

A TALE OF CHANGE AND CONTINUITY: THREE STORM SURGES, AND THREE TOWNS, UNDER THREE FLAGS

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ABSTRACT

The historical record, though incomplete, shows that typhoon generated storm surges cause extreme damage and loss of life in the Philippine archipelago. Storm surges associated with typhoons historically make sea-to-land crossings. There is an annual average of nineteen tropical cyclones occurring in the Philippine's area of responsibility, of which an average of nine cross the country. There are few areas of the archipelago that have not been affected by storm surges. This paper investigates the crucial role and impacts of this natural hazard in certain areas of the Philippines that have been exposed to typhoons and storm surges across the centuries. The paper discusses the character of the storm surge, highlights some of the worst storm surge catastrophes that have occurred outside the Philippines, and then focuses on three storm surge events in the Visayan Islands of Samar and Leyte. On October 12, 1897, November 24-26, 1912, and November 3-11, 2013, the exposed coastal towns of Hernani and Guiuan on Samar and Tacloban on Leyte were destroyed by storm surges. The recurrent damage and loss of life caused by storm surges and cyclonic storms has increased in these three places as the complex cascade chain of the hazard changed through time, shifting from thousands to millions of people displaced and their livelihoods and communities destroyed on three occasions between October 1897 and November 2013.

INTRODUCTION

Cyclonic storm surges have helped shape the character of regions and areas in the Philippines—one of the most hazard prone nations in the world.¹ But storm surges have not affected all people and all areas in the archipelago equally. Patterns of death and damage from cyclonic storm surges and the capacity of people to recover and reconstruct their livelihoods reveal differences based on history, geographical location, wealth, and socio-political organisation. While there are historical studies on Philippine typhoons and calamities, this article investigates an important and unexplored theme about cyclonic storm surges and how they impacted coastal communities through time.

A significant difference between the types of natural hazard in the Philippines must be noted here: some, like typhoons, are ‘processual,’ occurring on an annual basis, while others are infrequent, sudden-onset events, and governed by climatic and geophysical laws of probability, such as the abnormally rapid destruction caused by a cyclonic storm surge or earthquake.² Consequently, storm surges are a major weather phenomenon that inhabitants of the Philippines have had to confront periodically across the centuries. With the passage of time, however, cyclonic storm surges have become an increasingly serious and growing development challenge with long-term social and economic consequences for certain areas of the Philippines. The densely populated island of Luzon and the Visayan Islands are most seriously affected by cyclonic storm surges, while most of Mindanao and the Sulu Archipelago are not storm surge-prone areas. Individual calamities have found a place in some studies of cities and regions in the Philippines, but few scholars have considered cyclonic storm surges as important agents of change or explored in detail their impacts on changes and continuities in people’s daily lives in the Philippines.

The investigation of Philippine storm surge variability on an interdecadal timescale, and over longer periods, is hampered by the short period of time for which accurate records concerning frequency of occurrence, area of occurrence, maximum intensity, and storm surge structure are available. The instrumental record is limited prior to the late nineteenth and twentieth centuries, and it is certainly difficult to reconstruct a fully reliable

¹ The Philippines is the country with the highest natural disaster risk. In 2022, it was given the disaster risk index (WRI) of 46.82. India followed with 42.31. The KU Leuven Centre for Research on the Epidemiology of Disasters also consistently ranked the Philippines at the top of the list in the first decade of the twenty-first century.

² Greg Clancy to James Warren, personal communication, 1 Aug. 2003, “Case for support: Draft application for an international symposium, Natural Disasters in Asian History, Culture and Memory.” The symposium was subsequently sponsored by the Asia Research Institute and Department of Japanese Studies, National University of Singapore, 26-27 Aug. 2005. See also: Gregory Clancy, *Earthquake Nation: The cultural politics of Japanese seismicity, 1868–1930* (Berkeley, CA: University of California Press, 2006).

analysis of storm surge activity in the era of pre-instrument observation. However, despite the lack of earlier records based on reliable measurements, a great deal of useful information exists due to the pioneering work of the Manila-based Jesuit scientists and meteorologists about cyclonic storm surge patterns and trends in the more recent Philippine past.³

Given the current state of scholarship, this paper attempts to fill a lacuna in the historical literature on the Philippines by writing the workings of the cyclonic storm surge back into the archipelago's history. This is a timely initiative, offering a comparative case-based interpretation of the cyclonic storm surge as a crucial factor in the change, continuity, and development of the nation and its historical links with the islands of the Eastern Visayas. Most importantly, in this context, such recurrent calamities can lead to a tipping point, when local, regional, or national capacity and coping resources dwindle, and in extreme cases cause societal collapse.⁴

We want to also stress here the overriding importance of the temporal dimension to understand the character and development of such so-called 'natural' disasters. They unfold historically—even seemingly sudden-onset events like huge storm surges and earthquakes. The preconditions for such disasters, namely the 'root causes' and 'dynamic pressures,' have often been forming over an extended time span.⁵ Indeed, Anthony Oliver-Smith treats the Peruvian earthquake of 1970 as having 'root causes' that stretched back 500 years to the trauma of the Spanish conquest of the Inca Empire. The consequent biological and social collapse led to a loss of traditional methods to cope with environmental risk.⁶ In other words, there is an ecological dimension to the making of the Third World and the ensuing gap that has opened between industrialised and non-industrialised parts of the world, such as the Philippines.

³ This article utilises the published reports of the Jesuit scientists and meteorologists for the Spanish and American colonial periods alongside the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) reports for the post-colonial era. PAGASA, a post-colonial government agency, was created on 8 December 1972 by virtue of Presidential Decree No. 78, which reorganised the Philippine Weather Bureau into PAGASA. The historical sources used by PAGASA to document historical storm surges for the Spanish and American periods is based on data compiled by the Jesuit meteorologists. For information on archival documents containing additional information on past cyclonic storm surges see: James Francis Warren, "Philippine typhoons, sources and the historian," *Water History*, 7, 2 (2015), 213-32, but esp. 216-24.

⁴ Susanna Hoffman, "After Atlas shrugs: Cultural change or persistence of a disaster," in *The Angry Earth: Disaster in anthropological perspective*, eds. Susanna Hoffman and Anthony Oliver-Smith (London: Routledge, 1999), 302, 311.

⁵ On disasters, see: Alan L. Pineda, "The Philippines: Common haven of natural disasters," *International Centre for Disaster Mitigation Engineering*, Institute for Industrial Science, University of Tokyo, 2, 3 (1993), 1-7; Bruce Parker, *The Power of the Sea: Tsunamis, storm surges, rogue waves, and our quest to predict disasters* (New York: Palgrave Macmillan, 2010).

⁶ Anthony Oliver-Smith, "Peru's five-hundred-year earthquake: Vulnerability in historical context," in *Disasters, Development and Environment*, ed. Anne Varley (Chichester: John Wiley and Sons, 1994), 3-48.

We define a disaster in this case to be a meteorological event that creates such severe physical damage to a community, region, or nation to the point that virtually all major public and private facilities can no longer provide essential social and economic services unless either replaced or repaired. Tropical cyclones and storm surges are ‘natural’ hazards that have historically culminated in violent deaths, acute hunger, disease, and widespread property loss in communities across the Philippines—such as Hernani, Guiuan, and Tacloban. Here, it is important to note that the distinction between natural and unnatural, or man-made, disaster is difficult to sustain presently. A growing share of the devastation triggered by so-called natural disasters stems from ecologically destructive practices and from Filipinos increasingly situating themselves in harm’s way. In the Philippines, since the end of the nineteenth century, many ecosystems have been either damaged or destroyed, setting the stage for an escalation of ‘natural’ disasters caused by cyclonic storm surges. In other words, by the twenty-first century, these ‘natural’ disasters have become larger and more destructive due to human actions and institutions.⁷

Greg Bankoff has stressed that learning to live with hazard and the expectation of disaster is necessarily part of a culture’s routine of daily life.⁸ But this expectation does not alter the stark reality that, if twenty-first century cyclonic storm surges continue to increase in intensity and scale in the Philippines, there will be few safe havens left in storm surge-prone regions for women, children, the indigent, and elderly to seek sanctuary, because of the recurrent scale of damage and increased risks caused by such extreme weather events.

This article interrogates three recorded cases of cyclonic storm surges in three Visayan communities in the central eastern Philippines. The cases were drawn from three historical periods (the Spanish and American colonial periods and the postcolonial era) and chosen specifically because the area was of concern to the Jesuit scientists pioneering the science of meteorology and the study of storm surges in the Philippines in late nineteenth and early twentieth centuries. We provide some comparative examples, insights, and lessons from the cases presented, exploring aspects of the impacts of cyclonic storm surges—specifically those of 1897, 1912, and 2013—on the eastern Visayan communities of Hernani, Guiuan, and Tacloban. The paper highlights the increasing move of populations to the coasts due to changes in political power and the economy on the one

⁷ Janet Abramovitz, “Averting unnatural disasters,” in *State of the World 2001: A Worldwatch Institute Report on progress toward a sustainable society*, Lester R. Brown and the Worldwatch Institute, ed. Linda Starke (New York: W.W. Norton, 2001), 123-42.

⁸ Greg Bankoff, *Cultures of Disaster: Society and natural hazards in the Philippines* (London: Routledge/Curzon, 2003), 179-83.

hand, and how the geography of economic opportunities and social dynamics have remained the same for many of the communities in the Visayas on the other. People have persistently resided on vulnerable stretches of the coasts despite the grave risks they face from cyclonic storm surges in recent times. The framework of analysis is trans-historical and comparative to assess change and continuities in the three storm-surge prone areas over time.

The historical record shows that typhoon-generated storm surges cause extreme damage and loss of life. This abnormal weather phenomenon, which is due to the presence of a typhoon, has had a major impact on life and property across large parts of the Philippine Archipelago. An annual average of nineteen tropical cyclones take place in the Philippine area of responsibility (PAR), with about nine crossing the country.⁹ There are very few regions of the Philippines that have not been affected by storm surges associated with extreme low-pressure systems, like typhoons. The people who are most exposed live along the eastern shores, as well as some distance up major rivers. Furthermore, the highly irregular coastline has made certain areas in the archipelago particularly susceptible to storm surges, especially coastal areas of Leyte and Samar in the Visayas. In these places, storm surges associated with typhoons historically make sea-to-land crossings. On 12 October 1897, 24–26 November 1912, and 3–11 November 2013, the exposed coastal towns of Hernani and Guiuan on Samar and Tacloban on Leyte were destroyed by storm surges. The recurrent damage and destruction that resulted from these storm surges and cyclonic storms has increased as the scale of the cascading chain of hazards altered through time, shifting from thousands to millions of people displaced and their livelihoods and communities destroyed between October 1897 and November 2013.

In this paper, we investigate the historical impact of these three storm surges, examine how the character of these communities have changed over time due to periodic storm surges, and the ways they have continued to respond to hazardous events. We also suggest that the current government needs to focus attention on how to mitigate storm surge events by taking stock of their own role in exacerbating such disasters and restoring local resilience in the face of increasing risk and big weather.

⁹ James Francis Warren, “Typhoons and the inequalities of Philippine society and history,” *Philippine Studies Historical and Ethnographic Viewpoints*, 64, 3-4 (2016), 455-72.

CHARACTER OF STORM SURGES AROUND THE WORLD

A storm surge is an abnormal rise in sea level (from 2.4–2.7 metres or 8–9 feet) at the coast during the passage of an intense tropical cyclone. It requires the combination of strong typhoon winds banking up water at a particular angle, a high tide, and the centre of the storm passing close to a vulnerable area. Key factors contributing to a storm surge are a concave coastline that prevents the volume of rising water from moving laterally; a fast-moving cyclonic storm with an extreme barometric fall that does not allow time for the water to spread; the volume of the tide; and shallow coastline waters. With these conditions, the resultant wave rushes in through the estuaries and channels and across the shoreline at great speed. Besides the damage caused by high winds, the storm surge floods everything in its path and washes entire communities away because it arrives as a large rising wall of water. For a normal cyclonic storm, the surge affects about 160 kilometres of coastline for up to several hours. Concerning the horrific impact of storm surges, Fr. José Algué states in *Typhoons or Philippine Cyclones*, that ‘experience teaches us that it is the cause of the greatest destruction on the coasts and on the high seas.’¹⁰

As a typhoon crosses from the sea over land it drags the enormous mound of ocean water drawn up by low pressure below the storm with it, inundating low-lying areas and causing widespread damage. Frank G. Haughwout made an important meteorological observation concerning the crucial link between falling atmospheric pressure and the rate of growth of a storm surge. In 1938, commenting on the destructive forces inextricably linked to typhoons he wrote:

The lowered atmospheric pressure at the centre of a storm raises the level of the sea thirteen inches for each inch (25.44 mm) of diminished pressure, a change that contributes largely to the volume of the great storm wave that accompanies the hurricane and which so often demolishes entire cities on the coast.¹¹

The history of weather and climate in Asia is filled with storm surge catastrophes. In 1737, one of the deadliest cyclonic storms in history occurred in the Bay of Bengal when storm surges drowned 300,000 people near Calcutta. On the opposite side of the region, between 27 September and 6 October 1881, a strong typhoon appeared east-south-

¹⁰ José Algué, *Baguios ó Ciclonas Filipinas* (Manila: Observatorio, 1897), 123.

¹¹ Frank G. Haughwout, “The destructive forces on typhoons,” *Philippine Magazine*, 35, 6 (1938), 283, 296.

east of Manila and cut a damaging swathe through Camarines, Tayabas, and Batangas provinces. It then moved across the South China Sea, growing in intensity, where it unleashed on the port of Haiphong a massive storm surge and flood that drowned over 300,000 Vietnamese people.¹²

On June 30, 1905, a typhoon that also inflicted great devastation passed over the southern Marshall Islands, causing a storm surge at Mille that was reported to be 14 metres (46 feet) in height. An equally huge storm surge swamped the city of Swatow on the night of 2–3 August 1922, and in less than three hours it had destroyed most of the city and killed 50,000 of the 65,000 persons living there. Similarly, in the 1960s, hundreds of thousands of people were drowned in Bangladesh, when a giant surge rushed up the Bay of Bengal and again in 1991, when more than 125,000 people were killed in a cyclone and storm surge which also left ten million people homeless.

In the Philippine Archipelago, when a typhoon develops in the Pacific or crosses it, the swell is often first noticed on the exposed east coasts of Luzon, Samar, Leyte, and Mindanao. Along coastlines facing the open sea, such as the Ilocos coast and the eastern seaboard, whenever an unusual swell moves in a direction which cuts across the path of the wind at an angle of 90 degrees or more, although the weather may be calm and the barometer normal, there is good reason to fear bad weather, which necessitates watching further movements of the barometer and observing the sea for signs of a storm surge.

WAVES OF DEATH

In the Philippines, recorded storm surges were usually associated with the landfall or crossing of tropical cyclones of typhoon strength. However, the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) also notes that tropical cyclones exiting from land to sea also generate storm surges.

Table 1 shows that in the era of instrument observation the earliest documented storm surge described and analysed in detail by the Manila Observatory occurred on 12 October 1897, when an extraordinary typhoon laid waste to coastal towns on Samar and Leyte. The accompanying 7.3 metre (24 feet) wave obliterated Hernani on Samar and Tacloban on Leyte. Fifteen years later, in late-November 1912, storm surges struck the Samar and Leyte coasts, again tearing through Hernani, Guiuan and Tacloban, and leaving

¹² Miguel Selga, "Typhoon of September 27–October 6, 1881," in *Charts of Remarkable Typhoons in the Philippines, 1902–1934: Catalogue of typhoons 1348–1934* (Manila: Bureau of Printing, 1935). See also: Ivan Ray Tannehill, *Hurricanes their Nature and History* (Princeton: Princeton University Press, 1956), 70.

more than 800 people dead. The table also demonstrates that, between 1897 and 1940, a disproportionately high number of storm surge incidents occurred in the Visayas.

*Table 1. Storm surges by region in the Philippines, 1897–1998*¹³

Years	Events	Northern Luzon	Central Luzon	Southern Luzon	Visayas	Mindanao/Sulu
1897–1910	8	1	1	1	4	1
1911–1920	8	2	1		5	
1921–1930	6		1	1	4	
1931–1940	3				3	
1941–1950	3	2			1	
1951–1960	5	1	1	2		1
1961–1970	20	5	8	3	3	1
1971–1980	15	4	7		3	1
1981–1990	13		5	4	3	1
1991–1998	3		1	2		
Totals	84	15	25	13	26	5

The table highlights a pattern of regions historically hit by storm surges: Areas with vulnerable, irregular coastlines and expanding patterns of growth and settlement. These include the northern side of Luzon, eastern Luzon (particularly Isabella, Quezon and Camarines Sur), the Eastern Visayas fronting on the Pacific Ocean, and places on the Ilocos coast, Batangas and western Mindoro that face the South China Sea. On Mindanao, the north-eastern part of the province of Surigao was the only area occasionally affected by the fury of the *huracan* and storm surges.

PAGASA's data shows that on five occasions between 1897 and 1945, the storm surges rose to a height of seven to ten metres (23–33 feet) above sea level. Apart from those mentioned affecting Hernani and Guiuan, Samar in 1897 and Leyte in 1912, an 8 metre (26.25 feet) storm surge overwhelmed Bataan in 1920; a 9.8 metre (32 feet) surge

¹³ This table is compiled from: "Storm surges occurrences in the Philippines (1897–1998)," *Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA)*, Department of Science and Technology, Climatology, and Agrometeorological Branch, Climate Change, Drought Early Warning and Monitoring Center. Only the information on the typhoon and storm of 24-28 May 1929 is taken from an entry by David Langshore in: *Encyclopedia of Hurricanes, Typhoons and Cyclones* (Chicago: Fitzroy Dearborn Publishers, 1998), 260-63.

inundated Borongan, on the east coast of Samar in 1933; and a giant ten metre (33 feet) wall of water swamped Solvec, Ilocos Sur, in 1944.

Since the end of World War II, a storm surge reached nine metres (29.5 feet) at Solvec, Ilocos Sur during Typhoon Didang in 1968, and another reached 8.4 metres (27.5 feet) at Baler on the central east coast of Luzon during Typhoon Anding in 1981. By contrast, in 2013, Typhoon Haiyan unleashed its fury on Tacloban with a relatively moderate storm surge.

In past centuries, this periodic abnormal rise in seawater level during a typhoon frequently turned exposed areas into sites of local disaster with the sudden passage of a storm cutting a swathe of destruction and leaving a trail of almost unimaginable human suffering. The typhoon of 1749 that struck Dagami was accompanied by a horrific storm surge causing enormous loss of life and damage to crops and farmland in Samar and Leyte. Fr. Juan José Delgado, S.J. in his 1754 history of the islands, provides one of the earliest published descriptions of a storm surge. He begins his account by stating it was ‘a singular blessing that typhoons do not generally coincide with high tides’:

because with these and the large waves called dolo by the natives, there was no town that was not flooded. This is what usually happens, although the opposite sometimes does, like what happened last year, 1749, in which the tides and waves were so high that there was flooding in the town of Palo, capital of the neighbouring island of Leyte.... The same thing happened in this town of Guiguan (Guiuan). Everywhere was flooded and more than a hundred and thirty of the natives died, [the] majority of whom were children whose parents had been unable to help them because of the fury of the winds, or could not find them because of the darkness.... These plains become a sea where the fury and force of the strong winds also form very tall and big waves. This same thing happened this year in the towns of Palo and Dagami, where everything was turned into a sea, and the churches and residences of the priests which were made of lime and stone—were destroyed; and especially the houses owned by the natives, because these were made of wood and palms.¹⁴

¹⁴ Miguel Selga S.J., “Primer catalogo de baguios Filipinas,” *Revista de la Sociedad Astronómica de España y América*, xx, 138, (1929), 78-9; Juan José Delgado, *Historia general sacro-profana, politica y natural de las islas del poniente llamadas Filipinas* (Manila: Imp. en el Eco de Filipinas de D. Juan Atayde, 1892), in *The Philippine Islands*, 28, eds. Blair and Robertson (Cleveland: The A.H. Clark Company, 1903), 650, 914-15. Delgado then describes the discovery of a ‘monstrous fish,’ a sperm whale, 11 fathoms (65.6 feet or 20 m) in length and five fathoms (29.5 feet or 9 m) in height, dumped by

Nearly two centuries later, Fr Miguel Selga noted that what happened in Dagami in 1749 could occur anywhere in the Philippines ‘where big waves combine with high tide to block up the free discharge of rivers into the sea during the passage of a typhoon.’¹⁵ He added that many floods in Manila were best explained as not solely due to torrential rainfall passing over the city or to the mountains to the east, but rather more likely due to the inability of the Pasig River to discharge its current into the sea on account of the blocking action of a storm surge.

HERNANI

The most disastrous storm surge documented in the Spanish colonial era occurred on 12 October 1897 on the islands of Samar and Leyte. Jesuit meteorologist Father Jose Algué, in a detailed report, described the devastation caused by the typhoon’s storm surge, and the *Meteorological Bulletin* issued by the Observatory summarised the impacts of this deadly storm surge:

The destruction caused by the fury of the winds in the settlements in the southern part of Samar and the central and northern part of Leyte, which successively were found within the destructive zone of this typhoon is indescribable, but the ruin which the hurricane wave caused on the eastern and western coasts of South Samar, and on those of Leyte and Samar which form the Bay of St. Peter and St. Paul, was incomparably greater.¹⁶

Hernani, one of the stricken towns Algué visited, is a small, low-lying coastal community facing the Pacific Ocean in the province of Eastern Samar. During normal tidal activity the shoreline of Hernani is protected by a reef and mangrove system between 100 and 300 metres wide.¹⁷ However, the town is located only three metres above sea level, rendering it particularly vulnerable to cyclonic storm surge events.

another storm surge on the tip of Guiuan (Guiguan), during the same typhoon. The Sameraños considered the whale’s stranding a miraculous response to their hunger caused by a ‘great storm so terrible that ... after this considerable misfortune followed pestilence, during which time, in a little more than a year, 700 were buried, aside from those who died in other places.’

¹⁵ Selga, “Primer catalogo de baguios Filipinas,” 78-9.

¹⁶ United States Philippine Commission Paper no. xxi, “Climatology and meteorological features,” *Report of the Philippine Commission to the President*, 4 (Washington: Government Printing Office, 1901), 311-12.

¹⁷ Janneli Lea A. Soria, Adam D. Switzer, Jessica E. Pilarczyk, Hui Tang, Tobert Weiss, Fernando Siringan, Michelle Manglicmot, Adonis Gallentes, A.Y. Annie Lau, Amanda Yee Lin Cheong, and Tracy Wei Ling Koh, “Surf beat-induced

Despite this risk, after Hernani was founded in 1850, the locals established a thriving agricultural industry comprising of cereals, root crops, and fruits, such as coconut. In addition, the ocean supplied an abundance of fish which locals dried and sold to Chinese traders who visited the town periodically.¹⁸ The community, numbering 4000 inhabitants, prospered until approximately 8 a.m. on 12 October 1897 when a typhoon and storm surge of 7.3 metres wreaked havoc for three hours, obliterating most of the town, and killing 166 people.¹⁹ The death toll would have been higher, but many farmers had already left their homes to work in fields, located on high ground outside the main town.²⁰

The impact of the storm surge on buildings and houses in Hernani was immense. Photographs taken a few days after the disaster showed the scale of the devastation. These photographs proved that Algué was not exaggerating the widespread extent of its impact. On the contrary, these early photographs of a major typhoon-related disaster provided confronting images to readers in Manila, showing that where the town of Hernani had once stood was now an abandoned wasteland, with corpses strewn for miles along the seashore (*Fig. 1*).

Of the town's 370 houses, just two remained standing and the walls and doors of the recently built stone church and convent suffered significant damage. The town resembled a 'desert wasteland'; there remained just a few *harigues* (house poles) bent to the WNW—tell-tale signs of the force of the storm-surge current arriving from the ESE—along with innumerable pieces of broken crockery mixed with sand and stones left behind by the huge wave.²¹ Standing across from the wrecked convent were the remnants of the district of Santa Barbara, which was virtually destroyed, along with the rest of the town (*Fig. 2*). In the aftermath of the devastating storm surge, survivors relocated the main town approximately one and a half kilometres inland.²² However, Spanish census reports

overwash during Typhoon Haiyan deposited two distinct sediment assemblages on the carbonate coast of Hernani, Samar, Central Philippines," *Marine Geology*, 396 (Feb. 2018), 215–30, specifically 217.

¹⁸ "History of Hernani," *Municipality of Hernani*, (2012): <https://hernani-esamar.gov.ph/index.php/history.html/> [Accessed: 11 June 2023].

¹⁹ Raphael Lotilla, "Flashback: 1897, Leyte and a strong typhoon," *Rappler*, (20 Nov. 2013):

<https://www.rappler.com/nation/leyte-1897-typhoon/> [Accessed: 11 June 2023]; Jose Algué, *El Baguio de Samar y Leyte 12–13 de Octubre de 1897*, 15–32.

²⁰ Algué, *El Baguio de Samar y Leyte 12–13 de Octubre de 1897*, 19.

²¹ Algué, *El Baguio de Samar y Leyte 12–13 de Octubre de 1897*, 18.

²² "History of Hernani."

suggest that many must have abandoned the town after 1897; between 1896 and 1898 the population fell by approximately 1000, from 3551 to only 2555 inhabitants.²³



Fig. 1. Part of the town of Hernani after the typhoon and storm surge. Photo, Fr. José Algué.²⁴

From 24–26 November 1912, a powerful typhoon hit Eastern Samar and northern Leyte. Stephen Visher noted that the storm’s intensity was classified as ‘very remarkable’ because pressure at its centre had minima of less than 720mm (28.35 inches).²⁵ In Hernani,

²³ United States, *Report of the United States Philippine Commission to the Secretary of War for the period from December 1, 1900, to October 15, 1901. Part 2* (Washington: Government Printing Office, 1901), 602; J. G. Schurman et al., *Report of the Philippine Commission to the President January 31, 1900 [-December 20, 1900], Vol. 1* (Washington, DC: Government Printing Office, 1900), 23.

²⁴ José Algué, *El Baguio de Samar y Leyte 12–13 de Octubre de 1897* (Manila: De J Marty, Observatorio de Manila, 1898), 15-32.

²⁵ Stephen Sargent Visher, *Tropical Cyclones of the Pacific* (Honolulu, HI: The Museum, 1925), 85.

property damage and fatalities were again immense: only one house was left standing, and the sea rose above houses in many coastal barrios, killing unknown numbers.²⁶

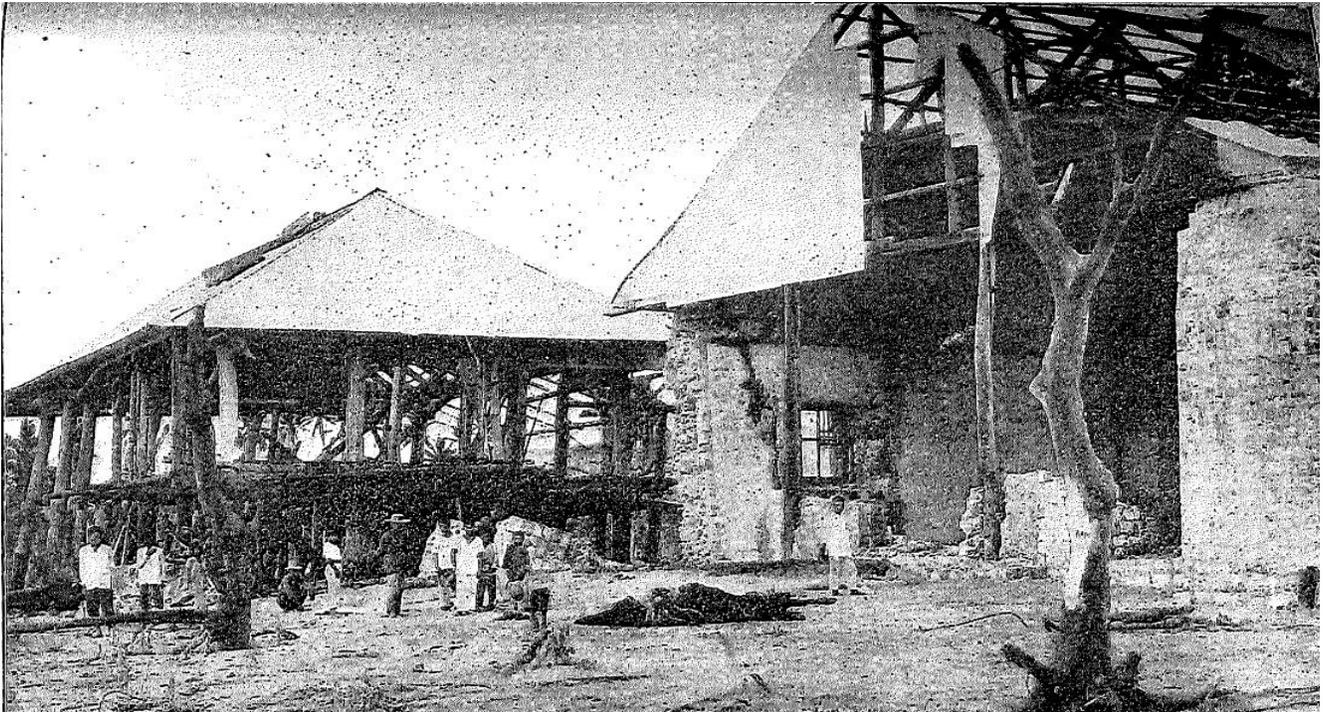


Fig. 2. The damaged church and convent in Hernani after the typhoon and storm surge. Photo, Fr. José Algué.²⁷

Hernani was devastated for a third time by Super Typhoon Haiyan (known as ‘Yolanda’ in the Philippines) in the early hours of 8 November 2013. With a population of just 7900 in 2012, more than 70 villagers were still killed in Hernani, mainly due to flooding caused by the storm surge and waves exceeding the height of seven metres.²⁸ Hernani’s natural coastal defences comprising of coral reefs and mangroves were no match for the velocity and height of the extreme waves generated by Haiyan. The waves deposited layers of sand 300 metres inland from the shore and previously submerged rock boulders weighing up to 180 tonnes were dislocated and shifted several metres up onto the sandy shores.²⁹ Of the town’s 13 barangays, nine were severely damaged by the storm

²⁶ Visher, *Tropical Cyclones of the Pacific*, 154.

²⁷ Algué, *El Baguio de Samar y Leyte 12–13 de Octubre de 1897*, 15–32.

²⁸ “History of Hernani”; Kesha West, “Typhoon Haiyan: Coastal town rebuilds six months after Philippines disaster,” *ABC News* via *ReliefWeb* (9 May 2014): <https://reliefweb.int/report/philippines/typhoon-haiyan-coastal-town-rebuilds-six-months-after-philippines-disaster/> [Accessed: 16 June 2023]; Soria et al., “Surf beat-induced overwash,” 216–17.

²⁹ Soria et al., “Surf beat-induced overwash,” 229; S.M. May, M. Engel, D. Brill, C. Cuadra, A.M.F. Lagmay, J. Santiago, J.K. Suarez, M. Reyes, and H. Brückner, “Block and boulder transport in Eastern Samar (Philippines) During Supertyphoon Haiyan,” *Earth Surface Dynamics*, 3, 4 (2015), 548.

surge, with public facilities (including local government offices), infrastructure, houses, and livelihoods destroyed.³⁰

In the aftermath of the typhoon, reporters highlighted the enormous difficulties facing Hernanians: ‘We do not have motorboats for the fishermen, no copra, no rice to harvest. People now have to start from scratch [but] they shouldn’t depend on the government because relief will not last forever,’ warned the town’s mayor.³¹ Meantime, another journalist, also visiting Hernani just weeks after Haiyan, reported finding a sense of calm among locals; men and women were building temporary shelters, bathing and washing clothes, while children were playing and giggling: ‘The men, women and children of Hernani said they intend to regain normalcy amid this crisis.’³² Despite the devastation experienced by locals, the mayor of Hernani explained, ‘You’ll see people even when hungry, still smiling. That’s the Filipino people for you.’³³

Like the earlier typhoons, Typhoon Haiyan decimated the commercial coconut industry, one of the most important crops in Eastern Samar. An estimated 15 million trees, one-tenth of the total, were wiped out during the big storm, destroying livelihoods of around 80 percent of the region’s population.³⁴ Coconut farmers, mostly sharecroppers, relied on a meagre income (around \$1–\$2 a day) from selling coconuts. After losing half of his 800 trees, one Hernani sharecropper, who had picked and husked coconuts for over 30 years prior to Haiyan, lamented that he would now have to live off government relief for the foreseeable future because coconut trees are slow growing. Traditional varieties take seven to ten years to produce fruit while newer varieties, though faster, still take three to five years to reach maturity.³⁵ In 2014, local authorities were hoping to regenerate the industry quickly by replanting the areas destroyed with a dwarf variety of coconut tree. By 2018, there were signs of recovery across the Eastern Visayas: 1.085 billion coconuts were harvested in 2017 compared to 1.075 billion in 2016, an increase of 1.38 percent.³⁶

³⁰ Environmental Science for Social Change Inc., “Strengthening local capacities for disaster preparedness in eastern Visayas” (13-16 July 2016): https://issuu.com/lifeofajai/docs/version_3/ [Accessed: 16 June 2023].

³¹ Kristine Angeli Sabillo, “2 weeks after ‘Yolanda’, tragic tales still haunt Hernani folk,” *Inquirer.net* (22 Nov. 2013): <https://newsinfo.inquirer.net/532853/2-weeks-after-yolanda-tragic-theses-still-haunt-hernani-folk/> [Accessed: 11 June 2023].

³² Kristina Le, “Trying to rebuild after ‘super storm,’” *The San Diego Union Tribune* (23 Nov. 2013): <https://www.sandiegouniontribune.com/sdut-typhoon-haiyan-hernani-philippines-2013nov23-story.html/> [Accessed: 11 June 2023].

³³ *Ibid.*

³⁴ Eric Bellman et al., “Typhoon Haiyan deals blow to coconut farmers in Philippines,” *Wall Street Journal* (21 Nov. 2013): <https://www.wsj.com/articles/SB10001424052702304607104579211942300527858/> [Accessed: 11 June 2023].

³⁵ *Ibid.*

³⁶ Sarwell Maniano, “Region 8 coconut industry on road to recovery after ‘Yolanda,’” *Philippine News Agency* (18 June 2018): <https://www.pna.gov.ph/articles/1038526> [Accessed: 11 June 2023].

The livelihoods of fishermen and their families were also severely disrupted after Haiyan destroyed their boats, nets, and other equipment of thousands in the Eastern Visayas region. One year on from the devastation, several ‘Youth Reporters’ from Hernani took part in Plan International’s child-focused disaster response program. They explained on camera that some villagers had turned to new means of making a living, raising and selling pigs and planting vegetables, but the income was insufficient to meet their daily household needs, necessitating their return to fishing using a boat borrowed from the village leader.³⁷ It seems, then, rather than fleeing the coast and their livelihoods *en masse* as had occurred in the past, many Hernanians attempted to rebuild and carried on doing what they have always known and done—fishing and agricultural work.

Nevertheless, the government planned to relocate families from typhoon-affected coastal communities in Hernani to one upland site. The project aimed to build 989 new houses and units through the National Housing Association (NHA).³⁸ However, by mid-2018, five years after typhoon Haiyan, none of the NHA homes had been completed and families were still living in communities on land declared danger zones because of their proximity to the low-lying coast. As recently as November 2020, 700 families were still living within danger zones and 31 NHA houses remained unbuilt.³⁹ The mayor of Hernani spoke of his frustration about building delays and the use of substandard materials in the housing project. However, the NHA dismissed all complaints, blaming other government agencies, including the local government who had chosen and acquired the land for the project site, for all the problems related to the project.⁴⁰

On a slightly more positive note, by early 2017, Gawad Kalinga, a Filipino NGO, had constructed, using a ‘sweat equity’ arrangement, 241 two-storey units for families from the two worst affected coastal communities. To receive a ‘safe house,’ project beneficiaries were required to provide 1500 hours of volunteer labour.⁴¹ However, initially, the local government did not have the required funds to purchase land for the redevelopment scheme. According to the Vice Mayor of Hernani, ‘Our biggest challenge

³⁷ Plan International Philippines. “#Youthreporter: Recovery in Hernani 1 year after Haiyan,” *YouTube* (31 Oct. 2014): <https://www.youtube.com/watch?v=83iAhurb83M> [Accessed: 11 June 2023].

³⁸ Connie Fernandez-Brojan, Hazel P. Villa, and Joey A. Gabieta, “5 years after ‘Yolanda,’ survivors still waiting for relocation houses,” *Philippine Daily Inquirer* (8 Nov. 2018): <https://newsinfo.inquirer.net/1051634/5-years-after-yolanda-survivors-still-waiting-for-relocation-houses> [Accessed: 11 June 2023].

³⁹ Samuel D. Candido, “Only 31 units remain for the Hernani Yolanda Housing Units Project, Cabsec Nograles,” *Govt. Philippines* (25 Nov. 2020): <https://reliefweb.int/report/philippines/only-31-units-remain-hernani-yolanda-housing-units-project-cabsec-nograles> [Accessed: 11 June 2023].

⁴⁰ Fernandez-Brojan et al., “5 years after ‘Yolanda.’”

⁴¹ Anna Marie Karaos, *Compendium of Permanent Resettlement Housing Interventions in Post-Yolanda Rehabilitation in Eastern Visayas, Philippines* (Union Nations Development Fund, European Union, 4 Jul. 2017), 119.

is the purchase of the land. We need special funds from the national government for the relocation of our constituents because the municipality of Hernani is very dependent on the internal revenue and allotment of the national government.’⁴² To overcome the lack of revenue, the Mayor of Hernani convinced one of his relatives to sell their agricultural land to Gawad Kalinga for the project. The land was then donated to the local government.⁴³ By February 2017, only 15 families had moved into their new homes on a permanent basis. To further complicate matters, water and electricity had not been connected to the new units and the new location was some distance from the ocean, too far away for fishing families to travel back and forth each day.⁴⁴ Unpaved roads and lack of transportation also compounded problems for families who wanted to develop new livelihoods or shift goods in and out of the new village. As a result, the majority continue to live in temporary shelters erected along the coastline to fish during the week and only return to their new homes on weekends.⁴⁵

Faith-based organisations also played an important mitigating role in helping young people and the Hernani community to develop greater resilience in the aftermath of Haiyan. For example, an international Jesuit development organisation, the Xavier Network, has provided support to a Filipino research and training institute called the Eco-Jesuits. In 2016, the Eco-Jesuits delivered Geographic Information System (GIS) training modules to Local Government staff in Hernani that have assisted with developing a comprehensive land use plan for the town. The long-term plan is to identify areas less exposed to hazards so that coastal communities might gradually relocate to such safer areas. In the shorter-term, the GIS skills-training also has equipped staff with knowledge about how to map houses and facilities exposed to hazards and to develop appropriate risk and evacuation strategies.⁴⁶

⁴² Caroline Baudot, *The Right Move? Ensuring durable relocation after Typhoon Haiyan* (Oxfam International, 2014), 15.

⁴³ Karaos, *Compendium of Permanent Resettlement Housing Interventions*, 121.

⁴⁴ *Ibid.*, 124.

⁴⁵ *Ibid.*, 127.

⁴⁶ Environmental Science for Social Change Inc., *Strengthening Local Capacities for Disaster Preparedness in Eastern Visayas*, 5-6. On risk management see also: Rosalina de Guzman, Flaviana Hilario, Daisy Ortega, Peter Hayman and Bronya Alexander, “El Nino southern oscillation in the Philippines: Impacts, forecasts, and risk management,” *Philippine Journal of Development*, 36, 1 (2009): 10-34; Eduardo D. del Rosario, “Final report effects of Typhoon Yolanda (Haiyan),” *Republic of the Philippines, National Disaster Risk Reduction Management Council (NDRRMC)* (6-9 November 2013): https://ndrrmc.gov.ph/attachments/article/1329/FINAL_REPORT_re_Effects_of_Typhoon_YOLANDA_HAIYAN_06-09NOV2013.pdf [Accessed: 7 Apr. 2023]; Piers Blaikie, Terry Cannon, Ian Davis and Ben Wisner, *At Risk: Natural Hazards, People’s Vulnerability and Disasters* (London: Routledge, 1994).

GUIUAN

The 1897 storm surge also devastated the coastal town of Guiuan, killing 94 people and destroying homes and public buildings.⁴⁷ Guiuan, located on the exposed, south-eastern most tip of Samar, was established in the sixteenth century. The town's renowned Immaculate Conception Parish Church, a National Cultural Treasure, built by the Jesuits in 1595 and renovated by the Franciscans in 1844, was severely damaged by the 1897 typhoon and storm surge.⁴⁸ In addition, a large boat had been lifted from the sea and deposited 328 feet (100 metres) inland by the storm surge. According to official records, the population of Guiuan declined from 12,051 in 1896⁴⁹ to 11,311 in 1898,⁵⁰ indicating that the 1897 event led to a temporary out-migration.

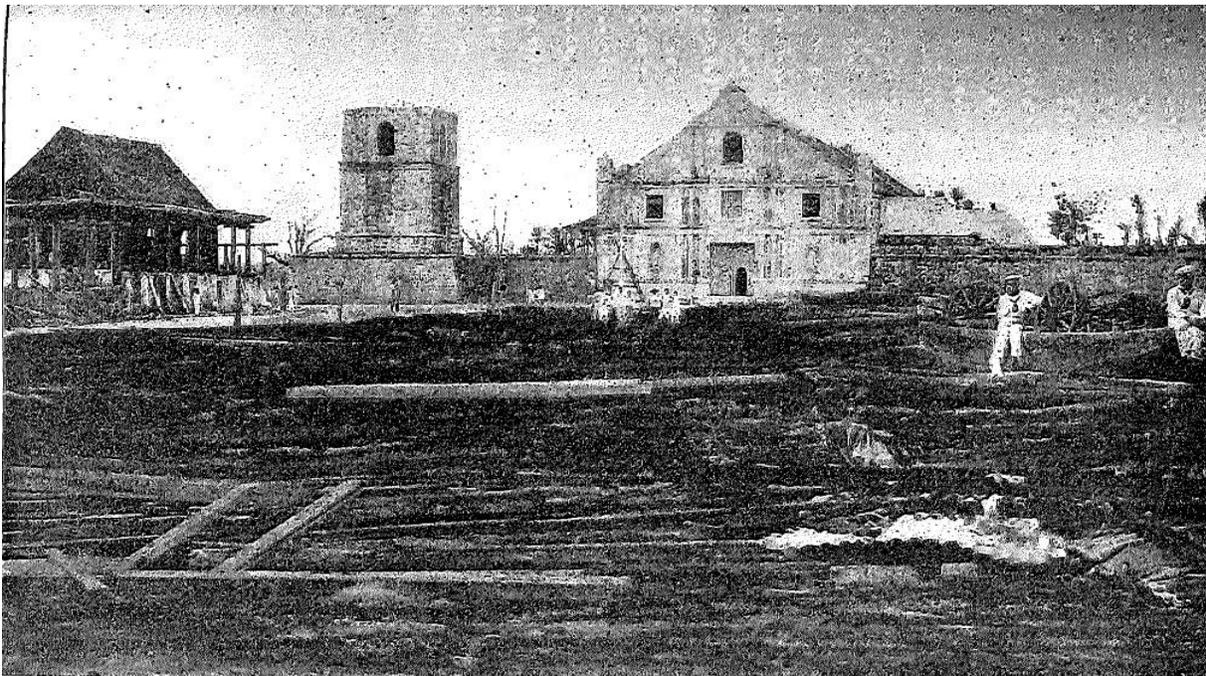


Fig 3. The “Plaza of Guiuan” showing the Immaculate Conception Church unroofed, the bell tower damaged, and the nearby court building and school in ruins. Photo, Fr. José Algué.⁵¹

⁴⁷ Lotilla, “Flashback: 1897, Leyte and a strong typhoon.”

⁴⁸ John Morrison and Annabel Livingstone, “Restoring and conserving the parish church at Guiuan, Eastern Samar,” *School of Historical & Philosophical Studies Research Blog* (30 Sep. 2020): <https://blogs.unimelb.edu.au/shaps-research/2020/09/30/restoring-and-conserving-the-parish-church-at-guiuan/> [Accessed: 11 June 2023].

⁴⁹ United States, Philippine Commission (1900-1916), *Report of the United States Philippine Commission to the Secretary of War for the period from December 1, 1900, to October 15, 1901, Part 2* (Washington: Government Printing Office, 1901), 602.

⁵⁰ United States. Philippine Commission (1899-1900), *Report of the Philippine Commission to the President January 31, 1900 [-December 20, 1900], Vol. 1* (Washington: Government Printing Office, 1900), 23.

⁵¹ Algué, *El Baguio de Samar y Leyte 12-13 de Octubre de 1897*, 15-32.

In 1859 a German naturalist touring the Visayas noted that ‘Guiuan was the centre of the most important district in Samar’ and was used as an entrepôt by traders to transport goods to and from Manila.⁵² However, by the late nineteenth century, this had changed with commercialisation, and economic and population growth were far more evident in the Calbayog area on the west coast of Samar.⁵³ Although an inadequate overland transport network at that time deterred economic and population growth in south-eastern Samar, it is clear this economic and demographic shift was also influenced by the lingering impact of the typhoon and storm surge which devastated Guiuan in 1897 (*Fig. 3*). Frederick Wernstedt and Joseph Spencer remarked that eastern Samar remained, ‘relatively lightly populated because of the ever-present danger from these storms.’⁵⁴ Furthermore, such ‘typhoons have actually discouraged settlement along exposed coastlines’ of both Samar and Leyte.⁵⁵

Towns like Hernani and Guiuan in south-eastern Samar were (and remain) largely subsistence-based economies, relying on fishing and agriculture, especially the coconut palm. Cruikshank noted that in the late nineteenth century, the southern part of the island, especially Guiuan, ‘was dominant in the production of coconut oil and sea products.’⁵⁶ Land ownership was rare with only about 11 percent of all families controlling land on Samar in 1896–1897.⁵⁷ As a result, most farm workers relied on patron-client relationships and depended on their patron’s land to grow crops. To survive, locals engaged in a variety of occupations, such as small-scale fishing, wage work, weaving, making copra and coconut oil, and, because cash was relatively scarce, receiving in-kind advances for cash crops, such as abaca. Values such as honesty and discipline were strong, and families cared for their own poor.⁵⁸ Sharing labour and food, and doing things together was a common expectation in the Philippines under Spanish rule. The necessity of fulfilling one’s obligations to kin and neighbours in cooperative work groups was essential in a hazardous island world marked by recurrent typhoons and storm surges.

From 24–26 November 1912, a powerful typhoon hit eastern Samar and northern Leyte. In Guiuan, on 24 November at 9 p.m., winds reached maximum intensity (force

⁵² Robert B. Cruikshank, *A History of Samar Island, the Philippines, 1768–1898* (Madison: University of Wisconsin, 1975), 87.

⁵³ *Ibid.*, 210.

⁵⁴ Frederick Wernstedt and Joseph Spencer, *The Philippine Island World: A physical, cultural and regional geography* (Berkeley, CA: University of California Press, 1967), 455.

⁵⁵ *Ibid.*

⁵⁶ Cruikshank, *A History of Samar Island, the Philippines, 1768–1898*, 99.

⁵⁷ *Ibid.*, 112.

⁵⁸ *Ibid.*, 87.

12) and water rose to a depth of one and half metres over a period of one hour,⁵⁹ much higher than the high point of 0.7 metres recorded during the 1897 storm surge.⁶⁰ Interestingly, however, fewer fatalities occurred in Guiuan during the 1912 typhoon than the one in 1897. Twenty people were drowned or killed by falling debris and three persons were lost, assumed drowned.⁶¹ However, the 1912 event destroyed some 350 homes and caused roof and wall damage to the city hall, baroque church, and convent. In some parts of the town, especially near the hills, two-thirds of the coconut plantations were wiped out. And yet, defying the odds again, the people of Guiuan rebuilt their homes and its revered parish church. By 2010, the town's population had grown to 47,037 residents,⁶² highlighting their resilience and capacity to recover from natural disasters, including typhoons, storm surges, and landslides. Acknowledging the biophysical and social vulnerability created by the hazards-of-place,⁶³ David Garcia points out that Guiuanians have “lived through numerous disasters [and] come to terms with the hard truth: There are no safe or unsafe zones; there are only places of varying risk, and the people's capacity to adapt in their places.”⁶⁴

On 8 November 2013, Guiuan was the first town hit by Haiyan. Wind speeds of between 315 and 380km per hour,⁶⁵ some of the most powerful ever recorded, along with waves of up to seven metres high⁶⁶ resulted in 110 fatalities and over 3,625 injuries.⁶⁷ The damage was catastrophic—described by American meteorologist Jeff Masters as ‘perhaps the greatest wind damages any city on earth has endured from a tropical cyclone in the past century.’⁶⁸ The scale of destruction in the town was immense with almost every building, including designated typhoon shelters, the highly valued Catholic Church (a National Cultural Treasure of the Philippines), hospital, and gymnasium severely

⁵⁹ Ibid., 153–54.

⁶⁰ Hisayuki Kubota, Esperanza O. Cayan, Yukihiro Takahashi, Huon Matsumoto, Kozo Yamashita, Rie Kumazawa, Flaviana D. Hilario, Roslaine G. De Guzman, Marcelino Q. Villafuete II, and Gemma Teresa T. Narisma, *Was the Typhoon Yolanda Strongest in the Observation History in the Philippines?* (Department of International Affairs: Japan Science and Technology Agency, 2015), 22.

⁶¹ Visher, *Tropical Cyclones of the Pacific*, 153-54.

⁶² “Guiuan,” *Republic of the Philippines, Official Website of the Province of Eastern Samar* (2019): <https://easternsamar.gov.ph/guiuan/> [Accessed: 11 June 2023].

⁶³ Susan L. Cutter, “Vulnerability to environmental hazard,” *Progress in Human Geography*, 20, 4 (1996), 529-39.

⁶⁴ David Garcia, “The geography of risk and resilience in Guiuan, the first town hit by Haiyan,” *BluPrint. OneMega.com* (21 Sep. 2018): <https://bluprint.onemega.com/coastal-hazards-guiuan-haiyan/> [Accessed: 11 June 2023].

⁶⁵ Morrison and Livingstone, “Restoring and conserving the parish church at Guiuan, Eastern Samar.”

⁶⁶ Kubota et al., *Was the Typhoon Yolanda Strongest*, 22.

⁶⁷ “Guiuan.”

⁶⁸ Jeff Masters, “Typhoon Haiyan kills 1,200 in the Philippines, heads for Vietnam,” *Weather Underground* (9 Nov. 2013): <https://www.wunderground.com/blog/JeffMasters/typhoon-haiyan-kills-1200-in-the-philippines-heads-for-vietnam.html> [Accessed: 11 June 2023].

damaged or unroofed.⁶⁹ Immediately after the storm, the Mayor of Guiuan stated, ‘It’s total damage; 100% damage’ with almost all the community’s 50,000 inhabitants left homeless. Indeed, of the 61,671 households affected by typhoon Haiyan in Eastern Samar, 11,609 (19%) were in Guiuan.⁷⁰

Little wonder then, that in response to the disaster, some residents quickly decided to leave Guiuan to establish new lives. For example, two weeks after the disaster, the UN Refugee Agency (UNHCR) interviewed Jane, a survivor who had fled from Guiuan to Cebu with her extended family. They were hoping to obtain humanitarian assistance so they could migrate to Manila and find new work. In Guiuan, Jane and her family had relied on coconut trees for weaving mats to earn their living. When all the town’s coconut trees were obliterated during the typhoon, their livelihood was also destroyed.⁷¹

However, not everyone who lost their homes, possessions, and way of life decided to leave Guiuan. Stories of hope, faith, and resilience also emerged amidst the ruins of the fishing town. One fisherman, whose boat had been damaged during the storm surge, spoke of his complete trust in God for continuing to provide what he and his family needed to rebuild their homes and lives.⁷² Another local, a barber, who lost his home and many possessions said, ‘My dream now is to build my house and start again a livelihood. Guiuan can rise again. People from Guiuan have strong spirits, they won’t back down. Guiuan has clawed its way to survival, it won’t let go. It will keep on. If we stop, we die.’⁷³ Locals have also learned important lessons from the Haiyan experience and changed their mitigation and improvement strategies and behaviour towards other typhoons. For instance, when typhoon Ruby (Hagupit) struck Guiuan in November 2014 one local said, ‘We packed our goods without giving it a second thought ... now, everything changed. We are more prepared and cooperative with the local government, especially if we hear

⁶⁹ “Guiuan.”

⁷⁰ Aaron Opdyke, Amy Javernick-Will, and Matthew Koschmann, “Typhoon Haiyan: Shelter case studies. January 2017,” (Mortenson Center in Engineering for Developing Communities, University of Colorado Boulder, 2016), 72: https://www.colorado.edu/lab/gpo/sites/default/files/attached-files/opdyke_et_al_2017_typhoon_haiyan-shelter_case_studies.pdf [Accessed: 11 June 2023].

⁷¹ Vivian Tan, “Typhoon Haiyan evacuees share tales of loss, survival,” *UNHCR* (15 Nov. 2013): <https://www.unhcr.org/en-au/news/stories/2013/11/5286316a6/typhoon-haiyan-evacuees-share-tales-loss-survival.html> [Accessed: 11 June 2023].

⁷² Tom Price, “Fifty-three year-old Lucilo Gubantes’ faith had never been tested more than when Typhoon Haiyan hit the Philippines three months ago,” *World Renew* (7 Feb. 2014): <https://worldrenew.net/our-stories/haiyan-survivor-tells-his-story-three-months-later> [Accessed: 11 June 2023].

⁷³ Patricia Evangelista, “After Yolanda: The barber of Guiuan,” *Rappler*, (23 Nov. 2013): <https://www.rappler.com/video/44409-haiyan-the-barber-of-guiuan/> [Accessed: 11 June 2023]; “The barber of Guiuan,” *Rappler* (22 Nov. 2013): <https://youtu.be/DxkeTthpY9E> [Accessed: 16 June 2023].

about storm warnings. We really never want to experience again the pain and stress that we did during Yolanda.’⁷⁴

In the aftermath of Haiyan, emergency assistance was provided by international humanitarian organisations, NGOs, and the national government. Reflecting on the post-Haiyan assistance efforts, one Guiuan resort owner commented that the ‘quiet little town suddenly turned into a bustling “United Nations” neighbourhood.’⁷⁵ Many survivors in Guiuan lived for up to a year in temporary accommodation, known locally as the ‘tent city.’ In response to the typhoon’s disastrous impact, the Philippine’s Environment Department immediately created a ‘No Build Zone’ in a hasty effort to reduce exposure to future storm-surge events. The ruling prohibited re-development in ‘unsafe’ areas located 40 meters from the shoreline. This meant Guiuan’s local government needed to resettle some 12,000 families from three coastal *barangays*.⁷⁶ For example, 130 coastal households, mainly Guiuan fisherfolk who had previously lived along a jetty, were relocated to new homes built several kilometres inland at Barangay Cogon.⁷⁷ The Cogon community housing project was completed by the Agency for Technical Cooperation and Development (ACTED), an international NGO, in partnership with the Guiuan Local Government and the National Housing Authority (NHA). Land was also selected and purchased by the Guiuan Local Government in two other *barangays* (Sapao and Tagpuro) for several thousand other coastal families identified as ‘most vulnerable.’⁷⁸

However, problems with the relocation model soon emerged. Construction of permanent homes in all three relocation areas was slow, and in some cases provision of basic infrastructure like water, sanitation, and electricity were delayed or never provided due to the involvement of multiple agencies and a lack of a coordinated approach.⁷⁹ By September 2018, shortage of government finances to connect water, power, and sewage meant that thousands of new homes built in relocation sites across the Eastern Visayas still lay empty.⁸⁰ As a result, for years after Haiyan, dislocated Guiuan families continued

⁷⁴ Helen Naddeo and Lisa Gardner, “After the storm: Two years on,” *Stories of Survival and Recovery after Typhoon Yolanda (Haiyan)*, (Department of the Interior and Local Government, The Republic of the Philippines, 2015), 21.

⁷⁵ “Hope floats for ‘Yolanda’ survivors,” *Philippine Daily Inquirer*, via *INQUIRER.net* (15 Mar. 2015): <https://business.inquirer.net/188513/hope-floats-for-yolanda-survivors> [Accessed: 11 June 2023].

⁷⁶ Alice R. Thomas, “Resettlement in the Wake of Typhoon Haiyan in the Philippines: A strategy to mitigate risk or a risky strategy?,” *Brookings Institute* (June 2015): <https://www.brookings.edu/wp-content/uploads/2016/06/Brookings-Planned-Relocations-Case-Study-Alice-Thomas-Philippines-case-study-June-2015.pdf> [Accessed: 11 June 2023].

⁷⁷ *Ibid.*, 18.

⁷⁸ Ladylyn L. Mangada and Irma R. Tan, “Post-disaster accountability in the Haiyan Shelter response: Who had the greater say?” in *Disaster Archipelago: Locating Vulnerability and Resilience in the Philippines*, eds. Maria Carinnes P. Alejandria and Will Smith (London: Lexington Books, 2020), 69.

⁷⁹ Thomas, *Resettlement in the Wake*, 18.

⁸⁰ Garcia, “The geography of risk and resilience.”

to live in ‘bunkhouse’ style accommodation, built by the Department of Public Works and Highways, intended as a temporary measure while permanent homes were built. The absence of social networks, work opportunities, and public transport led to further questions over the sustainability of the resettlements. Although the relocated survivors had somewhere to live, many who had previously worked as coconut farmers had no income because their plantations were destroyed by the typhoon.⁸¹ Such families living in bunkhouses relied on government assistance from the Department of Social Welfare and Development. According to one Eastern Samar *barangay* chief, ‘That may be why some still stay in the bunkhouses.’⁸²

Other families, dependent on fishing as a source of income, could afford neither the daily commute to the coast for work nor the cost of sending their children to school. Fisherfolk were also concerned about the safety and security of storing their fishing boats and equipment on the coast while they resided inland.⁸³ Deciding that the coast was no longer dangerous despite the Government’s ‘No Build Zone,’ relocated fishing families soon returned to their original *barangay* and built wooden shacks over the water.⁸⁴ When asked why they returned to coastal areas, ‘people say they’ll die in relocation sites all the same, albeit slowly.’⁸⁵ It seems for many, then, the benefits of living and working near the ocean outweighs any risks posed by big weather and typhoons.

In Guiuan, survivors living in the ‘tent city’ also complained about a lack of information and consultation by the government relating to the relocation process and the way housing beneficiaries were selected.⁸⁶ Survivors had little or no opportunity to express their opinions and preferences concerning the provision of new homes. As Ladylyn Mangada and Irma Tan explained, ‘They are unaware that, as citizens, it is their right to participate in decisions on matters which may impact them.’⁸⁷ This top-down, entrenched patron-client approach poses a serious challenge for the people of the Eastern Visayas to hold decision makers to account.

On a more optimistic note, however, Garcia argues the situation since Haiyan has compelled Guiuanians to become agents of resilience and adaptation through a series of community-based initiatives supported by local government officers. As Garcia states,

⁸¹ Thomas, *Resettlement in the Wake*, 17.

⁸² Ibid.

⁸³ Mangada and Tan, “Post-disaster accountability,” 69.

⁸⁴ Thomas, *Resettlement in the Wake*, 18.

⁸⁵ Garcia, “The geography of risk and resilience.”

⁸⁶ Baudot, *The Right Move?*, 17; Mangada and Tan, “Post-disaster accountability,” 70-3.

⁸⁷ Mangada and Tan, “Post-disaster accountability,” 83.

‘They are building their capacities, lowering their vulnerabilities, and trying to slowly reduce exposure in the process.’⁸⁸ Strong networks and local associations are crucial to building resilience. One such initiative, the formation of the Guiuan Fisherfolk Federation, aims to reduce the economic vulnerability of thousands of fisherfolk. Activities include conservation of the marine reserves and reefs, and operating fish cages which can be lowered before a storm. The federation is allied with the local seaweed growers’ association, providing training and assistance to seaweed growers and processors as an alternative occupation to fishing. Training in housing construction has also been provided by the local diocese and an international organisation, and unlike some other government-run reconstruction projects, families have had significant input into the design, budget, and selection of the building contractor.⁸⁹ Additionally, a strong and active women’s association manages issues concerning shelter, services, and livelihoods to keep the resettlement area alive. In 2014, the local government and community successfully evacuated people to emergency centres in low-risk areas before Typhoon Hagupit and associated storm surges arrived.⁹⁰ Learning tragic lessons from Haiyan’s devastating impact, the Guiuan community has subsequently formed some strong local institutions and worked together to address vulnerability, build capacity, and reduce risk: ‘It is a model that runs contrary to the hazard-based mindset of merely treating the situation through any bureaucratic, financial and technical trap.’⁹¹

The recent restoration of the Immaculate Conception Parish Church, all but destroyed during the 2013 typhoon, is further testament to the resilience of Guiuan’s people and their reluctance to abandon the coast. The historic church has been at the centre of spiritual and social life in the coastal town, and has been used for weddings, funerals, baptisms, and fiestas for 500 years: ‘Its significance for the local people cannot be overstated ... the church building stimulates a sense of identity, tradition, memory, and place.’⁹² Indeed, the church has played such a long prominent spiritual and social role in Guiuan, that without it, ‘the local community may struggle to enact their traditions or carry out practices that are central to their shared Guiuan identity.’⁹³ The church restoration project, completed in 2020, was a collaboration between the National Museum and the Guiuan community, with input from conservation students at the University of

⁸⁸ Garcia, “The geography of risk and resilience.”

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² Morrison and Livingstone, “Restoring and conserving the parish.”

⁹³ Ibid.

Melbourne. However, most of the reconstruction work was undertaken by skilled local craftsmen, providing jobs and a sense of ownership over the project.⁹⁴ During a homily to reconsecrate the church in 2019, Archbishop Caccia praised the project's collaboration between the church and government as 'a sign that when we work hand in hand, miracles happen. And this is an encouragement to continue in this way.'⁹⁵ He added that 'what seems to be impossible has become possible. It is now back—strong, solid and will be able to endure for centuries ahead.'⁹⁶ This remarkable church building that has survived three extreme typhoons and storm surges over three centuries embodies the spirit of the townsfolk; it symbolises their remarkable character and strength and serves as a reminder that for them, giving up in the face of adversity is never an option.

We can see that since the late nineteenth century, both Hernani and Guiuan have suffered immense damage to their towns on three occasions, although arguably Hernani has suffered to a greater extent than Guiuan. Hernani's buildings and homes have been totally wiped out three times. Even relocating their town inland 1500 metres after the 1897 typhoon did not spare them from the devastating impacts of the 1912 and 2013 storm surges. In both Hernani and Guiuan, sustainable livelihoods have been ruined, and yet despite this, locals have not abandoned their small towns, but rather, re-built and carried on. It is a similar story in Tacloban, an important city for the whole of the Visayas. The urban scale matters here, however, as the catastrophe is historically much greater, due to the city's much larger population, and unfettered development since 1897.

TACLOBAN

The 1897 typhoon and storm surge struck Tacloban, the largest town on Leyte and a major coastal trading port between Leyte and Samar. Situated on San Pedro Bay on the north-eastern side of the island, Tacloban faces the San Juanico Strait. It became the capital of Leyte in 1830 because of its ideal port location where products such as copra and timber were trans-shipped overseas, and corn, rice and fish were redistributed for local consumption.⁹⁷ However, Tacloban was, and remains, particularly vulnerable to typhoon and storm surge events because much of its coastal area fronts a semi-circular bay, and is

⁹⁴ Ibid.

⁹⁵ "Guiuan town reconsecrates church damaged by Yolanda," *CBCP News*, (8 Dec. 2019): <https://cbcnews.net/cbcnews/guiuan-town-reconsecrates-church-damaged-by-yolanda/> [Accessed: 12 May 2021].

⁹⁶ Ibid.

⁹⁷ Wernstedt and Spencer, *The Philippine Island World*, 467.

situated below sea level.⁹⁸ In 1897, the *Sydney Morning Herald* initially reported that ‘one thousand natives were drowned at Tacloban, the principal town of Leyte.’⁹⁹ However, after inspecting the area, Father Algué reported there were ‘200 fatalities in Tacloban probably more than less.’¹⁰⁰ Meanwhile, another Australian newspaper the *Barrier Mariner*¹⁰¹ belatedly printed a sensational article, ‘Typhoon and Tidal Wave in the Philippines, 7000 lives lost’ on Wednesday, 12 January 1898.¹⁰² Although the number of lives lost in such overseas news accounts varies widely from the Jesuit data printed in Fr. Algué’s monograph about this remarkable storm,¹⁰³ they still provide a sense of the widespread notoriety and destruction caused by this particular typhoon. The *Barrier Mariner* reported the ‘fearful destruction’ and ‘terrific force’ of the typhoon which ‘reduced (Tacloban) to ruins in less than half an hour.’ The article describes how bodies were removed from underneath flattened buildings, trading ships were cast ashore and wrecked, crews drowned, prisoners escaped, and property and lives lost due to mass tidal floods. As it stated, ‘Thousands of natives are roaming about the devastated province seeking food and medical attendance. In many cases the corpses were mutilated as though they had fallen in battle, and the expressions of their faces were most agonising.’¹⁰⁴

In late November 1912, when the next major typhoon struck low-lying Tacloban, the storm surge rose to two metres, far higher than it did during the 1897 event when it rose to 0.4 metres.¹⁰⁵ The *Yale Daily News* reported that Tacloban, a town of 14,000 inhabitants and principal outlet for a major hemp district, was ‘practically destroyed, three fourths of the city being carried away.’¹⁰⁶ Many lives were lost, two steamers sank in the harbour and damage was estimated at several million pesos.¹⁰⁷ However, because telegraphic communication infrastructure was quickly destroyed, the exact death toll in Tacloban remained uncertain, with one initial newspaper report suggesting half of the

⁹⁸ Luigi Toda, Justine Ravi Ordūna, Rodel Lasco, and Carlos Tito Santos, “Geography of social vulnerability of Haiyan-affected areas to climate-related hazards: Case study of Tacloban City and Ormoc City, Leyte,” (Causes of Vulnerability and Livelihoods of the Poor Conference, Illinois, May 2015).

⁹⁹ “Cyclone in the Philippines,” *Sydney Morning Herald* via Trove (25 Oct. 1897): <https://trove.nla.gov.au/newspaper/article/14101833> [Accessed: 11 June 2023].

¹⁰⁰ Lotilla, “Flashback: 1897, Leyte and a strong typhoon.”

¹⁰¹ The *Barrier Mariner*, published in Broken Hill, New South Wales, was established in 1888 and ceased publication in 1954.

¹⁰² “Typhoon and tidal wave in the Phillipines: 7000 lives lost,” *Barrier Mariner* (Broken Hill) (12 Jan. 1898).

¹⁰³ José Algué, *El Baguio De Samar Y Leyte 12-13 de Octubre de 1897*, V-71.

¹⁰⁴ “Typhoon and tidal wave in the Phillipines: 7000 lives lost.”

¹⁰⁵ Kubota et al., *Was the Typhoon Yolanda Strongest*, 22.

¹⁰⁶ “Storm kills many in Philippines,” *Yale Daily News*, (30 Nov. 1912), 4.

¹⁰⁷ “Typhoon kills many,” *New York Tribune*, (29 Nov. 1912).

town's population was killed or missing but another, on the same day, published a much lower death toll of slightly over 300.¹⁰⁸

By 1912, the US had been governing the Philippines for more than a decade. After the typhoon, the Governor-General of the Philippines immediately sent 'a shipload of food, clothing and all available medical supplies to Tacloban.'¹⁰⁹ House building materials were also included in the shipment.¹¹⁰ Although the American Red Cross was prepared to send relief funds to the Governor-General, the emergency aid was not sent because 'the Government has matters looking to prompt relief work well in hand.'¹¹¹ In the immediate aftermath of the typhoon, the Legislature passed Act No. 2199 on 11 December 1912, providing 500,000 pesos for relief purposes to stricken provinces, in order to rebuild devastated towns like Tacloban. 215,000 pesos was set aside to purchase emergency rice stocks, charter vessels, and hire destitute people to labour on public works. The remaining 285,000 pesos was allotted by the Governor-General on 18 January 1913, to reconstruct and improve public buildings and eliminate locusts in typhoon affected provinces.¹¹²

In Tacloban, the storm surge associated with Typhoon Haiyan in 2013 was 5.2 metres in height, more than double the height of the 1912 waves. The city's inhabitants were caught unaware of what would unfold: 'Everybody was normal during that day. No one believed that Yolanda [Haiyan] would cause big trouble for the city. We are used to big typhoons, but our forefathers had never told us stories about storm surges. So, when we heard about Yolanda and that it was going to have a storm surge, it was ordinary for us,' recalled the City's Convention Center General Services Officer.¹¹³ However, the experience proved to be anything but ordinary: 'It was really intense. It seemed like the sea was reaching for the sky. It seemed that the strong winds were meant to kill us all,' recounted one survivor.¹¹⁴ Another survivor in her eighties, compared Haiyan to her experiences during the Second World War, stating the storm surge and winds were far

¹⁰⁸ Jethro Mullen. "In Tacloban's history, little compares with terror of Typhoon Haiyan," *CNN* (21 Nov. 2013): <https://edition.cnn.com/2013/11/21/world/asia/philippines-typhoon-history/index.html> [Accessed: 11 June 2023].

¹⁰⁹ "Storm kills many in Philippines," 4.

¹¹⁰ "Typhoon wipes out town; Many killed," *The Sun* (New York), (30 Nov. 1912), 4.

¹¹¹ "Storm kills many in Philippines," 4.

¹¹² United States Philippine Commission, *Report of the Philippine Commission to the Secretary of War 1913*, (Washington: Government Printing Office, 1914), 32–33.

¹¹³ Naddeo and Gardner, "After the storm: Two years on," 77.

¹¹⁴ Jack Board, "Dislocation and dysfunction hang over lives of Tacloban evacuees, five years after Typhoon Haiyan," *Channel News Asia*, (7 Nov. 2018 [updated 4 May 2021]): <https://www.channelnewsasia.com/asia/typhoon-haiyan-tacloban-5-years-on-problems-1338196> [Accessed: 11 June 2023].

more terrifying than the wartime bombing raids by the Japanese: ‘I really thought it was already the apocalypse—that I wasn’t going to survive’ (*Fig. 4*).¹¹⁵

Haiyan caused absolute devastation in Tacloban, killing 6,293 people, and injuring 28,398 others. Six months after the event 1,061 people were still missing. More than 30,000 houses were destroyed. Of those, 90 percent had been situated along the coastline, while another 23,000 homes were partially destroyed, of which, over 10,000 belonged to urban poor and informal settlers.¹¹⁶ At the height of the catastrophe, the World Health Organisation (WHO) reported over 398,000 people being housed in 1551 evacuation centres, while over 600 health facilities were either damaged or destroyed.¹¹⁷



Fig. 4. ‘Basey, Samar after the devastation wrought by Typhoon Haiyan (local name: Yolanda) on November 8, 2013.’¹¹⁸

¹¹⁵ Mullen, “In Tacloban’s history, little compares.”

¹¹⁶ Rita Marteleira and Carlos Tito Santos, “Lessons from adaptive responses to Super Typhoon Haiyan in Tacloban, Philippines,” *Environment: Science and Policy for Sustainable Development*, 62, 5 (2020), 19.

¹¹⁷ Ruth Alma Ramos, Vikki Carr de Los Reyes, Ma Nemia Sualdito and Enrique Tayag, ‘Rapid health assessments of evacuation centres in areas affected by Typhoon Haiyan’, *Western Pacific Surveillance and Response Journal*, 2015, 6(Suppl 1):39–43.doi:10.5365/wpsar.2015.6.2.HYN_003

¹¹⁸ Lawrence Ruiz, “Basey, Samar after the devastation wrought by Typhoon Haiyan (local name: Yolanda) on November 8, 2013,” *Wikimedia Commons* (17 Nov. 2013): https://commons.wikimedia.org/wiki/File:Basey_after_Yolanda.JPG [Accessed: 3 July 2023]. CC-BY-SA-4.0.

Under the ‘Build Back Better’ principle, the government began the process of relocating 14,433 families (100,000 people) from Tacloban’s coastal communities to new homes in ‘safe zones’ further north.¹¹⁹ Issues like those in Guiuan and Hernani soon emerged. Projects were unduly delayed, newly built homes lacked water supplies or were poorly constructed, and the distance of the relocation zones from the coast proved problematic for families working in the fishing or tourism industries.¹²⁰ One year after the disaster, a Tacloban fisherman explained that ‘people don’t want to be relocated when there’s no livelihood. If you move fishermen into the mountains, then you have to assure them they’ll make a living somehow.’ Another Tacloban fisher asked, ‘What else are we going to do in the new site? It’s so far from the sea, and we are fishermen. We’ll go to the new site only at the weekend to visit our wives.’¹²¹



Fig. 5. ‘Rebuilding homes in the Philippines after Typhoon Haiyan.’ The International Organisation for Migration training people how to build safe shelters while distributing shelter repair kits to those whose houses were damaged. Picture: Henry Donati/DFID.¹²²

¹¹⁹ Karaos et al., *Compendium of Permanent Resettlement Housing Interventions*, 18.

¹²⁰ Marteleira and Santos, “Lessons from adaptive responses,” 21.

¹²¹ Kate Hodal, “Tacloban: A year after Typhoon Haiyan,” *The Guardian* (1 Nov. 2014):

<https://www.theguardian.com/world/2014/oct/31/tacloban-a-year-after-typhoon-haiyan> [Accessed: 11 June 2023].

¹²² DFID - UK Department for International Development [Henry Donati], “Rebuilding homes in the Philippines after Typhoon Haiyan,” *Wikimedia Commons* (9 May 2014):

[https://commons.wikimedia.org/wiki/File:Rebuilding_homes_in_the_Philippines_after_Typhoon_Haiyan_\(13964752619\).jpg](https://commons.wikimedia.org/wiki/File:Rebuilding_homes_in_the_Philippines_after_Typhoon_Haiyan_(13964752619).jpg) [Accessed: 3 July 2023]. CC-BY-2.0.

Five years after Super Typhoon Haiyan, many families were still living between two houses—an old one in the ‘danger zone’ (*Fig. 5*) and a new one in the ‘relocation area.’ As it was reported, ‘They will not abandon their former communities until forcibly made to.’¹²³ However, the Tacloban City government hoped such survivors would permanently relocate for two reasons. First and ostensibly for their own safety, but second to redevelop the seaside ‘slums’ as a tourism location and regional business hub, attracting sorely needed investment to the city. ‘We just hope that we can transform the people’s mentalities,’ stated the City’s official in charge of the Information Office.¹²⁴ Although the Tacloban City Housing and Community Development Office acknowledged that the shift to permanent housing ‘should be a relocation not a dislocation’ process, clearly many fishing families have remained unconvinced of the benefits of abandoning the coast and their age-old source of income.¹²⁵ Most were particularly angry that the government prioritised business interests over sustaining their livelihoods and local ecology. ‘They’re implementing programs that are anti-people and anti the survivors. No concern at all for the poor and the devastated victims,’ said the president of People Surge, a grassroots political party representing the voices of Haiyan’s victims.¹²⁶ In Tacloban, the murky world of contemporary Philippine politics and capitalist business interests converged, constraining coastal villagers’ future choices about where to live and work. Based on historical evidence, this stands in marked contrast to the experiences of previous generations, who, shortly after the 1897 and 1912 events in Tacloban, were not forcibly relocated to areas with limited work opportunities. Undoubtedly, in the past some families did leave the area; however, those that stayed rebuilt their homes and coastal villages, and carried on with their lives.

Just weeks after Haiyan struck, Vicente Rafael, a Filipino historian at the University of Washington, spoke optimistically about the recovery effort, and future of Tacloban and other devastated communities. He pointed to their long history of human-environment interaction and adaptation in response to natural hazards, suggesting they would eventually recover: ‘I have no doubt. If only because Tacloban has historically been at the crossroads of trade, commerce, and tourism,’ he said.¹²⁷ Former government official Raphael Lotilla agreed. He believes the early photos of devastated communities and churches, taken in 1897 by Father Algué, represent an unspoken message of hope today:

¹²³ Board, “Dislocation and dysfunction.”

¹²⁴ *Ibid.*

¹²⁵ *Ibid.*

¹²⁶ *Ibid.*

¹²⁷ Mullen, “In Tacloban’s history, little compares.”

‘These communities did live again; and they will once more.’¹²⁸ However, anecdotal evidence shows that in order to ‘live again,’ coastal communities in Tacloban have been forced to adapt to a very different way of life: ‘The fishermen who were already made to evacuate are doing other meagre jobs elsewhere, yet they still find themselves going back to the sea, regardless of whether they already live in the housing areas. The fishermen always find their way back to the shore,’ commented Lozanto Castillo Jr, chairperson of the Tacloban Fisherfolks Urban Association.¹²⁹

Returning to the question of how people and communities respond to typhoon and storm surge events, it seems clear from the examples of Hernani, Guiuan, and Tacloban down through the centuries, that there is reluctance to abandon the coast. Many, from all three communities, chose to return to their coastal *barangay* and rebuild, despite the recurrent threat posed to their lives and livelihoods by cyclonic storms and storm surges of ever-increasing intensity. Even the promise (and eventually, in some cases, provision) of more secure homes and buildings for commercial activities in ‘safe zones’ has not proven to be sufficient enough reason for many maritime people to leave the Visayan coasts permanently.

Insufficient income and lack of appropriate assistance underscores the reasons why many families chose to return to live and work as fishers in the ‘danger zones’ dotting the coastlines of Leyte and Samar. They simply had no other viable livelihood option. However, research by the Stockholm Resilience Centre has also revealed inequities in the distribution of disaster relief in fishing communities affected by Haiyan.¹³⁰ Those with explicit political connections received donated boats more quickly, while those who missed out resorted to loan sharks, waited for support from aid agencies or borrowed money from patrons. While this kind of corrupt patrimonial assistance may have helped fishing families get back on their feet more quickly, the Stockholm researchers found it compounded existing problems of weak governance, lack of financing options, and indebtedness. Concerns about the long-term sustainability of the fishing industry also emerged from this post-Haiyan research: to reduce previous overfishing by larger boats, donors were encouraged to provide only small boats. However, this resulted in the oversupply of far more small vessels than before Haiyan, which then increased competition between more fisherfolk, who were forced to work closer to shore and local

¹²⁸ Ibid.

¹²⁹ Board, “Dislocation and dysfunction.”

¹³⁰ Kate Ravillious, “Did post-Haiyan disaster relief boost fishing pressure?” *PhysicsWorld* (15 Jul. 2019): <https://physicsworld.com/a/did-post-haiyan-disaster-relief-boost-fishing-pressure/> [Accessed: 11 June 2023].

reefs because their new boats were too small to fish deeper offshore waters. Given the escalating effects of extreme weather events, which are becoming less predictable and more destructive, the authors state this kind of fiercely competitive scenario could become more common.¹³¹

Decisions about whether to remain in coastal communities have largely been based on livelihood options, patron-client relationships, local social networks, and a cultural sense of place (including the spiritual, in the case of Guiuan). These personal and collective factors are deeply rooted in the past and in the human psyche. Life affirming choices have also been constrained by lack of information and lack of inclusion in government decision making processes, concerning resettlement locations, services, and the design and construction of homes. Despite the now well-known risks posed by typhoons and storm surges, it seems the marginalised poor are reluctant to re-locate: if they do so, ‘they are left to fend for themselves in a waterless, powerless, and jobless settlement. In this milieu, the risk is merely maintained, transferred, and created.’¹³²

In some ways, little has changed in how the communities of Guiuan, Hernani, and Tacloban have responded in the aftermath of devastating typhoons and storm surges over the past three centuries. The vulnerable and poor have returned after each major event, attempting to rebuild their lives in risky coastal villages to either fish, or grow and sell coconuts. While bureaucratic and logistical challenges remain at the national and local-regional government levels to reduce peoples’ exposure to such natural hazards and risk, this longitudinal study has also revealed clear lessons for building resilience at a local level, offering Visayan coastal people some hope for the future: nurturing culturally specific coping relationships through local initiatives between kin based groups, the church, and government officials; holding locally elected officials to account for decisions affecting marginalised and displaced people; reducing vulnerability to future economic loss by diversifying livelihood opportunities for fisherfolk; and building more sustainable fishing industries. Clearly, by working together and heeding the lessons of past calamities, typhoon and storm surge prone communities like Guiuan, Hernani, and Tacloban can indeed “Build Back Better.”

¹³¹ Ibid.

¹³² Garcia, “The geography of risk and resilience.”

A FUTURE OF INCREASING RISK

The failure to pay heed to the calamitous effects which geography, politics, and the weather have imposed over the past century in areas traditionally hit by storm surges has helped foster the present harmful conditions along coastal stretches of the Philippines' eastern seaboard. Since the mid-1980s, the enormous impact of the damage inflicted on the archipelago by storm surges has become worse with each passing decade and has caused far more destruction to the east coast than the renowned typhoon and storm surge of 12 October 1897. Since the lessons of the tragedies of October 1897 and November 1912 in Samar and Leyte were first published, hundreds of thousands of homes and shanties have been built along coastal stretches of the eastern seaboard over the past half century. The changes resulting from the interplay of power and wealth during recent economic times, especially since the 1970s, has seen millions migrate to the water's edge. But residents living along these exposed stretches of coast have frequently turned a deaf ear to relocation advice. The current situation is even more precarious for numerous coastal inhabitants because of the unfettered expansion of the built environment in areas exposed to rising sea levels. In the Philippines, particularly along the east coast of the archipelago, a key factor contributing to storm surge disasters is the fact that two-thirds of the population is ignorantly, desperately, or stubbornly living in a string of calamity zones.

At the start of the twentieth century the Jesuit meteorologists at the Manila Observatory were already sending periodic telegraph warnings to coastal communities and shipping firms, forecasting the possible impact of typhoons and storm surges. However, early prediction is of little use if the population ignores the warnings given.¹³³ Even when lives can be saved by evacuation to safe shelters, the homes and livelihoods of people are often washed away. In December 1994, in Tacloban City alone, 80 per cent of the coastal houses were damaged by storm surges generated by Typhoon Axel. The result was no different when Typhoon Haiyan hit Tacloban's coastal stretches in 2013 (*Fig. 6*).

¹³³ Typhoon and storm surge warnings sent via telegraph, when the system was operating, frequently reached those parts of the archipelago where the Jesuit meteorologists had established a network of observation posts and major weather stations, but real time forecasts for weather and storm surge warnings were still limited for local populations in remote areas on Samar and Leyte and on smaller distant offshore islands. Throughout much of the colonial period, daily weather data reached the public, especially in remote areas through newspapers, but not everyone had access to them. In places outside the range of the real time tele-connected network established by the Manila Observatory, people relied primarily on local knowledge of the weather and area. See Kerby Alvarez, "Instrumentation and institutionalization: Colonial science and Observatorio Meteorologico de Manila," *Philippine Studies: Historical and Ethnographic Viewpoints*, 64 (2016), 385-416.

The unmitigated chaos of storm surges will only be further exacerbated by the exponential growth of population, the expansion of inappropriate housing and the built environment, and rising sea levels. Ecologically, socially, and economically, many coastal areas in the archipelago are now far more vulnerable than they were half a century ago. People who have repeatedly suffered setbacks in areas exposed to storm surges, especially in the Eastern Visayas in places like Hernani, Guiuan, and Tacloban, have not always been able to reconstruct their lives and sense of community.



*Fig. 6. '131115-N-BD107-734 GUIUAN, Eastern Samar Province, Republic of the Philippines (Nov. 15, 2013) A Guiuan woman stands outside of her makeshift shack in the aftermath of Super Typhoon Haiyan.'*¹³⁴

¹³⁴ Liam Kennedy, U.S. Navy Mass Communication Specialist, "131115-N-BD107-734 GUIUAN, Eastern Samar Province, Republic of the Philippines (Nov. 15, 2013) A Guiuan woman stands outside of her makeshift shack in the aftermath of Super Typhoon Haiyan," *Wikimedia Commons* (15 Nov. 2013): [https://commons.wikimedia.org/wiki/File:131115-N-BD107-734_GUIUAN,_Eastern_Samar_Province,_Republic_of_the_Philippines_\(Nov._15,_2013\)_A_Guiuan_woman_stands_outside_of_her_makeshift_shack_in_the_aftermath_of_Super_Typhoon_Haiyan_131115-N-BD107-734.jpg](https://commons.wikimedia.org/wiki/File:131115-N-BD107-734_GUIUAN,_Eastern_Samar_Province,_Republic_of_the_Philippines_(Nov._15,_2013)_A_Guiuan_woman_stands_outside_of_her_makeshift_shack_in_the_aftermath_of_Super_Typhoon_Haiyan_131115-N-BD107-734.jpg) [Accessed: 3 July 2023]. Public Domain.

The devastation caused by storm surges, particularly in heavily populated areas on the east coast fronting the Pacific, continues to cause great concern to government agencies and NGOs. The aims of the government and the Disaster Coordinating Council are to reduce loss of life, property damage, and economic disruption caused by typhoons, storm surges, and the hazards of flooding through concerted collaborative action, especially at the provincial and local levels. However, there remains the need to improve community awareness, disaster mitigation strategies, and the provision of the latest information on storm surge events unfolding in real time. One of the most valuable tools in this educational endeavour is the provision of computer packages to exposed coastal communities, and the application of Geographic Information System (GIS) techniques to aid in the forecasting of typhoons and storm surges. Local on-the-spot coastal application of such techniques and research into the hazards of storm surges will also help improve reliability of typhoon forecasts, reducing storm surge losses and assisting with emergency evacuation. To stem the rising economic and social costs of such ‘natural’ disasters in typhoon and storm surge prone areas, government officials must also focus more attention on addressing their own culpability. They need to take urgent steps to reduce social inequalities and ecological distress, in order to manage the coastline more wisely in an age of big weather and changing climate.¹³⁵

¹³⁵ Warren, “Typhoons and the inequalities of Philippine society and history.”