

2.5.6.2 *Maquina*

All 11 council members of the *barangay* are involved in resource mobilization. The 18 *barangay* tanods are involved in rescue and evacuation, in addition to their regular duties of securing the *barangay*. *Barangay* income pays the honoraria of the *barangay* officials (PHP1 700/month for the Punong *barangay*, PHP1 270/month for each council member, and PHP125/month for each *barangay* tanod). Five percent of the *barangay* income is allocated as local calamity fund for disaster relief.

Everyone in the community, but especially the BDCC, monitors the height of the Jalaur River whenever there is heavy rainfall in the community or upstream. They also observe the debris content of the river, as well as bubbles in the water caused by the strong current, as these are indications of rushing water from upstream. River conditions are also reported to the MDCC. Flood warning are given 24 hours in advance, to enable the community to prepare. Official warning comes from the MDCC. Respondents, however, said that when they see the water level in the river rising, they initiate preparatory actions even if official warning has not been received.

As a good practice, this *barangay* ties ropes to the trees that lead to the evacuation centre in order to guide people during evacuation, especially since the floodwater current is strong.

2.5.6.3 *Barasan*

The community receives warnings of an impending hazard and corresponding advisories from the AM radio, and from the municipal hall (MDCC) through the handheld radio communication network.



Photo 4. Farmers and *barangay* officials engaged in rice and fish farming in Barasan

2.6. RISK PROFILE

2.6.1 Community perception of risk

The words “risk” and “disaster” are not commonly used by people in Dumangas. Instead, they use the word *kalamidad* for any event that is not desired or causes destruction of property, livelihoods or their capacity to engage in a livelihood activity. They consider *kalamidad* or disasters either natural or human-made. From their own experiences, natural disasters include typhoons, flooding, drought, rat infestations, pest infestation and tidal waves. The respondents reported that they recognize that events such as fires are human-made disasters include fires, but they also perceive that floods and droughts are human made.

The respondents also perceived that a list of human-made disasters should include graft and corruption, the expansion of fishponds in river pathways, the establishment of fishponds in municipal coastal waters, the importation of rice and the agricultural policies of the government that further marginalize small farmers. They felt that these human-made disasters can have a broader and more destructive impact and affect more people and communities than natural disasters. Moreover, they perceive that natural disasters allow faster economic, physical and social recovery and that human-made disasters can have long-term effects that are more economically, socially and politically debilitating.

2.6.1.1 Typhoon and flooding

Of the natural disasters the respondents had experienced, typhoons and flooding were the most common. Typhoons, accompanied by strong wind, destroy relatively unstable houses and cause palay washout in farming communities, as well as washout of fishnets and fishtraps for fishing communities. For fishpond operators, the destruction of dikes is the greatest concern.

When flooding comes, physical dislocation occurs low-lying areas of the municipality. Animals, agricultural equipment and household fixtures that cannot be moved to higher grounds are often washed away. Flooding cuts off access to sources of potable water since most households still draw drinking water from wells with manually-operated water pumps. Fever, flu and diarrhoea among the elderly and children are often attributed to contaminated water and food.

It is, however, interesting to note that most respondents do not necessarily perceive typhoons and flooding as disasters if they do not negatively impact on their lives and livelihoods. Heavy losses of capital and invested non-financial capital that result from floods and typhoons render many incapable of immediate debt repayment, providing for family needs (from several days to several months), or immediately going back to their accustomed livelihoods. Respondents in Maquina and Barasan expressed that financial losses may range from 75-100 percent of the capital they have invested in their farming and fishing activities. In turn, these losses lead to psychological stress, multiple economic burdens for parents who wish to provide for their families, and possible loss of traditional livelihoods for those who are unable to recover immediately. In addition, while adults concern themselves with economic capacities and losses, children see typhoons and floods, in particular, as opportunities for them to swim in pools created by floods.

2.6.1.2 Drought

Droughts are considered far worse than flooding and typhoons in terms of crops loss. In the case of flooding, only sections of farmlands, fish traps and breeding areas are washed out. Droughts, on the other hand, have wide-ranging effects causing plants to either grow stunted or die, meaning that grazing animals will have nothing to feed on. Crops such as palay will most likely have the same fate without enough water, leading to losses. Fishing communities suffer from drought as well. The fishermen perceive that fish often prefer cooler temperature habitats, meaning that when water temperature and salinity rise, the fish tend to migrate to cooler habitats – either upstream in rivers or into deeper waters. Oysters and other mollusks, a major source of income for those residing near the coastline, are also affected.

2.6.2 Environmental Issues

The municipal government recognizes that forest degradation, and silting and obstruction of waterways have contributed to increased flood risk in recent years. The mouth of the river has narrowed due to an increase in the number of fishponds located there, increasing the risk of flooding. Environmental protection laws exist but often are not implemented. The continued expansion of fishponds by fishpond operators not only denies small-scale fishers access to traditional fishing grounds, it also causes river pathways to narrow. Thus, flooding occurs heavy rains come and the water cannot flow through the river with ease.

In the case of those living near the municipal water coastline whose livelihoods traditionally depend on access to municipal fishing grounds, the establishment of private fishponds in municipal waters limits and blocks their access to the very source of their livelihood. According to respondents, while natural disasters allow them to recover in a shorter time period, human-made disasters such as the continuous expansion of private property into what should have been common or municipal property (such as rivers and municipal waters) may signal the end of their traditional livelihoods.

LOCAL INSTITUTIONS RESPONSE TO RECENT NATURAL HAZARDS

3.1 Hazard events – 1990 and 2000

3.1.1 Typhoon Ruping, November 1990

Typhoon Ruping was one of the most intensive and destructive tropical cyclones of 1990. It entered the Philippine Area of Responsibility on 10 November 1990 from the western Pacific Ocean (Figure 7), slowly moved west/southwest, made landfall in Leyte and crossed the Visayas on November 13. With maximum winds of around 220 km per hour, Ruping devastated the provinces of Cebu, Negros, Iloilo and Bohol and then exited in the South China Sea towards Vietnam. Aside from devastating winds, Ruping also generated significant amount of rainfall causing flooding in most areas. In Iloilo, several days of heavy rains flooded the Jalaur River and inundated low-lying areas.

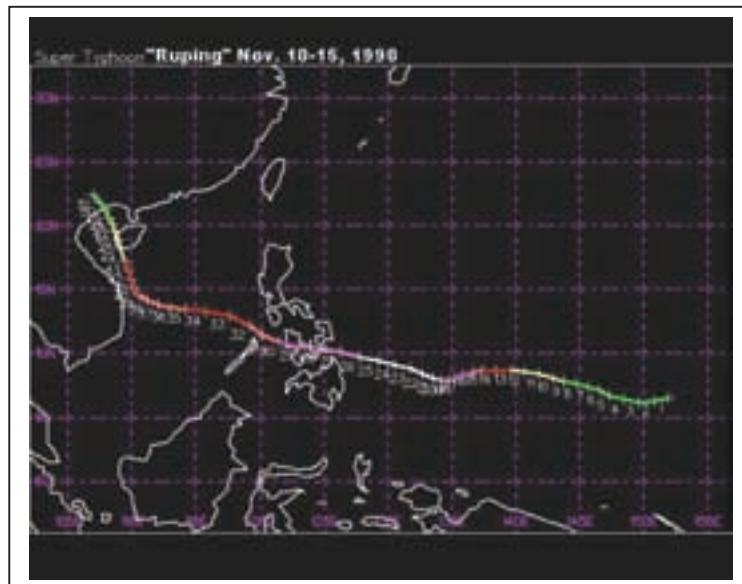


Figure 7. Track of Typhoon Ruping, November 1990

Although there is no record of local government action taken during the event, residents of Barasan still clearly remember the event, as this was a strong typhoon that gravely affected their livelihoods, damaging the rice crop which had been ready for harvest and destroying animals (chickens, ducks and hogs) who died due to hypothermia.

3.1.2 Typhoon Ulpiang, December 2000

Although one of the weakest tropical cyclone in terms of wind strength to hit the country during the last quarter of the year, Typhoon Ulpiang battered Western Visayas on 7 December 2000 when it dumped huge amount of rainfall leaving several people dead, widespread property damage and hundreds of families homeless. Several days of incessant rains inundated the provinces of Capiz and Iloilo. Typhoon Ulpiang formed in the central Philippine Sea on the morning of December 6, and cut across central Philippines where it degenerated into a low pressure area on the morning of December 8. Figure 8 shows the track of tropical depression Ulpiang.

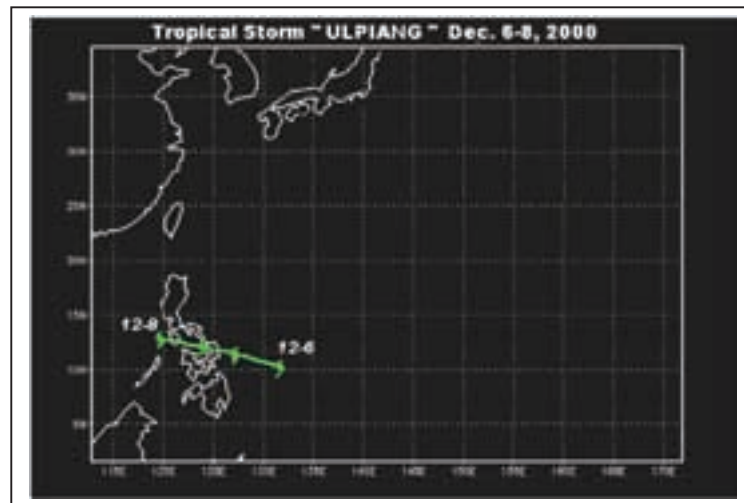


Figure 8. Track of Typhoon Ulpiang, December 2000

Figure 9 shows the rainfall brought by tropical depression Ulpiang at Roxas City and Iloilo City PAGASA stations. Compared with the long-term average, the December 6 and 7 rainfall at Roxas City were way above normal while at Iloilo City, rainfall on the same days was near normal. Although less rain fell, the Jalaur River at Dumangas still experienced flooding, probably because of the large amounts of rainfall that occurred upstream (represented by the Roxas station).

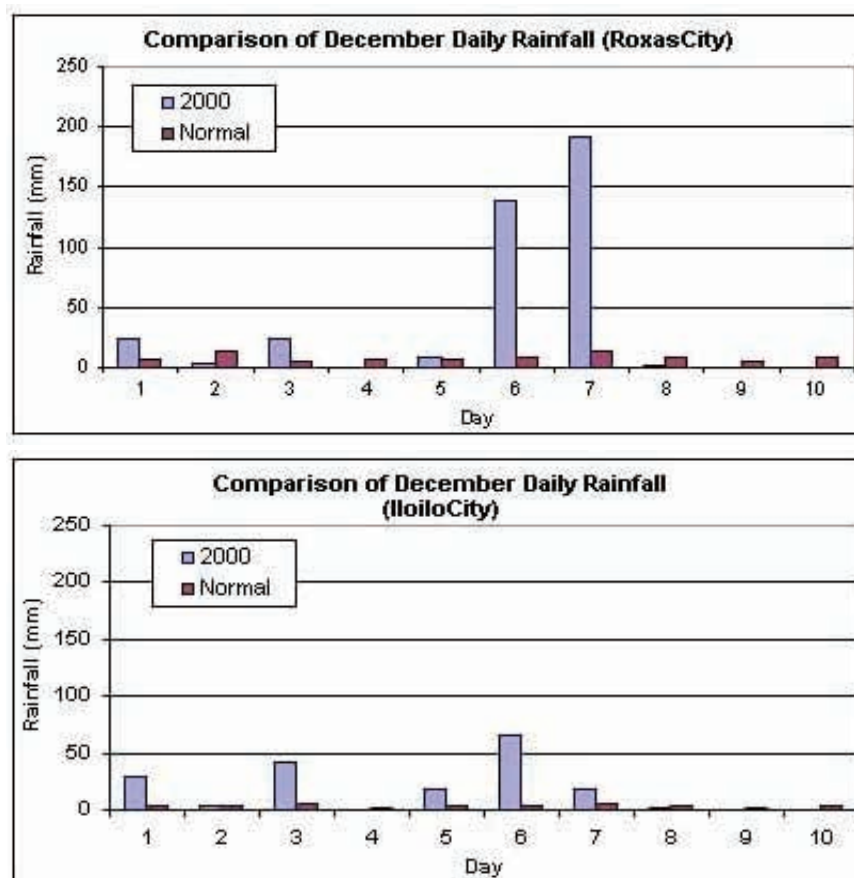


Figure 9. Rainfall from the passage of tropical depression Ulpiang, December 2000

Residents of Balud still vividly remember the flooding of December 2000 – The barangay was isolated, as houses, farmlands and roads were under water. The floodwater current was strong, one person drowned and all households were affected. They said that floods of this magnitude have happened three or four times in 10 years.

The *barangay* hall was used for evacuation, but it was small and could not accommodate more than 5 to 10 families (Photo 5). Therefore, most being evacuated stayed with others whose dwellings had second floors.

The *barangay* used its calamity fund for medicine and food. Partially damaged dwellings were repaired by residents themselves (e.g. reinforcing structures with bamboo poles). The municipal government also provided galvanized iron sheeting for roofing.

There was incidence of diarrhea, colds and cough, especially in children. The municipal government sent a doctor and health workers on a medical mission to the *barangay* and other affected communities.

The respondents felt that it takes time to recover losses when disaster strikes. For example, those who worked odd jobs in construction sites could not resume their activity until things had gone back to “normal”. Some had to borrow from relatives and friends who had money to spare.



Photo 5. Focus group discussion with Balud residents at the *barangay* hall

According to respondents in Maquina, typhoon Ulpiang brought floods that destroyed about 20 houses located near the riverbanks, killed all their poultry due to hypothermia and caused 100 percent loss of the rice crop. They said that if there had been no warning given, even their household items would have been destroyed as well. There were, however, two farmers who did not heed the warning, and were caught unprepared. They did not have access to potable water and food and, although their neighbors did not approve of their negligence, these neighbors shared food and water in the spirit of *pakikipagkapwa*.

3.1.3 Local Institutional Response

The account of the community and municipal government activities before, during and after the disaster is presented in Table 13.

Table 13. Community and municipal government account of the December 2000 flood

Date	Community activities: Maquina	Government activities
Pre-disaster phase		
5 December 2000, 08:00	Warning of impending flood was received by handheld radio network. The Punong <i>barangay</i> mobilized the BDCC, which promptly informed all community members to prepare for the impending flood.	Called the attention of all Punong <i>barangays</i> for vigilance in monitoring the water level at Jalaur River, and to always monitor weather reports through commercial radio stations. Advised Punong Brangays to disseminate the information to constituents so that they could prepare their belongings, livestock and poultry for possible future action.
09:00	The BDCC initiated the following preparatory actions: <ul style="list-style-type: none"> Prepared raft from banana trunk and bamboo 	Coordinated with the National Irrigation Administration on the water-level situation at upstream Jalaur-Suage dam (Dingle municipality).
14:00	<ul style="list-style-type: none"> Arranged for the use of private vehicles for evacuation 	Called an integrated meeting with MDCC, DREAM, communicators group, etc. to prepare all necessary materials and equipment for disaster operation, and to maximize information dissemination.
16:00		Evacuation centres checked for readiness.
18:00 onwards		Continuous monitoring of water level at Jalaur River.
19:00		Asked assistance of Bombo Radyo, a popular commercial radio station in the province to inform people of possible flooding.
6 December 2000, 08:00	Warning for evacuation – BDCC asked people near riverbanks to move to higher ground.	Issued warning for evacuation especially those living at the banks of the Jalaur River.
08:30	The BDCC prepared the evacuation centre, a six-room school building, with cooking utensils, rope access to the building, used clothing, bedding, including tents if more room would be needed.	Called the Municipal Economic Council for a meeting; made loan arrangements for them to acquire goods and other materials needed for disaster-related operations.
14:00	The following preparatory actions were undertaken by the community: <ul style="list-style-type: none"> Secured potable water, food and cooking utensils to bring the evacuation centre or to higher ground 	Called the Municipal Health Office, Philippine National Police (PNP) and volunteers for a meeting on possible action if and when the water level at the Jalaur River continues to rise.
15:00	<ul style="list-style-type: none"> Put household and other items on higher ground Transferred animals to higher ground 	Organized DREAM into several teams in coordination with the communicators group, the PNP and the volunteers, in order to patrol the <i>barangay</i> clusters. Monitored all reports from various sources and made directives to various offices concerned.
onwards		
17:00	<ul style="list-style-type: none"> Started moving to the evacuation centre. 	Issued a stern warning to evacuate all people and secure properties vulnerable

Onwards		to floods. Ordered stocking goods from members of the Economic Council Continuously monitored water level at the Jalaur River.
19:00		The mayor personally checked <i>barangay</i> readiness for the impending flood.
21:00	<ul style="list-style-type: none"> Other residents moved to the 2nd floor of their houses. 	Ordered all concerned to continue monitoring the Jalaur River and check weather updates.
Disaster Phase		
7 December 2000, 03:00		Water overflowed the Jalaur River, inundating numerous <i>barangays</i> ; members of DREAM were stationed at their respective areas of responsibility.
08:00	Reported to the MDCC the situation at the evacuation centre (number of people, need for additional food and medicine), and the situation in the community	Convened the Municipal Council for declaration of state of calamity.
10:00		Packed up goods for distribution.
11:00		Distributed goods, medicines, etc. to affected <i>barangays</i> .
12:30		Received reports on insufficiency of potable water in various <i>barangays</i>
13:00		Ordered the Bureau of Fire Protection to fill fire trucks with potable water for distribution to affected <i>barangays</i> .
14:00 onwards	Help came from the municipality eight hours after request was made. Water and relief goods were delivered using dump trucks.	Stringent monitoring of flood situation.
8 December 2000, 00:00	Evacuees still at the evacuation centre	Continuous monitoring of water movement at Jalaur River and of weather updates. DREAM deployment.
09:30		Called meeting of the Municipal Treasurer, Budget Officer and Accountant regarding the immediate release of the calamity fund.
11:00		Called the Office of Civil Defense for possible extension of rice assistance to the municipality.
12:00		Received reports that some areas could not be penetrated by dump trucks anymore because of high of floodwaters and strong current.
12:30		Requested permission from the National Food Authority to allow the municipality the use of its rubber boat in disaster operations.
13:30		Requested the provincial government to lend to the municipality its bigger trucks to transport food items, medicines, etc. to affected <i>barangays</i> .

onwards		Monitoring.
9 December 2000, am	Evacuees still at the evacuation centre	Called and wrote provincial, regional and national offices for possible relief assistance.
pm		Deployed the medical team in areas still reachable reached by transportation. Monitoring of water level and weather situation
10 December 2000, am	Evacuees started returning to their homes and assessed damage. They reported damage to the local DSWD and requested assistance. Residents whose houses were damaged stayed with relatives or friends.	Water level began receding. Initial reports on damages received showed some residents began returning to their homes. Others whose dwellings were damaged stayed in evacuation centres or with neighbors.
pm		Ordered the Municipal Social Welfare and Development office to facilitate the provision of housing assistance to affected families. Monitoring of the Jalaur River and of the weather condition.
23:00		Water receded to the level of the Jalaur River.
Post disaster phase		
11 December 2000, am		Sent the Municipal Agricultural Officer, Municipal Engineer, Municipal Planning and Development Coordinator, Municipal Social Welfare and Development Officer to assess damages. Called all offices concerned for a consolidated damage report.
pm		Sent requests for financial assistance relative to the assessed damage to concerned offices. Requested the Department of Public Works and Highways and the Provincial Government for the immediate repair of various damaged national and provincial roads.
12 December 2000		Ordered Municipal Health Office to conduct medical missions. Ordered immediate repair and rehabilitation of municipal and <i>barangay</i> roads. Checked the processing of papers for the provision of housing materials for the flood victims.
31 December 2000	Roofing materials and lumber costing about PHP2 000 was provided per affected household from 3 to 4 weeks after the flood subsided.	

Respondents are of the view that materials requested for repair of damaged dwellings should be provided immediately to minimize dislocation, and enable them to return to

normal as fast as possible. They said that the *barangay* would stockpile housing material if it could afford it.

3.2 Hazard events – 2001 and 2003

3.2.1 Typhoon Nanang, November 2001

Typhoon Nanang hit Panay Island on 7 November 2001 (Figure 11), bringing torrential rains (Figure 12) over an extensive area. It submerged 14 *barangays* in Dumangas, affecting 1344 families. Damage to farmlands, fishponds and infrastructure totaled more than PHP100 million. The increased preparedness of the communities and local government led to a decrease in the number of households affected when compared to that of the previous event (Figures 10 and 11).



Figure 10. Track of Typhoon Nanang, 6–10 November 2001

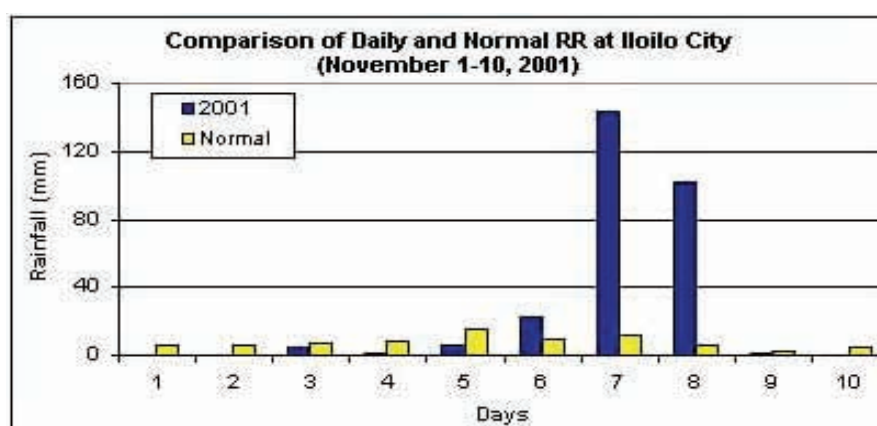


Figure 11. Daily rainfall at Iloilo synoptic station during the passage of Typhoon Nanang on 7 November 2001. Note the large deviation from the long-term average during November 7 and 8.