Chapter 8
When a Disaster Risk Reduction Policy Fails in the Implementation Stage: Eroding Community Resilience and Traditional Architecture in Iranian Villages

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8.1 Introduction

Iran is a disaster-prone country. It is mentioned by United Nations Development Programme (UNDP) that out of the 40 different types of known natural disasters in the world, 31 types have been identified in Iran. Major hazards include frequent, serious earthquakes, floods, droughts, landslides, and storms. Earthquakes take an especially heavy toll (2005). As part of the Alp-Himalayan orogenic belt, Iran is one of the most seismic-prone areas in the world and suffers severe economic and social damage as a result. During the last 40 years, almost 200,000 people have lost their lives in earthquakes in Iran (Zare 2012).

Experiences from past earthquakes in different regions of Iran showed the high vulnerability of houses in rural areas (Bahrami 2008), hosting 20,730,625 inhabitants according to the last census of 2016, and accounting for nearly 26% of the country's population (Statistical Center of Iran 2017). The last analysis of rural housing units, made in 2003 at the country scale, reported the state of houses been highly vulnerable in 15 provinces (51%), in 9 provinces having minor vulnerability issues (33%), and only in 4 provinces the houses were in a good condition (14%) (Sartipipour 2009). These results describe the emerging priority of the government in supporting and subsidizing disaster risk reduction programmes to retrofit rural housing.

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However, decision-making processes in a vast and geographically diverse country such as Iran (with diversity of climate, ethnicities, and local architecture cultures) could be challenging because of the need for policy-making capable of addressing variety of context-specific needs (Sartipipour 2005). Indeed, not all the vernacular buildings are vulnerable to earthquakes since "seismic culture" and social processes of disaster response could be embedded in the construction methods and processes, as already pointed out in some very recent studies (Ortega et al. 2017; Aldrich and Meyer 2014). Also, from the Bam (2003) and Manjil (1990) earthquakes, the resistance of the vernacular buildings (if properly built and maintained) has been tested and demonstrated (Sartipipour 2012). Moreover, rural houses are self-sufficient units, able to provide all the functional spaces for the village production activities. They are well-fitted solutions to fulfill the requirements imposed by the environment and society. Since the physical features of rural houses is rooted into economy, social, cultural, and environmental aspect of rural life (Zargar 2011), unconventional changes in the patterns and design of the houses might affect traditional lifestyles dynamics. To this regards, the Sendai Framework for Disaster Risk Reduction 2015–2030 suggests complementing scientific knowledge in disaster risk assessment by ensuring the use of appropriate traditional and local knowledge and practices, framing disaster risk reduction strategies, plans, and programs tailored to localities and cultural contexts (UNISDR 2015).

Furthermore, construction of vernacular buildings is a group practice. In rural communities, houses are being built by the community. The process of involvement and participation in group activities is considered to generate positive consequences for the individuals and the community resulting in leveraging and strengthening social capital and networks. Social capital has a critical role in disaster survival and recovery, contributing therefore to enhancement of community resilience (Aldrich and Meyer 2014).

This chapter addresses the gap between the disaster risk reduction policy and its implementation in rural Iran and compares it to the traditional practices enhancing community resilience. Indeed, notwithstanding the overall vulnerability of rural settlements (see Sartipipour 2009), properly built and maintained traditional buildings can resist earthquakes because of the embedded seismic culture and community resilience, strengthened during construction processes (as demonstrated by Sartipipour 2012; Aldrich and Meyer 2014; and Ortega et al. 2017). However, the current policy for disaster risk reduction in rural Iran, implemented far from its very own objectives, is promoting a philosophy of demolition of rural houses and rebuilding following building codes and typologies common in urban areas. In order to explore the pros and cons of this policy implementation, we selected a case study from a remote village where traditional buildings showed seismic resistance during the last earthquake, but the disaster risk reduction policy is increasingly demolishing traditional houses, replacing them with new and concrete-based houses rising concerns among the residents. A viral weblog post titled "*An elegy for the death of traditional house*" expressed residents' dissatisfaction in how this retrofitting policy has been applied on the ground (Shams Nateri 2013). In the light of such dissatisfaction and disaster risk reduction framework operationalization, this chapter evaluates the decision-making process and the policy implementation steps in order to explain the expenses paid for vulnerability reduction, confronting community resilience.

The structure of the chapter is framed within five sections. After explaining the policy and legal frameworks for disaster risk reduction in Sect. 8.3, as applied to rural villages of Iran, Sect. 8.4 introduces the case study (Nater village) and justifies the reasons for this choice. In Sects. 8.5 and 8.6, the results of reviewing the provincial policy documents, their implementation on the ground, and their substantial differences to the traditional architectures in providing the built environment with earthquake resilient characteristics is mentioned. Finally, the results are discussed in Sect. 8.7.

8.2 Method

This chapter is based on a qualitative research which analyses the Iranian policy called Rural Housing Retrofitting Special Plan (RHSP), by reviewing the legal framework and the corresponding implementation processes. The study also involves fieldwork in a selected case study, the village of Nater, in which both the traditional architecture buildings (24 units) and new houses (41 units) built under the RHSP strategy have been assessed in terms of their typology, construction methods, and building processes. The results of the fieldwork observations were complemented with interviews with houses owners, while responses about building methods were later triangulated through the employment of secondary data on Iranian traditional building methods as illustrated by Zomarshidi (2005).

8.3 The policy and legal frameworks for Disaster Risk Reduction in small towns and rural villages

Development of rural regions, so as to reduce vulnerability to disasters, is one of the important missions of the government of Iran. The authority responsible for risk reduction in rural settlements of Iran is the Housing Foundation of Islamic Revolution (HFIR from here) (Deputy of rural development and deprived areas of Iran 2014) which operates tenure security programs (issuing building permits) and two schemes: one for land use and infrastructure planning (called Rural Guide Plans) and another, mainly focusing on housing retrofitting and enhancement, namely the Rural Housing Retrofitting Special Plan (RHSP from here). In the framework of the sixth National Development Program of Iran (2017–2021), the current RHSP is looking for retrofitting and renewal of 200,000 rural housing units per year (Islamic Parliament of Iran 2017) by allocating conditional low-interest loans to rural people, who are expected to apply the program in return for obtaining the funding, and retrofit their houses in accordance with the Housing Foundation of Islamic Revolution building standards (HFIR 2016; Beyti 2012).

Within the 16 articles of the RHSP Charter, the purpose of building more disaster resistant and durable houses (Article No. 1) is linked to the mandate to preserve the identity of the vernacular architecture of rural housing by minimizing the shortcomings of translation of urban housing style and promoting the selected outstanding patterns of rural architecture in terms of forms and aesthetics (Articles No. 2, 13 and 15, HFIR 2016).

Such integrated risk-reduction and aesthetic strategy is operationalized through the RHSP guidelines, which are interpreted by different consultants, separately, for each province. These guidelines usually consist of different documents, including landscape and built environment typology studies, which serves as the basis for a "design patterns" document, integrating and adapting within the context of the Iranian building codes for seismic resistant structures (Standard 2800).

The Housing Foundation of Islamic Revolution provincial offices are in charge of coordinating the implementation of the guidelines. This responsibility is given to the HFIR local technical offices. However, it is the HFIR national headquarter who is in charge of deciding the number of allocated loans per province and employing consultants to provide the guidelines. Therefore, while the decisions determining dimensions and territorial distribution of retrofitting projects is centralized, the responsibility of putting adequate building codes into practice, integrating disaster risks reduction standards with the rural aesthetic and traditional architecture is delegated to the local level. Indeed, HFIR provincial offices support the manufacturing of building materials to be used in retrofitting and also organize technical courses for local engineers to make them familiar with HFIR design and supervision criteria (HFIR 2016; Beyti 2012).

8.4 Case Study Introduction

Nater is a small village located in a remote mountainous area in the province of Mazandaran, Northern Iran (see Fig. 8.1), with the area of approximately 220 ha (Deputy of rural development 2005). Nater has cold semi-arid climate, with winters

Fig. 8.1 Geographical location of Nater, Google with the authors' additions

that usually come early accompanied by heavy snowfalls. Nater's economy is dependent on traditional husbandry and incomes are low and insecure.

According to the census of 2011, Nater has 490 inhabitants distributed within 151 families (Statistical Center of Iran 2011). Nater was one of the villages effected by the earthquake of May 2004, which had a magnitude of 6.5 (Deputy of rural development 2005). Luckily, and notwithstanding the traditional nature of the houses in this small village, a considerable number of buildings withstood the earthquake, or suffered minor damage (as reported from the local authority of Nater). However, from 2004 to 2005, people in Nater were eligible to get the earthquake reconstruction loan from HFIR. This opportunity induced a dramatic change in the built environment. Around 110 loans (since the date of the earthquake) were given for both retrofitting and enhancing maintenance of traditional buildings. The issue is that under this program and its "retrofitting" nature, even the houses that withstood the earthquake were destroyed and rebuilt. This trend has been reinforced through the implementation of the RHSP program in 2006, and over ten years 41 new houses have been constructed (HFIR internal statistics accessed on April 2017). As stated in the introduction, people have been increasingly concerned about how the RHSP has been applied (Shams Nateri 2013), neglecting the provincial guidelines (aligned with the traditional building culture) during its local implementation (see Fig. 8.2). Therefore, in the next section, the chapter explores the resilience features of the traditional architecture building techniques.

Fig. 8.2 Contrast between the traditional and RHSP constructed houses, (A traditional house of Nater being cut in half for a RHSP house to be constructed), author, March 2017

8.5 Traditional building culture in Nater: The disregarded earthquake resilience characteristics

The traditional houses of Nater are maximum two-storeys. The family lives on the first floor while the basement is allocated to the livelihood activity of the family, mainly husbandry. Locating the living space on top of a barn has thermal function as well. An elderly villager explained during the interview, that the heat produced by the animals would make the barn warm and consequently the first floor would have a comfortable temperature (owners of traditional houses interview, Nater, March 2017).

It is a ritual to retrofit some part of the houses every year before winter. During such a reconstruction, the plinth, walls, and roof's shingles are checked and replaced if necessary. The local authority of Nater stated during the interview that, unfortunately, this ritual has been forgotten for some years, and lack of maintenance is becoming a major issue that can potentially increase vulnerability to earthquakes (local authority interview, Nater, March 2017). Lack of maintenance is either caused by the poverty, old age of those with construction knowledge, or the intention of local people to build new houses using alternative materials such as concrete, under the RHSP program in future. During the interviews with the local authorities, we realized that people aspire to have new houses, because it represents wealth, but at the same time they regret losing the comfort (thermal insulation) of their old house and the traditional appearance of Nater.

8.5.1 Building Methods

Traditionally, houses were made of stones, wood, and cob. The double wooden ceilings of these houses are based on a framework of timber pillars and beams. The walls are thick, plastered by daub and gypsum which leads to a high thermal mass of the building. Notwithstanding most of the traditional houses of Nater withstood the earthquake of May 2004, most of the damages happened to the roof's shingles and the plinth (local authority interview, Nater, April 2017). The elements having seismic resistance features are, among others: the vertical members and horizontal bands, which are placed in different levels in the plinth, especially in its corners, to ensure proper load transfers and to reinforce the wall- to-wall connections of the building (see Fig. 8.3). The villagers had inherited this technique from their ancestors while its purpose became evident to them after the earthquake of May 2004, which remarked during the interviews: "during *the last earthquake, some stones fell out of the plinth but there was no major damage to the plinth itself, thanks to its beams*" (owners of traditional houses interview, Nater, March 2017). Indeed, the openings in the plinths are relatively small and boxed by wooden frames to increase the strength of the plinth.

Another feature of earthquake resilience of the traditional houses is the Daarvarchin method of wall construction, which can be described as the use of

Fig. 8.3 The plinth, author

round logs with bottom-cut corner notches as mortise and tenon joints. Sometimes mortise and tenon were also secured by nails (see Fig. 8.4). The flexibility of the joints provides basic seismic esistance in this building type.

One more traditional method for walls construction is called Nefar, and it is similar to timber frame structures. In this method, the columns are attached together by diagonal planks nailed or tied to the columns from both sides and the area in-between is filled with cob. Finally, the wall would be covered all by daub (see Fig. 8.5). Knocking on the wall of his house, one of the village elders explained that "*this wall has a structure, and is not made purely by cob. We put the diagonal timbers inside the wall to make it more stable*" (owners of traditional houses interview, Nater, April 2017). Indeed, the Nefar method with its diagonal planks has similar function of cross-bracing which supports compression and tension forces.

The use of flexible joints is also evident in other structural elements: the second floor beams are put on top of Y-shaped columns, resulting in flexibility in the connection between beams and columns. The provided flexibility can accommodate, to some degree, the horizontal tectonic movements (see Fig. 8.6). However, the connection of the beam and the column can still be improved. The villagers have developed their method to increase the durability of the wooden columns:

Fig. 8.4 Daarvarchin method, author

"*The old columns used to decay after a while but we figured out that by saturating them in bitumen we can overcome this issue*" (owners of traditional houses interview, Nater, April 2017).

These local capacities are recognized from the head of the local technical office, which reported during an interview that all these building techniques are indeed well known, also within the region, due to their earthquake resistance performance (head of local technical office interview, Marzan Abad, April 2017).

8.5.2 Construction Process

Traditionally, houses were built by the owner with the help of the community. To construct a new house, the young generation of the family would build his house with the help of their father who had learned the construction methods from his parents. "*I still remember clearly how I built my house with my own hands. But now, my son cannot do it anymore and a contractor is building his house*" said a village elder. The construction of the roof truss was a group work with the help of the community and everyone was invited by the owner to have a meal together

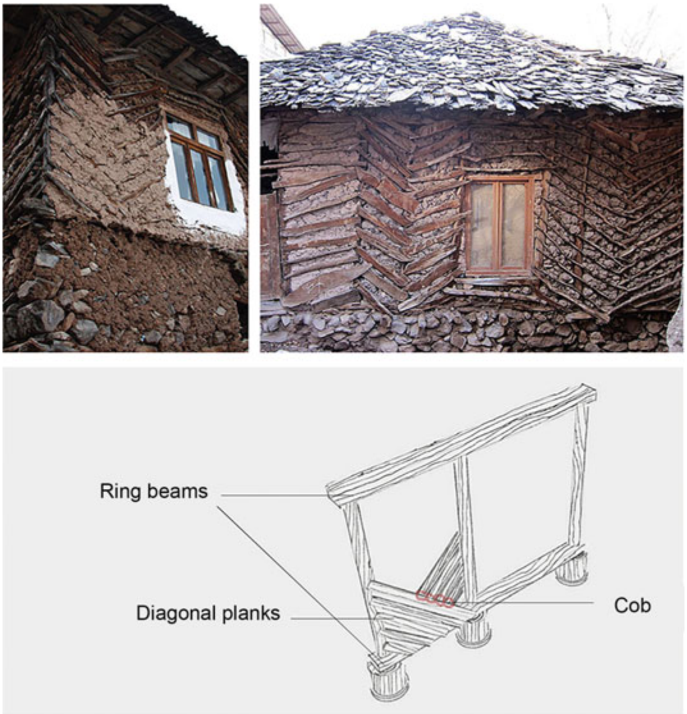

Fig. 8.5 Nefar method, author

afterwards. Anytime during the process when an obstacle was happening, the neighbours would gather and help solving the matter (owners of traditional houses interview, Nater, April 2017). The owner performed an active role in maintenance and fixing malfunctioning components as illustrated previously through the traditional yearly maintenance before each winter. Because of this accumulated building knowledge anybody was able to adapt or expand the houses for any further needs of the family. We can state that such activities and traditions will strengthening social capital in the community, contributing therefore to the enhancement of community resilience to earthquakes.

Construction materials were accessible and provided locally. However, things changed "*because of an environmental law that has prohibited the cutting down of trees, the afforestation office supplies the timber and logs*", mentioned by the local authority of Nater (local authority interview, Nater, April 2017). The next section illustrates how implementation of the RHSP program in Nater, aiming to enhance building seismic resiliency, is actually diminishing such a social capital that confers community resilience.

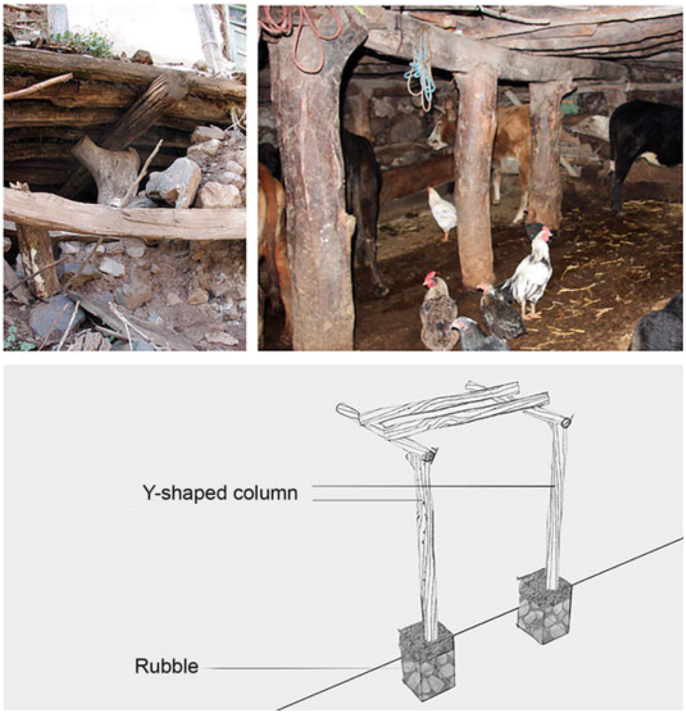

Fig. 8.6 Columns, author

8.6 RHSP on the Ground: From a Planned Policy Framework to a Subjective Application

8.6.1 Through the Provincial Guidelines

By the implementation of the RHSP in 2006, people in Nater who owned land were eligible to get RHSP low-interest loan (amounting at 200 million Iranian Rial, corresponding to 5800 Euro), which would be paid in 3 installments (The Cabinet of Iran 2015). The three trenches of the loan are to be paid by the approval of the technical supervisors from HFIR after the construction of the building's foundation, after the roof and walls have been built, and when the finishing is done (Beyti 2012). People can construct houses by their own but under the condition of accepting the HFIR building regulations, which for the province of Mazandaran, where Nater is located, suggested to use new methods and materials (specifically reinforced concrete). Although in the policy documents the strengths and weaknesses of the local techniques of construction were mentioned, no specific mention has been done supporting their use or adaptation within the new buildings under this program. Consequently, the HFIR guideline limits the use of local materials to the facade of buildings, or for special cases in remote areas that have difficulty accessing "new" materials, neglecting the relevance and built-in resilience features of the traditional houses walls structures.

Moreover, the results of the fieldwork suggest that the implementation of RHSP in Nater led to the destruction of most of the its traditional buildings, as far as the loans have been used and assigned to build new houses. The high expertise needed to insure the full structural safety of vernacular buildings, in general, is the reason for HFIR to focus on building of brand new units (HFIR headquarter officer interview, Tehran, April 2017). Due to limited available space on people's lands, many people destroyed their old homes to gain space and took advantage of the loan to build a new one.

Another important evidence from the fieldwork has been that the suggested "design patterns" provided by HFIR have not been used in practice, in Nater, nor in other villages of the province (interviews, Nater, 2017). Reviewing the enquiries at the local HFIR technical office and interviewing loans' applicants this research reveals that applicants were not informed at all about the existence of such design patterns, and actually the local technical office didn't promote them. Local engineers usually designed the houses from scratch without considering the HFIR guidelines, visiting the site, or studying the context; as the policy framework recommended. Their designs were based on the Iranian code of practice for seismic resistant design of buildings (Standard 2800) which, again, is not a context-specific document, but a generic guideline on technical design and building codes. Moreover, without referring to the HFIR guidelines, there was no other document for the local technical office to use as a checklist in order to approve the designed building plans for implementation. Paradoxically, the head of the local technical office was in charge of evaluating all the building designs based on his own knowledge and experience, rather than following the policy framework.

8.6.2 Implementation of RHSP

As of April 16th 2017, as previously mentioned, 41 houses were constructed by the RHSP in Nater. These buildings resulted in imitations of housing design style of major Iranian cities, introducing in so doing "new" materials and construction methods in Nater (see Fig. 8.7). An officer of HFIR in the province said during the interviews that the villagers like to imitate urban houses and explicitly requested local engineers of HFIR to design such houses for them (Officer of HFIR interview, Chaloos, April 2017). On the other hand, the head engineer of the local technical office admitted during the interview that, although architects were accredited from HFIR to build according to the traditional building styles and techniques, they do not have enough practical competence to do it, and because of this, their designs were imitations of urban buildings (head engineer of local technical office interview, Marzan Abad, April 2017).

Fig. 8.7 Design of the facades in Tehran (left), A house in Nater (Right). *Source* up.alamto.com, hira-static.com, Accessed May 2017 and the author, 2011

Unfortunately, the effects of these imitations are greater than the visual effect of placing concrete buildings among traditional houses, implying a mismatch between the construction provided, the actual local needs, and housing functions. An example resulting from this issue is that the new houses include a garage for each house, even though in Nater, due to the village topography and roads patterns, cars cannot enter the village. At the same time, locals' need for a space for their livestock has been neglected. An adaptation to this fallacy has been reported from the local authority of Nater, referring that locals converted those "compulsory spaces" (the parking) into barns or used them as warehouses, to answer their livelihood needs. A recognizable change in such conversion is blocking the garage windows or reducing their size in order to provide thermal comfort inside for the animals (local authority interview, Nater, April 2017).

8.6.3 Building Methods

Observation of the ongoing construction in Nater shows the use of reinforced concrete for foundations and structure. The walls are made of hollow blocks and the sloping roofs have an iron truss structure, covered by corrugated iron tinplate.

The construction details from the archive of the local technical office show that this method has been used in all 41 houses that have been constructed under RHSP.

The HFIR officers consider the structural resistance of buildings only being provided through the use of reinforced concrete structures. At the meeting in the local technical office of HFIR in April 2017, a case was mentioned: the use of wood was not approved for semi-structural elements although there was enough evidence that the resistance of this material and its method of construction was acceptable. The head of local technical office stated that, although he personally supported the use of vernacular material, he was not able to convince his superiors and so obtain approval for the procedure (personal communication, Marzan Abad technical office, April 2017).

8.6.4 Construction Process

With regard to the construction material, they need to be brought to Nater from the neighboring cities of Chaloos and Marzan Abad. The price of transportation would be added to the material costs, which would make it more expensive than the normal cost of materials available locally. Therefore, the villagers prefer to use lowest quality, second hand materials, or in some cases reduce the percentage of cement in concrete and mortar to save money.

Construction of buildings according to RHSP stipulations would be done by contractors hired by the villagers, since the villagers have no knowledge of the building methods that are being used. The workforce mainly comes from the nearby cities. According to the head officer of local technical office, contractors are mainly "self-thought architects" who do not usually pay enough attention to building regulations. At the same time, due to the distant location of the village, the supervisory engineers would normally only be able to make just the three required visits for approval of the next loan-payment. The head of the local technical office reported during the interview that the current visits by supervisors at the end of each construction stage are not sufficient to guarantee that the guidelines are being followed (head of the local technical office interview, Marzan Abad, April 2017).

Most of the RHSP built houses observed in Nater still have exposed structure and no plaster on their exterior walls. The reason for this is the insufficient amount of the RHSP loan to cover the construction costs of a building with a sloping roof, as mentioned by the head of the local office. Thus, after construction of the roof, people cannot afford to spend more money from their own savings on the facade of their houses (head of the local technical office interview, Marzan Abad, April 2017). This not only affect the appearance of the village, but also reduces the durability of the walls and their insulation properties.

8.7 Discussion

In order to respond to the different needs coming from the diverse climatic conditions and geographical contexts of Iran, disaster risk reduction programs should be framed in a way that respects local-specific conditions (as mentioned by Sartipipour 2005). Indeed, the charter of the policy called Rural Housing Retrofitting Spatial Plan (RHSP) considers preservation of the local characteristics (the landscape, built environment and its traditions). Moreover, its operational framework shows that its implementation stages should be carried out at the local level. However, notwithstanding the effectiveness of RHSP program in reducing the physical vulnerability of the built environment, as already mentioned in the recent literature (Einali et al. 2014; Abdollahi et al. 2015), the RHSP program so far, has just reached its quantitative goals (renewal of 200,000 rural housing units per year). The qualitative goals of the RHSP about preserving the identity of the vernacular architecture of rural housing and providing required spaces based on rural needs are not reached yet (Mahdian and Sartipipour 2012; Beyti 2012). Other scholars remarked that the implementation of the RHSP is having adverse effects on sociocultural relations and the economy of the settlements by neglecting peoples culture, need, production activities, and way of living (Ghasemi Ardehaee and Rostamali Zadeh 2012; Saidi et al. 2013). Therefore, Zargar consider the RHSP program "not realistic, but an emotional hasty approach in providing resistant structures" (Zargar 2010, p. 254). This chapter highlights the fallacies of the RHSP policy implementation when it comes to retrofitting rural villages houses in line with the spatial and cultural local contexts.

Notwithstanding the well-designed policy framework of RHSP program, integrating risk reduction measures while recognizing the local building architecture (stated under article No. 1, 2, 13, and 15 of its charter), this research results highlight the neglecting of local social and built environment embedded resilience characteristics. First of all, HFIR policy regards that buildings' structural resistance is to be provided only through the use of "new" materials and techniques, and indeed, interviews showed that local HFIR architects did not have enough knowledge about local architectural methods and designs to employ them (see Sects. 8.6.1 and 8.6.2). Moreover, although the term "retrofitting" is employed in the title of HFIR policy, this actually does not convey "Reinforcement, upgrading" (United Nations International Strategy for Disaster Reduction [UNISDR] 2009, p. 25) and "modification of existing structures to make them more resistant to seismic activity" (Management Association, Information Resources 2016, p. 1378). Rather, it focuses on increasing resistance of the buildings through construction of brand new units; due to expertise needed to keep the traditional houses and insure its full structural safety (as mentioned by HFIR headquarter officer through interview). Moreover, the implementation of RHSP in Nater including its strategy to assign the loan in the criteria of land ownership without considering the limited available space on people's lands, led to the destruction of most of the its traditional buildings (see Sect. 8.6.1). Also, the imitation of urban typologies in RHSP buildings (far from being in line with the local building culture, lifestyles and landscape) fosters the process of devaluating the vernacular houses, which are not maintained anymore, resulting on their decay.

Through its results, this chapter explained how the implementation of RHSP policy leaves no space for vernacular architecture to demonstrate and maintain its seismic resistance features. Furthermore, this chapter indicates that implementation of the RHSP vanishes the social processes related to traditional methods of construction (knowledge transfer, traditions of maintenance, community participation in construction, etc.); related to community resilience attributes (Aldrich and Meyer 2014). As illustrated in Sect. 8.4 and as others have recently highlighted, there are mechanisms of adaptation to the risk of earthquake developed by locals which are embedded in the vernacular buildings (Ortega et al. 2017). Indeed, not only the new RHSP buildings, but also the existing local vernacular architecture was providing the built environment with safety and earthquake resistant performances, while enhancing social capital and community resilience as well. Interestingly enough, the guideline of RHSP for Mazandaran province does mention and recognize one of such mechanisms, the Daarvarchin walls building method (see Sect. 8.6.1 explaining how this method contribute to enhance seismic proof performances). However, the operationalization of the policy completely neglects those guidelines. Also, the building processes in Nater have been done mainly by external workforce (see Sect. 8.6.4), disrupting the knowledge-transfer cycle to the next generation about traditional housing building methods. Therefore, for any the future expansion or repair of the new houses, locals will be depending on external specialized workforce.

8.8 Conclusion

As this chapter explored, the poor outcome sometimes is not due to having the policy being not properly framed or articulated. The chain of decision-making along the implementation process of a good policy can fail to deliver the proper outcomes of the policy guidelines to locals. It can disturb the existence local capacities to adapt or cope with stresses and threats by introducing distant practices and methods. Such deficiencies along the decision making and implementation process of the policy called Rural Housing Retrofitting Spatial Plan (RHSP), in the case of Nater, have been: (i) not believing in the use of traditional building methods and materials, nor supporting the conservation of traditional architecture, (ii) hiring architects and engineers who are not appropriately trained about the policy framework guidelines and local building culture, resulting in the production of inadequate housing units, (iii) neglecting the provincial RHSP policy guidelines and not having a checklist for evaluating the designed buildings, (iv) ignoring the relation of the physical features of rural houses with the economy, social, cultural, and environmental aspect of rural life (v) increasing the resistance of houses by construction of brand new units with different construction methods and demolishing the vernacular buildings,

(vi) neither investing on the maintenance of the vernacular architecture, nor enhancing local methods of construction. Indeed, it should be taken into account that 'poor maintenance' of the vernacular houses was a key indicator for overall seismic vulnerability of rural settlements (Ortega et al. 2017).

To minimize the gap between the RHSP objectives and its outcomes, the chain of decision-makers along its implementation process should change their negative mindset towards the traditional buildings. Indeed, a context-specific need assessment can reveal if the local seismic culture exists in building, as not all the vernacular buildings are vulnerable. Therefore, this chapter suggests to complement appropriate traditional and local knowledge and practices and ensure the development and implementation of policies to be tailored to localities and context, in the light of the Sendai Framework for Disaster Risk Reduction 2015–2030 and existing literature on vernacular seismic cultures and methods of enhancing the resistance of vernacular buildings (such as Yousefnia Pasha 2006; Sartipipour 2012; Minke 2005). To this end, a chapter on vernacular seismic building methods, its related regulations, building codes, and checklists should be provided within the RHSP guidelines. These methods should be taught to the architects and engineers responsible for RHSP implementation. Moreover, local communities need to be informed about the value of their cultural construction practices and its capabilities to withstand seismic shocks. In cases that a retrofitting method is suggested or a new construction technique is to be implemented in the village, local people need to be trained and educated on such method to be able to participate and get involved in construction, maintenance and reconstruction (if any damage happened). Since risk reduction policies should be framed in the light of both building and social capital features, contributing to the built environment as well as the community resilience.

This chapter demonstrated, only for the specific case study of Nater, that the vulnerability of settlements in remote areas of Iran is not due to the lack of coping mechanism, social capital and buildings weakness with respect to seismic treats. On the contrary, if well maintained, the vernacular architecture offers a variety of seismic resilience features, while contributing to enhancement of social capital. Paradoxically, those elements are neglected in the implementation of the disaster risks reduction policy of RHSP. However, for a sounding and consistent critic to the RHSP, we call for more case studies to be developed in order to test this chapter hypothesis and results.

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