within the community; and
- ***credo***: the vision of a community, one that depicts a better future, a horizon of hope (Ganor and Ben-Lavy, 2003, p. 106).

Furthermore, the authors argue that community resilience grows by itself and cannot be achieved in the short term. It requires time and constant efforts by the community. The abovementioned Six Cs are cornerstones for building a community able to cope with the consequences of a disaster.

At this point it is crucial to note that this paper does not propose community resilience as a substitute response to institutional resilience, but rather as a process integrated into institutional practices, whose values, methods and aims could inspire top-down disaster management. Thus, rather than claiming that community is a panacea in the area of disaster response, this paper argues that the process of community resilience is a long one that can present contradictions and that can be unsuccessful. A case in point is the site of La Hermandad in El Salvador, where non-governmental organisations (NGOs) sought to promote participatory reconstruction after the earthquake of 2001, but failed to generate successful community resilience processes. Rather, it has emerged that divergent goals led to competition and conflicts within the community (Davidson et al., 2007; Sliwinski, 2010). Similarly, in the Indian state of Gujarat after the earthquake of 2001, the local government provided assistance to local communities to promote owner-driven reconstruction, which was also supported by NGOs and international organisations. During reconstruction, it became apparent that the initial participatory plans were not properly implemented. As a consequence, owners were assigned a marginal role and their involvement was strongly reduced; the ideal of owner-driven reconstruction yielded to a process that relied on unskilled labour, such as for cleaning up rubble and carrying material (Jigyasu, 2010).

Community resilience as a way to promote sustainability

This section argues that disasters can serve as opportunities for new and alternative social and spatial solutions (Birkmann et al., 2010). In particular, the Pescomaggiore case raises questions as to how a disaster can create new ways of organising space.

The objective of post-disaster resilience is not only the re-establishment of functioning systems to ensure continuity with the past, or the reproduction of pre-disaster conditions of normalcy (Paton and Johnston, 2001; UNESCAP, 2008). Rather, it can involve the use of a shock as an opportunity to generate change and produce new

balances. In this sense, community resilience can be seen as 'a process linking a set of networked adaptive capacities to a positive trajectory of functioning and adaptation in constituent populations after a disturbance' (Norris et al., 2008, p. 131). Such a definition of community resilience is key to the concept of sustainability (Callaghan and Colton, 2008). Tobin argues that a community, in order to be resilient, should consider sustainability the 'forefront of all community planning efforts' (Tobin, 1999, p. 16). In view of these positions, this paper defines community resilience as:

> *a process generated by grassroots groups that assume the responsibility for organising themselves in a collaborative, spontaneous and autonomous way, exploiting local skills, knowledge and resources, and using the disaster as an opportunity to ameliorate the social dynamics of the community and to enhance its sustainability.*

The following section shows how the main elements identified in the proposed definition of community resilience—a grassroots group, responsibility, collaboration, spontaneity, autonomy, local resources and knowledge, an ameliorative opportunity and sustainability—are embedded in the practices of the Pescomaggiore ecovillage.

Ecovillages and methodology

Before presenting the empirical analysis of the case study, it may be useful to define the concept of an ecovillage. Ecovillages are 'intentional communities' created by people who want to live in better, more sustainable conditions than what is otherwise available. The Global Ecovillage Network defines an ecovillage as:

> *an intentional or traditional community using local participatory processes to holistically integrate ecological, economic, social, and cultural dimensions of sustainability in order to regenerate social and natural environments* (GEN, n.d.a).

In view of the four dimensions cited in the above definition, the next part of this paper analyses whether the EVA project can be understood as an example of a community resilience process. In so doing, it employs five lines of enquiry:

- origins of the ecovillage idea;
- location and financing;
- the nature of social organisation;
- the ecological approach; and
- sustainability in the EVA.

The research method is based on in-depth interviews.[3] Interviewees had the possibility to answer questions freely and to address the most relevant issues in an open and flexible manner (Longhurst, 2003; Vale and Campanella, 2005; Kvale and Brinkmann, 2009). Eight semi-structured interviews of 60–90 minutes were carried

Figure 2 EVA construction in progress, 12 February 2011

Source: authors.

out with six EVA residents and two architects in February 2011. All interviewees were deeply involved in the community and strongly engaged in the project. The authors had the opportunity to take part in the activities of the ecovillage—such as cooking and arranging straw bales—as a form of participatory observation; they also had the chance to engage in informal conversations with most of the participants in the project.

At the time of the fieldwork in February 2011, four buildings were nearing completion. Two young couples were sharing one house, another two older couples were sharing another building and one family of three was going to live in the third house. The fourth house had been left for common activities and to host volunteers. The fifth house was under construction (see Figure 2). The ecovillage is to be composed of seven buildings, designed to house 22 people (Tomassi, Robazza and Savini, 2011; see Figure 3).

Figure 3 Digital EVA projection with Pescomaggiore in the background, 2009

Source: EVA (n.d.a).

Findings: community resilience in the EVA project

Origins of the ecovillage idea

The 'group' is the basic element behind the creation of the ecovillage. The creation process can be long and arduous, especially since the group composition may change as members can opt to leave the project while others can join it later (Christian, 2003; Kasper, 2008). The process entails a series of difficult tasks, such as deciding on a location, finding property, seeking funding and building houses. The project thus depends largely on the shared vision, mission and goal of the group. Indeed, the vision of the ecovillage and its subsequent design are among the key aspects of the project. In terms of resilience processes, this aspect is the *credo* of the abovementioned six Cs. This type of project cannot be realised through a top-down process as it requires the involvement of each individual in the group and a willingness to collaborate with other people.

Twelve individuals of various ages—ranging from 28 to over 70—make up the group of EVA residents. They have different interests and backgrounds; some are practicing journalists and lawyers, among other professions, while others are students and retirees. Their only commonality is that they were all affected in some way by the earthquake of 6 April 2009. About 60% of the project members are not from Pescomaggiore but from adjacent towns. The group that manages the EVA project was actually created two years before the earthquake. Its original name was the Committee for the Revival of Pescomaggiore (*Comitato per la Rinascita di Pescomaggiore*). Interviewee 1, who was one of the three initial promoters of the ecovillage and a member of the Committee, explained their original intentions:

> *The Committee wanted to try to promote a process of participation to reconstitute the* identity *of the site, involving residents—locals and possibly new people coming from outside—interested in being considered part of the Pescomaggiore* identity (emphasis added).

Like many other Italian mountain villages, Pescomaggiore has been suffering from depopulation since the 1960s. The group formed to create a community of people with a shared sense of belonging; their aim was to take responsibility for and participate in the social life of the village. Since 2007, the Committee has organised a series of activities, including a cultural festival in an abandoned area of the village, social initiatives for the inhabitants and public demonstrations against a project to expand the quarry at the bottom of Pescomaggiore's hill in order to preserve the environment (Interviewee 1).

Since the earthquake, the Committee has played a key role in the recovery of the village. The ICPD's call for Pescomaggiore evacuees to move to the tent camps of Paganica 8 km away met with general disapproval. The survivors' response soon took on the form of a community resilience process. A group of people, some of whom were members of the Committee, argued that the solution proposed by the Italian government met neither their needs nor their vision of the future of the village. As pointed out by Interviewee 2, the former residents of Pescomaggiore 'had this vision

that if they had abandoned the village it would have been forever'. In post-earthquake contexts, residents often fear that they will be relocated to a distant site, as argued by Geipel (1979; 1991) with reference to the Friuli earthquake of 1976. In the Friuli case study, the majority of the interviewed evacuees also voiced concern about being moved to coastal tourist accommodation during the emergency phase, far from where they lived.

Rather than relocating to a place far away from the village, the Pescomaggiore group created an autonomous and self-organised tent camp, independent from the ICPD. Although the Committee's independence from formal institutions placed a great burden on the group members, it also granted them an autonomous space in which to brainstorm and assess potential courses of action. The collective search for alternative paths eventually generated the idea for an ecovillage; soon thereafter, a self-governing community began to emerge, as recounted by Interviewee 1:

> *We were still in the first month, the end of April. We talked with the group about what was going on, about what to do, whether to stay or leave. Nobody at that time had an established situation. It made no big difference whether you were precarious here or elsewhere, but at least elsewhere you were not living in a city affected by the earthquake. [. . .] If some people thought about the option to go elsewhere even before the earthquake, now the choice had come back in a more extreme and more radical way. If you do not choose [to leave] now, when will you leave? [. . .] In contrast, the meetings resulted in a decision to try to stay here, to stay in Pescomaggiore. [. . .] That was the result of a process in which the planning of the group or individual lost its connection with reality.*

A shock such as an earthquake can provoke different types of reactions. Some people prefer to accept the recovery solutions proposed by the government; others choose not to be involved in the recovery process by leaving the affected area; and still others react by activating alternative solutions through a community resilience process. Interviewee 1 underlined that the group lost its connection with reality, meaning that it was willing to consider unrealistic or unworkable alternatives. Based on what Interviewee 1 said, it seems that people who found themselves in a precarious situation after the earthquake were actually more likely to take risks. In this context, the term 'precarious situation' indicates the absence of stability in the form of a stable home or employment, with the consequence of living in extreme uncertainty. According to Interviewee 2, people who have to start over after having lost a great deal may be more inclined to take risks since they may not have the same fear of loss they used to have. As Butler reflects:

> *Perhaps [. . .] one mourns when one accepts that by the loss one undergoes one will be changed, possibly for ever. Perhaps mourning has to do with agreeing to undergo a transformation (perhaps one should say* submitting *to a transformation) the full result of which one cannot know in advance* (Butler, 2004, p. 21).

The EVA group, aware of the loss experienced and the resulting feeling of precariousness, decided to submit to a transformation by actively pursuing change through

the creation of the ecovillage. The temporary, precarious conditions generated an impulse for community transformation, whereby residents intentionally adopted a preferred lifestyle rather than continuing to live in a state of need.[4]

The idea of an ecovillage thus developed spontaneously. The Committee was not attracted by the branding of an ecovillage itself but, rather, by the values inherent in ecovillage practices. The ecovillage project was a way to stay in Pescomaggiore and to solve the housing problem in a sustainable way, while simultaneously stimulating people to participate and reinforcing their identity and sense of belonging. Yet, not all the residents of Pescomaggiore were interested in the project; some of them were sceptical about the Committee's initiative.

Location and financing

Two of the greatest difficulties were related to the location of the ecovillage and to fundraising for the project. The ecovillagers were able to persuade some landlords to give them land 160 m from the centre of Pescomaggiore, through a free loan agreement, as described below (Tomassi, Robazza and Savini, 2011). Although the land was classified as a 'public green area', meaning that construction would not be allowed under normal circumstances, L'Aquila Municipality permitted the construction of temporary houses (*manufatti temporanei*) during the declared 'state of emergency', thereby deviating from the usual landscape and environmental restrictions (Comune dell'Aquila, 2009, art. 5.2). These temporary houses could become lawfully regulated in the future. In this way, ecovillagers were authorised to start the construction and, subsequently, the project would become recognised under national Italian legislation. It should be noted that there is no Italian law governing intentional communities. Only in 2010 did Italian community federations[5] promote a bill entitled 'Recognition and Discipline of Intentional Communities'; the left-wing deputy Giovanna Melandri has sponsored the bill in the Italian parliament (Camera dei Deputati, 2010).

While addressing the location issue, the ecovillagers also had to secure financial means to start the project. Two main types of funding could be considered: government funds and private donations. The Italian government provided 200–300 euros ($270–400) to each evacuee who autonomously founded temporary housing during the emergency, as an alternative to CASE and temporary housing prefab proposals. In the initial period ecovillagers were unemployed or part-time workers; thanks to these funds, they were able to provide for basic needs and to support the beginning of the construction. However, constant delays in the allocation of funds slowed down the recovery process.

Most of the funds for the project were raised from private donors at fundraising events. The main incentive offered to donors was membership in the beneficiary community of EVA, which took on the role of a 'common good'—representing the third category of economic actors, alongside the public (state) and private entities (individuals and corporations) (Barnes, 2006). It means that ecovillagers are not owners of the houses and the lands; they are their managers and users. The free loan agreement stipulates that once the housing shortage is solved and the ecovillagers

can return to their original houses, the ecovillage will be used for social, recreational and touristic purposes. This decision is to be made by Pescomaggiore inhabitants, donors and members of the association that manages volunteer work (Cure and Tomassi, 2012).

Fundraising activities required an effective communication strategy, both external—to inform the public about the project—and internal—among group members and volunteers. Ecovillagers used different communication channels for fundraising purposes, particularly the Internet and word of mouth. The cause was also promoted by Italian filmmaker Sabina Guzzanti's documentary *Draquila: L'Italia che trema* (2010), which tracks the disaster management in L'Aquila. Furthermore, a communications agency helped to launch the EVA website and volunteers spread information about the project well beyond L'Aquila, including throughout Italy and European countries. This fundraising campaign raised €143,278.17 ($195,000) from 130 donors over four years (EVA, n.d.b). Another important resource was the assistance provided by 300–400 volunteers (Interviewee 2). Since the beginning of construction work in July 2009, the project has expanded considerably, involving different people and groups, such as associations, volunteers and professionals.

The nature of social organisation: from the wide community to ecovillagers

Autonomy and responsibility are also key aspects of community resilience. An analysis of ecovillage literature shows that all participants of a founding group agree to share responsibility over the project (Ross Jackson, 2000)—as opposed to waiting for outside help. With reference to the abovementioned Six Cs, as identified by Ganor and Ben-Lavy (2003), the *community* has been able to take action and thus to *cope* with the shock and to create a common vision—or *credo*—for the group. Members and volunteers, moreover, *cooperate* and *collaborate* as they share responsibilities and tasks. Indeed, the variety of skills, knowledge and backgrounds of the members has allowed for a decentralised way of organising community activities and, consequently, of establishing a new type of grassroots leadership based on *credibility*. The community dimension implies that each ecovillager feels empowered and takes part in the decision-making process, without hierarchies or leadership. While members are responsible for their own lives, they also feel supported by others, which fosters a feeling of belonging and of being safe (GEN, n.d.b).

The EVA community is composed of a central core of people—referred to as ecovillagers in this paper—and a large number of individuals who gravitate around it but do not live in the ecovillage and have varying levels of engagement. There was no selection process to determine who could be part of the core team and live in the new houses. The interviews revealed that the people who belong to the core group were those who committed to the initial project and decided to take the risks and reap the benefits. In most cases, the decision about who was going to live in the new houses was made before construction work began, and the occupiers were those who took full and shared responsibility, investing their time and money in the EVA. The first built house was for the two elderly couples who, due to health problems,

had more difficulties and greater need than others in the group. This demonstrates a feeling of *cohesion*, inclusion and support for those who were more disadvantaged.

Based on the interviews, the EVA community may be seen as encompassing not only the ecovillagers, but also the volunteers, architects and people who have been involved in the project in some way. In the words of Interviewee 1:

> *The group evolves continuously. It is a field of relationships. [. . .] There are a number of people who chose to physically live in these four houses. But I will not reduce the group only to these people because it would be absolutely incorrect. [. . .] Some people are absent for months; however, they are part of the community, even if they did nothing. Why not consider them part of the community?*

The interviews confirmed that the ecovillagers relied on grassroots leadership and a bottom-up development process. During the fieldwork, the authors had the opportunity to attend a three-hour-long decision-making meeting in one of the homes in the ecovillage. Such decisions are taken on a daily basis. During this meeting, six members of the community participated, but not all the ecovillagers attended. This absence created a bit of concern. During the meeting the group discussed specific difficulties and critical issues. For example, some ecovillagers complained that they were taking on a significant amount of work compared to others. Although the aim was to divide the community's activities equally among all ecovillagers, the majority of the work was carried out by unemployed people because it was perceived they had more time to dedicate to the ecovillage. While the unemployed thus made a significant contribution to the EVA project, their unpaid activities for the community could not solve their financial situation.

It was not possible to cover all of the scheduled discussion points during the meeting, largely because the group aimed to reach consensus on all points, which proved time-consuming. Specifically, the group considered each individual's opinion and discussed each perspective until a common solution was found. In this way, they sought to solve the difficulties, problems and disagreements that emerged during the meeting. This underlines that a community is clearly not free of problems. While some members presented their opinions more forcefully than others, no one took on a leadership position, confirming that no hierarchical process was in place.

The ecological approach

The ecological dimension refers to an approach that ecovillages are a 'commitment to low-impact living, integrated village-based energy systems, water treatment plants, Earth restoration, permaculture and ecological building' (Svensson, 2002a, p. 10). The ecological perspective calls attention to local resources and local knowledge, as in the adoption of alternative housing construction methods (Seyfang, 2010). According to Jacobsen (2002) and Elizabeth (2002), the criteria for choosing the typologies of materials are strictly related to local conditions and to the availability of local materials. There is no standard typology of ecological buildings, although

climate, culture, know-how and the availability of raw materials are fundamental factors for building in an ecological way. Stone, wood, clay, earth and straw are raw materials that are typically suggested for ecovillages (Svensson, 2002b). The connection between ecovillages and disaster reconstruction has been made by Rashmi Mayur, the director of the International Institute for a Sustainable Future:

> *As disasters increase in the world, we are actually presented with equally increasing possibilities for ecological reconstruction. The ecovillage principle encompasses everything needed to resettle refugees in the wake of natural disaster, and to prepare against such calamities in the future. We have to seize this opportunity to establish ecovillages as the planning paradigm in exposed areas* (Svensson, 2002c, p. 153).

The EVA community needed the pivotal contribution of architects and planners to realise its plans. Several architects alternated during the whole period (2009–13). While this paper is focused on the core group of ecovillagers, it also examines the involvement of two architects who participated in the EVA project during different periods, as both shed some light on the environmental impact of ecological building.

Interviewee 6, an architect who was involved in the early planning stage and in the physical building of the ecovillage, explained that the combination of wood and straw is suitable to areas exposed to high-magnitude earthquakes. Another architect, Interviewee 7, observed that a wooden frame—which has the same flexibility in each point—provides an earthquake-proof guarantee. Interviewee 7 offered additional useful information about the structural characteristics of these buildings. The fire risk of an eco-sustainable house, for instance, is similar to that of a concrete house, due to the extreme compactness of the straw bales. The proof lies in the fact that electrical circuits pass safely through such bales, just as they pass through concrete walls. Interviewee 6 pointed out further characteristics of this type of building:

> *The houses are made of wood and straw bales, timber roofs with insulation in flaked cellulose, walls of rectangular bales of straw and natural interior and exterior plaster based on lime. The straw acts as the infill between the walls. The advantage of straw is the economic price; the natural, breathable material is not harmful to the body. It is also heavily insulated so that the heating consumption is reduced to a minimum. You only need a bit of wood for two/three hours per day to heat well the house, even in winter temperatures.*

Interviewee 6 also emphasised the economic advantages of the straw: it is a local and cheap material that makes it possible to save money on heating. Natural materials such as straw and wood could thus pave the way towards a sustainable lifestyle that is environmentally friendly. In addition, straw is a material that can strengthen individual and community ties with the house. As Interviewee 6 suggested, 'Building in your own house with straw creates a unique community spirit and a peerless tie with your home.' Interviewee 4 went a step further, arguing that the construction of the ecovillage and, in particular, the involvement in physical reconstruction, could help people to overcome traumatic experiences:

In this way, you have the opportunity to cope with your trauma, because in rebuilding the house you'll ask yourself different questions, reflect about your life. This enables you to follow this route, so while you rebuild [the house], you rebuild yourself at the same time. [. . .] Having to deal with a [physical] structure is useful if you have inner troubles and you do not want to deal with it. You care about something that is external to you, but, in reality, it takes you back inside yourself. [. . .] An additional benefit is that you have to relate to other people, whether one likes it or not.

Thus, building a house reinforces and creates ties among people and between people and nature, playing a key role in overcoming trauma and, consequently, in facilitating the community resilience process.

Sustainability in the EVA: from depopulation to new solutions

As highlighted earlier, the community resilience process after a disaster can re-establish pre-disaster normalcy or seek to address social and economic dynamics towards sustainability. The EVA project serves as an example of how a disaster can represent an opportunity to establish a new vision to cope with both the effects of the earthquake and the depopulation phenomenon of rural villages. This paper argues that the EVA community exploited the window of opportunity provided by the disaster. Interviewee 5 reinforced this point:

Since the earthquake, we are doing something here that didn't exist before: a community of people living together who share a garden, an ecological and environmentally friendly lifestyle, trying wherever possible to secure any income through food self-sufficiency, a reduction of energy consumption for heating. I believe in the idea that small towns can be rebuilt after an earthquake only if you first create a network of relationships, a statement of reasons for living there, an economy of proximity.

The EVA group seeks to produce a more sustainable lifestyle. The group aims to create a social network that encourages the feeling of belonging and identity; it develops a local economy that is oriented towards exploiting local resources; and it promotes knowledge of and respect for the environment, such as through lower energy consumption. These are the new challenges for the Pescomaggiore community.

In addition to growing their own produce and sourcing local products, the EVA community wants to renovate the old communal oven to allow Pescomaggiore inhabitants to bake their own bread; refurbish the old school; create a social centre in the village; and reuse a nearby mountain retreat as a tourist lodge (Interviewee 3). Furthermore, two of the ecovillagers have implemented a research project called *Memorie* (Memoirs) with the aim of collecting the experiences of each inhabitant of Pescomaggiore regarding the past and present and asking for their future vision of the village. All these practices undertaken by the ecovillagers have the goal of strengthening the community of Pescomaggiore and stimulating the inhabitants' participation (Interviewee 7). As noted above, when the ecovillage project was launched,

some inhabitants of Pescomaggiore were sceptical about it and often not very supportive regarding the new community's initiatives. Aware of this scepticism, the EVA project aimed to strengthen the village community against fragmentation and depopulation, stimulating the local traditional economy and common cultural activities.

Regarding the future of the ecovillage, there is no generally accepted vision, although any decision will involve the whole community, including donors and volunteers. For now, the ecovillagers consider the EVA a complementary area, a neighbourhood of Pescomaggiore and a driving force for the village. Interviewee 2 put it this way:

> *It is a neighbourhood that will remain in the village. Then we would like Pescomaggiore to follow a certain philosophy of life, respectful of the place [. . .]. Before the earthquake, Pescomaggiore was identified with just the quarry. Now, one associates Pescomaggiore with the ecovillage. The image of the village has changed, it has been reclaimed. For us this is an accomplishment.*

Short of claiming that ecovillages are the solution to coping with a disaster, this paper underscores the fact that 'intentional communities have traditionally sought to establish a bounded space in which to explore new possibilities' (Kirby, 2003, p. 35). It also demonstrates that the creation of an ecovillage in Pescomaggiore provided a way to cope with a disaster and to promote a sustainable recovery process at the local level.

Conclusion

This paper has analysed the post-disaster initiatives that took place in Pescomaggiore after the L'Aquila earthquake of 6 April 2009. The aim of this work is twofold:

- contributing to an understanding of community resilience process in the ecovillage of Pescomaggiore; and
- analysing how the disaster served as a window of opportunity for sustainability.

The first part of the paper explores the resilience strategy applied by the Italian government. The authors argue that the CASE Project is the outcome of a paternalistic choice aimed predominantly at solving housing needs. The main characteristics of this top-down strategy were the centralisation of power in the ICPD and the Italian government, and the unwillingness to consider the opinions of affected residents. By taking this approach, the institutions also neglected the potential benefits of elements such as local empowerment, participation, transparency, holistic long-term visions and sustainability. In this case, therefore, institutional resilience cannot be associated with the community resilience process.

Instead, the noted elements have served as the cornerstone of the resilience process adopted by EVA, whose main aim has been the reinforcement of the Pescomaggiore

community. In fact, fieldwork results demonstrate that the EVA experience can serve as a positive example of the community resilience process. By presenting the interview results through the framework of the Six Cs, the paper shows that this process was developed by a grassroots group that took responsibility for coping with a disaster in a collaborative, participatory and autonomous way.

Through the creation of an autonomous ecovillage, the community enhanced its mechanisms of resilience. It was not an easy process. Finding a suitable location with a free loan agreement, developing fundraising strategies, supporting the project through partnerships, being involved in construction work without having specific knowledge in the field, identifying architects with expertise in bio-construction, managing the work of lay volunteers, persevering without the support of the local and national government and in the face of initial scepticism of the local community, and overcoming internal disagreement among ecovillagers were stumbling blocks in the EVA community resilience process. The ecovillagers have overcome these obstacles thanks to the establishment of strong networks and high levels of commitment to the community.

Furthermore, the unavoidable interaction with other people and the physical construction of houses may help individuals to deal with or to overcome their trauma. In other words, building the ecovillage does not merely involve a physical reconstruction, but also a social and individual one.

Within the framework of resilience, there are different ways to react to a disaster. Some survivors may feel a desire to return to the pre-disaster status quo, to re-establish previous conditions of normalcy. Others may wish to start anew and establish new trajectories, as has been the case in Pescomaggiore. The ecovillagers initiated a radical shift that transformed a socially isolated and economically depressed village into a dynamic space oriented towards reinforcing the local community and developing an ecologically sustainable approach. In view of its new community ties, more sustainable daily practices and new plans for the future, Pescomaggiore has become a paradigmatic example of post-disaster bottom-up reconstruction in affected areas.

This paper defines the community resilience process as a sustainable, grassroots, bottom-up response to a major shock, such as a disaster. Community resilience processes are best developed and implemented at the local level, so that residents' needs can be taken into consideration. Put differently, this paper holds that community resilience is more easily fostered at the local level than at the institutional or national level. While it does not claim that ecovillages are the only way to cope with a disaster, this paper suggests that the basic values of community resilience—which are embedded in ecovillage practice—could usefully be integrated into institutional resilience strategies.

In conclusion, a disaster can provide a window of opportunity for the promotion of a community resilience process. The ability to take advantage of a shock often depends on the extent to which community members feel responsible for the development of coping strategies. In this context, the creation of ecovillages, oriented towards new sustainable values, can help to stimulate community resilience.

Acknowledgements

The authors would like to thank the ecovillagers of Pescomaggiore for their helpfulness and hospitality during the fieldwork conducted in February 2011. In addition, the authors also extend thanks to the MEMOTEF Department, School of Economics, La Sapienza–University of Rome, Italy, with which the authors were affiliated when the project was developed. Additional thanks go out to Filippo Celata, Cary Yungmee Hendrickson, Ladan Cockshut and Ugo Rossi for their comments and corrections. Further, the authors are grateful for workshop participant comments on presentations they made in two conference sessions: 1) 'Climate Change and Futures' at the 2011 Postgraduate Forum Mid-Term Conference of the Royal Geographical Society and Institute of British Geographers, 'Geographical Futures', in Durham, United Kingdom, on 2 April 2011, and 2) 'Resilience and Beyond: Geographies of Response to Systemic Social, Economic, Political and/or Environmental Shock' at the Annual Meeting of the Association of American Geographers in Seattle, United States, on 16 April 2011 (which was partially funded by MEMOTEF Department, School of Economics, La Sapienza–University of Rome, Italy). Thanks are also due to the editors and the anonymous referees for helpful comments on earlier versions of this article.

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Endnotes

[1] See, for example, Bruneau et al. (2003); Cutter et al. (2008a; 2008b); Furedi (2007); and Tobin (1999).

[2] See also Kreps (1984); Kreps and Bosworth (1993); and Saunders and Kreps (1987).

[3] The authors translated all interview excerpts cited in this paper from Italian into English.

[4] See also Heben (2012).

[5] Italian communities and ecovillages are represented by CONACREIS (Coordinamento Nazionale Associazioni e Comunità di Ricerca Etica, Interiore e Spirituale, the National Committee of Ethical and Spiritual Research Communities and Associations).

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