

The story of the disaster-relief houses in Iceland

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1. Introduction

Forced displacement after disasters, including the adverse effects of climate change, is one of the biggest humanitarian challenges faced by states and the international community in the 21st century. Every year, millions of people are displaced by disasters caused by natural hazards ([The Nansen Initiative, 2015](#)). According to a report by the Internal Displacement Monitoring Centre (IDMC), there were seven million new displacements associated with more than 950 disaster events in 102 countries between January and June 2019 ([IDMC, 2019](#)). The global community is facing a challenge of immense proportions within all three phases of humanitarian response: emergency, transition, and reconstruction. The process of

responding to post-disaster housing needs remains fraught with complexities. As affirmed by Ashdown (2011, p. 25), “providing adequate shelter is one of the most intractable problems in international humanitarian response.”

This chapter focuses on a recovery process following a disaster, as opposed to tackling the complexities of shelter response following conflicts. More and more people affected by disasters are forced to live for longer periods in transitional environments: temporary constructions that eventually turn into permanent ones. As an example of the current post-disaster situation, the 2010 earthquake in Haiti left more than one million people homeless, and as of May 2018, nearly 38,000 people (70% of whom are women and children) still live in the same post-earthquake displacement camps (Human Rights Watch, 2019). Graham Saunders (2015), the former head of the Shelter and Settlements Unit of the International Federation of Red Cross and Red Crescent Societies (IFRC), stated that transitional shelters, originally planned as a short-term remedy while longer-term solutions are arranged, have unfortunately often become synonymous with poorly designed and constructed dwellings. Moreover, the transitional-shelter label has been widely utilized to justify such poor solutions and the reality is that they often ultimately become permanent. He continued: “The question that *should* be asked is not whether temporary housing hinders the recovery process, it is why support for recovery and reconstruction is not the default response instead of the provision of temporary housing” (Saunders, 2015).

In this regard, it is interesting to study the housing process that took place following a volcanic eruption on the small island of Heimaey, located in the south of Iceland, nearly 50 years ago. The houses, initially planned during an acute situation as a transitional solution that could eventually serve as permanent houses, have ever since been occupied and adapted to their inhabitants’ diverse needs. These houses—known as *Vidlagasjodshus* (meaning disaster-relief houses in Icelandic)—and their story provide a unique opportunity to analyze the factors that proved crucial for their local adaptation during the three phases of disaster response. Thus, this chapter aims to examine the primary factors that have enabled these houses to be still in use and to be considered homes by their inhabitants, five decades after the disaster.

The *Vidlagasjodshus* convey a story of swift responses to unexpected circumstances, an entire community suddenly being forced to flee their homes, alongside how people and houses were able to adapt to the situation. This chapter claims that there are generic factors that apply globally to post-disaster responses that are crucial for culturally integrated recovery. These factors include: the involvement of local stakeholders in the decision-making process; long-term planning from the earliest stages; adjustable housing design with technical, climatic, livelihood, and cultural considerations; an owner-driven process; and a holistic approach to the integrated recovery of the livelihoods and homes of the affected population.

Such research on the *Vidlagasjodshus* is the first of its kind in Iceland. To the best of my knowledge, no academic studies have yet been conducted on the disaster-response process from the building and development perspective, on the progress of the response, or on the cultural adaptation of the imported element houses into homes. The study was conducted with a multiphased, mixed-method approach between 2016 and 2018, utilizing research techniques from both the built-environment and social-science fields. A framework was developed to measure inhabitants’ satisfaction with their houses as well as to track the cultural and technical modifications they made to their houses over time. A web-based survey

received responses from 433 current and former inhabitants, while six semistructured interviews were conducted and various secondary data were analyzed. This chapter first looks at homes and housing in the context of disaster recovery. It subsequently presents the case study of the disaster-relief houses in Iceland, and then the adopted method. Finally, the results section discusses some generic factors that supported a long-term housing recovery approach in this disaster response.

2. Home, housing, and shelter in disaster recovery

There is an important distinction between the terms *shelter* and *housing* in the relevant literature. Traditionally, shelter is intended to be temporary, even though in practice structures and communities often remain in place far longer than planned. Housing reconstruction refers to rebuilding or providing a permanent solution. A gap exists between emergency relief and longer-term recovery. For surviving households, the sheltering process from immediate protection to permanent housing is a continuous one. However, for the supporting agencies, this process is usually fragmented into discrete phases (relief, recovery, and reconstruction), ultimately undermining longer-term recovery (Davis & Parrack, 2018).

In addition, there is a distinction between housing, a house, and a home. Housing is essential to the well-being and development of most societies. It is a complex asset, with links to livelihoods, health, education, security, and social and family stability. Housing acts as a social center for family and friends, constituting a source of pride and cultural identity (Barakat, 2003).

Throughout the related literature, home is described in various ways, often conflated with or related to a house, a family, and a location. According to the philosopher Kuang-Ming Wu, “home is the intersubjective relationship that brings a self, person, or I into being or existence” (quote in Mallett, 2004, p. 83). This conceptualization of home can, therefore, be understood as fundamental to being. Similarly, the architect Juhani Pallasmaa (1994) stated that from the viewpoints of architectural philosophy and phenomenology, home is not an object or a building but a diffuse and complex condition that integrates memories and images, the past and the present. Home contains the dimension of time, represents a continuum, and evolves as a gradual product of the individual’s adaptation and progression through the world.

Studying the homemaking of Georgia’s internally displaced Abkhazian inhabitants, Cathrine Brun (2015, p. 44) noted that a “house—the material structure built for human habitation—is not automatically a home. Houses may be turned into homes by their residents, but some houses will never feel like home—never become home.” Here, Brun referred to the complex interplay of the occupants’ experiences, memories, and relationships with their surroundings as well as the materials, structure, and architecture, which all play a vital role in enabling a house to become a home. The renowned Finnish architect Alvar Aalto also wrote in 1941 about the need for shelters to evolve into permanent homes:

To satisfy the need for human shelter in an organic way, we must first of all devise a shelter, which will provide the essentials of protection for the individual family and for the community. At the same time, it should be possible for this shelter to develop, step by step, with the social group [...]. In the present situation, there is an

immediate need for an elementary human shelter that can be produced in large quantities. However, at the same time, the permanent character of human life requires that such shelters should be of a nature that they may be developed into shelters on a higher level. That is to say, turned into homes. (Aalto, 1941, p. 24)

The notion of “owner-driven reconstruction” has much in common with what some authors call an “aided self-help approach” (Barakat, 2003). Owner-driven reconstruction may be considered the most natural, empowering, and dignified approach toward reconstruction. It encourages people to do what they normally do: build their own homes (Barenstein, 2011). According to Hamdi (2010), donor-driven reconstruction supports instant housing “solutions” that are notoriously inappropriate in layout and technologies, particularly in relation to habits and lifestyles. He argued that participatory processes both get things done in the immediate phase of reconstruction and build capital over the longer term, while delivering more sustainable solutions (Hamdi, 2010). According to findings from case studies on reconstruction projects in Asia and Latin America (Schilderman & Parker, 2014), the beneficiaries’ participations in design program, implementation, and monitoring created a sense of community ownership, encouraged housing improvements, and led to the replication of safer techniques (Davis & Parrack, 2018).

The traditional disaster-response approach aims to deliver a finished “shelter product,” which is limited in scope and is ultimately inadequate. This approach relies on technical solutions that mainly focus on standardization and speed, with origins in a perception that post-disaster reconstruction is a continuation of the delivery of emergency aid, as if the planning and building of homes are commensurate with the distribution of blankets and other items (Skotte, 2005). The importance of applying a sustainable, holistic approach that recognizes people’s housing culture and self-recovery strength is crucial for successful recovery reconstruction. Indeed, as stated by Jennifer Barenstein (2011, p. 194) regarding reconstruction and recovery: “Unfortunately, the consequences of ignoring people’s housing culture and livelihoods within the framework of post-disaster reconstruction are coming to light in failed projects all over the world—in abandoned villages, ecological damage, new health problems and dangerous buildings.”

In his book *Shelter after disaster*, Ian Davis (1978, p. 33) argued that “shelter must be considered as a process,” a series of actions taken to fulfill certain needs, rather than as a mere object, such as a tent or a building. Even though a shift has occurred in recent years toward more process-based approaches in the post-disaster recovery field, this development has been slow. Instead, transitional shelters are often perceived to be “part of nonfood items distribution rather than an ongoing exercise in supporting livelihood, health and security needs” (Davis & Alexander, 2016, p. 183). Discussing the essence of effective shelter and housing following a disaster, Davis (2015) claimed that housing recovery must incorporate a holistic solution to a broad range of challenges, including but not limited to 12 key issues, whereby the absence of only one would reduce the effectiveness of the entire project. These include the affected population’s involvement and acceptance; an effective organizational structure within government; the long-term commitment of all supporting groups in both the short and the long terms; technical competence in all key fields including architecture, planning, engineering, and contract management; shelter designs that are adaptable, climatically and culturally appropriate, and environmentally sustainable; and the aim of strengthening the community’s economic base (Davis, 2015).

The positive effects of rapidly orchestrated reconstruction toward the long-term recovery of disaster-affected communities have been well documented (Saunders, 2015). However, a separation still persists between the humanitarian sector, which focuses on short-term disaster relief, and the development sector, which works toward long-term recovery and permanent housing development. This gap is also evident in the lack of evidence-based information on how post-disaster reconstruction projects have developed over time in the different recovery phases. Davis and Parrack (2018, pp. 12–13) emphasized the importance of learning from previous projects, revisiting the key results decades after their completion: “Taking a longer-term perspective helps us form a clearer view of recurring themes; [...] we still do not know the long-term consequences of different forms of shelter and settlement assistance; this is where we need better evidence from more long-term studies.”

3. The Disaster Relief Fund's houses in Iceland

Shortly after midnight on January 23, 1973, a volcano erupted in the Vestmanna Archipelago off the south coast of Iceland. At the time of the event, Heimaey, the largest island of the archipelago, was a fishing village with 5300 inhabitants (2.5% of the Icelandic population) and over 25% of Iceland’s annual fishing production (Einarsson, 1974). The eruption forced the entire population to evacuate, instigating the largest migration in Iceland’s modern history. Fortunately, it was possible to rapidly evacuate all the island’s inhabitants to the mainland. At the initial stages of the eruption, it was impossible to predict its duration, whether the inhabitants would be able to return home soon, or whether the town would even continue to exist. Indeed, as the Icelandic newspaper *Visir* headlined on January 27, 1973: “Will Vestmanna become a modern Pompei?” (Fig. 3.1).

The eruption drew considerable media attention from around the world and relief assistance came from many directions, including the Nordic countries, which offered generous



FIGURE 3.1 “Will Vestmanna become a modern Pompei?” Credit: *Verða Vestmannaeyjar Pompeii nútímans?* (January 27, 1973). *Visir*, p. 1.

financial support. The Icelandic Government established a disaster-relief fund (*Viðlagasjóður*) within a few weeks of the eruption, one of the purposes of which was to solve the housing needs of the evacuated islanders. Shortly thereafter, the Disaster Relief Housing Response Committee took actions to assess the possibility of importing houses from the Nordic countries, which could serve as a permanent housing solution if required. Many of the evacuated families had been living with relatives in mainland Iceland or had been assisted in finding rental accommodations, mostly in and around the capital, Reykjavik. Given the continued uncertainty as to the duration of the eruption, many started to look for a permanent place to live in, in the eventuality that return to Heimaey Island would not be possible. As a result, the Disaster Relief Fund organized the introduction of prefabricated wooden houses, which were imported from other Nordic countries. In total, 479 houses were built during the summer and early autumn of 1973 in 20 places around Iceland (Fig. 3.2 and Table 3.1), mostly in the southwest region (Pálsson, 2014). This was an enormous disaster-response task, representing the most extensive housing-construction project ever undertaken in Iceland, accomplished with almost no prior preparation, as underlined by the project leader Gudmundur Thorarinsson during an interview.

On July 3, 1973, the local authorities made a formal announcement that the volcanic eruption had ended. Subsequently, most Vestmanna islanders decided to return home. One year later, approximately half the pre-eruption population had returned to the island and by March 1975 about 80% of the formerly evacuated population had resettled back. As a result, many of the disaster-relief houses were sold on the open market, having served as transitional shelters to the evacuated population. These houses have since been inhabited by different families, each of whom have adapted them to their respective needs and have made them their homes.



FIGURE 3.2 Distribution of the disaster-relief houses across the different areas of Iceland. *Credit: Based on Pálsson, S. (2012). Eyjamönnum bjargað af götunni: Byggingarævintýri Viðlagasjóðshúsanna [Heimaey islanders saved from the streets: The Vidlagasjodshouses building process]. Fréttabréf Verkis, 11, 11–13.*

TABLE 3.1 Distribution of the disaster-relief houses by location and donor country.

Area and town	Number of houses	Country of origin
South Iceland	164	
Höfn	20	Norway
Hvolsvöllur	5	Norway
Hella	5	Norway
Selfoss	60	Norway
Stokkseyri	12	Norway
Eyrarbakki	12	Norway
Hveragerdi	10	Sweden
Thorlakshofn	40	Sweden
Reykjanes Peninsula	132	
Grindavík	42	Sweden
Sandgerdi	10	Norway
Garðar	15	Norway
Keflavík	55	Norway
Hafnafjörður	10	Denmark
Capital area	155	
Reykjavík	40	Sweden
Garðabær	30	Finland
Kópavogur	52	Norway
Mosfellssveit	33	Finland
West Iceland	10	
Akranes	10	Norway
North Iceland	10	
Akureyri	10	Denmark
East Iceland	8	
Neskaupsstaður	8	Denmark
Total	479	

Credit: Based on Björnsson, B. (1977). Skýrsla um starfsemi Viðlagasjóðs [Report on the activities of the Disaster Relief Fund]. Reykjavík: Viðlagasjóður (in Icelandic).

4. Research method

My fascination with the *Vidlagasjodshus* began many years ago, before I started to study disaster response and architecture. I grew up in Akureyri, a town in North Iceland where ten of the disaster-relief houses were built in 1973. They were located close to my home and I walked by them every day. The houses had a certain mystique. They were in many ways “strange birds”: they had arrived from far away and seemed quite different from the other houses in the neighborhood. They were built of wood, painted in dark colors and made of materials and using building technologies that were relatively unknown in Iceland at that time.

Moreover, the story of their inhabitants was captivating. Everyone at the time was aware that the newly arrived villagers had fled their island due to a large-scale disaster, the destruction of their homes leaving them with little more than what they could carry on their boats. They were welcomed and quickly became integrated into the community. The children went to school and the adults to work. Once the eruption had ceased, most of the Vestmanna islanders had the possibility to return to their island, yet the *Vidlagasjodshus* remained. In my annual visits to Iceland over the last decades, I have witnessed the conversion of these houses. They have been transformed from being odd elements in the townscape to houses adapted to the local climate, traditions, and their inhabitants’ sociocultural habits. Today, these houses are highly sought-after dwellings, many being situated in prime locations around Iceland. Thus, my research was motivated by the intriguing story behind these houses and that of the disaster response.

Previous studies of the Vestmanna eruption in 1973 focused on the sociological aspects of the community’s relocation (Arnardóttir, 2015; Helgadóttir, 2011), as well as on a short-term shelter solution, called “telescope houses,” which was tested during the time of the response (Pálsson, 2014). The geological aspects of the volcanic eruption, the progress of the evacuation, and the relief action were covered by various contemporary media and thoroughly documented both in Iceland and abroad. The Icelandic newspapers digitalized all their archives, a valuable resource throughout this study. These materials provided significant information on the scale of the relief, the response tasks, and the reactions of the people involved.

Kortavefur, an Icelandic open-source Internet database (<http://www.map.is>), archives original building-permit drawings of all the houses built in the country since 1955, as well as all the layout updates, additions, and technical changes that require permits from the local authorities. This database provided an opportunity to explore the evolution and adaptations made to all the *Vidlagasjodshus* from their construction in 1973 to the present day. Analyses of the ensuing drawings led to the selection of four types of houses in different locations, one originating from each of the Nordic countries. The four selected housing types were investigated in detail regarding their interior plans, development, renovations, extensions, and technical upgrading (Fig. 3.3).

I conducted field studies at five locations during the summers of 2016 and 2017. The selected neighborhoods in Reykjavik, Keflavik, Gardabaer, and Kópavogur in South Iceland were visited on one occasion each, and the ten *Vidlagasjods* houses in Akureyri several times during the research period.

An Internet-based survey was created in October 2016 and remained open to collect responses until December 2016. The survey invited all current and former inhabitants to answer

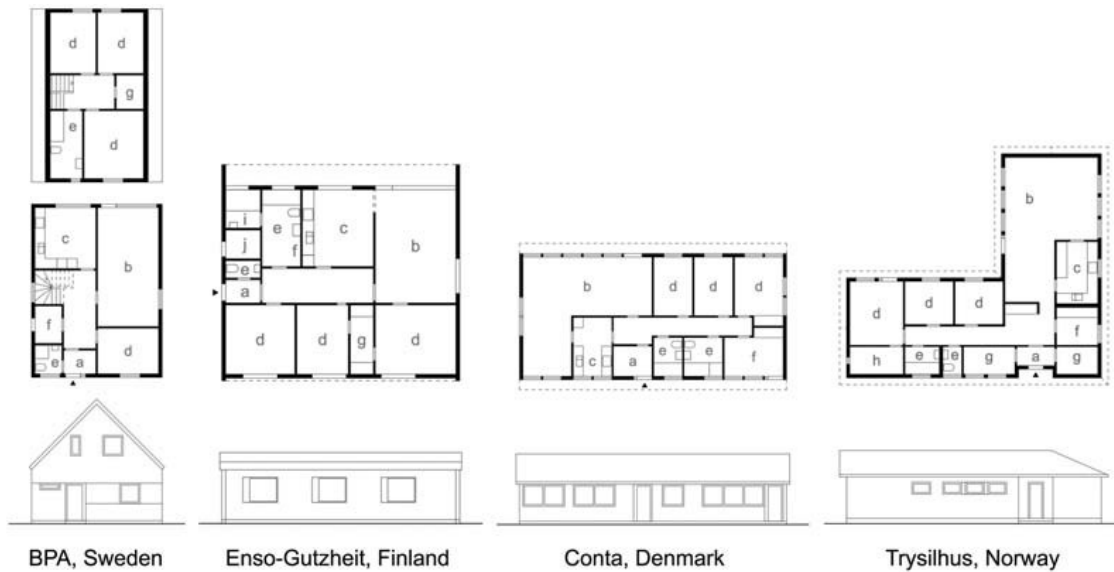


FIGURE 3.3 Plans and facades of four house types, indicating the manufacturers and the countries of origin. Credit: Based on drawings from the database Kortavefur; drawings by Gardar Snæbjörnsson.

questions about their houses and to share stories and photographs from their lives in them. The questions sought to collect information both on quantitative issues (such as the development of the houses over time, maintenance, costs, and earthquake resilience) and qualitative aspects (the inhabitants' experiences of their houses as homes, issues regarding their qualities, positive and negative experiences, and future plans for the houses). The survey was well received and garnered considerable publicity in the Icelandic media, resulting in 433 participants from all the areas where the houses were built, with an average of 358 answers to each question. The respondents shared many personal memories, including stories of important life events that had taken place in the houses, as well as photographs and links with further information.

The research identified four active Facebook groups connected to the story of the *Vidlagasjodshus*. One comprises owners of the Norwegian houses who share their experiences of their houses' renovations and adaptations. Two groups are composed of childhood friends who lived in the *Vidlagasjodshus* in the 1970 and 1980s. The fourth and largest group (with 2017 members) is linked to an archive project and a webpage (<https://www.1973-alliribatana.com>), collecting stories, photos, and videos and promoting an active discussion forum.

During the study, I interviewed around 15 house owners in informal discussions while visiting the sites and conducted six semistructured interviews with current and former inhabitants. Given that almost 50 years have passed since the volcanic eruption, it was extremely helpful to interview people who were personally involved in the disaster-relief, response, and reconstruction processes. The leader of the housing operation at the time provided a thorough overview of the process as well as of the political and economic aspects of the response management. Furthermore, a member of one of the construction teams in 1973 offered valuable insights into the technical issues and the necessary adaptation measures associated with the local climatic conditions. One of the directors of the Disaster Relief Housing Response

Committee shared his experiences of the decision-making phases. The other three semistructured interviews were conducted with current inhabitants who have lived in the houses for over 20 years. All the interviews were conducted in 2017. The aim was to understand how the inhabitants had turned their houses into homes and to identify the elements that had been important in this process.

5. Results

The evacuation and housing projects induced by the 1973 volcano eruption represented the largest disaster-response operation in the history of Iceland, accomplished with almost no prior preparation. Moreover, this was the most extensive housing-construction project completed in the country until that time. The impacts of the disaster were widespread and affected every Icelandic citizen to varying degrees.

5.1 The importance of multidisciplinary cooperation

Given the severity of the event, decisions had to be made rapidly, and for the first six months it was unclear for all the involved parties whether the inhabitants would ever be able to return to their homes. The decision-making process was therefore very challenging regarding the choice between temporary-housing solutions and the permanent relocation of the population. All the interviewed persons emphasized the importance of effective cooperation between the various stakeholders. The coordination was centralized by a local management that knew the culture, circumstances, building traditions, and regulations. This is a fact that was often viewed by both the leader of Disaster Relief Housing Response Committee and the inhabitants as one of the key factors behind the smooth operations.

The discussions about temporary-housing solutions versus permanent houses and the relocation of the whole population were complicated, and the related decision-making process was very complex. The Disaster Relief Housing Response Committee and the local authorities in Heimaey drafted various scenarios and considered both long-term and short-term housing solutions. The decision to import prefabricated wooden houses that could serve as permanent houses was strongly influenced by the importance of perpetuating the evacuees' livelihoods, mostly fishing, in a new location as soon as possible. This fact had to be taken into consideration when the locations of the new houses were selected.

Most of the houses were constructed in areas where the inhabitants could carry on their main sources of income and immerse themselves in the process of recovery. The houses were built in or close to villages that had a similar economic structure and could welcome these new inhabitants. Many communities, especially in the southern coast of Iceland, announced their willingness to support the relocating families. The intention was to strengthen the communities with skilled fishing workers and add to their fishing boat selection in addition to, of course, hosting people in need. The "welcoming attitude" of the host communities indeed played a considerable role in the integration of both people and houses.

In all the phases of the disaster response, representatives of the evacuated population were involved in decision-making. Yet, the uncertainty of the duration of the volcanic eruption and of the possibility of eventually returning home made the coordination of the process

complicated. The situation changed often and rapidly as the eruption evolved. The Icelandic saying “*þetta reddast*,” meaning “it will all work out,” soon became a mantra for the many overloaded and time-pressured coordinators, engineers, and construction workers faced with this enormous challenge.

Already by the end of February 1973, over 900 out of the 1350 evacuated families had applied to get a donated *Vidlagasjodshus*. Out of the 479 prefabricated wooden houses donated by the Nordic nations, the majority (256 units) came from Norway, with an additional 132 from Sweden, 63 from Finland, and 28 from Denmark (Table 3.1). Two months after the eruption started, the Disaster Relief Housing Response Committee signed the first contract for the import of 200 Norwegian prefabricated houses. The construction of the houses progressed in most cases quickly and smoothly, and the first inhabitants moved in only 100 days after the importation of the houses (Johnsen, 1973) (Fig. 3.4). In many of the small villages where the houses were built, these formed a considerable part of the built environment, for example, in Selfoss (Fig. 3.5).

5.2 Adaptation to local conditions and inhabitants’ needs

Climatic conditions and building traditions in Iceland are quite different from the countries where the houses were designed. In modern times, the most common building material in Iceland is concrete. Estimated the material used in over 87% of all houses constructed in the country since 1950. The imported prefabricated wooden houses were built of materials and using techniques that were relatively unknown to Icelanders at that time. Some beneficiaries expressed skepticism to the durability of the houses and how well they would survive in the harsh Icelandic climate. Moreover, given that most outhouses and huts in Iceland are built from wood, a certain stigma existed regarding the use of this material, not deemed “proper” for dwellings. Indeed, one of the comments in the survey stated that “*there was a negative attitude toward these houses. Maybe not officially, but I know that some villagers saw the houses as low-quality wooden huts.*”



FIGURE 3.4 Disaster-relief houses under construction in Höfn, South Iceland, in 1973. Credit: Photography by Vilborg Harðardóttir, with the courtesy of The National Museum of Iceland.



FIGURE 3.5 Aerial photograph of Selfoss, South Iceland, in 1974, featuring the recently implemented *Vidlagasjodshus* in the front. Credit: With the courtesy of the photographer Mats Wibe Lund.

According to the engineers working on the planning and coordination as well as the constructors who built the houses, considerable work was invested into adapting the houses to the Icelandic climate and other local conditions. For example, frequent horizontal rains threatened the wooden walls of the new houses, while the fluctuation of winter temperatures around 0°C , by causing frequent freezing and thawing events, exerted unusual strain on the wooden structures. The engineers paid special attention to insulation, which had to be added to all houses to ensure acceptable indoor temperatures during the winter. In addition, most of the houses were reinforced with steel brackets in the corners to support them against heavy winds and provide for earthquake resistance. The adaptations made during the construction period often proved insufficient, with about 37% of the responses in the survey stating that they added insulation to the houses several years after their completion.

The houses have an area of approximately 125 m^2 (Fig. 3.3). Most of them were one-story, single-family dwellings, except for the houses built in the district of Breidholt in Reykjavik and the row houses in Kopavogur, that have two floors. All the house types had similar, conventional floor plans: a small corridor in the middle of the house leading to the bedrooms, a closed kitchen in one room, one bathroom, and a living room. Thus, they all had clearly defined spaces. During the early 1970s, a period of strong economic growth in Iceland, most of the newly built houses applied similar floor-plan solutions, but they were considerably larger, with an average size of approximately 190 m^2 . The *Vidlagasjodshus* were thus relatively small compared to modern Icelandic standards for family houses.

As the house types came from different countries, they carried certain unique traits and traditions from their respective origins. For example, the Norwegian houses featured top-hung, fully reversible windows (called a “housewife’s window”) that had been developed in Norway. They could be turned 180 degrees, a feature that was totally new to Icelanders. As one interviewee exclaimed: “Our neighbors really envied me the fine windows, when I turned

them outside in and washed from the inside!" As for the Finnish houses, they came with a sauna, which is an essential part of every Finnish home. In addition, they came fitted with a traditional integrated drying cabinet for dishes above the kitchen sink and a cold storage room for groceries. None of these Nordic inventions became established in Iceland even after being introduced in the *Vidlagasjodshus*. Indeed, Icelanders still wash their windows from the outside and a majority of the saunas have either been integrated with the bathroom or serve as a storage space. As one interviewee noted: "I think that the sauna has actually never been used, all these 44 years. The previous owners dried their laundry in there, but we have plans to build a Jacuzzi when we expand and renovate the bathroom next year." Another interviewee stated: "We had no idea what the intention of that space was. We had never seen a sauna before."

Studying the development of the houses over time, it is evident that the inhabitants have made major changes to their dwellings (Figs. 3.6 and 3.7). This is also supported by the data from a house study by the planning authorities in Gardabaer, where 12 out of the 16 houses had built extensions and/or major indoor changes that had required building permits from the authorities (Jónsdóttir, 2015). As one of the respondents to the survey stated: "It was so easy to change the house as needed, because it was made of wood. You could just do it yourself. Take down walls and make additions. And we have done all that." Many stories were shared about household members armed with electric saws enthusiastically breaking down interior walls and building outdoor decks.



FIGURE 3.6 The original drawings of a *Vidlagasjodshus* in Reykjavik. Credit: Data from the database Kortavefur.

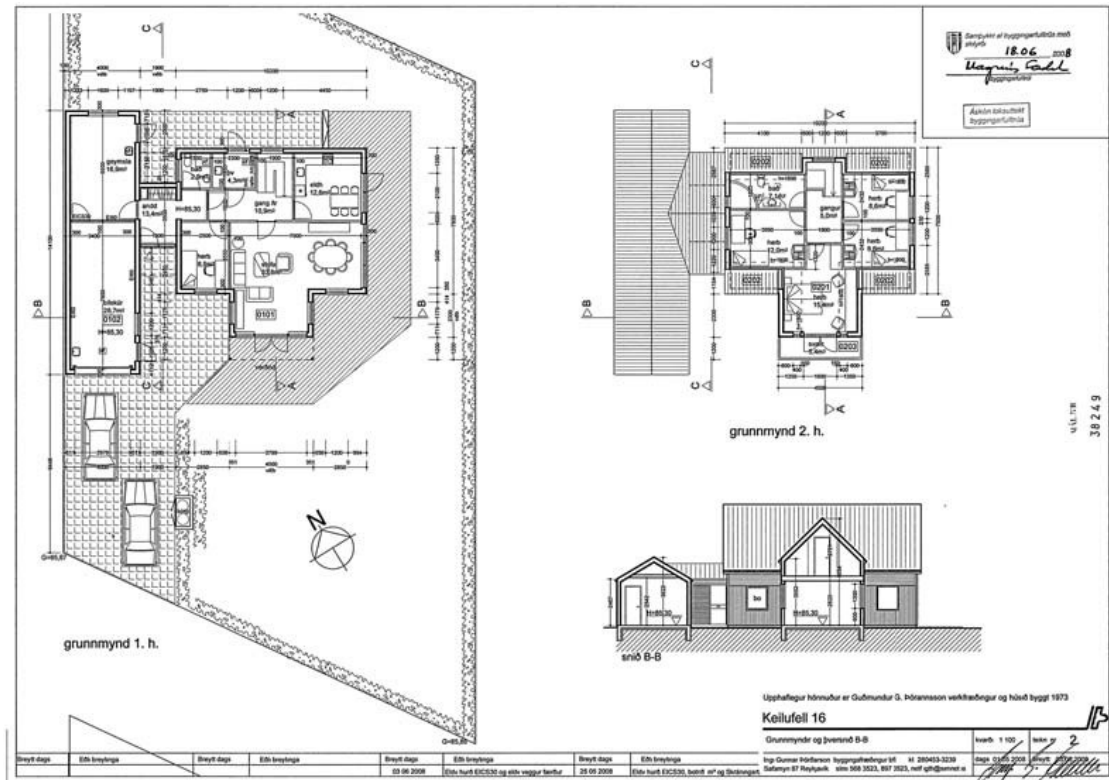


FIGURE 3.7 Drawings of additions and changes of a *Vidlagasjodshus* in Reykjavik. Credit: Data from the database Kortavefur.

The repairs and renovations served three main purposes: adapting to local customs, such as integrating the sauna to the bathroom space; reflecting changing family needs over time, such as when bedrooms and kitchens are renovated and bedrooms are connected or divided; and modernizing the houses in line with local standards, such as building winter gardens and sun decks as extensions. The findings from the survey on the various changes and updates made to the houses so far are presented in Table 3.2.

Interestingly, only 3% of the respondents believed that the maintenance costs were higher than those of comparable houses. It was often noted that the houses were made from high-quality wood and that they had endured the Icelandic climate with normal maintenance. When asked about mold, only 26 of the 320 respondents reported having detected any signs of this. More than half of the respondents found the resale value was comparable to houses in the same area. Many mentioned that the *Vidlagasjodshus* were in demand as places to live, especially in established neighborhoods, where they are well maintained.

5.3 Inhabitants' acceptance and satisfaction

It is evident from the survey and the interviews with the inhabitants that they felt at home in their houses. They have managed to transform the foreign standardized houses into

TABLE 3.2 Results from the Internet survey regarding building repairs and development.

Building repairs and development	Quantity	%
<i>Interior development</i>		
Bathroom	211	69.4
Kitchen	206	67.8
Balcony	191	62.8
Garage	141	46.4
Bedroom	139	45.7
Extensions	127	41.8
Living room	97	31.9
<i>Technical adaptations and repairs</i>		
Windows	101	33.2
Water pipes	78	25.7
Roof	72	23.7
Electricity	65	21.4
Isolation	26	8.6
Air condition	10	3.3
No information on repairs available	65	21.4
Total answers	304	n.a.

homes. The group of *Vidlagasjodshus* has become an integrated part of the local neighborhood (Fig. 3.5), and each house manifests the personal style of its inhabitants over time (Figs. 3.8 and 3.9). One of the survey respondents synthesized: “*I grew up in a Vidlagasjodshus. My family was evacuated after the volcano eruption. I bought a similar house for my own family when I established one. The houses have a reasonable price for their size, are pleasant to live in and you can easily make the changes you want.*”

The survey responses indicate that the inhabitants viewed the houses positively, with respondents assigning them an average satisfaction rate of 8.6 out of 10. This high rate was also supported in many of the survey’s comments and in the interviews with the owners, as expressed in the following quotes: “*The best houses in town. They have their own charm and character that we like, and an interesting story as well!*”; and “*The time we lived in our little house was the best time for our family. Life was simple and our house was a good frame for us and for our children to grow up in.*” Many of the individuals shared stories of important family events related to their houses. The respondents who held a more critical view mostly referred to technical problems, such as heating issues and leakages.



FIGURE 3.8 An example of external adaptations and development of a house in Gardabaer. *Credit: Kristjana Adalgeirsdottir (2017).*



FIGURE 3.9 Another example of external adaptations and development of a house in Gardabaer. *Credit: Kristjana Adalgeirsdottir (2017).*

When asked whether the houses have a negative reputation, 44% answered “no,” while only 26% associated some negative conceptions with the houses, largely owed to a lack of knowledge about the qualities and possibilities that the houses offered. As stated by a respondent, “*in the beginning many were skeptical about the houses, [they] were a bit strange, but now they have proved themselves and are regarded as any other house here.*” Another person shared: “*My wife did not want to move to a Vidlagasjodshus, but now she is the one who does not want to move away.*” To the question on whether the inhabitant would like to still be living in the house in five years, 92% answered “yes.”

6. Conclusions

The findings from the survey and the interviews with inhabitants demonstrate that the houses have passed the test of time and provided their former and current residents with safety and shelter, both as transitional houses in the aftermath of the volcanic eruption as well as permanent homes thereafter.

Similarly, as Cukur, Magnusson, Molander, and Skotte (2005) demonstrated in their studies from Bosnia and as supported by the findings of various other studies (Barakat, 2003; Barenstein, 2011), the experience of the *Vidlagasjodshus* clearly illustrates that understanding the sociocultural aspects of the reconstruction process is one of the key factors behind achieving success. When planning and implementing a reconstruction project, it is necessary to adopt a holistic approach and to understand how the affected people's whole livelihood networks, traditions, customs, and wishes for the future need to be included within the disaster response's physical interventions. The findings of this study of the Icelandic *Vidlagasjodshus* clearly demonstrates, based on the interviews with various stakeholders and in the survey responses, that one of the key factors ensuring the acceptance and adaptation of the imported prefabricated houses was local participation during all stages of the process.

Even though every reconstruction project has different cultural, climatic, and economic conditions depending on its location, the results of this study of the Nordic houses in Iceland provide valid generalizable information and serve as an important contribution to the ongoing discussion. Indeed, the results support previous findings on the factors that are crucial when tackling post-disaster housing problems. First, locally integrated solutions are of utmost importance. Second, the layout design, materials, and technical structures should allow the inhabitants to adjust their houses according to their needs. Third, various local stakeholders should always be involved in the decision-making process. Finally, long-term solutions should be planned from the very beginning of the process.

The story of the *Vidlagasjodshus* demonstrates that, with a clear, unified plan of action and the common intent of all involved parties (including policymakers, aid workers, developers, and inhabitants), it is possible to solve an immediate post-disaster housing challenge. The findings indicate that the provision of simple modular houses can serve their purpose and offer a feasible framework for a home. Moreover, it is possible to find solutions that support a smooth and sustainable transition from the emergency phase to one of a permanent home. After all, houses tell stories—and we must learn to listen to them.

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