Philippines CCDR Background Papers

PH-1 Climate Change Institutional Analysis
PH-2 Water
PH-3 Agriculture
PH-4 Philippine Energy Transition: Towards a Secure, Affordable and Clean Energy Future
PH-5 Transport
PH-6 Macroeconomic Modelling in the Philippines CCDR
PH-7 Climate Change and Environmental Risks in the Financial and Private Sector and Opportunities for Green Finance
PH-8 The Distributional Impacts of Climate Change Damage, Adaptation and Mitigation Policies in the Philippines
PH-9 Strengthening Adaptive Social Protection for Climate Change and Disasters
PH-10 Social Impacts of Climate Change in High-Risk Areas of the Philippines
PH-11 Disaster Risk Management in the Philippines

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1 Introduction

In March 2022 the World Bank Sustainability and Social Inclusion (SSI) team carried out a case study of the social impacts of climate change in four high-risk municipalities in the Philippines: Guiuan and Salcedo in Eastern Samar and General Luna and San Francisco in Surigao del Norte. The four municipalities are all hotspots characterized by high climate risk and high poverty rates. Specifically, they are located on the eastern seaboard facing the Pacific Ocean, an area which is often hit by typhoons. They are among the poorest municipalities in the country with an average poverty incidence of 40 percent. Focus group discussions (FGDs) were conducted with one barangay from each of the municipalities as well as municipal government officials and representatives. A detailed concept note on methodology and FGD questionnaire is included in annex A. Full reports for each of the four municipalities can be found in annex B.

The case study was used to generate information on climate change and disasters from the perspective of communities who directly confront and experience these in real-life context. There were two focus areas for the case study: 1) Patterns of experiences from climate change by the communities within the lens of social inclusion, livelihoods and economic opportunities, social capital and relationships, coping strategies, and voice and empowerment; and, 2) Climate change governance primarily to look at local government capacity to define the issues and priorities and implement interventions that reduce the vulnerability of affected populations. This report summarizes the results of the FGDs, which sought to capture the experiences and insights of four rural poor communities on how climate change has been changing household and community arrangements as well as livelihoods, relationships, community support, coping mechanisms, and governance.

As this case study focuses on the social impacts of climate change, it is important to recognize that extreme events such as typhoons are one of the primary ways communities experience the effects of climate change. Communities, however, also face prolonged floods, intense precipitation, dry spells, increased temperatures, and other risks. The case study found that these climate risks not only undermine the communities’ traditional coping strategies for typhoons, but these coping strategies also do not work well for other types of climate impacts. The increasing frequency and strength of typhoons further exacerbate other climate impacts as the capacity of communities to deal with slower onset climate impact is undermined: Savings are depleted, livelihoods are threatened, and investments in socioeconomic infrastructure are required. Already poor households and communities are therefore trapped in poverty as they spend their limited resources responding to repeated disaster events and do not have the means nor the knowledge to address climate change risks. The typhoons repeatedly affecting communities in the Philippines are thus a critical part of the story of how climate change impacts people.
2 Community Vulnerability to Climate Change

Communities are under constant stress. The Philippines ranks high among the countries most affected by climate change. The poor, who often live in the most climate-vulnerable municipalities, bear the burden of climate-induced multiple hazards such as extreme rainfall and temperature increase, sea level rise, and more frequent and stronger extreme weather events. These most vulnerable communities are located in 64 coastal provinces, 822 coastal communities, and 25 major coastal cities in this archipelagic country. An estimated 13.6 million Filipinos are projected to potentially need relocation because of climate-induced hazards (CCC).

The case study communities, Guiuan and Salcedo in Eastern Samar and General Luna and San Francisco in Surigao del Norte, are considered hotspot areas, meaning that high climate change risk overlaps with high poverty rates (Figure 2.1). The projected risks from flooding and drought range from moderate to high for Eastern Samar and from low to extremely high for Surigao del Norte. Climate change has triggered many water-related changes, including typhoons and flash floods, storm surges, higher rainfall variability, heavy precipitation, sea level rise as well as dry
spells and droughts. Wet areas will generally become wetter and dry areas drier. Some of these areas will see a combination of both. Poverty in both provinces is among the highest in the country, increasing their susceptibility to climate change. Other vulnerabilities include the presence of areas with vulnerable populations of indigenous people (IP) in San Francisco. Eastern Samar and Surigao del Norte are likewise conflict affected.

**Figure 2.2: Poverty incidence, 2018**

![Graph showing poverty incidence across municipalities]

Source: PSA. 2018 Small Area Estimates.

Guiuan and Salcedo in Eastern Visayas and San Francisco and General Luna in Surigao del Norte all show increasing population growth, with annual growth rates hovering between 1.2 and 1.68 percent in 2015. The average household size is close to the national average of 4.4. The population trends indicate a generally young population. Literacy among household population is high at over 95 percent for persons ages 10 and above. Table 2.2 presents selected demographic indicators.

**Table 2.1: Demographic profile of the four case study municipalities**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Guiuan, Eastern Samar</th>
<th>Salcedo, Eastern Samar</th>
<th>San Francisco, Surigao del Norte</th>
<th>General Luna, Surigao del Norte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>52,991</td>
<td>22,532</td>
<td>14,552</td>
<td>16,771</td>
</tr>
<tr>
<td>Male</td>
<td>27,445</td>
<td>11,741</td>
<td>7,502</td>
<td>8,509</td>
</tr>
<tr>
<td>Female</td>
<td>25,446</td>
<td>10,791</td>
<td>7,050</td>
<td>8,262</td>
</tr>
<tr>
<td>Households</td>
<td>12,394</td>
<td>5,201</td>
<td>3,160</td>
<td>3,837</td>
</tr>
<tr>
<td>Land area (km²)</td>
<td>175.49</td>
<td>113.68</td>
<td>53.71</td>
<td>52.21</td>
</tr>
<tr>
<td>Population density (people/km²)</td>
<td>302</td>
<td>198</td>
<td>270</td>
<td>321</td>
</tr>
<tr>
<td>Population growth rate (%)</td>
<td>1.27</td>
<td>1.03</td>
<td>1.41</td>
<td>1.67</td>
</tr>
<tr>
<td>Elderly population</td>
<td>4,668</td>
<td>2,350</td>
<td>1,356</td>
<td>1,479</td>
</tr>
<tr>
<td>Literacy rate of population &gt;10 years</td>
<td>99</td>
<td>97</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>Male</td>
<td>98</td>
<td>96</td>
<td>98</td>
<td>99</td>
</tr>
<tr>
<td>Female</td>
<td>99</td>
<td>98</td>
<td>99</td>
<td>99</td>
</tr>
</tbody>
</table>

The two regions where the four communities are located contribute 2 percent (Eastern Visayas) and 1 percent (CARAGA) to the overall GDP.¹ In Eastern Visayas the RGDP stood at PHP354.6 million at current prices and PHP184.9 million at constant 2000 prices while the RGRDP for Surigao del Norte stood at PHP194.0 million at current prices and PHP105.8 million at constant 2000 prices.² Average annual family income in 2018 was estimated at PHP227,000 in Eastern Visayas and PHP243,000 in CARAGA, both below the national average of PHP267,000.³ The following population groups in the two regions were among the poorest in 2015: children (49.3 percent in Eastern Visayas, 49.1 percent in CARAGA), farmers (46.4 percent, 46 percent), fisherfolk (40 percent, 38.9 percent), and women (38.9 percent, 38.7 percent).⁴

**Table 2.3 shows the employment rate of the two provinces from 2018 to 2020.** The employment rate is the proportion of employed persons to the total labor force. The high rates of employment are explained by how the Philippines officially defines employed persons.⁵

<table>
<thead>
<tr>
<th>Province</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Samar</td>
<td>96.9</td>
<td>95.9</td>
<td>94.1</td>
</tr>
<tr>
<td>Surigao del Norte</td>
<td>93.6</td>
<td>94.1</td>
<td>91.5</td>
</tr>
</tbody>
</table>


² “2020 Regional Social and Economic Trends” for Eastern Visayas and CARAGA, PSA.
³ “Statistical Table Average Family Income, Average Family Expenditure and Gini Coefficient, Philippines: 2012–2015,” PSA.
⁴ “2015 Poverty Statistics for Basic Sectors,” PSA.
⁵ The PSA defines employed persons as those “15 years old and over as of their last birthday and during the basic survey reference period are reported as either a. At work: Those who do any work even for one hour during the reference period for pay or profit, or work without pay on the farm or business enterprise operated by a member of the same household related by blood, marriage, or adoption; or, b. With a job but not at work: Those who have a job or business but are not at work because of temporary illness/injury, vacation, or other reasons. Likewise, persons who expect to report for work or to start operation of a farm or business enterprise within two weeks from the date of the enumerator’s visit, are considered employed.”


3 Community Climate Stress Points

Climate change is increasingly eroding the resource base of people who depend on the sea, land, rivers, and forest for their livelihood. Intense tropical cyclones and rising temperatures have disruptive effects on natural ecosystems, including coral reefs, soil quality, and food systems, making it more difficult for fisherfolk and farmers, who constitute about 70 percent of the population in the communities, to catch fish and grow crops. Residents pointed out that coral reefs are damaged and with it the breeding and hiding grounds for fish disappear. Unpredictable weather patterns, particularly heavy precipitation, increasingly keep communities from planting cash crops that are easily destroyed by weather disturbances. Constant flooding and changes in river flows have decreased productivity of agricultural areas.

3.1 Food security

Food security is increasingly undermined. Longer dry spells and prolonged intense rains have shifted cropping patterns, especially for food production. In San Francisco, areas planted with root crops (normally a coping food during difficult times) by the indigenous Mamanwa tribe required another three to five months to recover from the onslaught of super typhoon Odette (international name: Rai) in December 2021. The typhoon’s violent winds and torrential rains slammed marine resources and coral reefs hard, resulting in massive damages as well as loss of boats, gears, and homes of fisherfolk.

The prices of basic commodities are increasing. In the island communities of Siargao in General Luna, the price of potable water, which is traditionally imported, dramatically increased after typhoon Odette. This was compounded by the rising price of oil as well as the disruption in supply in the mainland due to road damages. Food and water subsidies were needed for 45 days to provide relief to the poorest and most affected households. Farmers generally rely on coconut and copra, deemed more resilient to typhoons and droughts than other crops, but market prices are always fluctuating and have remained low since 2017, according to the farmers. The powerful winds of typhoon Odette, December 2021, devastated coconut trees and farms in its path, rendering them unproductive for the next five years.

The change in weather pattern with more severe and frequent typhoons is now a reality. It affects food and water accessibility, creating sporadic periods of food shortages and even hunger during the lean months of June and July in Siargao and San Francisco. Malnutrition and water-related problems such as diarrhea among children are expected to rise.

3.2 Livelihoods

Rural communities in Eastern Samar and Surigao del Norte are heavily reliant on their natural resources for livelihoods. With their proximity to the sea, fishing remains a predominant source of food and income. It is common for fisherfolk to turn to farming to augment their income during the lean fishing season, normally from July to August but recently this extends to December. In general, 70 percent of the agricultural lands in all communities are planted with coconut (permanent crop), and the rest with cash crops, palay, root crops, and fruit trees. However, productive agricultural lands comprise a few hectares depending on the availability of water. A few raise livestock and poultry and engage in aquaculture.

Farmers have started experiencing extreme temperature changes that have negative consequences on the survival and productivity of their crops. The intrusion of saltwater into

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6 Cash crops are crops that normally grow and are harvestable in one cropping season.
groundwater sources has also affected the supply of water for agricultural production and undermines soil quality. Over the past years, farmers in Salcedo and Guiuan have reported reduced productivity of their farms because of prolonged dry spells and frequent and more intense precipitation. Extended periods of high temperatures have threatened rice and food production\(^7\) as well as reduced water accessibility and affordability.\(^8\) Farmers explained that it takes a long time to restore parched soil after a drought and the costs of re-fertilization have increased the burden on them. “It’s almost a no-win situation. We shift to fishing when conditions become difficult for us to plant, but we find the same outcome. Plants cannot survive the heat, and when it rains it rains for days, killing our crops,” said a farmer from Barangay Pagnamitan in Guiuan, Eastern Samar. It is, however, the sea-dependent livelihoods that have suffered the biggest setback in recent years.

**Fishing is extremely sensitive to changes in climatic patterns.** Fish catch has already declined from decades of overfishing. In almost all the communities interviewed, fisherfolk have observed a formerly less known phenomenon called “coral bleaching”: Heat stress results in loss of algae, which strips corals of their colors and turn them into white. Corals and algae have a symbiotic relationship and are essential to providing a diverse range of ecosystem services, including food, protection from flooding, and sustaining the fishing and tourism industries.\(^9\) With growing exposure to warming ocean temperatures the corals are finding it harder to regenerate and support life. This is the reason for what the fisherfolk in Salcedo referred to as “exodus of fishes.” Without the productive coral reefs, fish move farther away in search of cooler ocean temperatures. “We have to fish not just deeper but farther and farther out into the sea,” said a fisherfolk from Barangay Pagnamitan, Guiuan, Eastern Samar. People have also observed that they are catching less diverse and smaller fish compared to just a decade ago. Less predictable seasons have also shortened the periods that fisherfolk can safely fish. “Today is a classic example. It’s March, a normally dry month, but the rains have not stopped, so we can’t go out to fish. Heavy rains and waves drive away fish, so it’s harder to track them down,” said a fisherman from Guiuan.

Many are increasingly aware of the perils of the changing climate on fishing and ultimately on their livelihood and income. Only few, however, have identified other sources of income because options in these areas remain limited. The poor lack the assets required to make a change in livelihood, and their know-how is extremely limited. For those able to find new sources of livelihood, short-term construction work (as laborers) in nearby urban centers or tourist areas is the preferred option for men. Women, meanwhile, perform a variety of work to augment the family income; they also migrate to countries in the Middle East or Hong Kong to serve as domestic helpers.

### 3.3 Water access

**Water scarcity and contamination are approaching critical levels.** In Guiuan, storm surges and rising sea levels have resulted in saltwater intrusion into the groundwater, prompting the municipality to declare an emerging water crisis. Particularly long dry spells have disastrous effects on water quality and availability for farming and for household use. Deep wells and pumped water are common in island barangays and municipalities. Intrusion of sea water is,  

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\(^7\) The International Rice Research Institute (IRRI) studies show that rice yield decreased by at least 10 percent for each 1°C in growing season minimum temperature in the dry season.


however, increasingly observed, resulting in increased demand for imported bottled water. The
many island municipalities and barangays in the Philippines, such as Siargao, are challenged not
only during extreme weather events. Slower onset events like floods and drought will lead to
greater water, sanitation, and hygiene or WASH related challenges, including increased risks of
waterborne disease and illness.
4 Vulnerable Groups

4.1 Women and children

Women traditionally perform multiple roles in the household. Climate change has exacerbated the burden on women, especially as families are displaced by extreme weather events and become food insecure. As the family’s livelihood is challenged by extreme weather events or gradual impact from climate change, women usually resort to salvaging rice and other food exposed to floodwaters. They also harvest edible mushrooms in the wild or coconut fruits and bananas from trees felled by strong winds or storm surges. With reduced food access, locals in Eastern Samar consume whatever they find, including one variety of mushroom they described as “hard as rock and difficult to swallow.” A local term for this experience – tumo-tulon – literally means to “put in your mouth and swallow” (without tasting). Women are the first to carry the burden when water is limited or becomes unsafe for drinking. They and their children walk miles to find a suitable source of potable water. While this sensitive issue was not discussed during the FGDs, we know from similar high-stress environments that gender-based violence often increases as a result of economical and emotional stress in families. In Siargao, the Municipal Social Welfare and Development Office (MSWDO) was granted its own vehicle specifically for rescue operations of victims of home-based violence, both children and women.\(^\text{10}\)

4.2 At risk households

Poor households adopt a number of negative coping behaviors in order to survive. To augment the family’s income, many children drop out of school to work as cargadors (porters) at piers, carrying Styrofoam or polystyrene foam boxes of iced fish for traders. Old parents care for grandchildren left behind by mothers who are forced to migrate for work.

Families living in danger zones. Climate change has multiplied the risks of those living within the no-build zones. Destruction of homes among residents in unsafe locations is already a major cause of internal displacement, which in turn results in disruption as people lose the social support network in their community. Increasingly, the local government units (LGUs) in the four municipalities have observed that more coastal and fishing communities are now affected by sea level rise, as well as storm surges during extreme weather events. In San Francisco, five of 11 villages for the first time had to be totally evacuated during typhoon Odette. These villages are now identified for “immediate relocation.” Despite having suffered repeated damages to their homes, families who remain (or return) continue to build back with many refusing to relocate more permanently outside their barangays. Strong attachments to their land and source of livelihood are intrinsically linked to people’s identities as farmers or fishers, which might explain their refusal to relocate. Residents likewise said they have lived through repeated storms and floods and managed to bounce back each time.

4.3 Young people

The social readjustments in the aftermath of a climate shock weigh heavily on the shoulders of young people. The trauma coming from the experience of an extreme weather event, witnessing storm surges and strong winds sweep their homes away and the following impact on their families, is observed especially among young children and older people. Young people suffer psychological stress as they struggle to make sense of the change in their circumstances without the support of their immediate family. In one barangay, two teenagers committed suicide shortly after super

\(^{10}\) Interview with the MSWDO in General Luna, March 2022.
typhoon Yolanda (international name: Haiyan) struck in November 2013, possibly triggered by what residents explained were extreme poverty and the loss of emotional support when their mothers migrated to secure an income for the household. A single parent who lost her husband and a child during a storm returned home after five years of working in another province to find her 17-year-old daughter pregnant with no husband to support her. Stories of children losing interest in school after their family lost nearly everything to a typhoon are common.

4.4 Indigenous people

Conflict and isolation have long affected communities of indigenous peoples in Surigao provinces. These areas are remote with difficult access to basic services. The deterioration of natural resources in combination with the conflict has pushed some IP communities to move to the lowlands where they confront a different and unfamiliar set of climate challenges, including flooding, high temperatures, and storm surges. While being aware that this is an effect of climate change, the unfamiliarity means that the Mamanwas have not yet found viable adaptation strategies. Their main coping strategy is to find work as laborers in construction or road projects.
5 Coping Strategies and Practices

Facing climate risks, communities and families have resorted to numerous coping behaviors. Most households store food that can sustain them for the lean months. It is common to salt and dry fish. Farmers plant root crops such as cassava and coconuts that are resilient to drought. Houses have bamboo slats for flooring and bamboo strips for walls, which are good for air circulation and provide resistance to strong winds. Boats are either elevated to dry land or hidden between mangroves to secure them from strong waves. Following disaster events especially men find work as carpenters and workers during the clearing and rehabilitation of roads and other affected infrastructure.

Some traditional coping strategies, which communities have long made use of to manage risks, are increasingly undermined by new and increasing climate risks. Communities in high-risk areas for instance have often resorted to growing root vegetables that are less vulnerable to the high winds of typhoons. However, increasing salination threatens the viability of root crops. Prolonged occurrence of low-pressure areas (LPAs) loosens soil and keep them wet for longer period of time making it difficult for crops. Other types of climate risks such as longer and hotter days, shifts in availability of water, and observed sea level rise are increasingly changing the situation for farmers and fishers, and their households. Lacking knowledge and other options, communities often continue investing in traditional coping strategies assuming or hoping that at some point these practices will again work for them. Conversations in the case study communities suggested that some households were increasingly indebted as they borrowed money for traditional coping strategies from informal lenders or in their social network.

Some coping strategies also have adverse impacts on the integrity and well-being of the family unit. The study found that challenged livelihoods result in mostly women migrating to other places for work, either domestic urban areas or abroad. While enhancing the family’s ability to augment lost or limited income, migration has strained the family structures, leaving many households to the care of relatives or fathers and disrupting the traditional source of emotional support for the children. Some families have moved into urban areas and face livelihood and security issues, resettling in urban poor communities which are often prone to flooding.

5.1 Inclusion and voice

Climate change impacts are not experienced uniformly. There is strong consensus among residents in the surveyed communities about the need to recognize that certain groups are impacted more severely than the rest of the population. The FGDs indicated that the communities are aware that children, women, farmers, fisherfolk, older people, those living in danger zones, and persons with disabilities are among those in need of additional assistance because of preexisting limitations that make them more vulnerable than others.

Experience with participatory processes has helped communities “plan forward,” anticipate risks, and build social capital. Residents explained that their community organizations play an important role in organizing their response and ability to cope with climate change. Numerous civil society groups in the barangays have experience in participatory planning. In Guiuan, residents implementing the KALAHI-CIDSS National Community-Driven Development Project (KC-NCDPP) prioritized the construction of a road that provides an escape route to those who face risks from storm surges due to their location. In General Luna, a sea wall built by community volunteers through KC-NCDPP in 2014 protected the barangay from the storm surge during typhoon Odette seven years later. A COVID-19 isolation/quarantine facility built in 2021 through the KC-NCDDR
Disaster Response Operation Modality (DROM) in San Francisco served as an evacuation site for five families during typhoon Odette.

Processes that have allowed for community participation have strengthened community capacity for analyzing various risks, including those brought about by climate change, allowing residents to prioritize options to mitigate the risks. Such projects have also provided opportunities to engage with local governments, which can provide the much-needed technical assistance and resources to finance climate action. The communities cite in particular how the KC-NCDDP has helped them better understand and adapt to the risks from climate change and disasters.

Similar feedback was given for other organizations (for example, Pantawid Pamilya Parent Leaders, beneficiaries of the conditional cash transfer program of the Philippine government). Affiliations with groups and actual experiences with processes that call for consultations and inclusive decision-making seem to prepare communities for collective climate action. However, community members asserted that emergency assistance can only go so far. Providing resources and voice for community priorities for more long-term solutions to address climate change impacts is important, they said.

Local governments have prioritized certain sectors for social assistance, but residents explained that many government programs provide support only after risks have materialized. Communities expressed an interest in programmatic interventions that address underlying drivers of vulnerability and enhance their adaptive capacity. For instance, the communities requested for more long-term support to help them find alternative or diversified income sources as well as funding for critical infrastructure such as seawalls, evacuation centers, and climate-resilient schools and health stations.

Indigenous Peoples (IP) are represented in the local government unit through the Indigenous Peoples Mandatory Representation (IPMR) which requires IPs to be present at all levels of the local government units following the guidelines set by the National Commission for Indigenous Peoples (NCIP). Continuing challenges on IPs political isolation, economic marginalization and socio-cultural orientation are known to constrain their effectiveness in their governance role. In San Francisco, the Mamanwas sit as observers in the Municipal and Barangay LGU as they have wait for the formal endorsement from NCIP for more than a year now. Even as observers, they find their role important in “bringing IP concerns on livelihood and land” to the LGU.”

Loss of livelihood is a key driver to migration. While there were few reported cases of entire families moving out of their residences to escape the threat to their safety, lost and threatened livelihood as a result of climate change seems to be a stronger driver for residents to leave their homes. Women, perceived to have better employment opportunities in the service industry, are more inclined to migrate for work. However, working as domestic helpers can expose them to insecure and dangerous work arrangements such as exploitation, sexual abuse, and trafficking.

5.2 Social cohesion

Social coping mechanisms rely on strong family and community networks. People rely heavily on their immediate family and social network and turn to their more well-off relatives for assistance when they are exposed to shocks. In addition to their families, the community itself provides a strong social support system that cushions people from the impact of disruptive and often tragic climate events. The practice of extending a helping hand to neighbors during planting and harvesting continues to this day – addressing the high cost of hiring farm help that increasingly

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11 FGD with the Mamanwas in San Francisco, March 2022.
burdens farmers with declining production due to climate change. Neighbors and families provide mutual support in clearing debris and rebuilding their homes and community facilities.

In the barangays that participated in this study, the communities found shelter in the homes of neighbors built of more resilient materials during disaster events. Communities have developed a well-organized system for evacuation: The location of shelters has been mapped and particular houses pre-assigned to families that may need to be evacuated. In Guiuan and Salcedo, three to five families consistently seek refuge in one house, staying there between two and five days each time the communities are flooded due to storm surge. In 2013, during and after typhoon Yolanda, the evacuation extended up to six months to a year. Multiple households shared the same space and available food and helped each other rebuild homes that were destroyed. One barangay LGU formalized the arrangement and signed a memorandum of agreement with host households, acknowledging the role and value they perform in times of crisis. Following extreme weather events, there is, however, still high dependency on government and nongovernmental organizations (NGOs) for relief goods, cash grants, farm inputs, and other forms of assistance.

The proliferation of microcredit associations indicates that they have become an important part of the communities’ network of support. Climate change has triggered a reliance on these organizations for access to uncollateralized loans. Testimonies of succumbing to a “debt trap,” however, is common. The amount residents can borrow is normally insufficient to rebuild lost livelihoods, pushing them to contract debts from other sources, including loan sharks that levy at least 20 percent monthly interest. In San Francisco, women borrow and invest in food preparation and selling to put food on the table. “We get a loan to pay for another loan. That is the way it works,” explained a mother who spent two years trying to pay off a loan she took to rebuild her sari-sari store (a village retail shop).

In one barangay, people have set up a mutual aid group and pooled their savings to tide them over during emergencies. Climate change, however, will continue to undermine their savings as extended periods of low income become the norm or loss of livelihoods occurs. Climate-related stresses force families to draw upon their savings more often, mostly to replace assets that are essential for their livelihood and rebuilding their houses. This situation has become recurrent as their resource base is impacted by storm surges, dry spells, and increased rainfall. Testimonies by residents highlight how existing community networks and family capacities are proving inadequate to address the compounding effects of climate change, deepening further what is an already high level of poverty.
6 LGU Responses

Addressing the adverse impact of climate hazards through climate change adaptation plans is a step in the right direction for local governments amid the landscape of multiple challenges posed by climate change. The LGUs of the four municipalities have incorporated adaptation measures in their local climate action plans but explained that limited revenues have constrained them from full scale implementation. Even with additional resources arising from the Mandanas ruling, which increases the share of national government tax revenue transferred to LGUs starting in 2022, this will remain a problem for poor municipalities. In San Francisco, an additional budget of P38 million is expected but this will not even be sufficient to finance the existing infrastructure damages to LGU structures from recent disaster events let alone invest in new adaptation priorities.

Construction of climate-resilient and adaptive public infrastructure such as bridges, sea walls, and evacuation centers requires huge investments and more complex designs and construction methodologies. In San Francisco, where typhoon Odette damaged 90 percent of the government center, the local government expressed concern over the high cost of rehabilitation to conform to the new standards on infrastructure design set by the Department of Public Works and Highways for strong typhoons and earthquakes. Building back better with appropriate resilient design changes to withstand multiple hazards is a costly option, especially for poor municipalities. This necessitate not only the financial help of the national government, but also the active engagement of communities to ensure their priorities and needs are adequately addressed.

All LGUs have existing Local Climate Change Adaptation Plans (LCCAPs) mandated by law. However, the task of local climate planning is often assumed by an inadequately staffed Office of the Municipal Planning and Development Coordinator supported by the Municipal Disaster Risk Reduction and Management Officer (MDRRMPO) who has multiple responsibilities for planning and coordinating other local plans such as the Comprehensive Development Plan (CDP), Comprehensive Land Use Plan (CLUP), and the Local Disaster Risk Reduction and Management Plan (LDRRMP). The same offices are mobilized for emergency response. For instance, at the height of the pandemic, all LGU personnel had to perform functions to help manage the health, safety, movements, and social services for residents and visitors to their town. Several plans due for updating in 2022 might therefore have to take a back seat until some level of normalcy has been restored in the current health crisis and the recently experienced disasters. There are also projects in the pipeline (for example, construction of evacuation centers, seawalls, major watershed restorations) that have yet to take off due to lack of budget or completion of feasibility studies by national government agencies. The LGUs require massive support to initiate more strategic interventions such as a well-thought-out livelihood program for vulnerable groups. There is also a need to sharpen the targeting of vulnerable groups and use information from their vulnerability assessment to design programs that are responsive to the needs of these groups.

Capacities of the LGUs in identifying and financing strategic solutions to the problem of internally displaced peoples and moving households/communities from danger zones need a nuanced approach. This is not only a question of moving households to safer places. A better understanding and careful consideration around the wider socioeconomic and psychological impacts from climate induced migration is needed. This will require cross-sectoral planning as well as consultations and participation from all stakeholders, which might be beyond the current capacity of these vulnerable municipalities and will require a strategy at the national level.
7 Strengthening Climate Adaptation Programs and Policies

Recognizing that this case study is based only on the reflections of four communities, the following outlines a few considerations for strengthening adaptation programs and policies in climate-vulnerable communities. Further consultations should be carried out in a larger number of communities to capture more nuanced perspectives.

- **Awareness and Adjustments.** The case study indicates that communities have a basic understanding of climate change, including in particular its more obvious manifestations and how their lives are changing as a result. There appears to be broad understanding that climate change is affecting the ecosystems and resource base that support their livelihood, the ability of the structures to withstand severe climate disturbances, the availability of food, water and their overall coping capacity to deal with recurring climate-related events. Communities likewise observed that these climate related events are happening more often. It is not clear however that communities are currently willing or even able to make significant changes in order to avoid further losses and risks to their own safety. Further work is needed to understand the motivations and preferences of communities. What is the depth of information that is still needed to change the current mindsets, help people make decisions and change behaviors? What adaptation options can be developed and what considerations are made by communities to define these options? How can communities be helped to embrace the adjustments and make behavioral changes when current coping options no longer prove effective?

- **Ecosystems:** The protection of lifeline ecological services, the resource base upon which people depend on for their food, water, and livelihoods in order to survive, should be a priority for climate change action. The protection of ecosystems has become part of the language of climate change. At the community level, there is seemingly too few options developed to address these challenges. Ecosystems provide multiple benefits particularly in food and water security and numerous ecological functions. Enabling policies for protection of these ecosystem are already existing. Why are there weaknesses in implementing these policies and laws? At what level should ecosystem protection and management be effectively undertaken given its almost irreplaceable value to communities? What actions can LGUs and the national governemt more effectively do at their respective level?

- **Livelihoods:** The negative impact of climate change on livelihoods has been established and is a key issue. Loss of jobs and income along with loss of livelihood gears, destruction of farm assets, and fishing breeding grounds, and production due to extreme events, perennial flooding, landslide and long occurrence of drought are estimated to be severe. To this should be added the social impact as households are trapped in poverty and new households pushed back into poverty. Communities obviously need support to expand people’s skills, mobility to shift to alternative sources of income, including off- and on-farm livelihood activities, as well as enhancing the climate resilience of traditional livelihoods. Successful and resilient livelihood models are few and far between and LGUs are aware of the challenge of mounting sustained livelihood support that can provide viable alternatives to the increasingly unstable livelihood systems in fishing and farming villages. As communities and people are often loyal to their traditional livelihoods and ways of doing things, efforts will have to be invested in increasing knowledge and changing behaviors. Further work is also needed on resilient livelihoods to avoid the failures that so often hound many livelihood projects. How can communities shift to new alternatives? How can we find a balance between the need to
preserve people’s proximity to their livelihood base (e.g., sea) versus the need to ensure their safety particularly in areas where further occupation of lands in high-risk zones already prove untenable? Will it be preferable to support livelihood diversification and introduction of climate-smart approaches, the latter especially for farmers, rather than a drastic shift to a new livelihood? Would a combination of short-term and immediate support along the lines of a more transformative adaptation work better? Technical assistance at the field level directly for the farmers is certainly a requirement to make these work. It is argued that this would allow people to build on existing skills and would not require an abandonment of strong identities such as farming and fishing. Communities also often lack support to inform and guide market-based decisions for off-farm/off-sea livelihoods, which makes them susceptible to exploitation by middlemen. How can government facilitate private sector involvement in ensuring access to fair markets by poor and marginalized groups?

- **Inclusive and participatory support:** To build on the communities’ concerns and understanding of climate impact on their lives and livelihoods, support programs should build on inclusive participation and decision-making processes and support priority local development investments for adaptation in climate-vulnerable communities. Communities would need substantial support to cope with the increasingly harsh impacts of climate change, including financial and technical support. The current budgets of poor LGUs would be insufficient to meet the huge financing requirements, even after the increase in internal revenue allotment (IRA) from the Mandanas ruling, necessitating an increase in fund flows to very poor and vulnerable LGUs and communities to address their needs. LGUs and communities will also require assistance to ensure they have the technical capacity to inform development plans and investments, including climate change data and analysis in a format that is accessible. Community involvement and ownership can empower communities, provide them the necessary knowledge, and help accelerate climate action. The Philippines has successful models that could be leveraged, including the Kalahi CIDSS-National Community Driven Development Program where community voice and participation are an integral part of the local planning processes and prioritization. Climate change interventions can be designed to ensure IP participation and complement indigenous community practices for adaptation. Practices linked to traditional kinships and neighborhood solidarity are important elements that provide much needed psychosocial support to those who experience climate shocks. A few important policy questions around this include: What does a community-based climate change adaptation look like or at least what are its key elements? What would it entail for government to support such an approach in a scale that matches the severity of the risks now confronting communities?

- **Strategic resettlement:** As climate change may render particularly vulnerable areas uninhabitable, strategic resettlement will be required in certain areas as an adaptation measure. At-risk communities should be identified and affected communities engaged early on to discuss future risks and possible solutions as well as support required for resettlement. It is important to recognize that resistance to relocation is also tied to the perceived loss of identity associated with land and natural resources and established social support system. Specifically, for fisherfolk communities who are experiencing the effects of sea level rise, a strategic approach to resettlement in secure areas will need to balance both their livelihood needs and safety. Given the urgency of addressing this issue, what would be the most efficient and effective way to accelerate this intervention? How much resources should LGUs be provided given the scarcity of suitable locations and high costs of land acquisition?
Annex 1: Concept Note for Case Study Design

Introduction and objectives

The Country Climate and Development Report (CCDR) is the World Bank’s new core country analytics product that will help inform each Systematic Country Diagnosis (SCD), and as such, Country Partnership Frameworks (CPF). The CCDR will help identify opportunities for climate action by the public and the private sector, so that each country’s development goals can be achieved in the context of sustainability. The CCDR will draw on existing rigorous analytics and emissions data and will provide an analytical input for the SCDs. The objective and focus of the CCDR is to capture the interplay between green, resilient and inclusive development, country’s development goals and climate change, in the context of the Paris Agreement and the WBG’s commitment to align its portfolio to its objectives. The CCDR will analyze how the country’s development goals can be achieved in the context of mitigating and/or adapting to climate change.

The Philippines Country Climate and Development Report (CCDR) aims to analyze how climate change will affect the country’s ability to meet its development goals and green, resilient, and inclusive development; and to help identify opportunities for climate action by both the public and private sectors. The Philippines CCDR is organized around 3 technical deep dives (energy, water and agriculture) and will include also a poverty and climate vulnerability mapping exercise.

To feed into the CCDR, the Sustainability and Social Inclusion (SSI) brings into focus the social dimension of climate change which includes social inclusion; resilience and social cohesion; empowerment, voice and accountability. Case studies will be conducted in selected municipalities covered by the KALAHI-CIDSS National Community Driven Development Program (KC-NCDDP) which is implemented in 847 poorest municipalities since 2014. More than 500 of these Municipalities were hit by the typhoon Haiyan in 2013, the strongest typhoon to ever hit the Philippines. Since then, several strong typhoons have occurred with the latest one, Odette, in December 2021, bringing destruction in the regions of CARAGA and Eastern Visayas, being the worst hit.

The case studies aim to capture the social dimension of climate change among which are: community or household arrangements and relationships; community lifestyle and values; community support and coping mechanisms; community learnings and ability to adjust themselves in the face of changes.

Vulnerabilities coming from exposure to extreme events, and changes in temperature and precipitation ultimately hit hard on people and communities, and the lifeline resources they depend on such as forest, marine and water sources. Changes in relationships, power relations, lifestyle and values, happen as a result of disasters. The impact of disasters and its frequency is not the same for community members even as they have similar experiences of dislocation and disruptions of life and livelihoods. Disproportionate impact is dependent on whether communities and households are poor and/or organized. Gender and ethnic groupings also make communities vulnerable to unequal impact. Likewise, being located in remote and isolated areas, or in island communities at the same time being resource dependent, makes one prone to landslide, a storm surge or a very strong typhoon such as the one that recently hit the Philippines, Odette.

Methodology and proposed focused group discussion (FGD) activities

The case study approach will be used to generate information on climate change and disasters from the perspective of communities who directly confront and experience these in real-life context. The case study approach allows insights and understanding of the experiences of
community members and local government units when extreme climate related events hit them and the challenges they face during and after these events. There will be two focus areas for the case studies:

- Patterns of experiences from disasters by the communities focus on the changes in social inclusion, livelihoods and economic opportunities, social capital and relationships, coping strategies, and voice and empowerment; and
- Governance in disasters, looking at government response and capacity to do assessment on damages and impact reflecting the severity of impact in various communities; ensuring information to all and government support is accessible; targeting the affected communities without excluding particular groups; sustainability and quality of response; perception and analysis of future disaster and even climate risks; mechanisms to address grievances, problems, and issues.

The eastern seaboard which has been repeatedly hit by larger events including for instance Haiyan and Odette is selected as a case study area. Safety and security protocols related to COVID19 is likewise a consideration for the selection. Given the devastation from the recent typhoon Odette, case study areas should also be accessible and safe to travel.

Initially, the Provinces of Eastern Samar and Surigao Norte have been selected. Two municipalities have been initially identified in Eastern Samar (Guiuan and Salcedo) and in Surigao (General Luna and San Francisco), which are on the typhoon path including Haiyan and most recently Odette. In each of the municipality, two FGDs will be conducted: one with the local government unit and another with communities in a barangay. From the Local Government Unit (LGU), FGD participants shall include selected members of the Municipal Disaster Risk Reduction Management Council (MDRRMC) specifically, the Municipal Disaster Risk Reduction Management Officer (MDRRMO), Municipal Social Welfare and Development Officer (MSWDO), Municipal Planning and Development Coordinator (MPDC), Municipal Agriculture Officer (MAO), the Municipal Engineer and a CSO representative of the Municipal Development Council (MDC). In the communities, the FGD participants will be limited to about 10 to 15 people to include representatives from the barangay organizations of women, farmers, fishers, irrigators’ association, indigenous peoples and the Barangay Water Service Association (BAWASA) if any.

Secondary sources shall also be used to generate information regarding the profile of the Municipality and the Barangays to be visited. This information will include: hazards and risks, economic and social profile; relevant demographic information; and poverty information.
## Guide to Community FGD

<table>
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<tr>
<th>Areas of inquiry</th>
<th>Specific questions</th>
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<tbody>
<tr>
<td><strong>Priming Question</strong></td>
<td>Tell us how you were affected by Typhoon Odette? (Probe: social services, livelihood, agriculture, fisheries) Were there other disasters that have affected you in the past?</td>
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<tr>
<td><strong>1. Vulnerability</strong></td>
<td>Are there a particular groups and areas in your barangay that were more affected than the rest? How were they affected? Are the same groups or areas being hit by the other disasters? What changes do you notice about our climate? (Getting warmer, less predictable?) <em>(Use this opportunity to clarify the concept and to establish link of extreme events to climate change.)</em></td>
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<td><strong>2. Patterns of Relationships</strong></td>
<td>How did the disasters affect the relationships within the family (home and work arrangements, gender relations, time/interaction with children/family)? What has changed in the way you interact with your group/organization and with your LGU because of the disasters you experienced?</td>
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<tr>
<td><strong>3. Coping and Sources of Support</strong></td>
<td>Describe how you usually cope when disasters strike? Where do you usually get or ask for support when you are affected by a disaster? Before? During? After? (Probe also nature of support) Are you relying on the same people or group for support over the years?</td>
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<td><strong>4. Information and Communication</strong></td>
<td>Where do you get information on early warning regarding a coming typhoon/storm surge/drought? Have you heard about climate change before today? From what you heard; how does it manifest in your daily life? What has changed about the way government or other organizations relay information to you about disasters or climate change? What are your suggestions to improve information and communication? (e.g., additional data or ways of communicating them to you)</td>
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<td><strong>5. Governance</strong></td>
<td>How do you think we can more effectively deal with the impact of climate change? (Focus: basic social services, livelihood, agriculture, fisheries, permanent relocation). Have you ever initiated any discussion around these solutions with your Barangay or Municipal LGU? If not, why? What do you think government should do to help you address the effects of climate change?</td>
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| **Wrap Up** | Summarize the key points:  
- Climate change trends  
- Impact on communities (highlighting impact on access to social services, farming, fishing)  
- Vulnerabilities experienced among sectors and areas  
- Coping strategies  
- Ideas to address climate change and the issues raised in this FGD |
<table>
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<tr>
<th>Areas of Inquiry</th>
<th>Specific Questions</th>
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<tbody>
<tr>
<td>1. Introductory Questions</td>
<td>What has been the impact of Odette on the municipality? What disruptions happened? How does this compare to previous disruptions? (physical isolation, evacuation and length of stay in evacuation centers, livelihood, mobility, communication, government services)</td>
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<td>What other disasters have been experienced by the municipality? Yolanda, others?</td>
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<td>Is there a notable change in frequency/magnitude/intervals? How?</td>
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<tr>
<td>2. LGU Investments for resiliency</td>
<td>Has the impact also changed? Are there severely affected community members? Who? Are there least affected community members? Who? Are there communities/barangays that are more affected? Less affected?</td>
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<td>Has it taken longer or shorter for LGU to recover? Undertake rehabilitation? Have LGU priorities changed? How and Why?</td>
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<td></td>
<td>Does the LGU update its LCCAP/DRRMP regularly? Has the CLUP/CDP integrated climate change and DRR? What LGU strategic actions address hazards? the vulnerabilities of communities? Capacities of communities?</td>
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<td>What community based initiatives is LGU supporting? Marine Protected Areas (MPAs)? Community based Resource Management Projects (CBRMPs)? Are these sustainable in terms of resource management and livelihood? What are the learnings?</td>
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<tr>
<td>3. LGU Response</td>
<td>Has the LGU response changed over time? In terms of form? Modality? What has changed? Why?</td>
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<td>What actions has the LGU taken to improve response? Improve coping?</td>
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<tr>
<td>4. Targeting</td>
<td>How do you identify those who are in most need of support? What actions have the LGUs made to address those who are severely affected?</td>
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<td>Are there changes in community being dislocated/ displaced? Longer or shorter period? Are there members of the community who have been permanently transferred? What support did LGU provide?</td>
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<td>Has the LGU experienced livelihood dislocation? What was the response? How did LGU restore livelihoods? Did it work? What are the lessons?</td>
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<tr>
<td>5. Accountability, Information and Citizens’ Engagement</td>
<td>Has affected communities brought their problems/proposed solutions to the LGU? Are the community based solutions implemented? Affected? Sustained?</td>
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<td>Has the LGU communicated its disaster response plans and budgets? With community input and participation?</td>
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<td>What are the changes in the relationship of the LGU with the communities? Why?</td>
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<td></td>
<td>What are the observed changes in community participation/mobilization in community/barangay meetings?</td>
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Annex 2: Individual Case Study Reports on Four Target Municipalities

The World Bank Sustainability and Social Inclusion (SSI) team carried out a case study of the social impacts of climate change in four high-risk municipalities in the Philippines in March 2022: Guiuan and Salcedo in Eastern Samar and General Luna and San Francisco in Surigao del Norte. The four municipalities are all hotspots characterized by high climate risk and high poverty rates. Specifically, they are located on the eastern seaboard facing the Pacific Ocean and among the poorest municipalities in the country with an average poverty incidence of 40 percent. Focus group discussions (FGDs) were conducted with one barangay from each of the municipalities as well as municipal government officials and representatives.

Below are included four individual reports, one for each municipality, summarizing the results of the focus group discussions conducted with residents of the barangays and Municipal Local Government Unit (MLGU) department heads and staff. The objective of the FGDs was to capture community experiences and insights on how climate change has been changing household and community arrangements as well as livelihoods, relationships, community support, coping mechanisms, and governance.
A2.1 Guiuan, Eastern Samar, Philippines

Figure A2-1: Satellite Map of Eastern Samar (red boundary line) showing the location of Guiuan at its southern tip


Community profile

Guiuan is situated in the southern tip of the Eastern Samar Province and is bound by the municipality of Mercedes to the north, the Pacific Ocean to the east, Surigao Strait to the south, and by Leyte Gulf to the west. Borongan City, the provincial capital, is 11 kms. away, while Tacloban City, the regional center of Eastern Visayas, 152 kms. It is classified as a first income class municipality. The town has a total land area of 175.49 km\(^2\) and consists of 60 barangays, 38 of which are located across islands and islets that make up the Guiuan Protected Landscape and Seascape, an area recognized for its rich marine resources.

The population of the municipality in 2015 was recorded at 52,991. The majority of the population belong to the 1-19 cohort. The province has a literacy rate of 99 percent.

Fishing and farming represent the principal sources of livelihood in Guiuan. According to the Guiuan Local Climate Change Action Plan (LCCAP), 70 percent of the population are dependent on fisheries for food and income. In the months between March and September, fishers are able to harvest some of the most valued fish species: Yellow Fin Tuna, Skip Jack, Blue Marlin, Rainbow Runner, Flying Fish and Spanish mackerel. Throughout the year, species of Sail fish, Jack, Big Eye, Indian Mackerel, grouper and emperor fish can be caught. Fish catch normally supply 40 percent

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13 Eastern Samar Provincial LGU. Guiuan. Accessed on 15 April 2022 from
of local market needs while another 40 percent go to other towns and overseas (Hongkong and Japan). The rest are for household consumption and processed. In recent years, fishers interviewed report that the yield from Guiuan’s fishing grounds have been significantly dwindling which many attribute to climate change.

Known for its pristine beaches and natural scenic spots, Guiuan is also a famous tourist destination and a number of resorts and tourism auxiliary establishments are found in the islands. These establishments were destroyed by Typhoon Yolanda and rebuilding took between three to five years according to the residents. Sixty percent of the houses are made of wood and light materials. According to the FGD participants, around 90 percent of the households reside along the coast and only a small number are in the upland portion of the village.

![Figure A2.2: Poverty Incidence Among Population in Eastern Visayas: 2015 and 2018](image)


**Poverty in the province of Eastern Samar remains one of the highest in the region.** In 2018, the province had an estimated poverty incidence of 49.5 percent of population and while it has slightly declined from 51.5 percent in 2015, it still represents the highest in the entire Region VIII (Eastern Visayas) and three times higher than the national average of 16.6 percent. The same report estimates the annual per capita poverty threshold in 2018 to be at PHP29,070, also the highest in the region.

Guiuan’s poverty situation is no less different from the province. In 2018, 43.4 percent of its population were determined to be poor and thus, struggle to meet their minimum food and non-food requirements.

**Climate change vulnerabilities**

Guiuan’s Local Climate Change Action Plan (LCCAP) has identified four major vulnerabilities the municipality faces due to climate change–related hazards: (i) tropical cyclones, (ii) storm surges, (iii) increased temperatures, and (iv) sea level rise. Other natural hazards include tsunami and those connected with earthquake-related hazards. A vulnerability assessment conducted by the municipality found medium to high threat to tropical cyclones and long dry spells. Due to its location in the Pacific Ocean, Guiuan experiences the direct effects of typhoons. Low lying areas

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are prone to flooding, tsunami, storm surge and landslides. Warming temperature has exacerbated the impact of their exposure to severe climate related events.

**Severe typhoons accompanied by storm surge as high as 4 to 5 meters have battered the municipality in the last ten years—claiming lives, leaving many people homeless and causing destruction in billions of pesos.** Typhoon Yolanda in 2013 according to the residents, is still the deadliest, with a death toll of 101, 18 of them from Brgy. Pagnamitan, and flattening nearly the entire town. The following year, 2014, Typhoon Ruby (Hagupit) also hit the town. Three of the most destructive are Ursula (Phanfone) in 2019, and Jolina (Conson) and Odette (Rai) in 2021 and Agaton in 2022. Every year at least 20 typhoons pass by Guiuan and people say they are becoming more severe. Coastal and island barangays and those in the low-lying areas in the mainland are prone to flooding. Pagnamitan, which is one of the barangays in the Calicoan Island, experience storm surge frequently and have to evacuate each time there is a storm surge warning of more than 1 meter.

**The municipality is prone to the effects of warming temperatures.** The oceans are said to absorb most of the excess heat from global warming. Guiuan is vulnerable to the effects of climate change because it is surrounded by three major bodies of water. To its east is the Pacific Ocean, to the west, Leyte Gulf and Surigao Strait to the south. Global warming has already increased sea surface temperatures (.2 percent increase in 2020) which triggers the changes in climate patterns and the local government unit projects that an annual temperature increase by 1.2 percent will happen by 2050.\(^22\)

**Warming temperature creates a number of issues among them the threat from longer dry spells.** While Eastern Samar has no distinct dry season because of its climate type (Type E),\(^23\) residents claim the warm months become warmer and longer ushering in extended months of dry spells and with it, destructive impacts on fisheries, agriculture, and water supply. The fishers interviewed related that their fish catch has been continuously dwindling due to the damage on fish corals. Fish corals are susceptible to “coral bleaching” during extended periods of extreme heat. Dry spells are drying up water sources as well raising threats on the availability of water for both agriculture and household needs.

**Rainfall has become unpredictable resulting to shorter but wetter months.** The months from October to February are normally considered the rainy season according to the residents but this pattern is now being disrupted such that it has become quite common to experience heavy rains during the “dry months”. Global warming tends to increase evaporation particularly in coastal regions like Guiuan. The FGD with communities indicates that people are aware that extreme rainfall patterns are occurring in shorter periods, creating longer periods without precipitation. This has devastating effects on farming in an area where plantations remain largely rain-fed.

**The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAG-ASA) predicts that “heavy daily rainfall will continue to become more frequent, extreme rainfall will also increase in Luzon and Visayas only, whereas the number of dry days is expected to increase in all parts of the country in 2020 and 2050”.\(^24\)** PAG-ASA defines extreme rainfall as daily rainfall exceeding 300 mm and dry day as that with rainfall less than 2.5 mm when compared with the

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\(^{21}\) Focus Group Discussion with the Municipal LGU staff, 2 March 2022.

\(^{22}\) Guiuan Municipal LGU. 2017-2022 Climate Change Action Plan.

\(^{23}\) Type II Climate type is characterized by the absence of distinct dry season and instead would experience pronounced maximum rains usually in the months from November to January (PIDS, Economic Issue of the Day: Basics on Philippine Climatology. Accessed on 20 March 2022).

observed baseline values, respectively. The LGU has projected a 2.9 percent increase in annual precipitation by 2020 and a 5.4 percent increase in annual precipitation by 2050. Strong rainfall when combined with strong winds have resulted to flooding in Guiuan and a host of other issues that include loss in productivity, destruction to public infrastructures, contamination of water sources and even landslides.

**Poverty makes it more difficult for people to cope. Certain segments of the population are also at risk from the effects of climate change.** The differential impacts of climate change are well documented and they arise from the lack of adequate capacity to recover and adapt due to lack of resources (assets), opportunities and overall capacity to survive the shocks that come with changing climate patterns. Residents consider children, senior citizens, persons with disabilities, women especially pregnant women and those residing in low lying and coastal barangays, fishers and farmers and those who are poor to be the most vulnerable to the effects of climate change. While poverty is a shared condition among majority of the people in Guiuan, people argue some specific sectors among the poor are likely to feel the brunt of climate change more than others. These sectors are less able to take care of themselves due to their existing conditions. Some have fewer assets and experience socio-cultural impediments (e.g., gender biases, multiple burden) that make recovery and resilience to climate change much more challenging.

The LGU acknowledges that certain vulnerabilities are locational. For instance, those that are most at risk from sea level rise, typhoons, and storm surge include 27 island barangays and coastal barangay in low lying areas. These barangays include Taytay, Barbo, Dalaragan, Salug, Bungtod, Campoyong, Hollywood, Cantahay, Población Ward 1, Población Ward 3, Población Ward 5, Población Ward 8, Población Ward 9-A, Tagpogo, Coron, Trinidad, Pagnamitan, Baras, Ngolos, San Jose, Hamorawon, Buenavista, Banaag and Suluan. In 2013, these same barangays were those that were most severely impacted by Typhoon Yolanda.

The LGU shared that over the long term, the plan is to find permanent relocation sites for the families that continue to reside near the coasts and low-lying areas vulnerable to floods. An estimated 800-900 families in the coastal barangay are in need of relocation and the LGU said it would need close to 10 hectares just for relocation alone. The requirement is expected to be higher when the land needs of offices and structures in the central business district that are similarly exposed to threats, are factored in.

Communities are experiencing unpredictable and often violent natural disasters. Residents of Barangay Panagmitan are no strangers to deadly typhoons. Their municipality, Guiuan, was the site of Typhoon Yolanda’s (international name Haiyan) first landfall in November 2013. Yolanda was the catastrophic storm that killed thousands and left entire communities homeless when it swept through Eastern Visayas and most of the Visayas, packing winds of 345 kph and inundating coastal towns with 5 to 6 meters of storm surge.

The community was not spared. Says, a mother: “The announcement warned us of storm surge which we took for granted. Nobody knew what the word meant. Had they said “daluyong” (a local term for deadly tidal waves), we would have understood.” But then, no one could have predicted just how deadly it was. Eighteen people died in the wake of the typhoon. The few houses that survived were badly damaged, the rest were flattened to the ground. “I lost my child and husband when the church where they evacuated collapsed. I was spared along with my other children because we took shelter in another house.”, says a widow. Another lost her mother and child.

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The Barangay Chairperson explains that since Yolanda they have been visited by other typhoons. Among the most destructive were Ruby (international name: Hagupit) in 2014; Ursula (Phanfone) in 2019; Jolina (Conson) and Odette (Rai) in 2021. Every year the town is hit by no less than 20 tropical cyclones. Residents describe the occurrence of these typhoons. They are becoming less predictable. Residents cite the case of Typhoon Jolina that hit the town in the evening of 6 September 2021. Thinking that it was on its way out of Guiuan, evacuees have started returning to their homes in the early morning of the following day but shortly noticed that rains and winds have intensified, in fact stronger that when the typhoon’s presence was felt the day before. Barangay Panagmitan was submerged in flood waters.

A fisher remarked: “These events come more frequently these days even on the dry months. Today is a classic example. It’s March, a normally dry month, but the rains have not stopped, so we can’t go out to fish. Heavy rains and waves drive away fish, so it’s harder to track them down.” While Yolanda is by far the worst killer storm they have experienced, the residents claim succeeding storms are no less deadly. Almost every year, they say, extreme weather events leave them with huge losses whether in their homes, farms or livelihood. Because their barangay faces the Pacific Ocean, they are also the worst hit each time there is a typhoon. They explain that the entire area fronting the sea becomes flooded in 3-5 feet of water each time it rains heavily or continuously.

Awareness about climate change and its impacts are shaped by people’s experiences with natural disasters. Residents who participated in the FGDs are aware that warming temperatures is causing disturbances in weather patterns. To them, however, the most vivid manifestation of climate change is the occurrence of violent storms with enough force to topple their houses and coconut trees. Residents of Pagnamitan talk about their entire barangay practically wiped out by Jolina just a year ago. It used to be that the intervals of these violent storms would be between 20 to 30 years, they said. Nowadays, residents fear about deadly storms coming to their town in intervals of 5 years and less.

Troubled waters

It is difficult to talk about climate change without referring to the sea. To the residents, the sea is a vital part of their life and history. They depend on the sea for sustenance and livelihood. Before the roads connected them to the mainland, there was the sea which gave them the means of transport to link with government services and with their neighbors.

“Our whole life has been centered around the sea. Our parents, grandparents and many before us drew their lives from the same sea.” The sea that they know refer to the bodies of water surrounding them – the Pacific Ocean and Leyte Gulf.

“We are sensitive to every change in the way our sea behaves. We know when she is calm. We know where she will likely give us the best catch. We know if its time to sail. The sea is becoming restless lately.” This is how a fisherman describes the disturbances of late (strong winds, severe rainfall).

FGD participants from Pagnamitan relate that they are concerned with the changes they have observed recently. The first signs of trouble came with dwindling fish catch and the decimation of species in their once rich fishing grounds.

Food security. With no exception, everyone in the barangay is inextricably linked to the sea. There are the fishers who directly survive from fishing and about 30 percent that dry and sell them to the local market. From what they earn, families buy other food provisions from the sari-sari store (local retail shops) or the bigger market in the población (central area/central business district).
In the last five years, fishers have returned home with barely enough for a day’s meal. “We used to catch on the average 10 kgs of fish even on a lean season. We are small fishers, using traditional small nets and boats. Others have bigger boats and can go very far out into the sea. If we have at least 5 kgs we can sell the rest and have enough money for rice and the needs of our children who go to school.”, explains one father. Unfortunately, this is no longer the case. There are more days, when the fish they catch are so small and scanty. There is also less diversity in the species. “We have to fish not just deeper but farther and farther out into the sea,” said a fisher. It is a declining trend that has compromised food and income security from this fishing village that thrives almost solely on fishing.

Asked how serious the problem is, they said that declining fish catch is going to affect families who have no other source of income. Hunger is an on and off thing, they say. But it is also triggering compounding effects. Malnutrition rises during periods of natural calamities and this was the case when Typhoon Yolanda happened. With heavier rains and unpredictable weather, fishing has of late been a less predictable source of food for the table of ordinary people. If the trend continues, the risk from hunger can increase. Store owners extend credit on the premise that fishermen will be able to catch enough fish, sell them and have enough to pay for the loans that they incurred. It used to be a reliable repayment scheme that sees a daily or bi-weekly predictable turnover of income. Reduced productivity

Livelihoods. Families in Brgy. Pagnamitan usually engage in fishing and farming alternately to survive during the lean fishing season. Unpredictable climate patterns whether shorter and wetter months, or longer dry spells invariably affect the ability to make a living among families who rely on these two sources of livelihood.

Those interviewed described troubling signs. Their corals are turning white, a phenomenon called “coral bleaching” which they attribute to exposure to too much heat. The corals are technically dying from warming temperatures and thus might explain the significant reduction in fish catch. Guiuan has beautiful and healthy coral reefs, making it one of the country’s favorite diving sites. Fishers know that healthy corals are key to the abundance of marine life. They said the corals are breeding grounds for the fish. If they die, fishers worry that there will soon be less and less fish that will thrive in their waters.

Another fisher from the group shared that after Typhoon Yolanda, which also destroyed many corals due to the strong waves, many corals in Guiuan also disappeared. “If we get more and more of Ursula or Jolina types of typhoons, this will stress our marine resources. It will be more difficult for them to recover. Every year that we lose, means livelihoods lost,” says the same fisher.

Farming is as vulnerable as fishing. In the last ten years, the dry spells have become longer, drying up water sources. Farmers have resorted to planting more climate-resistant and permanent crops like coconuts, which market price is susceptible to sharp fluctuations. “While coconuts are generally resilient, they are still prone to damage by strong winds. When we lost our coconuts to Yolanda, it took us five years to regrow them. We tried planting cash crops but without the rains, they will ultimately wither.”

Water access. LGU participants have raised concerns about the quality and availability of water. They said that storm surges and rising sea levels have resulted to saltwater intrusion into groundwater sources. This has affected not only farming but also available water for household consumption. A farmer remarked: “It’s almost a no-win situation. We shift to fishing when conditions become difficult for us to plant, but we find the same outcome. Plants cannot survive the heat, and when it rains it rains for days, killing our crops.” The LGU has acknowledged that
they are already possibly already staring at a water crisis and thus, treats the issue of water as a priority in the Local Climate Change Action Plan.

**Families continue to rely on mothers for household chores and this includes fetching water for cooking and washing dishes.** The scarcity of safe drinking water has forced mothers and other females in the families to spend considerable time fetching water in ground wells or rivers. The situation presents other challenges as well on the sanitation and health of all family members.

**Vulnerable groups**

**Women and children.** Women and children often pay the costs of climate change. In Barangay Pagnamitan, a mother relates how she was forced to leave her children to the care of her mother so she could look for work in Iloilo, a city in the Western Visayas region. This, after she lost her husband and another child, to Typhoon Yolanda. She worked as a street sweeper and took every available job in order to save enough to support her children. They lost everything to the typhoon. She was gone for almost six years and came back only just before the COVID-19 disease spread out to her hometown. She was devastated to find her 17-year-old daughter pregnant and abandoned by the boyfriend. Her daughter stopped going to school. The mother now supports the new addition to the family.

**Female-headed households are among those that are easily displaced.** They struggle to raise their family single-handedly, simultaneously working and attending to the household duties. Similar stories of mothers or older daughters leaving the hometown to work in cities usually as domestic helpers are common. Many of the girls quit school and are barely out of their teens.

**Boys are just as susceptible.** As the sea and farms yield less produce, even young boys are forced to work, often as kargadors (porters) at piers, carrying Styrofoam or polystyrene foam boxes of iced fish for traders.

**A mother shares that quite often, it is the women who venture out of their town in search of work.** Around 60 to 70 per cent of work migration according to the residents involve women and young girls because of the high demand for them as domestic workers. A number take up jobs in the Middle East or Hongkong.

**Asked how this has affected the families they leave behind, one FGD participant said:** “It is tough for the children to deal with the stress of surviving on their own. It’s not surprising a lot of them drop out from school or marry young. We have two cases of teens who committed suicide here. The family was struggling to make ends meet. I think the pressures of poverty and the feeling of isolation became too much for these young people to bear.”

**Still, another sector among the women population that is susceptible to the stresses of climate change are the pregnant mothers.** Pregnant mothers can find it challenging to seek services to ensure safe pregnancy and childbirth if the family income falls due to climate-induced disasters or decreasing productivity in farming or fishing. One mother explains that during evacuation, pregnant mothers are among those that will face the most difficulty in having access to WASH (water, sanitation and hygiene) facilities that they badly need because of their condition. Evacuation centers are not often equipped with enough WASH facilities.

**People with disabilities, senior citizens, single parents.** Awareness about the differential impacts of climate change is quite high in Brgy. Pagnamitan. There are populations that they know have inherent limitations and capacity to cope with the effects of climate change. One person with disability who participated in the discussion shared that since his legs were amputated, he became completely dependent on his family and neighbors for support. Neighbors carry him each time that people would be asked to evacuate.
Older people face similar challenges. Many live with their married children and very few in the barangay receive pensions when they reach retirement age because most of them worked in the informal economy without social protection benefits. Climate change has increased the risk of older people becoming sick from water-borne diseases or from becoming injured during extreme climate disturbances. Food insecurity impacts older people as they are often forced to forego their share of food so that children in the household would have enough to eat.

Families living in danger zones. There are 45 out of the 60 barangays in Guiuan that are located in the coastal zone. For these communities, the risks from severe typhoons and storm surge are constantly present. More recent typhoons have exposed their vulnerabilities. Homes of light materials such as nipa shingles and bamboos have been wrecked by strong winds and heavy rains.

Despite government prohibitions to build in areas close to the sea, families continue to rebuild on the same sites. Majority of those in the FGD are willing to relocate only if within the same barangay.

Many cite their apprehensions of possible loss of livelihood as a reason for refusing to move to locations far from their original homes. The sea has always been a lifeline for them. One participant proposed that rather than relocating them to another place, government should consider buying land in the elevated sections of their barangay.

Coping mechanisms and practices

Inclusion

Climate change magnifies the disadvantages already faced by socially vulnerable groups in the community. Women, children, persons with disabilities, families living in high-risk zones, single-parent households, older people and those who are without work are among those disproportionately affected by climate change.

Among women (mothers, young girls, female-headed households), a common coping strategy is work migration to deal with economic displacement. Within their homes, however, women absorb the responsibility of finding the means to bring food on the table when there is a crisis. Stories shared by women in the FGD have a common thread—women usually draw upon their resourcefulness to look for food in the forest, from whatever could be salvaged after a storm, and from families and neighbors who either donate or extend loans.

Most of these vulnerable groups have limited social benefits (statutory coverage) and the benefits if there are any, are quite small to cover losses from unanticipated shocks triggered by climate change. In the Philippines, unemployment insurance is not yet available for most of the populations except with the Government Service Insurance System which awards a certain sum if a government employee is separated from work.

Communities cope by drawing upon their already limited savings. Participants shared that whatever they have (cash or physical assets sold off or pawned) usually go to food needs. Education and health care are often relegated to the bottom of priorities. Some children are made to quit or postpone school and help in the farm or in fishing. Mothers seek work to augment the family’s income. Males work in construction projects during lean seasons in fishing. The current forms of assistance by the government to vulnerable groups include social pension to senior citizens, conditional cash transfer to support the education and health needs of children and mothers from poor households, other social assistance that are usually made available to targeted poor populations. There are also sector agencies that provide support during or after a disaster.

The support is usually provided across the board, often to a poor household. Residents point out that there is a need to provide more adequate forms of support including more long-term
assistance to restore livelihoods that are lost due to climate change. Not all households are the same. Some have senior citizens, sick people under the care of an already poor family. Some have many children, a pregnant or disabled member of the household and some may have to repair or rebuild a new home damaged by a storm.

*Social cohesion*

**Communities turn to family and their social network for support.** Family members, neighbors and friends are a constant source of support to displaced families. The assistance extended come in many forms – cash, goods and extra hand in repairing a damaged home or free fishing or farm labor. It is common to see people offering their homes as evacuation centers to families who need to find shelter in more sturdy structures.

**In Barangay Pagnamitan, the families find shelter in the homes of neighbors built of more resilient materials.** They have developed a well-organized system for evacuation: The location of these shelters has been mapped and particular houses pre-assigned to families that may need to be evacuated. Three to five families consistently seek refuge in one house, staying there between two and five days each time the community is flooded due to storm surge. In 2013, during and after typhoon Yolanda, the evacuation extended up to six months to a year. Multiple households shared the same space and available food, and helped each other rebuild homes that were destroyed. The barangay LGU formalized the arrangement and signed a memorandum of agreement with host households, acknowledging the role and value they perform in times of crisis.

**The operation of micro-finance institutions is widespread in the area, and they represent an important source of support for uncollateralized loans.** Residents say the amount of loan varies on the size of one’s savings or on the willingness of another member to provide guarantee for a neighbor’s loan. Due to the normally insufficient loan amount, many incur various loans to pay off debts from multiple micro-credit groups. “We get a loan to pay for another loan. That is the way it works,” explained a mother who spent two years trying to pay off a loan she took to rebuild her sari-sari store (a village retail shop).

**People adjust to climate change by applying their indigenous knowledge.** Both fishers and farmers have strong affinity with their natural resources (land and sea) and possess important knowledge that they use to manage the impact of climate change. They normally plant more resilient crops like coconut and fruit trees that adapt to harsh climate conditions. Fishers sometimes sense a brewing storm by the presence of dark clouds and an unusually hot temperature. They use these signs to take their fishing boats to higher grounds and avoid going out to sea. They also know that temperature extremes can drive fishes away and thus choose the timing of their trips to be able to catch fish.

**To prepare for lean months, people salt and dry fish and store food for emergencies.** Houses using light materials are secured by nailing windows to the jamb, tying the roofs to beams to avoid these from being damaged by strong winds.

*Voice and accountability*

**People take a keen interest in solving problems that affect their safety and well-being.** A good number of the FGD participants have prior exposure to and experience with participatory processes for projects implemented by the government and the private sector. They cite their experiences with projects like the KALAHI CIDSS-NCDDP and the Pantawid Pamilya Program as good training ground in preparing them to better understand how to analyze the issues in the community and work with one another to find solutions to these problems. They said that it is important to have a venue where they can collectively discuss their concerns. Asked what kind of problems they would like to be prioritized, they mentioned i) the completion of the sea wall that
was originally funded by the provincial government 2) building an evacuation center 3) establishing a permanent relocation site within the barangay; and 4) financial assistance and training to set up alternative livelihoods.

Many of the issues the community has prioritized require support from higher levels of government. While they are aware that the resources and expertise for the interventions, they require are not available within the Barangay LGU, sustained dialogue and follow up with the municipal or provincial LGU and concerned national government agencies need to be actively pursued. The Barangay LGU has forwarded resolutions to reiterate their request for the second priority but do not seem to be aware of the opportunities for risk financing and who can help them prepare their proposals for funding.

**LGU Responses**

Both the Barangay and the Municipal LGUs have prepared their Local Climate Change Action Plans that identify the vulnerabilities and actions to be implemented by the LGUs in order to manage the actual and anticipated impacts of climate change. The Municipal LGU acknowledges the scope of the interventions needed to mount effective climate action to prepare for and mitigate the increasing risks from climate change. The resources required to fully implement the plan is enormous and many of the identified huge infrastructure components will take time to be realized.

The LGU has identified many adaptation and mitigation options in its LCCAP:

1. Greening and Reforestation and Rehabilitation Program
2. Approved Forest Land Use Plan (FLUP), ordinance to support FLUP, program and budget for FLUP
3. Enactment of Environment Code and IRR
4. Climate-sensitive Agriculture
5. Adoption of Organic Agriculture Ordinance
6. Climate-sensitive tourism development plan and budget and its adoption
7. Green Building Ordinance, plans and budget
8. Renewable Energies in select development sector
9. Construction of typhoon resilient classrooms
10. New business district in more resilient location (CLUP)
11. No Dwelling Zone Ordinance
12. Relocation of vulnerable communities along coastal areas (CLUP)
13. Improved drainage system and flood control

During the FGD with LGU department heads and staff, however, it was shared that the action agenda have been identified to reflect the following priorities: i) Securing Food and Water ii) Protection and Rehabilitation of Ecosystems particularly watersheds and marine ecosystems; iii) Livelihood Restoration and Development iv) Relocation of residents to safe zones; v) Construction of climate resilient infrastructure.

The LGU is committed to effective water resource management to address the threat of a water crisis. Given the heavy reliance of residents to the marine ecosystem, the LGU has taken steps to reduce overfishing and develop the aquaculture potentials of the municipality. There are also 30 nurseries being managed by people’s organizations that supply the seedling requirements of farmers. These steps are meant to address the first priority on securing food and water.

Rehabilitation of forest areas is being pursued in partnership with local organizations. Guiuan’s forest resources much like the rest of Samar Island has witnessed significant reduction in the past decades. There are at least two mining companies with permits for mining operations in Homonhon Island, a subject of protests from local residents due to alleged violation of
environmental laws that involve the cutting of valuable forest trees. The LGU is committed to protecting its forests recognizing these are vital to securing adequate water supply for its residents.

**The LGU admits that efforts to restore livelihood need to be intensified.** Partnerships with local and international NGOs are focusing on providing training and assistance to communities on adaptation of agricultural practices and support to small and medium scale enterprises to supply the requirements for souvenir products of its thriving tourism industry. The infrastructure projects required to mitigate the impact of flooding, erosion control, safeguards against storm surge need huge investments and complex technical designs. Given its minimal budget, however, many of them could not be carried out.

**Strengthening climate adaptation programs and policies**

- **Ecosystems:** The marine and land resources of Guiuan are vital to the survival of the populations who directly depend on them for food, water and livelihood. These are under threat from both indiscriminate human use as well as from the compounded effects of climate change. The protection and rehabilitation of these ecosystems should be prioritized.

- **Livelihoods:** The community clamors for more well thought out and long-term support to develop climate-adaptive alternative sources of livelihoods. Livelihood is a major stress point particularly among those dependent on fishing and those who are already losing income as a result of dwindling productivity. Investments on livelihoods should be linked to a strategic plan by the Municipal or even Provincial LGU to achieve scale and profitability for communities.

- **Inclusive and participatory support:** Strengthening people’s voice, inclusion and participation in planning and implementation of climate action have been shown to enhance the effectiveness of climate action. Programs that support participatory processes for risk planning and enhance the capacity of local communities can go a long way towards ensuring that the most vulnerable are reached with appropriate interventions.

- **Strategic resettlement:** In Guiuan is largely a coastal town and the requirement for resettlement is huge. Families residing in danger zones need to be relocated to safe zones. Resettlement can be more effective if it is matched by appropriate consultations and information dissemination to better understand motivations and preferences of communities. When and where feasible, relocation should be carried out within the barangay to avoid massive displacement of people who are attached to their land and marine resources for a living.

- **Information, Education, and Communication (IEC).** Communities should be helped to understand climate change and its implications. This may require adapting technical and scientific information into a language and form that will help them make informed decisions (e.g., resettlement). It is also important to note that their views are largely shaped by their own experiences with recent major disasters rather than a more thorough understanding of the nature of climate change and its risks.
A2.2 Salcedo, Eastern Samar, Philippines

Community Profile

Salcedo is a fifth-class municipality that lies along the eastern seaboard in the province of Eastern Samar. It is bound to the north by Matarinao Bay, to the west by Quinapondan, to the southeast by Mercedes, to the south by the Leyte Gulf and to the east by the Pacific Ocean. Borongan City, the provincial capital, is 92 kms. away, while Tacloban City, the regional center of Eastern Visayas, 137 kms. 

The town has a total land area of 113.68 km² and consists of 41 barangays, 26 are coastal while 2 are island barangays. The LCCAP also describes the topography of the municipality as predominantly undulating to rolling terrain (94.49 percent of the total land area) while some parts are rolling to hilly (4.29 percent) and hilly to mountainous (1.22 percent). 60 percent of the land area of Salcedo is considered alienable and disposal with about 31 percent categorized as forestlands.

Farming and fishing constitute the major source of income for about 70 percent of the people of Salcedo. There are households that engage in small businesses like small retail shops, meat and poultry products and fish vending. The LGU reports that new businesses have sprouted after Typhoon Yolanda – water refilling, gas stations, new bakeshops, coffee shops, pawnshops among others. On Saturdays, people troop to the town center for the traditional “tabo” or flea market day where agricultural and fishing products are sold at low prices. A number of home-based enterprises are into kakanin-making (local delicacies or snacks usually made of glutinous rice, coconut or root crops and bananas) and these are also sold during tabo.

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The population of the municipality in 2015 was 22,532 and a household population of 5,201.\textsuperscript{28} Majority of the population belong to the 1-19 cohort. The province has a literacy rate of 97 percent.\textsuperscript{29} Basic service facilities like day care centers, schools (up to secondary), health stations, are present in almost all barangays. The town, which suffered heavy damages after Typhoon Yolanda, received a number of humanitarian assistance for rehabilitation and recovery including new housing units to relocate populations from high-risk zones, damaged public infrastructure and livelihood restoration.

Sixty percent of the houses are made of wood and light materials with many located along the coast directly facing the Matarinao Bay.

**Poverty in the province of Eastern Samar remains one of the highest in the region.** In 2018, the province had an estimated poverty incidence of 49.5 percent of population and while it has slightly declined from 51.5 percent in 2015, it still represents the highest in the entire Region VIII (Eastern Visayas) and three times higher than the national average of 16.6 percent.\textsuperscript{30} The same report estimates the annual per capita poverty threshold in 2018 to be at P29,070, also the highest in the region.

![Figure A2.3: Poverty incidence among the population in Eastern Visayas: 2015 and 2018](image)

**Salcedo’s poverty situation is no less different from the province.** In 2018, 44.90 percent of its population were considered poor.\textsuperscript{31}

**Warning signs: Climate change vulnerabilities**

Salcedo’s Local Climate Change Action Plan (LCCAP) has identified six climate-related hazards with four of these affecting all or a large number of barangays.\textsuperscript{32} The town is most vulnerable to typhoon, flooding, drought and storm surge. The other two are rain-induced landslides and red tide. A vulnerability assessment conducted by the municipality found medium to high threat from tropical cyclones, storm surge, and flooding.

Due to its geographical location, the municipality is prone to the destructive effects of typhoons. Salcedo experiences an average of 5 to 6 tropical cyclones every year. The Municipal Disaster Risk Reduction and Management Office (MDRRMO) shared that at least two of these typhoons

\textsuperscript{28} PSA. 2015 Census of Population: Demographic and Socioeconomic Characteristics.

\textsuperscript{29} PSA. 2015 Census of Population: Demographic and Socioeconomic Characteristics.

\textsuperscript{30} PSA. Poverty situation in Eastern Visayas (Full Year 2018). Accessed on 17 March 2022.


\textsuperscript{32} Salcedo Municipal LGU. 2017-2022 Climate Change Action Plan.
are destructive. Among the most vicious are: Typhoon Amy (1951); Claren (1965); Claren (1966); Claring (1966); Undang (1984); Yuning (1987); Yolanda (2013); Basyang (2014); Ruby (2014); Ursula (2019), Odette (2021) and Jolina (2021). Of the more recent ones, Yolanda remains by far the most destructive. During the FGD the residents explained that almost all recent typhoons led to destruction of homes and disruption or loss of livelihood. The trauma people experienced from Yolanda prompt them to evacuate as soon as a typhoon warning is issued by the government. In more recent years, it became easier to convince people to do pre-emptive evacuation according to the MDRRMO.

Low lying areas and those in coastal zones are beginning to experience flooding, the most recent in 2015, when many población areas were submerged in water. The floods also contaminated water sources and led to disruption in transport service. Nearly a third of the barangays are vulnerable to flooding. These barangays include: Poblacion 2, 6, 7, 8, 9, 10, 11, 12, 13, Abejao, Asgad, Bagtong, Balud, Burak, Butig, Cagaut, Camanga, Carapdapan, Iberan, Maliwaliw, Matarinao, Palanas, Tagbacan, Talangdawan.

Salcedo is found in a province that has medium extreme heat hazard which projects a 25 percent chance that it will experience extreme heat stress from prolonged exposure to heat every five years. Experts project warming temperatures in the next fifty years and will likely affect the municipality as it is surrounded by bodies of water which absorb the excess heat from warming temperatures. The manifestations are already being felt by the residents who said that prolonged heat spells become obvious as rains suddenly cease on the months they are expected. “Our plants wither and it’s difficult to plant year-round when you have extended dry spells”, says a farmer during the FGD. The first to be affected said a women’s group leader is their water source. “The wells dry up and leave us with no water for months. We have to buy water when we run out of it. And this is such a burden on our budget. Not all of us can afford to buy drinking water and sometimes it costs more than P50 a gallon. Those who can’t afford it must hike and get it from a source that is far away.”

A stable supply of water is so important to this town because farmers mostly depend on rain-fed agriculture. “We adapt to the changes happening to our climate. We have done so for a very long time. We choose crops like coconut, cassava, and yam as they are more resilient to heat stress. But we are not sure for how long we can last. I think it is becoming more and more difficult to farm or even to fish. We don’t harvest crops and fish as much as we used to. I grew up in this town and there was a time we didn’t have to worry about going hungry. Now we do.”

The Comprehensive Land Use Plan (CLUP) of Salcedo notes that the average rainfall from 2007-2015 is 3,603.02 mm with the months of January and December having the highest precipitation of 612.4 mm and 461.4 mm. The month of May has the lowest rainfall at 119.6 mm (PAGASA, 2015). It adds that rainfall projections in Easter Samar vary but could increase by as much as 8.1 percent percent to 15.8 percent in the months of September, October and November, a trend that may continue from 2020 to 2050. In the months of March, April and May, on the other hand, a 11.3 percent and 26.8 percent reduction in rainfall could persist from 2025 to 2050 and would thus explain drought, flooding, typhoons as major hazards faced by Salcedo.

The cost of climate change is higher and more intense among the poor and vulnerable. The Local Social Welfare and Development Officer (LSWDO) of Salcedo explains that the LGU prioritizes certain sectors during relief and rehabilitation. “We all know that the poor have less by way of resources and sometimes capacity to recover if they lose their income or livelihood. Their homes are made of lighter materials and thus more prone to destruction if there are typhoons. They can

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be cut off from social services because they are located in high-risk areas. So, it just makes sense that we give them priority.

Participants to the FGD recognize some groups are more vulnerable than others. Children, women, the elderly and those living near the coastline. They need extra help because their status and condition limit their ability to cope or adapt when extreme climate events happen.

In Brgy. Mantarinao, the barangay captain shared that after destructive typhoons, it takes the poor longer to recover because if they lose their home or livelihood, they have no spare money or savings to rebuild. They are therefore very dependent on government support. He said on the average it takes 1-2 years for a family to recover from a strong typhoon. For Typhoon Yolanda which affected everyone it is much longer (3-5 years). That sets back any prospects of recovery because Salcedo lives with 5 to 6 tropical cyclones every year.

Residents say there is a way to be less vulnerable. “Preparedness is key. We already know we will have droughts or typhoons and they might become more frequent and destructive. We already know that. So we can plan ahead. Government must convince people to move out of high-risk zones and build more resettlement areas. People do not want to transfer. Why? Because they know they have no livelihood where they will be relocated. So we must think not just about shelter. We must think livelihood. As long as we can’t assure people that they will have income and other alternative activities, they will refuse to leave their homes even if they know they are not safe,” this from one of the community leaders who has seen entire villages decimated by a typhoon but was surprised many kept coming back to areas near the sea.

Declining farm productivity and dwindling fish are becoming more pronounced. People like those in Matarinao who live off on the generosity of their land and sea are aware that unpredictable weather patterns (heavy rainfall or dry spells) are sapping the yield from farming and fishing. They said that prolonged heat is very difficult to manage because plants cannot survive a drought. Animals are prone to diseases and die. A lot of farmers have resorted to gathering mangroves turning them into charcoal – which turns in more profit than risking a whole planting season without rain. This practice is, however, unsustainable because mangrove forests, a vital ecosystem, and necessary to arrest the effects of climate change, are already near depletion.

More people turn to fishing which is similarly under stress. The bounty that characterized the fishing industry in the past has drastically changed leaving fishers with less and less catch. A fisher describes the situation: “From 5 canastros (a basket made of bamboo or abaca) a day, we are now bringing home just 1 or 2. Some days, it’s just a small basin of catch to fill our stomachs. Of course, the loss of corals, and overfishing have contributed to this. But when the temperature of the ocean heats up, we observe that fish disappear. We don’t exactly know why. But they must be dying. If humans can’t stand the heat, how much more the fish?”.

Fishers have likewise observed a formerly less known phenomenon called “coral bleaching”. Prolonged exposure to heat stress results in loss of algae that strip corals of their colors and turn them into white. The coral and algae have a symbiotic relationship and are essential to providing a diverse range of ecosystem services including food, protection from flooding and sustaining the fishing and tourism industries.34 With growing exposure to warming ocean temperatures the corals are finding it harder to regenerate and support life. This is the reason for what the fisherfolks in Salcedo refer to as “exodus of fishes.” Without the productive coral reefs, fish are forced to move farther away in search of cooler ocean temperatures.

Community participants ponder on the consequences. People are heavily dependent on both the land and sea for their survival. Entire communities consume the products that farmers and fishers are able to bring to the table. Someone commented the effects of extreme heat and weather events can increase the number of people who are hungry and poor. Everything they said, ends with the question: “How can we survive if this trend continues?”

There are hundreds of families living near coastal waters whose lives are at risk. Hundreds of people have settled along the coasts over the years, forming their attachment to the land and sea as they carve their livelihood from them. But Typhoon Yolanda swept away homes erected on danger zones, areas fronting the sea. The loss of lives and property during this catastrophic event drive home the point that relocating people away from danger zones is urgent and necessary. With anticipated changes in temperatures and more frequent weather disturbances, the task of moving people to safety is a matter of utmost urgency.

The LGU has found the business of resettling challenging for a number of reasons. Land is expensive and difficult to obtain. Construction takes time impeded as it is by issues like delays in the release of budgets. Land acquisition including the long process of involuntary resettlement if there are already occupants on lands intended for housing can also drag on. And yet, the biggest challenge come from the people whose lives need to be protected. It is challenging to convince people to leave their current location. One of the residents who said that despite her willingness to transfer, she is anxious about the future. “It is an unfamiliar future. I will probably lose contact with relatives and friends with whom I grew up with. My husband is not even sure if he can fish again. How do we make a living in this new place? But of course, I know it’s for our own good. I accept that but when I think about it, it’s like escaping the danger we probably encounter once a year or not at all and then jumping to a new territory that is safer but where there is no assurance that we can find livelihood to support our needs.”

The LGU participants share that they have completed 300 housing units to relocate residents to safer areas. More are needed but the government is pressed for budget. The LGU likewise recognize that people can be displaced if they are uprooted from their current location and is trying to address the need for alternative livelihood in the new community.

**Pressures from climate change**

Their strong affinity to the sea has sensitized people to changes in the way it behaves. FGD participants not only observed corals turning white, they also observed that sea levels are rising causing coastal flooding. They also blame the rising water levels to the salination of water sources and even their formerly rich farming lots.

In Barangay Matarinao, families recall that in 2015 and 2019, Eastern Visayas was hit by El Niño which led to a drop in productivity as farmers lost their crops to the extended dry spell that lasted months without precipitation. The rainfall deficit during El Niño episodes was affecting not just crop production, it was also hitting the livestock industry hard. The phenomenon leads to hotter temperatures that trigger stress among livestocks and cause illness or death. People claim that dry spells are catastrophic to farmers and fishers. To the latter, this means fewer and fewer fish to catch and shorter fishing seasons.

Food security. Temperatures are expected to increase continuously over the next years. The occurrence of long dry seasons and the variability of rainfall are threatening the food security of people who rely on the water and land resources for their livelihood. Salcedo’s economy remains predominantly agricultural and climate change will exacerbate hunger and poverty in a community where nearly 50 percent of its people are leaving less than the required income to meet their daily food requirements.
Livelihoods. Unfortunately, says a participant to the FGD, there are few options for people like him who have been farmers and fishers for as long as they can remember. Income from agricultural activities has diminished significantly according to the farmers. “We used to rely on the regularity of rains to grow our crops. But there are months when the rains would come too little if at all. This affects crop yields and makes it difficult for us to make a living. When typhoons strike, we lose our crops and take longer to recover.”

Some have ventured into alternative forms of livelihood. One fisher said he works as a cargador (porter) in the pier in order to replace their family income each time they are hit by a storm, and he could not go out to fish. Locals relate how more and more of their neighbors migrate for work – to the Middle East mostly where women work as domestic helpers and men as laborers in construction, poultry and manufacturing shops. In Brgy Matarinao, locals considered exploring other income opportunities like shell craft, but their products are bought at such a low price that they abandoned the idea. Farmers also explain how it takes a long time to restore parched soil after a drought and how the costs of re-fertilization have increased the burden on farmers.

Water Access. Many communities are experiencing water shortage during dry seasons. After a series of typhoons starting in 2013 and 2015, residents report that their water supply has been infiltrated by saltwater. The LGU explains that rising sea levels could have already caused saltwater intrusion. The availability of water for both food and agricultural needs is linked to the ability of families to grow food and earn income as well. In 2013 when they were hit by Typhoon Yolanda, the entire town had to be supplied with water by humanitarian agencies as there was no water available for their daily needs. As the quality of water diminishes, entire communities will likely face issues with water quality and water access in the coming years.

**Vulnerable groups**

**Women and children.** For women and children, the cost of climate change will likely be more pronounced. Migration of mothers in search of work outside their town will break the traditional pattern of family connection and emotional support for very young children. It is common to see children being raised either solely by a father or in most cases by grandparents or relatives. The LGU noted that after Yolanda a lot of the people moved to cities in order to work leaving hundreds of households without at least one parent. Malnutrition also increases after extreme weather events. “That is understandable because we lose our source of income and could not bring enough food to the table”, explains one farmer.

When the livelihoods of families are affected, children suffer the consequences. Some participants related that many of their neighbors have to ask their children to work to augment the family income or to stop schooling altogether.

The women also shared how living in tents or temporary shelters when they are hit by a typhoon is very difficult for women especially pregnant ones. “The toilets are for common use and it’s very uncomfortable because women tend to use the toilets more frequently and longer. You have to queue for a chance to use it.”

People with disabilities, senior citizens, single parents. The Local Social Welfare and Development Officer explains that people who are sick, have disabilities, are old and have limited means to care for themselves like single parents are a priority for assistance. They are provided with food and sometimes cash assistance. Although not yet fully implemented, the social pension for senior citizens provides some minimum amount to eligible older people for their health and other needs. She admits that the resources are not enough. Climate change is going to highlight the vulnerabilities of PWDs, senior citizens and parents who raise their families single-handedly as
livelihood and income sources become threatened, when drought or typhoons affect crop yield and threaten food security.

Families living in danger zones. Salcedo has a relocation program for those living in danger zones, but the LGU says the scale of the problem needs additional resources to carry out. There are people at risk from storm surge, typhoons and flooding in nearly half of the settlements along the coasts. “Obviously, it is the only solution for those in unsafe locations. But we can’t do it fast because we are constrained by limited resources and lack of available land. Instead, we do preventive evacuation and install early warning systems which has proven effective so far”, says the Municipal Disaster Risk Reduction Officer.

**Coping mechanisms and practices**

**Inclusion**

Climate change magnifies the disadvantages already faced by socially vulnerable groups in the community. Women, children, persons with disabilities, families living in high-risk zones, single-parent households, older people and those who are without work are among those disproportionately affected by climate change. Women including young girls cope by seeking work in large cities or abroad. The FGD participants say that it comes with a lot of risks. If you leave your children to the care of other people, even if they are relatives, they say that it could affect the emotional and mental health of children. Children are distressed when their parents leave them, and many find it hard to cope with school. Some are even forced to drop out.

PWDs are very dependent on family and community support. They face immense challenges when the LGU orders their immediate evacuation. In Matarinao, neighbors provide strong community support systems to people with disabilities and their older populations by carrying them to safety or queuing up for them when there is food distribution by the LGU.

Children from families struggling to support themselves economically sometimes stop going to school to lessen the burden on the family. They lend free labor in farms or work in the markets as porters or in small shops as helpers.

**Social Cohesion**

Communities turn to family and their social network for support. The poor have limited savings and assets to draw from in the event of an emergency and this makes them extremely vulnerable. Families and neighbors provide the safety net that cushion the impact of climate change on people. Everything from food to shelter and money to tide them during hard times are provided by more well-off family members and their community. Neighbors host evacuees for days in designated residences that double up as evacuation centers.

In Barangay Matarinao, the spirit of solidarity is demonstrated in times of crisis when people offer food and shelter to displaced neighbors. “People in our community remain to have the traditional spirit of helping one another in times of crisis. This remains strong and helps us deal with difficult situations,” explains the barangay chairperson. There are micro-finance institutions that operate in the community and provide a lifeline during lean times. People know they cannot go to banks and rely on non-collateralized loans in order to recover each time they experience economic setbacks.

People adjust to climate change by applying their indigenous knowledge. Traditional coping mechanisms kick in as people face threats from climate change. Farmers shift to more resilient crops like coconut or root crops. They are alerted to incoming storms just by observing the color of the sky or the direction of winds at sea. People are constructing houses in the way that their grandparents used to build them – installing large windows that can be opened wide so that the
wind can pass through more easily and reduce resistance to strong winds and rains. And, to prepare for lean times, people dry fish and harvest before heavy rains fall. “We preserve fish by salting them and this way the supply can last year-round if needed,” shares one grandmother.

**Voice and accountability**

**People would like to take an active part in addressing climate change.** The municipality is a recipient of various national government programs like the DSWD’s KALAHI-CIDSS, Sustainable Livelihood Program and the Pantawid Pamilyang Pilipino Program – all of these involve participatory processes undertaken by volunteer groups in tandem with their local governments to tackle local issues that prevent their development. “I am a volunteer of KALAHI-CIDSS, and we have constructed public infrastructure projects on our own. We do planning and we talk to our LGUs to increase our budget. Should this not be the way we must solve the problems brought about by climate change? I am thinking that the person who best understands what we need would be us and the LGU and the national government can do things faster if they will allow us to decide on how we can solve our livelihood needs or protect ourselves from frequent typhoons. “

Experiences of communities in coming together to discuss how climate change impacts on them could be the key to accelerating adaptation. It can draw from their familiarity with their locality and the combined strength of community members to take local actions on small scale projects that make an impact in reducing vulnerability to climate change.

**LGU Responses**

The LGU is considered one of the more pro-active ones in the province and receives strong support from donor communities and civil society groups. The Local Climate Change Action Plan (LCCAP) has identified and is now implementing the following adaptation and mitigation measures in response to climate change:

- **Food Security** – The LGU is committed to ensuring food security through interventions that increase farm yield and make food supply stable and affordable.
- Water Sufficiency – The LGU has started assessing the resilience of major water resources and infrastructure and managing supply and demand, water quality, and promote conservation.
- Environmental and Ecological Stability – Ecosystem resilience and environmental stability during the plan period is focused on achieving one immediate outcome: the protection and rehabilitation of critical ecosystems, and the restoration of ecological services.
- Human Security – The objective of the human security agenda is to reduce the risks of women and men to climate change and disasters.
- Climate-Friendly Industries and Services – The LCCAP has prioritized the creation of green and eco-jobs and sustainable consumption and production.
- Sustainable Energy – The LGU also prioritizes the promotion and expansion of energy efficiency and conservation; the development of sustainable and renewable energy; environmentally sustainable transport; and climate-proofing and rehabilitation of energy systems infrastructures.
- Knowledge and Capacity Development – The priorities along this area support the National Climate Action Plan’s priority areas namely:
  - Enhanced knowledge on the science of climate changes

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- Enhanced capacity for climate change adaptation, mitigation and disaster risk reduction at the local and community level; and
- Established gendered climate change knowledge management accessible to all sectors at the national and local levels

The goals are ambitious and may take longer to achieve but there are projects already in progress (housing units, livelihood assistance to farmers and fishers, capacity building for local officials and communities on climate resilient practices). The communities have identified projects that they would like their LGU to prioritize: 1) Improvement of the communication system including more cell sites to improve connectivity, internet facility in barangays so people can receive information on new technologies to deal with the impacts of climate change; 2) construction of evacuation centers in the barangay because this will lessen the displacement; 3) review the targeting system for recipients of cash aid. There are some families who should receive support from NGA programs but were not able to receive them and it is unclear how beneficiaries are selected; and 4) utilize the systems already proven successful in SLP, Pantawid and the KALAHI – CIDSS particularly tapping community groups to implement livelihood, environmental protection and sustainable and climate-resilient infrastructure.

The LGU faces an enormous challenge in helping residents cope with the changes occasioned by climate change. The officials and staff in the FGD think that more can and should be done. The requirements are staggering and the scale of adaptation activities can be overwhelming according to the LGU so they prefer to prioritize. This year the LGU has already programmed livelihood projects in response to the call for diversifying income sources. It will work with the Department of Agriculture, Trade and Industry, Social Welfare and Development, and civil society groups to teach more sustainable and adaptive farming and fishing practices. Water management and the conservation of mangroves and watershed are also a priority

**Strengthening climate adaptation programs and policies**

**Sustainable use of resources:** Current practices (harvesting of mangroves for fuel and ornamentals, use of destructive fishing techniques) have to give way to more sustainable use of deteriorating land and water resources. These ecosystems are now under threat from climate change.

**Diversify livelihoods:** Climate change impacts on the economic activities of poor and vulnerable households. People have very limited options at the moment and will remain so until more feasible options are available. They clamor for more sustained support to build up their assets and capabilities to engage in more adaptive livelihoods.

**Strengthening participation and inclusion:** Participation and inclusion are key to generating public support and sustaining solutions to the climate crisis. Fortunately, in the municipality of Salcedo there is a rich wealth of both community and LGU experience to draw from and which could be used to initiate and implement local solutions that benefit from strong community involvement.

**Strategic resettlement:** Climate change has magnified the vulnerabilities of those residing in coastal areas. The LGU has its priorities right by investing in housing and settlements for the poor who are in high-risk zones. It can also enhance this strategy by ensuring that livelihoods, basic services and other support during the transition and when resettlement is completed are available and in place. It must also understand the constraints and mindsets that keep people from accepting resettlement as an option.

**Climate Information.** People need access to information on climate change beyond the customary storm signal warnings. Information that are vital to saving the ecosystems that give them a living
or practical solutions to prevent more global warming are needed by communities to make sound choices.

*Keeping poor and vulnerable populations up and center.* Climate change adaptation has to keep the needs of the poor and most vulnerable constantly in mind. Actions that provide them safety nets like the expansion of social insurance coverage for seniors and inclusion of PWDs and solo parents or additional support to farmers and fisherfolks to anticipate the impact of climate change on their livelihood would go a long way to minimizing or even avoiding displacements.
A2.3 San Francisco, Surigao del Norte, Philippines

Community Profile

San Francisco is a 5th class municipality in the Province of Surigao del Norte and one of 11 municipalities in the mainland of Surigao del Norte, about 13 kilometers from the City of Surigao. San Francisco has 11 barangays with a population of 15,347 people (3,160HH).

As a coastal municipality, 90 percent of the people are engaged a combination of fishing and farming for livelihood. San Francisco has rich marine resource. San Francisco also has mineral resources deposits which includes gold, copper and nickel. There are no commercial mining companies in the Municipality. However, quarrying is widely practiced and has become a problem.

Figure A2.7: Satellite Map showing the location of San Francisco in relation to other municipalities in the Province of Surigao del Norte (red boundary line)

The Province of Surigao del Norte remains challenged by poverty incidence as in the region as a whole. CARAGA remains as one of the poorest regions in the Philippines, and poverty especially among the indigenous peoples, farmers and fishers in the region has been observed. The region is also known for the presence of mining companies. Poverty incidence stood at 32.1 in 2018. Major IP group are the Mamanwas, consisting a minority of 1.2 percent present in four barangays. Most of the barangays are in the coastline facing the Pacific Ocean and its alluvial plains is quite limited. It has a total land area of 5,672 hectares. There is an area of 2,105.884 hectares delineated for ancestral domain located within the forest land. However, a number of families have moved into the lowlands to avoid the conflict between the rebel groups and the military. There are 4 barangays where the IP has moved and are known to be renting the land where they built their houses.

The Municipality of San Francisco was hit by one of the strongest recorded storms, Odette, on December 16, 2021. The environmental impact of the typhoon was severe; the timberland and coconut plantation were heavily damaged, and the protected areas covering the marine sanctuary and mangroves as well. The soil erosion in the coastline and the destructive landslide in the
Mountain slope are still visible up to now which already had been 3 months after the impact. The coastal barangays of Jubgan, Amontay, Linongganan, and Oslao were hit by a storm surge between 10-15 meters high.

Figure A2.4: Poverty incidence in CARAGA: 2015 and 2018

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<th>Agusan del Sur</th>
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Climate change vulnerabilities

The Municipal Disaster Risk and Reduction Management Council considers its climate hazard as very high risk coming from heavy rainfall, sea level rise, extreme flooding and high temperature. Being mainly a coastal community along the Pacific coast, it is likewise highly exposed to extreme events. During the summer months of June and July, rising heat is also affecting the availability of water for agriculture and household use.

Figure A2.9: Natural hazards per barangay in Municipality of San Francisco
Of its eleven coastal and hinterland barangays, eight of these are experiencing extreme events, specifically extreme flooding, and typhoon's effects while 4 to 7 barangays are at risk of increasing impact of dry spell, sea level rise and landslide. Effects of sea level rise on the settlements along the coast affecting immediately 5 of the 11 barangays (only 1 barangay is in the upland area). The table above indicates the various hazards in each barangay based on the Climate Risk Assessment conducted by the Municipality in its preparation for the formulation of its Municipal Disaster Risk Reduction and Rehabilitation Management Plan.

The community members in Barangay Amontay say that the most destructive disaster that they have ever experienced is that of Odette where more than 90 percent of the community evacuated from their homes and about 880 households were destroyed by the strong winds of the typhoon. The community was informed of the location of evacuation center near them which is either the barangay hall, school, day care center and the catholic church. Community members were able to stay with families and neighbors whose houses were made of more permanent structures. When Odette stuck, a number of these evacuation centers had the roof blown away. Neighboring homes were quick to accommodate the affected families.

Already prone to flooding and landslide, Odette aggravated the situation with its impact on the farm and fishing communities, destroying coconut and fruit trees as well as fishing boats, motors and gears. The barangay had two community-based marine sanctuaries that were destroyed by Odette. More than 90 percent of the coconut farms were destroyed. There is no alternative source of income for fishers and farmers who rely mostly on mono-cropping agricultural practices.

With the means of production and its resource base among fishers being destroyed by the typhoon event, the burden to recover economically is now with the women. In the barangay we visited, 40 women found credit of between 3 to 5 thousand pesos from a micro-financing company. They invested this amount in the production of food which they sell among neighbors and those passing in the highway. According to them, this allows them to bring food to their table but they are grateful that the micro-financing group gives some consideration when they cannot pay for a week.

A critical issue for communities is the access to safe and potable water. Sea level rise and its impact on intrusion of ground water is increasingly being felt by community members who rely mostly on deep wells for their domestic use. Poor sanitary conditions are common with the lack of water and toilets in households. Women and children bear the brunt of ensuring domestic water supply is available for household use. Incidents of diarrhea among young children were reported during the first week after Odette when lack of potable water was widely common in the communities especially among the fishers.

Community members consider the occurrence of low-pressure areas (LPAs) also as a threat nowadays, bringing in large volume of continuous rain for a number of days. This causes overflow of rivers from the upland areas towards the lowland. It has also been noted that rechanneling of the river flows has affected the areas planted to root crops which has traditionally been one of the main coping foods during disasters.

Families living in the danger areas identified as very high risk for sea level rise and storm surge is a major concern for the communities. About 50 percent of the community members in the barangay have been identified as needing relocation. No relocation site for the families living in the shorelines, and other high-risk areas have been identified by the local government unit.
Community members have expressed their concern on the relocation as they will be moving away from their source of livelihood which is the sea.\textsuperscript{35}

**Coping mechanisms and practices**

**Strong community solidarity.** The community members have traditionally practiced “pintakasi” which translates into community cooperation. Especially during disaster and challenging times, faced with a common problem, members of the community work together to overcome some of the challenges. In the aftermath of Odette, the community members were on the frontline, men and women, the elderly and young people, and IP and non-IP working to clear the roads which were ridden with felled trees and iron sheets, electric posts and wires and in some cases even cement and steel fragments from damaged buildings.\textsuperscript{36}

**During and after disasters, affected communities depend on each other for immediate relief including ensuring safety, food and water for everyone.** Cooperation among the stakeholders including community members and indigenous peoples’ groups remained strong as it was in the past and made it possible to solve the most urgent issue of debris clearing and food sharing. Private sector including contractors whose heavy equipment were freely used for this purpose. In San Francisco and in the barangay of Amontay, the disaster brought about by Odette brought out the common good and the community members were a part of this effort.

**Differentiated Impact for community members.** The most affected members in the community were the fishermen, both in terms of the destruction of their homes and livelihoods. Only a few have been able to repair their boats. According to the barangay officials, fishers began to borrow money to purchase motor for their boats. Interview with the fishers indicate that it is the women in their families who now carry the burden of putting food on the table. About 40 women from the community borrowed money from a micro financing institution ranging from 3 – 5 k. Many of them invested on food business for sale to neighbors and in the highway. Some of them established a sari sari store even if their houses are not yet fully restored. No organizations among the farmer and fisher folk have been sustained despite effort to support this in the past. According to the community members, it has been hard to sustain their organization as they had always been busy with their livelihoods. Hence, the access of agri-fisheries development support from private, non-government and government agencies is difficult as these are normally channeled through peoples’ organizations.

**Indigenous Peoples are challenged by traditional coping mechanisms.** The barangay is home to the IP group of Mamanwa who had been granted ancestral domain land in the upland area of the barangay. However, the IP Mamanwa group came down from the mountain area five years ago due to hostilities between the NPA and the Philippine military. They decided to come down to avoid being suspected of supporters. There are 18 IP families now renting the land where they built their temporary homes near the highway. From their upland area, they are now confronted with lowland problems related to climate. Still dependent on their upland ancestral domain for food and livelihood such as rattan collection, their mobility during continuous rains has become limited due to landslide and flooding. Root crops which have been their main food has become difficult to grow due to flooding and redirection of the river flow. Finding alternative livelihood in the lowland has led them to provision of labor to the LGU and farms in the area.

**Participatory Processes in Local Development.** The participation of communities in identifying priority projects in KALAHI-CIDDS helped communities mobilized response to its needs including

\textsuperscript{35} FGD with Community members in Barangay Amontay, March 2022.

\textsuperscript{36} Stories from the FGD with community members and barangay LGUs.
climate and disaster needs. In Barangay Amontay, an evacuation site that served during Odette was the isolation unit built in 2021 through the DROM Covid19 Response of the Kalahi-CIDSS NCDDP project. Even as it stood about 200 meters away from the shoreline, The structure withstood the strong wind and waves of Odette and provided shelter to about 5 households living nearby.

**LGU Responses**

- **Food relief.** San Francisco was isolated for a week after the onset of Odette. Debris cleaning all the way from Surigao City had to be undertaken for the distribution of relief goods of food. Food relief goods had been slow in coming and the Municipality could only reach about 80 percent of the affected families. Far flung barangays remained unreachable even after 3 months. According to the LGU, its resources had been severely constrained given that the LGU center was hardest hit by Odette. All the structures along with equipment and records had been damaged affecting its ability to deliver relief support to its constituencies.

- **Cash Support for Affected Families.** Only those whose houses were totally damaged, a total of 60 households, were able to avail of 5 thousand pesos per household. Information on the cash support was not clear for affected communities. ABS-CBN distributed shelter kits for about 100 families allowing them to do repairs of their homes.

- **The Recovery and Rehabilitation Plan of San Francisco.** This plan was crafted by the LGU within a month after Odette. To be able to capture the extent of damages both in the government center and in the livelihoods of their constituencies, the RRP contained a list of all the infrastructure damages with the estimated cost of repair which the LGU could not finance on its own. According to the Municipal Treasurer, an additional funding from Mandanas of 38 million pesos is expected this year but this needs to be reviewed and re-prioritize considering that for government infrastructure rebuilding alone, they would need 68 million pesos.

- **Livelihoods will take a longer time to recover.** The LGU has a grim projection on the recovery of agriculture and fisheries. Given the extent of the damages across crops, the office of the Municipal Agriculture do not expect the farms to be productive again in the short term and it will take a year or two for short-term crops to have a respectable yield. Financing for farmers production will indeed be a problem given these prospects. For Fisheries, there is no available government support for repair of boats and purchase of motors. Some fishers have initiated loan to support these expenses. The LGU has initiated a 45-day food support for fishers given the hardship they face with no means of livelihood and damages to their homes. This period also gives the LGU some space to generate government support from national and provincial agencies. The LGU given its limited resources has prioritized the loss of livelihoods among its constituency which is considered an urgent matter given the extent of the damage to farms and fisheries. In the short term, their strategy consists of cash assistance and cash/food for work program for a period of 6 months. This will allow community members to also focus on working on their farms. An additional source of income is to be generated from fallen coconut trees which can be sold for lumber. Cash assistance is targeted for small farmers and fishers to enable them to start clearing up and rehabilitating their farms, boats and gears. The LGU also plan to provide no-interest loan to livestock and poultry raisers.

- **Relocation Issue for Families in the Danger Zones.** A more strategic concern for the LGU is relocation and resettlement of fishers communities along the danger zones. The storm destroyed the residential areas of almost all of the puroks that were close and adjacent to the

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37 FGD with communities in Barangay Amontay, March 2022.
shoreline. At the moment this plan was written, the survivors and fishermen lived in makeshift tents established both by the Barangay Council and the LGU. Finding an appropriate relocation area for the most affected 5 barangays which is acceptable to the affected households and financing the project is a challenge at this point.

**Strengthening climate adaptation programs and policies**

The poorest and most vulnerable communities face new challenges coming from worsening impact of climate change and disasters. Even as the Municipality had existing and updated LCCAP and MDRRMP, the onset of Odette did not prepare the LGU for the worse disaster to hit them. Damaging practically all the LGU buildings, along with the equipment and data base, it took a week before the LGU could mobilize relief to affected constituencies. As climate stresses become more apparent and felt by communities, capacities of LGUs become more critical and may even decrease due to the impact on the existing facilities and capacities to provide even basic services. As LGU infrastructure including schools, health facilities, water sources and evacuation centers are also affected by sea level rise, not to mention flooding and landslides which has noticeably been more frequent.

The constraints of resources and capacities of LGUs to address the widespread impact of climate change are important to effective climate response. **LGUs cannot do it on their own in the way that it has been done in the past.** The deterioration of resource base including water, and along with its impact on livelihood and health, will need a good climate lens for adaptation programs. New standards on infrastructure as well as new institutional arrangements may have to be established as climate impact goes beyond the administrative boundaries of Municipal LGUs. Provincial governments should look closely at its own Provincial Development Framework Plan and incorporate analysis and offer potential solutions on inter-boundary climate impact among municipalities.

**On the other side is the situation of the communities.** Having set aside their organizations in the past, community members realized the importance of reviving their previous organizations of women, farmers and fishers but they have indicated the need for support to do this. A significant amount of time will be needed to rehabilitate their homes and livelihoods. The disaster has made them slide back into being poorer. While they are partially aware of the LGU plans, they are also concern that this would not be enough given the large numbers of affected families that may have to be relocated. Relocation should not contribute to displacement. Relocation alongside diversification of livelihoods would be ideal. Community participation will enhance inclusion and acceptability and may soften the impact of transitions resulting from relocation and changes in livelihoods.
A2.4: General Luna, Siargao Island, Philippines

Community Profile

General Luna is the resort capital of Siargao Island, being home to island resorts and hotels and host to the annual international and national surfing competitions. The Municipality of General Luna is a 5th class municipality in the province of Surigao del Norte, Philippines. According to the 2020 census, it has a population of 22,853 people or 3,837 households with a total of 19 barangays, 15 of which are located on Siargao Island while 4 are on outer islands. General Luna has the largest municipal waters among the nine towns of Siargao Island with an area of 92,000 hectares. The coastal areas are mostly facing the Philippine Seas and Pacific Ocean which makes it ideal for surfing. However, these areas are also prone to flood, landslide and tropical cyclone.

The whole of Siargao islands, covering its 9 municipalities is declared as a protected landscape and seascape under the NIPAS Act, covering a total area of 278,914 hectares, the biggest in the Philippines. Siargao Islands has benefitted from a climate vulnerability assessment done in >>>> with technical assistance from the GIZ. The vulnerability assessment identified increases in temperature, flooding and rain-induced landslides, sea level rise, storm surge and tsunami as the main climate change issues facing Siargao Islands. According to the plan, assuming a conservative scenario of 0.5-meter rise in sea level rise, close to one third of the built-up areas in Siargao Islands will be inundated and about 80 percent of the existing mangroves will be submerged. Overall, this will impact food production, infrastructure, livelihood and properties of local communities. This will also adversely affect biodiversity resources in mangrove ecosystems.
Despite the presence of resorts and tourism activities, poverty incidence in the municipality of General Luna was registered at 40.07 percent in 2018. Majority of the population remains dependent on fishing and farming. A number of these farmers sold their lands which had been converted to resorts. According to one farmer, “many opted to sell their lands for a good price but they lost it all and are now landless.”

**Climate change vulnerabilities**

The Municipality of General Luna is high risk in terms of a number of hazards particularly from flooding, sea level rise and drought. According to the LGU, these are already being felt before the onset of Odette. The Municipal Disaster Risk Reduction and Management Plan (MDRRMP) of the LGU says that “the change in temperature will also bring significant change in the frequency of occurrence and intensity of typhoons and storm surges resulting to more risks and hazards to every community, especially to those located near the coasts.” Five barangays have been identified for “immediate relocation” due to these multiple hazards. Another six barangays are secondarily affected.\(^{38}\)

The multi-hazard mapping exercise that was developed for Siargao Islands Protected Landscape and Seascape (SIPLAS) Management Plan shows that all municipalities in SIPLAS, except San Isidro and Del Carmen, have at least 50 percent of their barangays vulnerable to multiple hazards.\(^{39}\) The three primary sectors that contribute to the local economy of the municipality are tourism, agriculture and fishing. Construction has become a major contributor due the increased activity in the construction of tourism facilities which are mainly beach resorts owned by the foreigners. This has likewise threatened the forest cover of the Municipality as well as its mangrove areas coming from cutting of trees for construction purposes even as this is strictly prohibited under the Siargao Islands Protected Landscape and Seascape (SIPLAS) Management Plan (SIPLAS). Below is a table indicating the hazards per barangay.\(^{40}\)

\(^{38}\) Municipal Disaster Risk Reduction and Management Plan, General Luna 2020-2026.

\(^{39}\) Siargao Islands Protected Landscapes and Seascapes Management Plan, November 2015, DENR.

\(^{40}\) Municipal Climate Change Action Plan, CY: 2021-2026, Municipality of General Luna. This table is an input coming from the Mines and Geosciences Bureau of the DENR and was validated with the LGU according to the FGD conducted in March 2022.
### Figure A2.12: Hazards Identified per Barangay in the Municipality of General Luna

<table>
<thead>
<tr>
<th>Barangay</th>
<th>Hydrometeorological</th>
<th>Geological</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flood</td>
<td>Rain-Induced</td>
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<tr>
<td></td>
<td></td>
<td>Landslide</td>
</tr>
<tr>
<td></td>
<td>Storm Surges</td>
<td>Sea Level Rise</td>
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<tr>
<td></td>
<td>Drought</td>
<td>Ground Shaking</td>
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<tr>
<td></td>
<td></td>
<td>Liquefaction</td>
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<tr>
<td></td>
<td></td>
<td>Typhoon-Induced</td>
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<tr>
<td></td>
<td></td>
<td>Landslide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tsunami</td>
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<tr>
<td>Anajawan</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Cabitoonan</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Consuelo</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Corazon</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>La Januza</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Libertad</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Magasaysay</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Malinao</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Brgy.1 Pob.</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Brgy.2 Pob.</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Brgy.3 Pob.</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Brgy.4 Pob.</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Brgy.5 Pob.</td>
<td>x</td>
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<tr>
<td>Sta. Cruz</td>
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<td>Sta. Fe</td>
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<tr>
<td>Suyangan</td>
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<td>x</td>
</tr>
<tr>
<td>Tawin-Tawin</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

The coral reef cover of the areas around the Municipality is now seriously damaged. The coral reef serves as a natural breakwater protecting the coastal town from the damaging waves and is also an existing habitat for the rich species of marine life in the coastal areas of General Luna.

In Barangay Libertad which is considered a danger zone to storm surge and sea level rise, around 90 percent of the houses was severely affected by Odette, including barangay LGU infrastructures and school buildings and facilities. Except for two houses which are cemented, the houses in the barangay may be considered as made of wood and nipa shingles, and damaged by Odette as it crossed the barangay with its full force. Barangay Libertad is one of 19 barangays of General Luna, with a location fronting the Pacific Ocean and is considered a part of the Philippine trench, which makes the area susceptible to storm surge and sea level rise, and to regular occurrence of earthquakes as well. It has a population of 1,174 or 946 households based on the 2015 Census. The barangay has rich marine resources which has seen the decline of fish catch in the last 10 years.\(^{41}\)

\(^{41}\) FGD with barangay and community members, 2 March 2022.
The livelihoods of communities who depend on farming and fishing have been devastated. Coconut plantation accounts for 81.19 percent of the total agricultural area followed by rice at 9.84 percent. Other seasonal crops, fruit trees and bananas combined, constitute 8.9 percent of the cropland. More than 90 percent of the coconut farms were destroyed by Odette and is not expected to recover within 3 to 5 years. Fishing boats and gears were washed away with serious impact on the livelihoods of the fishers including those who serve the tourism industry. All the fishers in the barangay have setbacks on their livelihood, losing their boat motors and serious damages on their boats. According to the community, many fishers opt to work on the island hopping rather than to fish during the height of the tourism season, which is from March to August. The community members have been informed that no support from the government is forthcoming for the repair of their boats and the loss of their gears.

Tourism which started to develop in Siargao in the early 1990s has been negatively affected and will take some time to recover not only because of the rebuilding of the damaged structures but also because of the challenges it faces. Already reeling from the isolation of Covid-19 pandemic, the tourism industry and the communities who are dependent on it have been hit hard with increased poverty and unemployment. Local economies particularly food and transport services have been severely affected with people losing their supply link and motor vehicles due to damages from Odette. Increased food and water prices have been severely felt especially by the locales who have lost not only the security of their homes but their livelihood as well.

The after-Odette experience demonstrated the difficulty of water shortage and salt-water intrusion. Water supply is a problem and is inadequate since the existing level II piped water system in the Poblacion still needs sizable improvement and is considered expensive by most communities. Potable water is normally sourced from shallow wells using either electric motors or hand pumps. Most households use electric water pumps for flowing water for domestic use. Stories abound on land sale made by local people to investors, some of them foreigners who married locales and established hotels and resorts particularly in General Luna. This trend has increasingly pushed those who sold their lands in the periphery, making them illegal occupants of government lands, and losing all the money they made from the sale due to bad expenditures. There is high tenancy in the island as most land areas are coconut lands and not covered by agrarian reform. Most fishers and farmers do not have their own land even for their houses.

Coping mechanisms and practices

Community members are quick to acknowledge that the most important support during and after disasters came from families and neighbors. It was not easy for community members to work on their early recovery after Odette. Their homes were either totally or partially damaged, with all the roof being flown away. The constant rain and low-pressure area after Odette made it difficult to even start making temporary roof. Families cooperated in doing some temporary shelter for each other. Some stayed longer with other family members who had the space to accommodate them. One family stayed in the Day Care Center for a month. The cooperation among the community members during and after the typhoon was quite strong.

As expressed by a community member in Libertad, “if we were not a tourist area, the government response will be slow. For many of us, it was the private sector and resort owners who were most

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42 Small landowners in the coastal areas were encouraged to sell their lands to foreigners at relatively good prices. FGD with community members indicate that many of the locales who sold their lands became millionaires and left the Island. Some of them came back losing the money they had and going back to being fishers.

43 Stories about sharing homes, food and water were common among those interviewed during the FGD of Mar 1, 2022 in Libertad.
felt and seen during the most difficult times.” The local government relief support came a week after with the provision of DSWD food packs. In General Luna, the private sector played an important role in the provision of timely relief goods of food and water, in addition to the provision of shelter support to their employees.

In Barangay Libertad, community volunteers who were active in various community projects and activities such as being barangay health workers and community volunteers for Kalahi CIDSS, were able to share information and mobilize community members in clean-up operations of their neighborhood and providing assistance to the most vulnerable, among which are the elderly and female-headed households with young children.

Information was readily available to community members who were aware that Odette was going to be a strong typhoon. They did not realize that it was going to be a very strong typhoon at Category 4 until 24 hours before it hit. Fortunately, Odette came during the day. According to the community members the children in the evacuation center were terrified as they could see the high level of the sea and feel the strong wind. Community members were thankful that they could get text messages from the barangay, the LGU, and other community members. Some of them were able to video the actual effect of the typhoon showing the strong waves and also the damages to their homes.

Community members in Barangay Libertad point to some of the learnings coming from the participatory process related to the construction of the sea wall build through the Kalahi-CIDSS in 2014 coming from the support to Yolanda-affected municipalities. That sea wall built 8 years ago remained and kept the sea waters out of the barangay during Odette. The barangay has been informed of its vulnerability to tsunami, typhoons and storm surge. This is expected to cause displacement of people due climate hazards as 100 percent of the barangay is planned for relocation. This has caused anxiety to the community members since about 90 percent do not formally own the land where their houses are located.

The sea wall was built in 2014 during the KALAHI-CIDSS National Community Driven Development Program as a community-identified priority program under the Disaster Response Operation Modality. The sea wall prevented storm surge 8 years later during Typhoon Odette.

LGU responses

Almost 100 percent of the barangay population was evacuated 2 days before Odette’s onset following the DRRM protocols. Priority for evacuation was given to the most vulnerable which included older people, persons with disabilities (PWDs) and children. The rest of the population, men and women, went to the evacuation center on December 15. Information from the MLGU as well as the NDRRMC reached the community members through the barangay officials and by text. Communication by mobile phone is common among more than 90 percent of the population including the young people. The designated evacuation centers were occupied when Odette struck. In the few cemented houses in the barangay welcomed evacuees among their neighbors.

The supply of food and water for relief was a challenge for affected communities in Siargao. Island municipalities and barangays was difficult to reach due to its isolation after an extreme event. These areas are already constrained in terms of potable water and food availability. Occurrence of extreme events demonstrate this even more painfully as communities struggle to overcome the damages to roads, houses and government facilities just to be able to access relief goods. Clearing of roads to allow passage takes about 2 to 3 days and the most disadvantaged communities, which are normally the ones furthest from the Municipal center, are the last ones to reach by relief goods. The disaster tended to solidify community unity and effort to face the consequences of food and water shortage. Through family and neighborhood cooperation,
Community members work together to inform each other and mobilize for accessing government and private support.

Community members were aware of the financial support provided through the LGU. This support came from the DSWD through its Assistance to Individuals in Crisis Situation which was provided to all families who were affected after a validation process. Another support came through the DBM for those families directly affected with at least 5 dependents. And a third support came from NHA for those whose homes were totally damaged.

The LGU facilities in General Luna were heavily affected by Odette, and this included LGU structures, and the data system and base of the Municipality. Evacuation centers, multi-purpose buildings, and schools were severely hit by Odette. A newly constructed sports complex in nearby municipality of Dapa which was inaugurated by no less than the President in November 2021, and which served as evacuation center for tourists during Odette was damaged bringing into question the design and cost of the project. Other than the impact of Odette on the LGU staff in terms of damaged homes and farms, prepositioned relief goods that were in stock were damaged as most of the roofs in the LGU facility were flown away. As a result, the support from the LGU were delayed by about a week or two. Clearing operations of the highway took precedence as most support was coming from the capital municipality of Dapa.

It is important to note that some of the LGU department heads indicated the challenges posed by the rapid development of the tourism industry. Siargao has developed into a prime tourist area, with growing number of resorts including high-end ones and alongside with this is the poverty among the people of Siargao remain. While the benefits are clear in terms of employment, its contribution to reduction of poverty has not been clearly established as many of the employed are not really from the Islands. At the same time, the pressure on land value and resources has increasingly become obvious with prices of land and food increasing. Most of the food needs of Siargao is now imported, including fish despite the abundance of its marine resources. According to the locals, foreign or local, the price of food is the same for everyone. With the onset of Odette, the wide disparity between the foreigners and the locals on the purchasing power was clear. In the medium and long term, the LGUs across the islands is due to review the management plan of the protected area. Environmental and real estate taxes remain low. The issue of garbage is now on top of the agenda in the absence of a sanitary landfill. Road expansion, followed by the expansion of resorts and hotels is threatening the mangrove and protected areas.

Strengthening climate adaptation programs and policies

Across the affected areas three months after Odette, the loss of housing, community infrastructures such as health centers and schools is significant. Relief and early recovery are slow with many barangays having no power nor water yet. Education has been severely affected with learning kits and modules being destroyed. It is expected that when the month of June comes, there will be problems on food availability. Concerns on the cost and access to food had already been raised by communities.

Capacities of the LGUs in identifying and financing strategic solutions to the problem of internally displaced peoples and communities coming from danger zones need a change of lens. Given the large numbers of communities are considered high risk, relocation of households to safe areas will not only consider the exposure and magnitude of these areas to climate stress but also consider the psychosocial factors in relation to livelihoods and community life. Capacities going

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44 FGD with the LGU Department Heads of the Municipality of Del Carmen, March 2022.
beyond emergency response and into adaptation now require serious attention not just from the
LGU but with support from the national government.

Livelihoods and relocation of communities in danger zones is of primary concern in the near
future. As the occurrence of slow onset of temperature change and sea level rise become more
and more felt, existing coping capacities will not be enough. A science-based community approach
that will ensure inclusion and participation for a more strategic adaptation will need to be crafted.