Relocation as an Adaptation to Sea-Level Rise: Valuable Lessons from the Narikoso Village Relocation Project in Fiji

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ABSTRACT
Relocation as an adaptation strategy to coastal degradation remains on the fringes of climate change discourse. Yet, as sea levels are projected to rise, relocating is an inevitable response for vulnerable coastal communities worldwide. In fact, some Fijian villages are facing such severe coastal erosion that they have already begun the process of shifting to higher ground, and many more villages throughout the islands have been slated for relocation. This case study is based on the planned relocation efforts of Narikoso village on Ono Island in Kadavu, Fiji. In Narikoso, regional NGOs, INGOs, and local and national government are working with the community to relocate the village inland. The process of moving the community began in 2012 when Prime Minister Bainimarama sent the Fiji military to Ono Island to clear land for the new village. It came to an abrupt stop due to a lack of funding and ecological degradation caused by the preparation for the new village site. Since the relocation process began, a myriad of issues have arisen ranging from concerns regarding community engagement, availability of financial resources, and resistance to moving inland.

KEY MESSAGE
This case study provides specific insight into the obstacles associated with community-based relocation adaptation strategies. The overall goal of this case is to introduce students to the important considerations regarding relocation efforts. The themes represented here to address issues associated with funding, the importance of community participation in environmental adaptation projects, the role of transparency in decision-making processes, and the cultural value of a place.

INTRODUCTION
The perception of relocation as an adaptation strategy has seen major shifts through time. At one point, mobility as a response to ecological degradation was identified as a “failure to adapt” [1, 2]. Today, as climate change is making some areas less hospitable (specifically along global coastlines), relocation is becoming an increasingly more viable adaptation strategy to consider [3–5]. In fact, around the world, whole communities have already begun planning to, or have already relocated. The most publicized case in the United States is probably the Shishmaref village in Alaska, whose residents decided to move as a group over a decade ago because of habitual flooding and coastal erosion [6]. Relocation, however, is not always successful. For example, in 1997 the Bougainville Administration of PNG moved 12 families from the Carteret Islands in Papua New Guinea (PNG) to the neighboring island of Buka because seawater inundation was causing groundwater salinization and threatening food security [4]. Within a short time, all 12 families had moved back finding it difficult to adapt to their new environment.

In recent years, sea level rise due to climate change has drawn attention to coastal communities around the world and especially small island developing states (SIDS). SIDS’ physical vulnerability, in conjunction with their relatively low levels of economic development, makes them some of the first nations to be affected by the impacts of climate change [7, 8, 22]. Their less-developed status draws attention to an interesting paradox: although the SIDS as a regional grouping, contribute minimally to carbon emissions, they are disproportionately vulnerable to sea level rise [9, 10]. This raises important considerations about the unequal nature of climate change not only in
terms of who is responsible for the problem but also in terms of who will suffer the most. The structural inequalities that exacerbate SIDS’ vulnerabilities to changing climatic conditions have prompted global debates concerning fairness, equity, and financial responsibility for who should pay for the adaptation efforts of less developed countries [10].

The impacts of climate change have put SIDS in a precarious position and provoked island governments, including the Maldives, Tuvalu, Kiribati, and Fiji, to contemplate the future of their nations. Recognizing that it is relatively low-lying geography limits opportunities for adaptations to coastal degradation, the Government of Fiji, for example, has proposed National Relocation Guidelines that are intended to provide bureaucratic and financial assistance for vulnerable Fijian coastal villages that will have no option but to relocate. Despite all the complexities associated with relocation, there are three uncontested principles to the pending guidelines: (1) the community must reach 100% consensus for the relocation to take place, (2) the request for relocation must come from the village residents, and (3) relocation will only be implemented when all other options have been exhausted [11]. The guidelines have not yet been finalized, but the Fiji Government has already begun assisting communities with relocation efforts.

It is important to consider the geographic, economic, political, and cultural context in which these relocations are taking place. Unlike most SIDS, Fiji has a mountainous terrain so coastal communities can move to higher ground within the country. Fiji also has a mataqali land structure that ensures most indigenous Fijian villages have access to land [12]. However, Fiji’s low level of economic development makes it nearly impossible for the government to fund relocation efforts without external assistance. Also, the land is intrinsically significant and holds cultural value for many Fijians [13, 14].

**CASE EXAMINATION**

Narikoso is a relatively remote village located on Ono Island in the Kadavu Island chain of Fiji [See figure 1]. The Kadavu Islands still have peripheral characteristics despite a slight increase in economic activity from tourism [15]. Kadavuans, in general, rely heavily on semi-subsistence agriculture because they are largely removed from the market economy, which is concentrated in the capital city of Suva, approximately 85 km away by boat. Narikoso village is one of seven villages on Ono Island, and the only one facing severe coastal erosion. The village is only accessible by boat. It has 28 households, approximately 100 residents, a Methodist and Catholic Church, and a small market that operates out of a villager’s house. Similar to the rest of the Kadavu population, Narikoso villagers rely heavily on subsistence farming, fishing, and crabbing, and sell any surplus to neighboring resorts. The community also depends on the shipping company that goes to and from Suva once a week for purchasing goods, such as food supplies including sugar, salt, and flour, as well as fuel for boat transportation.

There are two circulating discourses about how relocation arose as an option for Narikoso. In one version, the community prompted the relocation initiative when a village resident invited Prime Minister Bainimarama to the village. According to one of the national papers, *The Fiji Sun* [23], “The relocation of Narikoso Village was mooted by the Prime Minister, Commodore Voreqe Bainimarama, during his visit to Kadavu in May, 2011. The villagers reported that their lives were at risk because of the rising sea level.” In the other version, during his campaign and while visiting Narikoso the Prime Minister Bainimarama asked the villagers what they needed. According to the community, they asked for a seawall, but the Prime Minister said it would be too expensive and instead offered to relocate the whole village (Interview exchange). The community agreed, with the intention that they would move as a whole. Within months, the community identified a new village site and the Bainimarama Administration sent the military to assist with the technical component of the relocation.

The geographic isolation of Narikoso shaped the relocation process. Due to the relatively secluded nature and smallness of Ono Island, the military had to transport equipment such as excavators and bulldozers from the capital of Suva to Narikoso via cargo ship. However, docking the cargo ship resulted in extensive damage to the Great Astrolabe Reef that encompasses Ono Island. To get the equipment on to the island, the soldiers chainsawed the mangroves. The military personnel then dynamited three cliff-like bluffs into the side of the mountain to level the new village site. This process led to severe ecological damage and cost the Fiji Government approximately 100,000 Fiji dollars, equivalent to 100,000 US dollars [16].

Given the human-induced nature and inequality of climate change, it is paradoxical that the solution to relocate Narikoso led to further environmental degradation on
Ono Island. The removal of the mangroves, the destruction of the coral reef, and the excavation of the mountaintop clearly contradict the environmental agenda of the adaptation project, which is to build community resiliency. Instead, the outcomes of the relocation process itself exacerbated community vulnerability. These outcomes elucidate the underlying driving logic behind the relocation. While it was intended to build community capacity, the process was approached as a technocratic fix—merely move the community away from the coast. By focusing on policies that identify geographically vulnerable communities and the most efficient way to remove them from “imminent danger” shifts the debate from ethical considerations of climate justice to economic and technological innovation.

The relocation process was not completely devoid of environmental concern. After the military was sent, the Bainimarama Administration immediately sent The Ministry of Minerals and Resources to survey the damage. The Ministry took a number of measures to repair the ecological degradation that had resulted from the relocation process itself. Government officials planted vetiver grass (*Chrysopogon zizanioides*), atop the dynamited mountain to stabilize the soil and curb erosion. They also planted mangrove seedlings along the coast to replace the ones that were cut down by the soldiers. This did little to repair the ecological damage that was underway. The shorelines were already muddying from the hillside erosion and the removal of the mangroves had already led to more intense coastal erosion. The Ministry’s assessment also showed that the land cleared was not solid enough to build on, so of the three levels carved out of the mountainside: the top level is unstable, and the bottom two can only support eight houses [See figure 2]. However, more land will need to be cleared. After Cyclone Winston struck Fiji in 2016, the government proposed a new initiative to restrict building...
within a certain (unknown) distance of the shoreline (Interview exchange).

According to interviewees, the relocation process stalled in 2012 after the funds had run out prematurely. Since then, the Fijian Government had been working with the Secretariat of the Pacific Community (SPC), a regional NGO, and the German Corporation for International Cooperation (GIZ) to secure funding to complete the relocation of Narikoso. Between 2012 and 2015, government workers went to Narikoso less than a dozen times. The community grew frustrated with the uncertainty of the relocation, wondering if it was still going to happen. In 2015, there was still no timeline for the project and the community had minimal interaction with the external stakeholders who were spearheading the relocation. To make matters worse, because of remoteness and limited household funds, villagers were unable to easily communicate with government representatives. They often had to wait for the next government visit to find out more details regarding the relocation.

In 2015, 3 years after Bainimarama sent in the military, SPC sent an economist to Narikoso to weigh the cost and benefits of relocating the whole village. The findings from the cost-benefit analysis showed that the highest costs associated with the project would be clearing the land for the new site (90,000 FJD) and building the houses (12,000 FJD for one climate resilient house) while the benefit would be removing the affected households from the path of flooding [16]. The study also revealed that only 10 households were located in the red zone—an area that is regularly inundated during high tide and most threatened by sea level rise [See figure 3] [16]. The findings from the cost-benefit analysis suggest that the government would be losing money if they follow through with the relocation. Yet because a promise to the village had been made, as a compromise, the government

**FIGURE 2.** New village site that was cleared in 2012, Narikoso Village 2015. Source: Amanda Bertana.
offered to only move households in the red zone. When discussions about fragmenting the village started to materialize the community expressed reluctance to relocate (Interview exchanges).

**Land Tenure System**

Colonial mechanisms have complicated contemporary land tenure systems, providing both challenges and opportunities for relocation. Fijian villages are on mataqali/iTaukei land which is communal land owned by mataqali units (landowning unit term) [17]. For the lack of a better word, the term “ownership” is oftentimes used in English, but it inadequately captures the true nature of mataqali and requires a more detailed understanding of pre- and post-colonial Fijian land rights [17]. In pre-colonial Fiji, Fijians were nomadic, moving without restriction and settling where land could be easily cultivated, until people chose to leave, or displaced by tribal warfare [18]. Rigid boundaries and formal ownership were foreign concepts. This is not to say that land transfers did not occur, on the contrary, high Chiefs were known to informally exchange land, but it could never be completely alienated [19].

The British Colonial Administration introduced the concept of fixed boundaries along with a formal land ownership system [19]. In 1876, Sir Arthur Gordon, the then overseer of Fiji, required all Fijian land to be surveyed and boundaries to be clearly demarcated. With the establishment of the colonial institution, the Land Claims Commission (LCC), Gordon converted the fluid land tenure structure he encountered to a formal system of “ownership” [17]. Under the new tenure system, all land was classified under one of the three categories: Mataqali/iTaukei Land (owned by indigenous Fijians), Crown Land (owned by the British government), or Freehold Land (privately owned) [17]. Under this system, mataqali/iTaukei land became an indigenous Fijian birthright, communally
owned throughout the generations, born and unborn, which meant that all indigenous Fijians would be granted access to land [12]. The colonial establishment also reorganized Fiji’s nomadic social structure into spatially bound villages. In creating a sedentary domestic population with registered land rights, the colonial government created subjects who could be more easily managed [20, 21]. When Fiji gained independence in 1970, the tenure system was maintained. Consequently, the power of authority over the people and the land were transferred from the colonial institution to the Fijian government. Still, the mataqali tenure structure is deeply embedded in Fijian institutions to the degree that it is adopted as a traditional Fijian system.

Fijian villages are comprised of one or several mataqalis. Narikoso village, for example, has four mataqalis, each of whom collectively owns a spatially explicit piece of land in the village. In the case of Narikoso, only one mataqali is in the vulnerable red zone that is prone to flooding. To save money for the relocation, the Fiji government proposed to only relocate this mataqali. The villagers raised two concerns with this option: (1) unlike other mataqalis in the village, the mataqali in the red zone has no other land to relocate to, and (2) the community does not want to fragment the village. In response to the land issue, another mataqali in Narikoso donated a large parcel of land to the community, so the village could relocate as a whole. The latter concern has yet to be resolved.

**Cultural Values**

Other villagers expressed reluctance to shift the village inland because of the cultural value of the place. In Fiji, like many other places around the world, people are culturally and emotionally connected to the land. The link between land, culture, and people is linguistically represented in the Fijian term vanua. Vanua is all-encompassing; it roughly translates to land, soil, people, ancestors, and country, but it also describes a concept [13]. It symbolizes a relationship people have to their land. Fijian culture emphasizes that metonymically, land connects the people of the present to their ancestral roots because ancestors are buried in the soil and thus become part of the land [14]. For many people, their land is symbolic of their familial lineage. The elderly are reluctant to move, especially those who have lived in the village their whole lives and buried their loved ones in the village cemetery.

**CONCLUSION**

The case of Narikoso is important because community relocation is a nuanced adaptation effort, which will become more prevalent as areas throughout the world become more and more vulnerable to the impacts of climate change. The experience of relocation in Narikoso serves as an opportunity to learn from key mistakes that were made and which can provide insight into how future relocations should take place. Community consultation that takes into consideration the local context is paramount, as is ensuring that “solutions” are vetted for possible ecological damage. The Narikoso case study raises a variety of questions and challenges related to the technical dimensions of relocating, such as financing, government responsibility, and spatial remoteness. It also brings to light the undervalued and understudied social and cultural variables associated with relocation. Although the context is important, generalizations can be extrapolated from the case of Fiji that is representative of most SIDS’ coastal communities.

**CASE STUDY QUESTIONS**

1. How important is it to consider colonialism in contemporary issues of relocation? Does it have a role? Should it be considered when making decisions about relocating communities? Why or why not?

2. Should the fact that more-developed countries contribute the most to climate change be considered when communities in less-developed countries are faced with possible relocation? Why or why not?

3. Is it the community’s responsibility to fund their own relocation? If they are unable to do so, who should be financially responsible for relocation efforts?

4. Is 100% consensus of a community feasible? In the case that 5% of a community refuses to move, should the community split?

5. When is relocation the last viable option? What other options do the people of Narikoso have?
6. How could the environmental damage caused by the relocation of Narikoso have been avoided?

7. How can you assess the cultural value of place?

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COMPETING INTERESTS
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