

## CHAPTER 4

### AFTER THE BUST IN PANGUIL BAY: IMPACTS OF GLOBALIZED AQUACULTURE ON BARANGAY LAPINIG

*Wa gayud datu sa among komunidad. Ang datu makaka-on kanunay. . . . dili mamad-an. Ang makatrabaho kada-adlaw dili gayud mamad-an. . . . Kami kay naay adlaw nga dili makatrabaho. . . . tungod sa baha!* There is nobody in our community who is rich. The rich are those who will not miss a meal. They will not “dry up.” Only those who are able to earn income everyday who will not “dry up.” Whereas, for our sake, there are days where we cannot work, like during floods! (Lapinig Household Interviewee)

Home to 603 households, Lapinig is one of the three coastal barangays of Kapatagan, a predominantly rural municipality that is part of the province of Lanao del Norte. The municipality allocates 2,231 hectares of mangroves to fishing, most of it converted to large export-oriented fishponds.<sup>1</sup> Because Kapatagan is a natural swampy lagoon between mountains, it is frequently flooded by water runoff from these uplands. In the 1970s, the government’s *Palayang Bayan* (Community Rice) Program connected part of this closed lagoon to the Butadon River. Once the swamp was drained, the area was developed into agricultural lands, transforming the municipality into a rice granary of the province. The Philippines Rice Research Institute operates a Provincial Nursery Seed Farm in the municipality.<sup>2</sup> Kapatagan farmers cultivate less than 9,500 hectares, using only about one-third of the available agricultural land. Far less land is cultivated in grains than in vegetables, roots, fruits and coconuts (see Table 4.1). Livestock

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<sup>1</sup> Kapatagan Municipal Website, <http://elgu.ncc.gov.ph/ecommunity/kapatagan-ldn/>

<sup>2</sup> [www.philrice.gov.ph](http://www.philrice.gov.ph)

production is far more important in this municipality than in the other areas studied, especially poultry, swine and goats.<sup>3</sup> In adjacent communities, there is current controversy and grassroots protesting over impacts of the Agrarian Reform Program which has dispossessed poor tenant farmers to stimulate the formation of large export-oriented coconut estates that rely on hired laborers.<sup>4</sup>

Lapinig was once linked to Panguil Bay by four inbound rivers– the Saliduangan Daku, the Saliduangan Gamay, the Maniwayan Daku and Katapak. These rivers provided natural highways between mangroves and the sea, and they abounded with crabs, prawns and other crustaceans which were a major source of fishers' subsistence. When the San Diego Fishpond was constructed in 1957, these rivers were closed. Logging and lumber milling also provided some employment. Misamis Lumber established a sawmill and logpond in Lapinig while engaged in logging in other municipalities.<sup>5</sup> During the 1960s and 1970s, Lapinig was a bustling barangay with an active port at which passenger and fishpond barges regularly docked.<sup>6</sup> At that point, Lapinig was a thriving economic hub, with the natural advantage of a river wide enough to accommodate three boats simultaneously<sup>7</sup>. By the late 1970s, Lapinig River had become so shallow that navigation was

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<sup>3</sup> It is easy to produce ducks and turkeys because they can be fed freshwater snails (Jocano and Veloro 1976: 31).

<sup>4</sup>“Detention of Farmers Shows Land Reform Woes,” *Manila Times*, 10 June 2003.

<sup>5</sup> Respondents stated that other logging ventures were also started in the area by some military officials.

<sup>6</sup> Mrs. Escobia, Lapinig Barangay official.

<sup>7</sup> Each boat has *katig* (balancer, made of wood or bamboo) on both sides which makes the total expanse of the boat around 6-10 meters wide.

Table 4.1

## Agricultural Production of Kapatagan, 2004

Crop or Livestock	Area/Production
Vegetables, Root crops, Coffee, Bananas, Mangoes	5,217 hectares
Coconuts	3,800 hectares
Rice	2,850 hectares
Chickens	52,454 heads
Ducks and Turkeys	14,462 heads
Swine	12,359 heads
Goats	4,582 heads
Cattle, Carabao, Horses	1,929 heads
Corn	1,947 hectares

Source: Aggregated from the annual statistics provided Kapatagan Municipal Website,  
<http://elgu.ncc.gov.ph/ecomunity/kapatagan-ldn/>

becoming difficult. By the late 1980s, water had receded so much that both river and port were dead, severely damaging the economy of the barangay.

Because nonfishing opportunities are so limited, only about half of Kapatagan adults are employed as part of the waged labor force.<sup>8</sup> Unemployment has increased for households throughout the 1990s and early 21<sup>st</sup> century (MSU-Naawan 1996). Some women from Kapatagan seek their chances to become transnational domestic laborers.<sup>9</sup> Even though government-subsidized microfinance programs are available through a local bank and cooperatives, very few men and women have benefitted.<sup>10</sup> Lapinig families are plagued by the same health crises that jeopardize Silangans. In Northern Mindanao, more than one-third of all children are underweight, under-height, and stunted, and one-third to two-fifths of pregnant women are malnourished. Iron deficiency anemia and deficiencies in iodine and Vitamin A are common. Maternal and infant mortality are higher here than in the rest of the country.<sup>11</sup> In recognition of the high infant mortality rates, protein malnutrition, and elementary school drop out rates, the World Bank sponsors an Early Childhood Development Project at Kapatagan which serves all the barangays of the municipality.<sup>12</sup>

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<sup>8</sup> Kapatagan Municipal Website, <http://elgu.ncc.gov.ph/ecommunity/kapatagan-ldn/>

<sup>9</sup> [www.greataupair.com/aupair-nanny/Lanao+del+norte/Lala.htm](http://www.greataupair.com/aupair-nanny/Lanao+del+norte/Lala.htm)

<sup>10</sup> [www.rbap.org/articlereview/1637/1/237/](http://www.rbap.org/articlereview/1637/1/237/) and [www.bsp.gov.ph/resources/bankdir/microfinance/default.htm](http://www.bsp.gov.ph/resources/bankdir/microfinance/default.htm)

<sup>11</sup> For Lanao del Norte Province. See “Statistics,” Philippine Food and Nutrition Research Institute, 2003, [www.fnri.dost.gov.ph](http://www.fnri.dost.gov.ph)

<sup>12</sup> [www.projectmaps\\_worldbank.org.ph/projects1-ecdp.htm](http://www.projectmaps_worldbank.org.ph/projects1-ecdp.htm)

## State of Fishing and Aquaculture in the Barangay

Traditionally, artisan capture fishing in the coastal waters and crustacean gathering in the mangroves have been the major sources of livelihood for most of the barangay coastal households.<sup>13</sup> In the 1980s, the *sudsud makina* (mechanized trawl) captured more fishes than any other gear, but it was declared illegal because of the rapid rate at which it depleted shellfish in the area, especially mussels and *agihis* (MSU-Naawan 1991). At present, the most common fishing gear is *laya* (cast net), as evidenced by the proliferation of hundreds of bamboo poles that are used by the fishers to attach their nets and to designate their “private” areas for harvesting. Fishers attach *agihis* as bait and cast the *laya* into the two-foot-deep water of the Bay. The seas have become virtually impassable to boats, barges, and fishes due to the great numbers of these nets colonizing every space. In the mid-1980s, *pamintol* (mudcrab gathering with a *bintol* net) provided a good livelihood for small fishers. At present, fishers are lucky to catch one or two crabs that are much smaller than those they caught two decades ago. In 1980, Lapinig fishers averaged 32 kilos per day. By 2000, that daily catch had dwindled to less than a kilo (JEP ATRE 2004). In 2004, the total output of Kapatagan’s small fishers was only 7 metric tons, far less than one percent of the production of local fishponds.<sup>14</sup> Fishers complain that fishing and crab gathering are almost dead because of the decline in marine species. Consequently, the Fishery Resource Management Program has established a fish sanctuary and a Municipal Training Center

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<sup>13</sup> Elder fishers recall the local joke that commercial buses plying the national highway had to stop to let a crab cross the street because the crustacean would be as large as an unhusked coconut.

<sup>14</sup> Kapatagan Municipal website, <http://elgu.ncc.gov.ph/ecommunity/kapatagan-ldn/>

in mudcrab cultivation. The goal is to provide small fishers with an “alternative livelihood” approach. At present, most of the fishing organizations in Lanao del Norte, the Lapinig Fishers Association included, engage in crab fattening projects. However, the government program has done little to provide income to most households since all crab fattening projects in Panguil Bay are “adversely affected by the scarce and unpredictable supply of mudcrab seedstock from the fishery” (MSU-Naawan 2001).<sup>15</sup> While a crab lays 3 million eggs, only five will survive in Panguil Bay.<sup>16</sup>

Some of the most massive fishponds in Panguil Bay are found in Kapatagan. While only 500 hectares of productive fishing are available for small fishers, fishponds monopolize nearly 80 percent of the available fishing area (1,714 hectares).<sup>17</sup> In 1957, San Diego Fishery Enterprises constructed its fishpond of more than a thousand hectares that span the three coastal barangays of Lapinig, Margos and Taguitic. Specializing on the export of prawns, milkfish and tilapia, San Diego is a domestic corporation that is also engaged in deep sea fishing business and one of the large agribusiness in the Philippines.<sup>18</sup> This Manila-based corporation held long term

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<sup>15</sup> [http://region12.bfar.da.gov.ph/news\\_crab.htm](http://region12.bfar.da.gov.ph/news_crab.htm)

<sup>16</sup> I. Cuaresma, IEC Specialist, Kapatagan Agriculture Office

<sup>17</sup> Kapatagan Municipal website, <http://elgu.ncc.gov.ph/ecomunity/kapatagan-ldn/>. In addition, the Federico Santos Fishpond of 400 hectares was constructed in 1958 but was abandoned in the 1980s. Local residents believe that these owners had close connections with the national government, especially with the Marcoses.

<sup>18</sup> [www.da.gov.ph/agribiz/milkfish\\_tilapia\\_tuna.html](http://www.da.gov.ph/agribiz/milkfish_tilapia_tuna.html). In 1982, the Philippine Supreme Court found the corporation guilty of unfair labor practices. See [www.lawphil.net/judjuris/juri1982/feb1982/gr\\_1\\_30592\\_1982.html](http://www.lawphil.net/judjuris/juri1982/feb1982/gr_1_30592_1982.html)

government leases which permitted exploitation of mangroves for export production. Still operational, this huge fishpond was established employing *extensive* production system which depend on natural inputs and tidal water exchange. According to Lucas *et. al.* (2000: 387-88), extensive shrimp farms have low stocking densities and are:

located adjacent to estuaries, bays and coastal lagoons and rivers. . . . [L]iming materials are applied to pond soils, and they use animal manures or other organic materials to stimulate production of natural food for their shrimp. Ponds are filled by tides and any water exchange (typically <5% per day) is also by tidal action. . . . [T]he shrimp feed on natural photo- and zooplankton, small plants and animals living or on the pond substrate, and particulate organic matter suspended in the water or lying on the bottom.<sup>19</sup>

Because of species depletion in the Bay, San Diego prawns must be highly supplemented with *agihis* bought at 40 pesos per sack.<sup>20</sup> Due to insufficient numbers of larvae in the wild, these ponds can no longer restock with tidal water exchanges and must purchase fingerlings from hatcheries. Like the semi-intensive prawn farms in Silanga, these fishponds routinely use *teaseed* to eliminate unwanted fish species. The San Diego Fishpond is still highly productive, averaging two metric tons per hectare annually. It is also very profitable because the financial inputs are far

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<sup>19</sup> Worldwide, almost no new extensive shrimp farms are being built because it is now illegal in several countries to build shrimp farms in mangrove areas.

<sup>20</sup> Probably, because of their bulk-buying, these corporate fishponds pay lower prices for *agihis* than the smaller semi-intensive farms in Silanga and in Lapinig.

lower than those required for an intensive prawn farm.<sup>21</sup> Despite their vast size, these fishponds employ few laborers, and most of the hired workers originate from outside Lapinig.<sup>22</sup>

### **State of the Environment of the Barangay**

While the government fishery program focuses on small fishers as the cause of marine depletion, the fisher's illegal fishing tactics and growing population generate only a fraction of the shortages and degradation caused by commercial aquaculture and agriculture. Fish and crustaceans are critically depleted in the Lapinig area, primarily due to the decades of Green and Blue Revolution strategies of agriculture and aquaculture. Fishponds and rice fields have deforested and polluted the mangroves, eliminating the natural habitat of numerous species. Discharges and effluents from the fishponds have polluted the coastal waters and rivers. In addition, the fishponds have consumed small shellfish to the point of near-extinction. The chemical-laden waters and soils from the vast rice farms in Kapatagan are carried away by the seasonal floods, and fishpond wastes have built up so much sedimentation that Panguil Bay is now very shallow. Teaseed is a major source of pollution and a threat to biodiversity because it kills off fish, mollusks and beneficial sea algae (Primavera 1993: 175). The fishpond sludge generates high chlorophyll concentrations which lead to algal blooms.<sup>23</sup> To facilitate the

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<sup>21</sup>Kapatagan Municipal website, <http://elgu.ncc.gov.ph/ecommunity/kapatagan-ldn/>. For comparisons of intensive, semi-intensive prawn farms, see Lucas *et al.* 2003.

<sup>22</sup> Local residents believe that the fishpond management hires outsiders on the assumption that they are more hardworking because they are away from home, have no families to divert their attention, and need to send money home.

<sup>23</sup> CRSP Research Report 88-12, online at <http://pdacrsp.oregonstate.edu/pubs>

harvesting process, the Lapinig fishponds routinely utilize *Cymbush* and *Decis*, two pesticides normally applied on area rice fields. These two chemicals trigger eye pain in prawns, stimulating them to rise to the top of the water where they can be more easily collected as the pond is emptied.<sup>24</sup> This tactic also permits the owner to maximize profits since the corporation will need far fewer laborers during harvest.

The whole coastal area of Kapatagan, including Lapinig, was originally a massive mangrove area, but most of these natural coastal forests were privatized to build corporate fishponds.<sup>25</sup> On the one hand, mangrove destruction eliminated household access to many natural resources that supported their livelihoods. Prior to fishpond deforestation, the mangroves were thick with several different kinds of wood species, including *maloro*, *pagatpat*, *ipil* and *tabigi*. Now, only *pagatpat* can be found along the shores; and crabs and other crustaceans have become extremely scarce. On the other hand, the fishponds closed off household access to Panguil Bay and the mangroves, and fisher families face legal sanctions if they trespass through private corporate territory. Since the Lapinig River is now dry, it is very difficult to get boats and gear to the coastal water. Now only an irrigation canal links Lapinig fishers to Panguil Bay. Because there is an insufficient number of bridges to make foot traffic safe during floods, people must wade or swim across canals. The sudden high currents increase the possibility of drowning, and the flood waters are contaminated with fecal coliform, industrial wastes, agricultural runoffs, and fishpond residues. Great numbers of snakes, such as the dangerous Philippine cobra and

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<sup>24</sup> Interview with government fishery technician.

<sup>25</sup> Barangay elders report that the vast, thick mangroves were a safe refuge for residents trying to escape the atrocities of World War II.

python, are also brought by flood waters.

Thus, the worst ecological threats to the survival of Lapinig households are the seasonal floods.<sup>26</sup> Because of the repeated flooding, Lapinig has higher poverty and a lower quality of life than the other two barangays studied. Since the flood control strategy was designed to divert flood waters away from the corporate fishponds around Kapatagan, the small fisher communities bear the brunt of the natural disasters.<sup>27</sup> Because frequent flooding has accumulated siltation, the Butadon River is no longer deep enough to move the rushing waters to Panguil Bay, so the excess pours into the coastal communities. Because of its location, Lapinig is the hardest hit of the Kapatagan barangays. Floods threaten every aspect of the subsistence of small fisher households. The rushing waters destroy houses, gardens, medicinal herbs, and toilets, kill household livestock and chickens, contaminate the public water supply, and keep people from working at their daily livelihoods.

### **Fishing Households of Barangay Lapinig**

While most fisher families have lived in Lapinig their entire lives, about one-third have migrated into the area over the last decade. In contrast to Silanga, far fewer Lapinig households depend on fishing as the most significant source of their subsistence. While most older husbands still engage in capture fishing, more than one-third have stopped fishing entirely. Those who still fish rely on *pukot*, *pangoryente* or *laya*, but these households are not engaged in the *bungsod*

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<sup>26</sup> <http://szopad.neda.gov.ph/areaprofile/ldn-physica.htm>

<sup>27</sup> This is from an interview with a local professional in the barangay.

fishing that is so common in Silanga.<sup>28</sup> Lapinig wives are far more likely to earn regular wages than are Silanga women and, therefore, are less likely to assist husbands with fishing. While most of the households own their own dwellings, they do not hold title to the public lands on which their houses are built. By world standards, Lapinig households are typical of the conditions in most peripheral nations, but their dwellings are smaller and less permanent than most Silanga fisher homes. The typical house is only about 8 feet by 10 feet, has one or two small rooms, and is built on stilts for protection against flooding or high tides. Even though these dwellings are often standing over or are very near water, a majority of them are constructed of thatched *nipa* and bamboo. Unlike Silanga fishers, these households cannot afford concrete block dwellings, even though such structures would provide more protection during the frequent flooding.

This is a middle-aged population in which husbands average 46 years and wives average 45 years. Both husbands and wives average six years or less of schooling, about the level that is typical of Filipino fishers. Very few attended high school, and their offspring are far less likely to attend high school than the children of Silanga fishers. Comprised of only two adults and three children, the average Lapinig household is smaller than the typical Silanga fisher family. Few households include extended kin or adult offspring. Because of severely limited livelihood opportunities, many teenagers and young adults out-migrate. More than 83 percent of Lapinig households fall below the Philippines poverty line (MSU-Naawan 1996). Since most wives have steady income from *nipa* thatching (see later discussion), Lapinig households average about 50 cents per capita per day (\$US), but they still fall below national and world poverty lines. By world standards, these are households which cannot consistently supply their basic survival

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<sup>28</sup> *Pukot* and *laya* are netting gears while *pangoryente* involves electrocution of fish.

needs. Even a small fishpond operator household lives on less than US\$1 a day per capita, placing this family among the ranks of the peripheral poor. Lapinig families perceive each other to be at the same impoverished economic level, except for a tiny number of *pawod* (thatched *nipa*) buyers/sellers. One fisher wife said:

*Wa gyud datu sa among komunidad. Ang datu makaka-on kanunay. . . . dili mamad-an. Ang makatrabaho kada-adlaw dili gyud mamad-an. . . . Kami kay naa adlaw nga dili katrabaho . . . . tungod sa baha!* There is no body in our community who is rich. The rich are those who will not miss a meal. They will not “dry up.” Only those who are able to earn income everyday will not “dry up.”

Whereas, for our sake, there are days when we cannot work, like during floods!

As in Silanga, cooking is done on a raised wood table covered with a thick layer of soil. Pots are mounted on stones and iron frames, with firewood between them. In sharp contrast to Silanga families, only about half of Lapinig households have electricity. Moreover, Lapinig families have far less security about water and sanitation than do Silanga fisher households. While a majority of the houses have no toilet, a few use outdoor pit toilets, and very few rely on indoor toilets that empty into the Bay. In short, the disposal of human waste leaves both people and ecosystem at risk. Most households have access to nearby public spigots, but some draw water from the community reservoir. Both sources are supplied by *untreated spring water* that is easily contaminated by floods and parasites.<sup>29</sup> No doubt, the water supply contributes to the high incidence of diarrheal diseases which are prevalent year-round, especially among children under

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<sup>29</sup> Kapatagan Municipal website, <http://elgu.ncc.gov.ph/ecomunity/kapatagan-ldn/>.

five years old.<sup>30</sup>

Compared to Silanga households, Lapinig families are far more likely to drink unsafe water and to bathe or wash clothes in nearby canals or streams. Consequently, the local midwife reports that all residents are infested with *Schistosomiasis*, caused by a parasite found in the fresh water of local canals and rice fields. “Swimmer’s Itch” is not nearly as innocuous as its popular name would imply. Worldwide, 200 million people in tropical countries are infected and it is a major cause of deaths every year. Human infection is caused by contact with a blood fluke that proliferates in tropical fresh waters that are populated by snails. *Schistosoma japonicum*, the worm which causes this disease in the Philippines, penetrates human skin and settles in mating pairs in the digestive tract, liver, spleen, bladder and lymph nodes. Untreated, the disease leads to diarrhea, bowel damage and bleeding, weight loss, bladder scarring, bloody urine, and pulmonary symptoms. Over time, the parasites migrate to the lungs, heart, brain and spinal cord. The highest incidence of infection occurs among children aged ten to nineteen, and one third of the infected women develop genital lesions that make them more susceptible to HIV transmission. When there is early medical attention, two-thirds recover, but the disease causes permanent organ damage when left untreated. This illness is commonly misdiagnosed by health professionals because the worst symptoms may not develop until months or years after initial skin rashes appear. Moreover, in the chronic stage, *Schistosomiasis* manifests itself as fever, severe fatigue, arthralgia, cough, bloody diarrhea, abdominal pain, or as ailments of the eye, bladder, liver, brain or lung. To prevent chronic illness and massive internal damage, populations at risk need to be treated several times a year to reduce the number of parasites.

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<sup>30</sup> Interview with B. Pactol, Midwife, Kapatagan Health Office.

Unfortunately, such public interventions do not occur in Lapinig.<sup>31</sup>

### **Threats to Household Survival**

Food insecurity is the outcome of radically diminished fish and crustacean catches, mangrove degradation, and the rising prices of grains. Having fish every day is a luxury in this fishing community. When crabs are caught, they are sold to purchase rice or corn. Families explained that they would rather give up the pleasure of eating the crab than to forego rice or corn grits. Moreover, the frequent floods destroy the livestock, chickens, and gardens they are producing to supplement their diets. Thus, many women reported that there are lots of days when their families eat only salted rice or corn grits.

As threatened as their food supply may be, safe water is even more insecure resource for Lapinig households. Like the fictitious thirsty sailors on Samuel Coleridge's doomed ship who lamented "Water, water everywhere and ne'er a drop to drink," Lapinig households repeatedly endure flooding, but safe drinking water is a precious commodity. Frequent flooding contaminates the public water supply, and most Lapinig households cannot afford to connect to the private water system. In the midst of torrential floods, safe water is scarce, and their health is at risk repeatedly.

Children are prevented from getting an education in two ways. Since the elementary school is situated at least two kilometers from the dwellings of most Lapinig coastal residents, these youngsters cannot attend during floods. When a flood washes away bridges and forces people to wade or swim across the canals, parents keep children at home. The regular school

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<sup>31</sup> For scientific information about the disease and its medical treatment, see [www.medicdirect.co.uk](http://www.medicdirect.co.uk)

curriculum is also cut short by flood threats. When it rains, teachers release classes early to permit children to arrive home ahead of possible flood currents. Several children have dropped out of school because of their frequent absences due to floods. The second deterrent lies in the cost. While most of these parents were unable to go to school themselves beyond a few elementary years, they want their children to have better opportunities. Even though schooling is often beyond their economic means, these parents still prioritize it among their basic survival expenses, second only to food. However, they cannot afford the 40 percent of educational costs that are no longer covered by the Philippines national budget. While there are no outright fees for attending the public schools, there are frequent expenses for “school projects” and “contributions.” One mother of three elementary graders explained: *“Mao na problema sa pagpaeskuwela diri. Kada lihok, amot! Kaisa nag-amot mi para kandidata sa pista! Kaisa nag-amot mga bata para floormat sa classroom!”* That’s what the problem is in children’s schooling. There are always contributions. One time we paid for a ticket for a candidate for the town fiesta. Another time, the children contributed to buy a floormat for the classroom.” Just like their parents, most of these children will achieve an elementary education or less and not attend high school. The only ones who will be able to go onto high school or college are the offspring of the well-off *pawod* buyers.

### **Survival Strategies of Lapinig Households**

Like Silangans, the people of Lapinig are dependent on their ecosystem for household subsistence, for waged incomes and for supplementary cash earning. Because of the accumulated

effects of nearly fifty years of export-oriented prawn farming, fish and crustaceans have been depleted and artisan fisher families have very limited access to mangrove resources. Grain purchases must be made on a daily basis, but earnings from fishing are no longer sufficient to cover these food costs. Consequently, Lapinig families must strive to meet most of their monetary needs through unstable waged employment or through other forms of income earning that is not directly related to fishing. Unlike Silangans, these households cannot gather oysters or other wild foods because the mangroves have been removed from the public commons and legally placed under the control of a single-use: the corporate fishpond. Now deprived of an adequate fish catch and ecological subsistence resources, this fishing community has had to shift to other means of livelihood, including:

1. *nipa* thatching
2. farming
3. gardening
4. livestock and chicken raising
5. shell gathering and selling
6. and supplements through networks of family and friends

### **The *Nipa* Thatching Industry**

Prior to fishpond construction, there was no *pawod* industry in the barangay. Now more than one-third of the coastal population depends wholly on the local *pawod* (*nipa* thatching) industry. Even though most of the mangroves are now controlled by corporate fishponds,

households are able to eke out a living by paying bribes or rent-shares to harvest *nipas*. The lowly *pawod* (thatched *nipa*) is a labor intensive industry which makes use of natural resources, creates no environmental waste, and relies on traditional skills, as shown in Table 4.2. The primary consumers of *pawod* are poor families who need cheap materials to construct the roofs and walls of their huts. Women can produce between 80 and 150 *pawods* a day to earn by the piece 28 to 52 pesos ( US\$0.50-0.95). Most women work full time from 8:00 a.m. to 5:00 p.m., taking only a short lunch break. Children, teenagers, elders, and husbands contribute to the production process (see Table 4.2). Girls begin to learn about age five, and many can thatch 40 to 80 *pawods* daily by age ten or eleven. Thatching is a back-breaking job, the tasks repeated eight hours a day, six and some seven days a week. But this work pays for the family's staple grain, and is, therefore, at the very heart of household survival.

Thatchers are paid weekly for their piece production, usually on Saturday afternoons. Women rarely collect in any week the true value of their labor, for they draw subsistence resources against future production. The most common form of credit in the community is for thatchers to receive in advance from the *pawod* buyer such household essentials as rice, sugar or salt. Sometimes children are sent to the buyer with a scrap of paper on which the mother specifies the advance she needs. Then the buyer deducts those items from the weekly income due the thatcher.

Like fishing, *nipa* thatching is a livelihood which makes Lapinig households vulnerable to ecological changes or to restrictive policies of the corporate fishponds. At present, thatchers have two concerns about the future. First, floods threaten this most important source of livelihood. According to one wife:

Table 4.2

The Lapinig *Nipa* Industry: Work, Tasks and Workers

<b><i>Lapinig Job/Activity</i></b>	<b><i>Who does the work?</i></b>	<b><i>How much do they earn? (Philippine pesos)</i></b>
<i>Tapas</i> to cut the <i>nipa</i> in the mangroves	Mostly men, few women.	20 pesos per <i>butok</i> and usually <i>manasa</i> produces 7 <i>butoks</i> a day.
Laborer to haul the <i>nipa</i> from the mangrove area to the <i>nipa</i> buyer.	Men	4 pesos per <i>butok</i> , usually carries 4 <i>butoks</i> in his cart.
<i>Man-luti</i> breaking the <i>tagik</i> (vine) into two and cleaning each.	Usually adult women.	4 pesos per bundle of <i>tagik</i> .
<i>Manibit</i> the process of making the <i>pawod</i> .	Majority are adult women. Children during weekends. Aged women and men.	35 centavos per <i>pawod</i> .
<b><i>Job Activity in Rural areas Outside of Lapinig</i></b>	<b><i>Who does the work?</i></b>	<b><i>How much do they earn?</i></b>
Making <i>Palawran</i> thin bamboo sticks used in <i>pawod</i> .	Usually men (husbands).	11-12 pesos per 100 sticks.
Harvest and deliver <i>tagik</i> , the vine used to sew <i>nipa</i> into the <i>palawran</i> to make the <i>pawod</i> .	Men	5 pesos per bundle of 100 <i>tagik</i> .

Sources: Interviews with *nipa* buyers and thatchers.

*Kung magbaha, dili mi makaadto sa palawran, ug wala say nipa kay wala man manasa!*

If it floods we cannot work as we are stuck in our respective houses. Even if we can cross the flood, we still cannot work because there is no supply of *nipa*. Nobody can harvest *nipa* in the mangroves during a flood.

The floods also destroy the *nipa* trees and wash away stored thatching supplies. Second, Lapinig thatchers are worried about rumors that the harvesting of *nipa* might be prohibited in the future, as part of the Mangrove Stewardship program (see later discussion this chapter).

### **Other Sources of Subsistence Income**

There are few informal sector opportunities in Lapinig, but some households do engage in shell gathering and selling. Some farm in adjacent barangays, and wives routinely garden when they have available land or pots. As more teenagers and young adults migrate to find distant jobs, Lapinig families draw part of the household income from regular remittances from those offspring. Like Silangans, these Lapinig fisher households derive part of their resources, especially food, from family and friends. In their study of a Philippine fishing community very similar to this one, Illo and Polo (1990: 104) emphasized the importance of “inter-household support” among parents, siblings, and extended kin.

Through a bilateral network of consanguineal, affinal, and ritual kins, the mobilization of labor and other resources involves more than just one household.

The support from affinal kins, particularly parents-in-law and members of one’s own natal family, [a]re a necessary ingredient for the reproduction and the firming up of material foundation of the households.

For example, the *nipa* industry operates like an extended family enterprise. Most of the *pawod* buyers are relatives, so they tend to support each other. For example, I observed a context in which a son was sent to borrow 50 *palawran* (bamboo sticks) from another buyer. As soon as the borrower had a fresh supply, the borrowed bamboo sticks were returned. The lending buyer stated that they all help each other to survive.

### **The Failed Mangrove Stewardship Program**

In the 1980s, flooding wreaked havoc on the coastal communities around Kapatagan. Uprooted banana trunks and coconut trees smashed the earthen dikes of fishponds, and polluted water destroyed prawn production. Locals believed that such devastation contributed to closure of the 400-hectare Santos Fishpond. Despite that its Fishpond Lease Agreement had already expired and has not been renewed<sup>32</sup>, Santos did not relinquish corporate control over the land, and he maintained armed security guards around its perimeter.<sup>33</sup> Residents recalled that these guards fired at them when they gathered shells, crabs or *nipa*. To avoid such violence, fisher families paid *tong* imposed by the guards, who took part of the meager harvest as their bribes. In 1989, residents of the barangay organized themselves into the Lapinig Multipurpose Cooperative (LMC) and petitioned the Department of Environment and Natural Resources (DENR) to award them a “Mangrove Stewardship Agreement” through the Integrated Social Forestry Program. In 1982, the Philippine government financed the creation of its forestry conservation program with

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<sup>32</sup> Atty. Leo Zaragoza, LMC Legal Counsel.

<sup>33</sup> National regulations require that holders of Fishpond Lease Agreements must relinquish control over the assigned land when the fishpond has been inactive five years. Clearly, the corporate fishpond is attempting to circumvent this regulation. Under the terms of the lease, local residents had no legal access to the mangroves covered by the agreement, and fishpond operators could take action against trespassers.

\$240,000 in loans from the Asian Development Bank and the Overseas Economic Cooperation Fund of Japan. Once a fishpond under a government lease has been abandoned for five year, the DENR is supposed to reclaim the land and reassign it to local community organizations or to non-profit non-governmental organizations that will rehabilitate the deforested mangroves. The legislation requires that:

1. Small parcels must be assigned only to local residents who traditionally rely on mangroves for their subsistence.
2. The tenured household must be “governed by the principles of biodiversity protection and sustainable development,” obligations not attached to the government’s long term Fishpond Lease Agreements.
3. The mangrove steward must show evidence of tenure by planting trees and by building a dwelling inside or adjacent to the parcel.
4. The mangrove steward cannot engage in any economic activity which will prevent or damage the mangrove regrowth. Most specifically, it is illegal for the steward to use the parcel for fishpond development.<sup>34</sup>

If a steward violates the contractual agreement, the DENR is responsible for suspending the permit for a period of six months to a year. If the steward does not terminate the illegal activated in that period, the local government and DENR are directed to revoke the permit and to reassign the parcel to new steward.

In 1991, the community group was awarded the stewardship agreement, and they

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<sup>34</sup> DENR Administrative Order No. 15-90 and AO No. 30, online at [www.tangol.org/environmental\\_laws/dao.html](http://www.tangol.org/environmental_laws/dao.html) and [www.tangol.org/environmental\\_laws/dao90-15.html](http://www.tangol.org/environmental_laws/dao90-15.html)

subsequently parcelized out to 160 members two hectares each of the abandoned fishpond. Massive planting of *nipa* trees followed to rehabilitate the mangrove, and the cooperative began to act as marketing conduit for the member-fishers who were engaged in crab harvesting and *nipa* thatching. While a healthy mangrove can provide household subsistence, a deforested and polluted mangrove has so few remaining resources that it can neither meet family protein requirements nor provide any income for schooling or increasingly expensive rice. Little wonder, then that some mangrove stewards have mortgaged their parcels to cover household expenses, such as hospitalization, funerals, or schooling. In this context, prawn farming was a tempting alternative. The adjoining thousands of hectares are making fishpond operators multi-millionaires, some stewards rationalized, so why should they not build small-scale fishponds to feed their families? In 1999, some mangrove stewards violated government regulations and converted their assigned parcels into fishponds. Informants contend that those who first converted their stewardship parcels into fishponds were government employees who had been awarded parcels by the LMC.<sup>35</sup> Such actions caused tension in the community, especially among the barangay council and the LMC officers who worry that too many outsiders are gaining control over Lapinig mangroves. Such violations also received national television coverage. By May 2004, the DENR had forwarded 44 cancellations of Mangrove Stewardship Agreements to the Kapatagan Mayor's Office.<sup>36</sup> The Mayor took no action, and informants were convinced that

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<sup>35</sup> Atty. L. Zaragoza, legal council for the LMC and former Vice-Mayor of Kapatagan, explained that the parcel awards to government employees were originally facilitated by the LMC officers as a token of gratitude for helping them. Pseudonyms were used to circumvent the legal requirements that awardees must be local residents who traditionally relied on mangroves for subsistence livelihoods. By assigning parcels to these government officials, the LMC thought the organization could ensure sustained support for their mangrove rehabilitation goals.

<sup>36</sup> Interview with Frank Bihod, Kapatagan Municipal Agriculture Officer.

the upcoming election forestalled any intervention. By April 2005, there were 100 cancellations waiting for enforcement by the Mayor's Office.<sup>37</sup>

Like the prawn farms in Silanga, these illegal fishponds are small-scale *semi-intensive* operations which rely on natural inputs. However, many of these fishponds are financed by outsiders who for a 90 percent share of prawn sale:

1. Finance construction of the fishpond.
2. pay to the mangrove steward annual "rent" of 5,000 to 10,000 pesos for five years;
3. pay to the family operator, who is usually the legal mangrove steward, monthly wages of about 2,000 pesos and a sack of rice;
4. cover the periodic costs of repairs;
5. pay for feeds and other production inputs, including seed/fingerlings, teaseed, lime, and *agihis* for feeding.

Flooding and low salinity make prawn production risky in Lapinig. Daily pumping of seawater into the pond is tricky since the salinity level for this part of Panguil Bay is zero. During high tide, operators must wait more than two hours for the salt ratio to rise and make it safe to flush water into the pond. Typically, prawns are cropped twice a year, but a few are maximizing efforts to four harvests annually. A production income of 80,000 pesos is considered good output, but the steward family who takes all the legal risk and does all the hard work retains only a 10 percent share, from which other loans and subsistence advances must be deducted.

Lina and Rene hold one of the mangrove stewardship parcels assigned by the Lapinig

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<sup>37</sup> Long distance telephone call with a barangay official.

Multipurpose Cooperative. Because their livelihood from the mangrove and from *nipa* thatching were so meager and children are soon to enter college, the couple decided to convert their parcel into a small-scale semi-intensive prawn farm. A financial backer pays annual rent of 10,000 pesos (about US\$108), plus 2,000 pesos (US\$ 36.36) and a sack of rice monthly to Rene for managing the fishpond. In return, the investor takes 90 percent from sale of prawns when they harvest twice yearly. In comparison to other Lapinig households, Lina and Rene are doing well. By national and world standards, however, this household is still impoverished, living only on 85 cents (US\$) per day per capita, and straining to provide basic survival needs. Two teenage sons attend high school, and a daughter is still in elementary school. Their two-room house is built of *nipa* and wood, and their outdoor toilet was destroyed by a flood and has not been replaced. Their house has electricity, but the family either carries water from the community reservoir or purchases it. By renting another mangrove parcel at 750 pesos per month, the wife is able to continue her *nipa* thatching. With the help of her daughter, she produces 50 *pawods* a day. To supplement the household diet, they also raise chickens and gather a few *tilapia*, crabs and *bangus* from the fishpond. The wife also sells home-made delicacies and purchases dried fish from Pagadian for resale.

Using financial backing, a second Lapinig household also converted its awarded mangrove parcel to a fishpond, with disastrous results.

*Inig harvest, pelyur! Ang resulta, take-over na ang financer kay daku na man ang utang. Daku na ang shorted. Sige magka pelyur. Alang-alang kay ang pansat mabakterya man.* When we harvest, it's always a failure. We have big shortages [i.e. prawn sales did not cover their indebtedness to the investor.] Cropping is

always a failure because bacteria attacks the prawns. The result: the financier takes over because of our big loans.

Repeated flooding has overflowed the fishpond and contaminated the prawns. When the mud dike was destroyed a second time by flood waters, the investor refused to repair it. “*Nabuhang and dike, dili na man ipatrabaho sa pinanser kay daku na daw ko og utang*. The dike was broken, the financier did not have it repaired because we have a lot of debt already. Encouraged by their first harvest, the couple borrowed an additional 15,000 pesos for their daughter to attend nursing school. However, succeeding harvests were failures, and the family is now worse off than before they took the risk. So the husband comments: “*Mao nga gibalikan na pod nako tanom og nipa!* That is why we are back to planting *nipa* again.” Compared to the food they could afford when the wife did *nipa* thatching from their own mangrove, their current diet is far worse. The husband laments:

*Niadto nga wala pa namo i-fishpond among kanipaan (sila ra man gatrabaho sa nipa kay didto man sila nagpuyo), kung maghatod si [Lina] og nipa didto sa Kapatagan, inig uli magdala og 2 ka kilo nga karne - isa ka kilo nga bukog sa baka ug isa ka kilong karneng baboy. Mopalit og sinako nga bugas, magdala of dagku nga bulad og mongos. . . . [The financier] wala na mosupply og konsumo. Karon, mokaon ra man mi og piding. Mga dagku kaayo nga bugas, yellow corn. Lung-agon ni og ipakaon sa mga pansat. Pero, kund dili na pautangon sa pinanser, kan-on ang yellow corn. Kabuhion man ko sa linukpaw, mao nga mamintol na lang ko. Before we converted our nipa mangrove planted to the fishpond, [Lina] delivered our thatched nipa to Kapatagan, and she always*

brought home with her 2 kilos of meat, one pork and one beef bones. She also could buy a sack of rice, some big dried fish and mungo beans. [The financier] does not supply us with food for consumption anymore. So now, we are just eating the prawn feeds. They are big-sized yellow corn grits. These have to be boiled until cooked before feeding to the prawns. But if the financier refuses to give us new loans for the reason that our standing balance is still big, we have no other recourse but to eat the feeds. But I always have problems eating the feeds. I have gas pain, so I really have to catch crabs.

Thus, the husband supplements household income with *pamintol* (mudcrab netting) while the wife is back to *nipa* thatching. Because of the family's increasingly limited budget, the daughter has dropped out of nursing school.

Majority of the Lapinig mangrove stewards have illegally converted their assigned parcels to fishponds, as evidenced by the high number of cancellation permits waiting for local government enforcement. While the small artisan fishers are responsible for rehabilitating the deforested and horribly degraded mangrove without any government financial aid, adjoining corporate fishponds flourish on long-term government leases that permit them to destroy the mangroves and marine species to achieve export prawn production. In other words, government policy subsidizes the capitalists, and then delegates to local impoverished households the impossible task of rehabilitating the endangered ecosystem, without any national budgetary commitment. Little wonder that a 2001 study of the Asian Development Bank describes the Philippine Mangrove Stewardship Program as ineffectual. The funding agency reports that over the last two decades, the Philippine government:

did not reverse the overall degradation of forest lands. It should also be noted that the replacement of forest is of a far poorer quality ecologically and in many places commercially than the natural forest that has been lost. . . . Private sector planting rates increased only slightly [in the early years] then fell back to low levels.

According to the report, the program has also failed to generate the promised income and subsistence for impoverished households, and its only successful outcomes have been the policing of “illegal fishing activities” of small artisan fishers and the elimination of “unsustainable trawl fishing.”<sup>38</sup> Despite numerous media reports of stewardship violations all over the country and despite several years of informer postings at the DENR hotline, neither local nor national government units have yet taken any action to end stewardship infractions.<sup>39</sup> In another community, mangrove stewards have publicly protested corruption inside DENR. The *Manila Times* reported that:

The ISF [Integrated Social Forestry] Program has even become a form of leverage for some unscrupulous DENR officials and employees who use it for extortion. . . . [S]ome department employees coerce [local mangrove stewards] into giving them half of their harvest of fruits, vegetables and *palay* by threatening to take away their lands if they decline to comply.<sup>40</sup>

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<sup>38</sup> Asian Development Bank, “Performance Audit Report on the Forestry Sector Program in the Philippines,” December 2001, online at [www.adb.org/Documents/PERs/IN3602.pdf](http://www.adb.org/Documents/PERs/IN3602.pdf)

<sup>39</sup> See for example, “Philippines: Mangrove Area Lost to Fishponds,” *Philippine Daily Inquirer*, 16 February 2005, online at [www.waterconserve.info/articles/reader.asp?linkid=39170](http://www.waterconserve.info/articles/reader.asp?linkid=39170). The informant hotline is maintained at [www.denr.gov.ph](http://www.denr.gov.ph)

<sup>40</sup> *Manila Times* (28 January 2004), [www.manilatimes.net](http://www.manilatimes.net)

### Survival Strategies of a Household Dependent on Corporate Fishpond Wages

The natal families of both Nina (aged 51) and Rene (aged 60) have worked in the San Diego corporate fishpond since 1963. They virtually grew up dependent on fishpond laborer wages, and they have supported their marital household in the same way. Nina remarked, “*Gamay pa mi nagtrabaho na mi sa fishpond.* We started working in the fishpond when we were little. My father and my husband’s father both worked in the fishpond. Also their respective families.” Nina remembers how difficult it was for her parents to send them to school.

We were 10 kins [siblings] total. . . . All but one are elementary graders only. . . .

I strongly believe that my parents could not afford to send us to school, not even to the elementary grades. My parents had to work hard at income-generating activities, like *nipa-nipa-wine*, to send just one of us to college in Ozamis City. . .

. I have 10 children also, some have reached high school, some have not even finished elementary. I believe I cannot afford to send a child to college, even if I work harder.

Rene’s wages and supplementary resources have declined sharply over the last three decades, she reports. In 1963, he was paid daily, and he received benefits then that are no longer available to the family. Rene recalled that:

Goods were then very cheap. *Camote* and other food stuffs were cheap. [Worker households] all lived inside the fishpond - free housing for the workers, but not free food. [We] can have free viand by using hook and line in the fishpond to catch *tipalia*, *haluan*, *bulan-bulan*, sometimes milkfish, but not prawns and crabs.

During harvest, sometimes a few workers could have some of the “rejects” due to

sizing, but not all workers.

In the past, this corporate fishpond provided supplementary food sources. After the prawn harvest, San Diego Fishpond management would hoist a white flag to alert the community, even those in the uplands, that they could come and glean the fish left in the water. Throngs of people flocked to the fishponds bringing sacks, baskets and buckets. This resource is no longer available since the fishpond management “realized they still can earn money from it, so they are not giving it for free.”

Until very recently, Rene has worked as a crane operator in the San Diego Fishpond, earning 3,600 pesos (US\$65.45) monthly. A ten-year old son helped in the fishpond at 20 pesos per hour. “My husband worked as crane operator everyday in the whole fishpond, from Monday to Saturday, eight hours a day. Sometimes, he would work from 6a.m. to 6:00 p.m. with no overtime pay,” Nina complains. From overwork in the fishpond, the husband developed pneumonia, the number one cause of death in the Philippines. The husband overworked and did not sleep during prawn harvests, for he feared he might be terminated due to disability.

Nina’s *nipa* thatching has always been crucial to household survival. Her husband’s fishpond income was “never enough” she explained.

*Kihahanglan molihok ko para mi mabuhì. Gi-antus lang to nako kay dili man gayud kasaligan ang suweldo nga menos gani sa 3,700 pesos. Usahay, ma-short pa.* So I have to work in order for the family to survive. I bear the hardship because we could not depend solely on a monthly salary which is actually lesser than 3,700 pesos. Sometimes, we get short.

Because she cut the *nipa* inside the mangroves of San Diego Fishpond, Nina had to

“remit 50 percent of whatever revenues” she derived from the sale of her finished *pawod* to the fishpond management office. Still, her total income was quite often “bigger than her husband’s,” for she typically netted more than 1,000 pesos per week. In those days, she asserts, she could “see real money!” Her husband grew increasingly concerned that she always had to do the back-breaking *nipa* cutting in the hot sun. “*Maluoy ko sa imo nga sige na lang pamawod!* I pity you that you always have to work on the *nipa!*” her husband would tell her. “*Pero bisan gamay kaayo among suweldo gikan sa fishpond, wala mi nagkalisod-lisod kay naningkamot man ko.* Even if we have very low wages at the fishpond, we were not at all in bad shape because I worked so hard,” Nina is convinced.

Recently, Rene left his long-term job with San Diego and found a better-paying position at another area fishpond. They have moved away from the place where they have spent most of their lives. After they left, Nina says: “we did not have much money to start a new life. We were so lucky that my husband was able to work immediately, and earned about 8,000 pesos. We were able to pay our debt, but I do miss the place since we grew up there.” Nina is not convinced that his new job is a positive change. Though it provides a higher daily pay compared to the previous job, Rene is not permanently employed but on an “on call” basis only - that means he is paid for the day he works. Like when Rene was not able to work for consecutive five days because of the death of [her] brother, they did not have any income at all.

In comparison to their previous fishpond dwelling, they now live in a *guba kaayo* (very dilapidated) one-room *nipa* hut that has no toilet, no electricity, and no access to water. Their new house is “always reached by the *baha* (flood waters), and her husband has already killed a Philippine cobra that washed into their house during a flood. Perhaps, one of the worst

disadvantages, however, is that the fishpond operator has a “company store” type arrangement with a local merchant. They are required to purchase food items from a *suki* outside the fishpond, and these debits are deducted from her husband’s wages. As a result, the couple is never really sure how much he has earned. Nina frets:

*Wala man ko kakita anang kuartaha! Usahay, kulang pa ang suweldo ibayad sa utang sa tindahan.* Actually, I have not seen any real money [from the fishpond wages]. Sometimes, the wages are not even enough to pay for our advances in the store. As long as we are not sick, all is well. We can eat, we can live simple lives. But when we get sick, it is a big problem because we have no money. The in-charge of the fishpond cannot decide and has to call long distance to Manila. So it’s very difficult.

The husband explains that the new manager uses a cellphone to send text messages to the absentee fishpond owner who makes all final decisions about worker requests.

This couple is nearing retirement age, so Nina is concerned about their future. Because of the failure of San Diego Fishpond to file her father’s full premium deductions with the government, Nina wonders whether Rene will receive his full pension. “We were so surprised why there was a blank for 10 years of my father’s remittances when the company has consistently deducted the SSS premiums from his wages!” When they complained to the government agency, they were told that the fishpond management had not submitted payments for his father during that decade.

*Giagwanta lang namo tungod sa SSS (Social Security System).* I think what we suffered in the fishpond is shared by all the workers. We bear all the hardship so

that we will be eligible for the old-age pension. Our only consolation is the thought of a government pension when we get older. It is small but is sure money every month. When we get older, we cannot all depend on our children. Maybe they can help us with food but not money. So we deem it important to work for the pension. That is the major reason we stuck it out with San Diego Fishpond.

Although she worries about the manner in which wages are paid by her husband's new employer, Nina thinks her own situation has improved.

I am more relaxed now that I am no longer living in the [San Diego] fishpond. Before I had to be under the sun to gather *nipa* and make *nipa* sheets. Now I can hire people to do the *nipa* sheets, and I don't expose myself to so much heat anymore. I cut *nipa* only when the sun is not that hot. I love *manasa* (cutting *nipa*), so I don't mind doing it. But not under the scorching heat of the sun.

Nina gathers *nipa* from the parcel assigned to her under the Mangrove Stewardship Agreement. Her parcel is "planted to *nipa*," she says, "but people illegally cut her *nipa*." To supplement their income, she rents out the 1.3 hectares of timberland she was assigned, but she cannot garden any longer. When they lived inside the San Diego Fishpond, she could plant *camote* (sweet yams) along the dikes, so it was food [for them]. When [they] left, all those [she] planted were left behind. Her family worries about her health because her teeth are infected, but she does not want to go to the dentist and risk losing work time. "I have to work! Hopefully, in the near future, I can attend to my teeth," Nina jokes. What she does not say is that they probably cannot afford such dental work, for this household lives on 44 cents per capita per day.

### Household Survival through Thatching and Illegal Fishing

Vera (aged 34) and Jose (aged 29) are the poorest couple among all the households I interviewed in Lapinig or Silanga. They are struggling to raise eight children on 22 cents (US\$) per capita per day. Six people live in a one-room *nipa* hut, with no electricity, and an outdoor pit toilet. They bathe, swim, and wash clothes and dishes in “the river,” which is actually an earthen irrigation canal. Rather than carry untreated water from the public reservoir, they purchase drinking water everyday for 1 peso per plastic container (around 10 gallons). Vera is eight months pregnant, and she has had nine pregnancies in eighteen years. Though she tried birth control pills several times, she always had to stop taking them when they triggered breathing difficulties. Vera has six children from a previous marriage and two with Jose. She married when she was sixteen because her parents were abusive. Her father “was a drunkard and usually hit them hard with whatever he could get hold of.” Her first husband died of hepatitis at age 36. “The liver was inflamed. He was sick for six long months and eventually died,” she recalls. Despite Vera’s claim that the inflammation of his liver was caused by drinking hot coffee, it is highly likely that the former husband’s liver disease resulted from untreated chronic *Schistosomiasis*.<sup>41</sup>

Vera and Jose begin their days at 4:00 a.m. She starts a fire using firewood gathered from the vicinity, and she puts corn grits into water to cook slowly. While the children are still asleep, she starts *manluti* (preparing the *tagik* vine she uses in *nipa* thatching). In the hope of eluding Fishery officers, Jose is out of the house before sunrise, without eating any food. He carries his

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<sup>41</sup> See [www.medicdirect.co.uk](http://www.medicdirect.co.uk)

*pangoryente* (a car battery attached to two long rods) to the irrigation ditches and rice fields where he will try to locate and electrocute fish. Jose's livelihood is illegal, but the gear is homemade and cheaper than any other approach. They cannot afford fishing nets or non-motorized boat, and they cannot risk 10 pesos a day to rent a boat. "*Kulob gyud among kaldero kung madakpan [si Jose]*. If Jose gets caught, our pots will be upside down!," exclaims Vera. It is a dangerous method, she says, because the fisher might get electrocuted while he is standing in the water. He is also at high risk of contracting *Schistosomiasis* because he spends so much time in infested water. He does not always make a good catch with this method, and one neighbor has not made a catch for three days. Yesterday, Jose was fortunate enough to catch three kilos, most of which he sold for 105 pesos, holding back only two pieces for the family. That was sufficient for only one meal, so yesterday's lunch was *cardaba*, a tough banana which must be cooked before eating. For today's breakfast, "*nagbahog ra mi og tubig*. We put more water into the cooked corngrits," smiles Vera.<sup>42</sup>

Vera and Jose cannot afford to keep all the children with them, so the four oldest boys (aged 12 to 16) live with relatives who work in fishponds in adjacent towns. They cannot contribute any funds to the household, however, because they work only for their room and board. Vera attended school only to the fourth grade, but three of her siblings are illiterate. Her own children may not have much better chance at an education than she experienced. Elementary school is too expensive for them because "the teacher is always asking for a contribution." Recently, the teacher requested 49 pesos for each pupil for the purchase of a

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<sup>42</sup> Interviewees often smile or laugh when they told me negative or stressful information. This is a common Filipino cultural trait. We laugh about our mistakes, our woes and even problems. Smiling or laughing is not intended to trivialize events but is more of a coping mechanism.

classroom floormat. Her seven-year-old daughter was enrolled in the first grade, but has already dropped out. The last flood washed away the bridge, causing her to be absent for some time.

Vera is thankful that she did not return to school because she will need her help at home when the new baby comes in few weeks.

By 7:00 a.m., Vera has fed her children and is off to her day's paid labor where she will thatch nipa until dusk. Upon arriving home, she will again work at *manluti* (preparing *tagik* vine) to get ready for the next day. Her ten-year old son prepares the food and feeds the pigs because Vera cannot stand to wet her hands after a full day's work at thatching. "*Maminhod ang mga kamot*. If I wet my hands with water, they will feel numb and will shake." During the work day, she rarely rises from her squatting position, so by day's end "*Sakit kaayo ang likod*. [Her] back is terribly painful".

Day-to-day provision of the family food supply is her foremost worry. If there is fish, it is a "very lucky day." The typical breakfast is boiled salted corn grits, and she will leave the remains for the three youngsters to eat during the day. "*Pareha karon, luto ra ang naa. Kung makakuha akong bana of isda, naa silay sud-an paniudto*. "Today, all I left for the children is cooked corngrits. If my husband has a catch, they can have fish for lunch." Since such daily protein is rare, the two-year old boy participates in the barangay's afternoon feeding program. Each day, Vera charges corn at 15 pesos against her weekly earnings. She budgets one kilo of corn grits each meal for two adults and four children, but that is rarely enough. They cannot plant vegetables because of frequent flooding and destructive stray animals. Not only are they a good food supplement, but bananas also stabilize their huts during floods by serving as *pugong* (a buffer zone). However, loose cows devour them. The family does not gather *kangkong*

(nutritious green vegetables that abound in the ricefields) because she fears they will contract *schistosomiasis* from them. Since the June 2004 flood drowned their sixteen chicks, Vera will not butcher their remaining chicken because she needs its eggs to resupply their lost poultry. “*Ampingan kaayo ang nabilin nga manok!*” We should take extra care with this one remaining chicken. Much as we want to eat the eggs, especially the children, we should not. We have to raise new chicks.” In another flood, the family lost its investment in pigs. They were raising swine on shares, and the sow delivered prematurely. After purchasing feeds for nine piglets over four months, they died. “That *baha* (flood), we lost big,” Vera despairs. If the animals had survived, they would have 4.5 piglets to supplement household survival needs. Instead, they just “returned the sow back to the owner.”

### **Gender Differences in Facing Survival Crises**

Lapinig women seem not to be faring as well as Silanga fisher wives. While Silanga fisher women retain traditional control of household “purse strings,” Lapinig wives no longer participate in fishing. The occupation is only recently gender bifurcated because the fish catch has declined to the point that women must prioritize *nipa* thatching. To take on this time-consuming waged labor, women must forego their traditional practice of selling the male-caught fish, so they now control only their own *nipa* earnings. The traditional fishing livelihoods of Lapinig men are far more threatened and their opportunities far more limited than is the case for Silanga males. Changing ecological and economic conditions emasculate men who can no longer provide sufficient resources through the only livelihood open to them. In contrast to Silanga fisher households, Lapinig women report a growing trend toward alcohol consumption

and domestic violence. Vera explains that local men “drink alcohol frequently. They go to the barrio center to drink, especially when they sell fish. And when they are drunk, it’s usually the start of a domestic quarrel at home.” Vera feels lucky that Jose “goes to sleep immediately” after drinking and does not harm her or the children.

In these crisis-ridden households that cannot provide all their basic survival needs, men and women make different decisions about how limited household income is expended. In the fishpond laborer household, Nina is outraged by husbands who waste precious household funds to gamble on cockfights. Even though Vera is eight months pregnant, she is far too thin because she often gives her food to the children. She cannot sleep most of the time because she worries about what they will eat the next day and about *kawad-on* (literally translated “nothingness,” in western terms, not having enough to meet basic survival needs). “*Kung among bugas usa na lang ka lung-agan, dili na ko makatulog; dili na pod ko ganahan mokaon.* If we only have enough corn left for cooking one meal, I cannot sleep anymore. Then I lose my appetite, and I don’t eat. That is good though. The children can eat more,” she laughs. In the same context, Jose spends limited fish income on alcohol while she budgets 7 pesos daily to purchase his cigarettes – even when they do not have enough left to provide the children 1 peso each for school expenses. They do not ever purchase fish because it costs at least 20 pesos (or the equivalent of three packs of the husband’s cigarette). The cost of a pack of the cheapest cigarette would also cover a week’s worth of safe water. Vera cannot remember when she was last able to buy any clothing for herself, but she would have to select from the *ukay-ukay*, relief goods from international donors that are sold on the black market for very cheap prices. Moreover, she has not been able to accumulate clothing for the coming baby.

There is a growing body of research which demonstrates that the family-based household is “not a collectivity of mutually reciprocal interests” (Whitehead 1981: 110).

The notions of “household income” and “household consumption” imply equality between members of the household. But this mythical equality does not stand up to scrutiny, for household members struggle amongst themselves over the distribution of income and consumption. . . . The outcome is determined by who can exercise more purchase over the other, by appeals to tradition or to modern ways, by drawing in neighbors and relatives, and by the use of physical threats. . . . [T]he actual standard of living and availability of resources of any particular woman is decided not by household budget but by the way in which resources are allocated (White 1993: 160).

While Vera budgets her *nipa* earnings to cover household food and Jose’s cigarettes, she avoids any small luxuries for herself or her coming baby. In her budget decisions, this Lapinig housewife is not so different from many other poor women in peripheral countries.

Even where women receive returns from their labor, they are often compelled to contribute this cash to household expenditures that would have typically been their husband’s responsibility. While some men appreciate their wives contributions, the majority feels threatened by their exclusion from a profitable income stream. To a large extent, this stems from men’s weakening position as the ‘breadwinner’ of the family due to declining incomes from [traditional livelihood strategies], coupled with limited opportunities for wage employment (Dolan 2001: 59).

It is very important not to overstate these gender differences. On the one hand, the women I have interviewed did not express resentment about their hard work and sacrifice, nor did they describe themselves as “compelled” by any one to do the work they do. Several of them actually expressed joy in their labors. On the other hand, the husbands may spend pesos on a few escape luxuries, but they have not abandoned their families. They have spent their lifetimes in endless toil. These men show physical signs of long-term malnutrition, and they are underweight and under-height. Moreover, fisherMEN have the highest mortality rates in the Philippines because of the health and accident risks associated with their occupation. Unlike studies of several other peripheral contexts, there is little evidence in Lapinig that husbands receive “larger and more appetizing portions of scarce food” (White 1993: 151). Jose, for instance, and many of his male neighbors, fish in the mornings without eating, leaving the limited corn mush for the children. In reality, it is the Lapinig wife who now has greater opportunity to earn cash income. As Nina points out, she quite often contributes more than her husband, but he endures the dangers of the fishpond, including a higher risk of death from pneumonia. These interviews show some differences in how men and women manage their earned cash. However, both parents engage in extreme *self-exploitation* to feed and to school their offspring, and both exhibit a clear concern for their children to be fed ahead of themselves.

## CHAPTER 5

### **AFTER THE BUST IN PANGUIL BAY: THE FAILED PROMISES OF GLOBALIZED SEAWEED MARICULTURE IN BARANGAY SAN ROQUE**

*Kung mayo gani ang guso, mayo sad ta. Kung dili mayo ang guso, wa sad ta ayo!*

When *guso* is fine, we are also fine. But if *guso* is not okay, we are not okay! (San Roque Housewife).

Situated at the sea opening to Panguil Bay, Ozamiz City connects Northern Mindanao to other economic hubs of the country. While it is primarily agricultural, Ozamiz City serves inter-island and regional destinations and is the principal transshipment point for the agricultural, fishery, and forest products and mineral ores which are exported from the provinces of Lanao del Norte and Misamis Occidental. Behind the city stands Malindang Mountain, and at least 60 percent of the land area is sloping and hilly. Three-quarters of the land is agricultural, and area farmers specialize in rice, fruits, coconuts and bananas. The city lost its mangroves to fishponds and to other businesses, such as its port. <sup>1</sup>

The coral reef area has been cut to less than half its original size (JEP ATRE 2004), and coastal waters are heavily polluted. Industrial effluents "are capable of wiping out the fishing population" and of transforming this area of Panguil Bay into "biologically dead waters" (Loquias 1990-91: 48-49). Oil and grease concentrations are "alarmingly high," and such sludge kills turtles and fish, erodes coral reefs, and chokes the breathing roots of mangrove trees.

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<sup>1</sup> Ozamiz City website, <http://ozamizcity.com>. Interview with E. Pedarse, City Fishery Officer.

Massive fish kills have occurred because processing plants discharge chemicals, grease and oil, households dispose of waste directly into the coastal waters, and fishponds, ricelands, and agricultural uplands contribute high levels of chemical runoffs to the Bay (JEP ATRE 2004). Seasonal flooding triggers *ice-ice* in seaweed farms, a bacterial infection that occurs after freshwater lowers salinity and introduces waste.<sup>2</sup> *Guso* growers also experience periodic massive mortalities of their cultured seaweed, and the losses are often caused by industrial effluents which are released during monsoon rains, in order to conceal the dumping as part of rushing flood waters.<sup>3</sup> Because one of the worst local ecological problems is waste disposal, local waters are also contaminated with garbage, domestic wastes, and sewage (JEP ATRE 2004).

Seaweed production seems to be having a positive impact on the local ecosystem. Small fish like *danggit* or *isda-sa-bato* (fishes-on-the-rocks) are attracted to the shallow gardens near shores while some larger species, such as *mulmul*, are coming back to the areas where there are mid-sea *guso* farms.

### **Fisher Households of San Roque**

One of the fourteen coastal barangays of the city, San Roque is located at the nerve center of city commerce. The community lies immediately behind the bustling public market and is very near the city port. Since 1979, there has been a steady growth in barangay population, which is

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<sup>2</sup> Ozamis City Fishery Office, "Comprehensive Report on Damaged Seaweed Cultivation in Ozamis City Area," 16 July 2004, internal memorandum. There is no known treatment for *ice-ice*.

<sup>3</sup> Bureau of Fishery and Aquatic Resources Regional Fish Health Laboratory, "Bacterial Analysis Result for San Roque," 11-12 August 2004.

the general trend for all Panguil Bay communities. Three-quarters of barangay households are impoverished by national and world standards, so these families do not have all their basic needs on a consistent basis (MSU-Naawan 1996). The average daily per capita income is 74 cents (in \$US), so these families are slightly better-off than those of Silanga or Lapinig. A majority of households own fishing gears and nonmotorized boats, and one-third have livestock. San Roque households are larger than those of Silanga and Lapinig. Nearly two-thirds of the *guso* growers are younger than 45, and these households are larger than Silanga or Lapinig fishing families, more than half of them having more than six members. They average 5.5 years of schooling, but two-fifths of them have attended high school (Albor *et. al.* 2002-2003), but a higher proportion of these parents attended high school than is characteristic of the other two study areas. Many San Roque families reside in small nipa and/or wood houses, many built on stilts over water. No doubt the constant exposure to polluted water, to molds and to water-borne bacteria accounts for the high incidence of respiratory infections which are the primary cause of death in this area.<sup>4</sup> San Roque families face the same health crises that jeopardize the two other study areas. More than one-third of all children are underweight and under-height, and one-third to two-fifths of pregnant women are malnourished. Iron deficiency anemia and deficiencies in iodine and Vitamin A are common. Maternal and infant mortality rates are also high.<sup>5</sup>

Of the 551 households, only about one-quarter are registered as full-time fishers, but far more families engage in capture fishing to supplement diets. Despite the steadily decreasing fish catches and despite the expansion of *guso* farming, the number of registered fishers has increased

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<sup>4</sup>Department of Health online at [www.doh.gov.ph/hsra/hsra-misamis\\_occ2.htm#SDPP](http://www.doh.gov.ph/hsra/hsra-misamis_occ2.htm#SDPP)

<sup>5</sup> "Statistics," Philippine Food and Nutrition Research Institute, 2003, [www.fnri.dost.gov.ph](http://www.fnri.dost.gov.ph)

from fifty in 1979 to ninety in 2004. In 1979, a San Roque fisher averaged ten kilos per day. By 2004, the typical fisher catches one kilo or less daily. Between 1999 and 2000, mudcrab production also dropped more than 7 percent while mussel gathering declined more than 20 percent. To complicate matters, area fishing cooperatives have disbanded, leaving 78 percent of households without access to such organizations (JEP ATRE 2004). Commercial prawn farms are also encountering downturns. Because of pollution and the natural entry of smaller endeavor prawns and white shrimp into fishponds during water exchange, tiger prawn output is ebbing.<sup>6</sup> However, cultivation of genetically-modified tilapia in cages or pens has more than doubled since 2000.<sup>7</sup>

In the mid-1980s, San Roque fishers began to make a transition to a more sustainable livelihood. As evidenced by the clutter of plastic bottle floaters in the bay waters, seaweed farming now exceeds fishing as the primary source of income for barangay households. Nong Nick, a native San Roque fisher, initiated *guso* farming in Ozamiz in 1984. By the 1990s when the government officially endorsed seaweed as its new export thrust in aquaculture, San Roque was already very active in this industry. In 1998, the Philippines ranked third among seaweed producing nations, rising to second in 1999. By 2001, cultivation of *Eucheuma denticulatum* (a seaweed species) accounted for two-thirds of the total aquaculture output in tons (Albor *et. al.* 2002-2003). The Philippines specializes in two types of seaweed export. The country is the

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<sup>6</sup> No doubt these declines in prawn farming account for the decision of the Bureau of Fisheries and Aquatic resources to open in late 2004 a Satellite Fish Health Laboratory in Ozamiz City to provide assistance to prawn hatcheries in this area.

<sup>7</sup> Bureau of Fisheries and Aquatic resources, "Fisheries Situation," January-December 2001. IBON Foundation, "Facts and Figures: Aquaculture," 15 March 2004, online at [www.ibon.org](http://www.ibon.org)

largest carrageenan chips manufacturer in the world, annually shipping to Spain, Denmark, France, India, and the United States 115,000 metric tons of semiprocessed seaweed chips worth \$69 million, most of those exports deriving from Mindanao. In addition, 22,500 metric tons are exported annually as seaweed extracts (Agar, Alginates, Carrageenan) valued at \$105 million. The Philippines is now the world's third largest producer of refined carrageenan.<sup>8</sup>

Unlike other regional municipalities, Ozamiz City has a year-round capacity to produce seaweeds because it is sheltered from typhoons. By 2000, almost all of the city's fishing population was employed in seaweed gardening. More than 90 percent of Northern Mindanao's seaweed farms are concentrated along the coastal waters of Misamis Occidental, and nearly three-quarters of the regional *guso* growers are located in Ozamiz City. In this city, 743 seaweed growers on 207 hectares produce almost half the region's annual seaweed output.<sup>9</sup>

In addition to the export demand, seaweed farming has expanded rapidly for two reasons. First, a small farm using the Hanging Longline Method requires low capital investment and is affordable to poor artisan fishers. The typical San Roque seaweed farm has ten *kutays* (lines) in the shallows, and it harvests every two to three months. To maximize profits, most growers purchase seedlings initially, but save part of their harvest for future crops. Second, *guso* gardening has expanded quickly because it is a very labor intensive family enterprise. "What is nice about *guso*, says Nong Nick, the fisher who initiated seaweed farming in San Roque, "is we don't have to buy *abono* (fertilizer) or insecticides." One of the disadvantages, however, is "one

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<sup>8</sup>Philippine Council for Aquatic and Marine Research and Development Series PCAMRD Data Series online at [www.iascp2004.org.mx/download/pon\\_postcongreso/paper\\_308.pdf](http://www.iascp2004.org.mx/download/pon_postcongreso/paper_308.pdf)

<sup>9</sup> 948 of Region 10's 1,041 *guso* growers are situated in Misamis Occidental, 743 of them in Ozamiz City.

has to focus his attention and energy into the *guso* farm." Every day the garden must be inspected. The *guso* plants are washed with seawater to remove any slimy sludge, eroded bamboo, shells or debris that has clung to them. While males are dominant in selling *guso*, the industry is not gender-bifurcated. When they are full-time *guso* growers, husbands complete daily cleaning and inspection. If household males fish or engage in other cash earning, wives are responsible for regular maintenance. In some families, husband and wife clean and maintain the *guso* together, in order to finish the work before the worst heat of the day. Males plant, monitor, maintain and harvest while wives and children *pasigot* (select, cut and tie seedlings before planting) and dry the *guso* after it is harvested. Males erect bamboo poles to which each 100-meter *kutay* (nylon line for hanging plants) is attached, and they tie the one-quarter-kilo *sigots* (seedlings) onto every *kutay*, about four to six inches apart. Each *sigot* will produce 2 kilos of seaweeds after 60 days.

Drying requires a day or two, and 80 percent of the growers dry their harvest on bamboo platforms.<sup>10</sup> The quality of the seaweed is affected by the drying method, and local buyers set export criteria as to moisture content and cleanliness (Albor *et. al.* 2002-2003). Seven kilos of fresh *guso* will provide one kilo of dried *guso*. Ideally, fisher cooperatives purchase fresh and dried seaweed for export and for local consumption. However, the San Roque coop lacks sufficient capital to buy wholesale *guso*, so producers go directly to private buyers. *Guso* for seedlings costs P7 per kilo and dried *guso* is P35 per kilo. Fresh baby green *guso* is more expensive at P20 per kilo from the producer and the Ozamiz Public Market can sell daily 200

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<sup>10</sup> Another 18 percent of growers dry *guso* on concrete grounds. A few large planters use solar dryers in their houses.

kilos to local consumers at P20 to P30 pesos per kilo.<sup>11</sup> Buyers at the local market complain that these prices are very high, sometimes price reaches P40. Local informants are convinced that they pay such high prices for this traditional element of their food chain because they must compete with export prices.

### **Threats to Household Survival in the Barangay**

As many of the small *guso* growers were previously fishers, they have experienced two threatened livelihoods within less than two decades. San Roque's *guso* production is now showing signs of permanent ecological destabilization, and marine resources in Panguil Bay are becoming increasingly depleted. To complicate matters, the cost of basic survival needs has skyrocketed. Between 2000 and 2004, Northern Mindanao's consumer price index increased 125 percent, and inflation has hovered at 8.6 percent annually.<sup>12</sup> These households recognize that if prices had not risen so sharply, their loss or decline in income would not be nearly so disastrous for them. At present, their meager incomes do not always provide basic food requirements, let alone cover the expenses of children's schooling. Another small *guso* grower fishes with hook and line ten hours every day, typically catching only three or four kilos. "Food is difficult because you have to buy it every day. If we don't catch fish, we have nothing," he observes. "As long as I can buy rice, life is fine." Another small *guso*/fisher buys one kilo of corn per meal when money is short. "Corn is preferred over rice," he explains, "because we feel fuller." These households

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<sup>11</sup>Interview with an officer of the San Roque *Guso* Growers Cooperative.

<sup>12</sup> Statistics for Northern Mindanao, Region 10, Philippine National Statistical Coordination Board, online at [www.nscb.gov.ph](http://www.nscb.gov.ph)

face the same health risks as the other two barangays, and water-related respiratory diseases cause more deaths than any other disease. San Roque households have an even more severe waste problem than the other two barangays, and local waters are filled with effluents and solid garbage. "No toilet but the sea" describes many of the stilted dwellings in which these families reside over the water. When *guso* production is strong, these families are more successful at sending children to high school and college. In recent years, however, more children are dropping out of elementary grades due to rising expenses.

### **Lowered *Guso* Productivity**

Since late 2003, San Roque *guso* production has dropped. Seaweed gardens in the shallows have stopped growing, and these are the areas cultivated by poorer households that cannot afford a boat to go to the deep seas. Many households have stopped attending to this labor intensive work because there has been no recovery for more than a year. Monsoons and flooding in 2002 and 2003 impacted area seaweed farming significantly by exposing the farms to fresh water that spread the bacterial *ice-ice* disease (Albor *et. al.* 2002-2003). Public agencies also have documented that high levels of grease, oil, industrial effluents, domestic wastes, and garbage damaged the farms.<sup>13</sup> One *guso* grower explains why small growers in shallows parcels have been at greater risk from natural disasters and ecological degradation.

Shallows are not planted any more because of poor harvest and disease," reports

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<sup>13</sup> Ozamis City Fishery Office, "Comprehensive Report on Damaged Seaweed Cultivation in Ozamis City Area," 16 July 2004, internal memorandum. Bureau of Fishery and Aquatic Resources Regional Fish Health Laboratory, "Bacterial Analysis Result for San Roque," 11-12 August 2004, internal report.

one *guso* grower. Those whose areas were already in the deeper seas were able to survive the ordeal. The deeper water has stronger current, and this is what the *guso* loves. If water is stagnant, the *guso* growth will also stagnate. Those whose areas are in the deeper sea, their *guso* is all year round while the areas in the shallows are seasonal.

According to another *guso* grower, "Panguil Bay water is too stagnant, not moving enough." Still the greatest ecological threats to *guso* is industrial pollution.<sup>14</sup> Seaweed is not only vulnerable to natural disasters, but also production is erratic due to milder weather patterns that alter water motion in and around *guso* farms (Albor *et. al.* 2002-2003). For that reason, San Roque *guso* households reported that they were accustomed to experiencing at least one instance of seasonal low production every year. After more than a year of "failed production," many smaller *guso* cultivators are now in debt.

### **Lack of Access to Growing Areas**

*Guso* farming is no longer an enterprise easily accessible to small newcomers or to those who need to locate a more productive parcel. The shallows are either already registered at the barangay hall to other cultivators or are no longer productive sites. The financial investment to engage in *guso* production in deeper water is prohibitive, each *kutay* costing about twice as much as a line in the shallows. Poverty is not the only problem for small farmers, for the cultivation area is concentrated into the hands of a few large commercial producers. Even though San Roque has 113,054 square meters of *guso* farms, the largest fourteen planters control two-thirds of the

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<sup>14</sup> Interviews with government fishery technicians and environmentalist groups.

territory (see Table 5.1), leaving the vast majority of poor small growers to compete for use of the remaining third, most of which are situated in the unproductive shallows. Consequently, a majority of the registered planters cultivate small areas of 1,000 to 2,000 square meters.<sup>15</sup> "The new ones planning to plant *guso* find no area," complained one frustrated fisher. "To plant *guso* in the *lawod* (deep seas) needs capital, and the small fishers cannot afford to start it," adds another. Nong Nick added: "If a new one wants to enter the *guso* business by planting, he can hardly find a place. The better option is to 'buy' an area. It is expensive, especially if it's in the *lawod* (deeper sea)." According to a barangay official, each grower must register his space with the barangay hall, using bamboo poles to mark the location of the *kutay*. There is a local regulation which requires growers to forfeit a site that has not been cultivated in the previous three years, but most parcel holders sell or rent their spaces instead. The barangay captain discourages growers from selling their *guso* areas, thinking it more rational for them to temporarily rent or lend their spaces, in case they want to begin farming again in the future. Besides, he chastises them: "Why are you selling the sea when it's not yours? The seas belong to Nature."

### **Credit, Finance and Marketing**

To start in *guso* farming, the grower needs at least 5,000 pesos (\$US9.10) for two or three *kutays* (lines) in the shallows, more than twice as much in deeper water where a motorized boat is essential. It is very difficult to locate a productive site without purchasing or renting from an existing cultivator. "Poor people need finance capital," report officers of the San Roque

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<sup>15</sup> Ozamis City Agriculture Office

Table 5.1

Distribution of Areas for Seaweed Plantations in San Roque, 2004

<i>Area in square meters</i>	<i>Number of Planters</i>
Less than 500	7
501 to 1,000	10
1,000 to 2,000	20
2,001 to 4,000	7
4,000 and more	7

Source: Calculated from information provided by Ozamiz City Agriculture Office

Multipurpose Cooperative of *Guso* Growers, but their organization has no funds to lend them. The coop has just 27 members, only eight of whom have deposited the required 1,000 pesos of savings into their "capital build-up" funds. In addition, coop funds are very limited, so it can only capitalize on purchasing gasoline and sells to the fishers. As Illo and Polo (1990: 39) observed more than a decade ago in another Philippine setting, "the effective range of technologies available to the households is constrained by their access to funds to underwrite the shift from one fishing technology to another." Thus, the inability to afford a motorized boat will prevent most small *guso*/fisher households from moving from the polluted shallows to deeper water.

Like the fishers of Lapinig and Silanga, small growers must rely either on the *suki* system or locate a financier who will take a majority of the value of the output. According to Nong Nick, small growers:

can borrow from the buyers, and there is always a supportive buyer who loans capital to *guso* growers. The only agreement is that they sell their *guso* only to them. Most often, *guso* growers in times of need go to the financier or buyer of *guso* to have some cash advance. In most, if not all cases, the buyer will not have any second thoughts. The buyers like to lend money so they can be assured of getting as much *guso* produce as possible.

One grower described 1999 price fixing by the three San Roque buyers. "There was a problem with marketing," he explained. "The three buyers at that time set the same low price, 16 pesos for a kilo of dried *guso*. If we questioned the price, they threatened to stop buying. This low price was only a hoax engineered by the three buyers." Like other growers, his "savings was eventually consumed during this crisis of *guso* marketing." One wife reported:

We only planted three rows and wanted to borrow 2,000 pesos to add one more *kutay*. But the buyer encouraged us to increase our loan amount. Instead of selling the first harvest, we had to use the *guso* as seedlings to enlarge the production.

This time, production failed, so a bigger loss for us.

At present, there is keen competition among buyers because there is high export demand for *guso*, but production has ebbed tremendously. Trying to survive a seven-month downturn in *guso* production, a pioneer coop member has lost 50,000 pesos and pawned most of the household valuables. "Buyers are not complaining about failed production," he reasons. "Only the losing farmers are complaining. Buyers will always profit."

### **Local Criminal Activities**

Unlike the other two barangays studied, San Roque is struggling with three patterns of criminal activity that threaten the persistence of small *guso*/fisher households. First, there is "*Kinawatay sa guso*" or rampant *guso* theft (JEP ATRE 2004). Small growers are convinced that *guso* are stolen because they bring easy cash at the public market, especially now when there is a shortage of supply for local consumption. Thieves "will *kawat* (steal) the *guso*, dry them and sell them," in order to buy their household food for the day. Larger planters contend that new poor farmers steal *guso* for seedlings. According to the Barangay Secretary:

Newcomers need capital and don't have enough to buy ropes, seedlings, etc. We stopped *guso* for seven years because of *kawat*. When *kawat* started, which sometimes resulted in violent encounters, my husband stopped growing *guso*.

Destructive illegal fishing gear is the second criminal activity which threatens small

*guso*/fisher households. Despite restrictive legislation, *sanggab* has been consistently popular throughout the 1990s, and *sanggabs* have proliferated in this area (JEP ATRE 2004). After a short-term legal ban on *sanggabs* in Panguil Bay, the restrictions were lifted. In the words of one outraged *guso*/fisher "*sanggab* still devours the seas." According to one *pukot* fisher:

This was our demand before, to dismantle the *sanggab*. When *sanggab* was dismantled, there were lots of fishes caught in our *pukots*. But now when *sanggab* is back, we catch a lot less.

A Philippine university analysis supports their contentions about ecological impacts.

A fisherman can have about 10 kg of catch a day but about 31% of this is macroplankton and uselessly thrown over board. A closer look at this macroplankton showed that it contained the larvae of fish, crustaceans and cephalopods of commercial importance when allowed to grow to adult sizes. . . .

The destructive effect of *sanggab* is brought to fore when this mean macroplankton count per liter is extrapolated to the mean daily haul. . . .When the number of macroplankton organisms hauled per day will be extrapolated from the number of gears operating in the bay, the result can be quite staggering. <sup>16</sup>

Between 1989 and 1994, there were thirty dynamite fishers (*pabotos*) in the barangay, and there has always been a higher incidence of *pabotos* in San Roque than in the other two barangays studied. Nong Nick explains that *pabotos* are directly destructive of *guso* farms.

With *guso*, the fish can rest because they won't be harvested any more. But there

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<sup>16</sup> Mindanao State University at Naawan, "Position Paper on the Operational definition of the Stationary Filter Net or *Sanggab* Deployed in Panguil Bay," unpublished, no date

are still too many engaged in dynamite fishing. There are lots of fishes that get into the shade of *guso* farms. Those engaged in dynamite fishing do it at the *guso* area in the deeper seas since there are lots of fishes there.

Still small *guso*/fishers contend that the government heavily penalizes dynamite fishing-- primarily a subsistence activity of the poor-- while ignoring violations of commercial *sanggab* operators. The municipality's illegal *sanggab* are concentrated in three barangays: 39 in Sinuza, 55 in Pulot, 9 in San Roque.<sup>17</sup> Several informants explained that the *sanggab* requires such a high capital investment that it cannot be an enterprise of the poor or the artisan fisher, and that the higher class positions of *sanggab* owners, they argue, is one reason for the unwillingness of local governments to prohibit and dismantle these illegal devices.<sup>18</sup> Moreover, local fishers are convinced that dynamite fishing is far less destructive than the commercial *sanggab*. "For all of us here," commented Nong Nick:

the dynamite fishing is better than *sanggab*. We all believe the dynamite fisher is the lesser evil. The *sanggab* is worse than dynamite. Fishponds and *sanggabs* are far more destructive.

The third criminal activity which threatens San Roque small *guso*/fisher households is the proliferation of illegal drugs in the municipality. Just as export of fish and *guso* integrates San Roque's small subsistence producers into globalized food chains, world-wide commodity chains of smuggled drugs suck them into another exploitative capitalist venture over which they have no

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<sup>17</sup>According to Correspondence from Office of Ozamis City Agriculturist, 5 November 2004. I attended a meeting in Tangub City of local government and fishery officials on 25 October at which they announced new decision to dismantle *sanggabs*.

<sup>18</sup> In October 2004, I attended a meeting of Panguil Bay local government officials and BFAR-10 representatives held in Tangub City where they announced that they will disband the use of *sanggab* by February 2005.

control. The Philippines has a long-standing history of methamphetamine use and export. Crystalline methamphetamine, known locally as *Shabu*, is the most common illicit drug, followed by cannabis. A 1999 national study shows that 8 percent of Filipinos (about 1.8 million) are regular consumers of these illegal substances. On the streets, *Shabu* sells in sachet packets for 100 pesos (\$US1.80) each, and most users smoke the powder (United Nations Office on Drugs and Crime 2004). Between 2000 and 2002, Philippine police authorities seized more than 4 million grams of *Shabu* and more than 16 million marijuana plants. In short, "the Philippines is gradually emerging as a major transit point for drugs coming from mainland Asia and as a producer of marijuana for export to consuming countries." In 1999, the value of seized drugs exceeded \$US3 million, and more than 37,000 were arrested.

At the same time in the 1980s that external Asian investors were attracted to prawn aquaculture in the Philippines, "Hong-Kong based syndicates with strong connections with Filipino-Chinese counterparts" established the international drug trade in the country. In the current period, "foreign criminal syndicates mostly run the local drug trafficking." There is a clear connection between globalized drugs in the Philippines and the country's economic woes in the face of structural adjustment. According to the United Nations Narcotics Control Board (2000: 7):

Evidences are very visible in the continued devaluation of the peso, permanent closure of companies and banks and rise in the prices of basic commodities. The worsening unemployment problem and a substandard living condition for many Filipino families as immediate consequences, created a fertile breeding ground for the illegal drug trade that is viewed as an alternative source of income and a

lucrative business. The continued devaluation of the peso and the threat of capital flight are attracting drug traffickers to launder money in the country. . .

Complex multinational drug syndicates form global commodity chains that link the Philippines to consumers in China, Malaysia, Hongkong, the United States and western Europe (Dikkenberg 1995). Little wonder that the U.S. Drug Enforcement Agency pinpoints the Philippines as one of the world's suppliers of illegal narcotics to Americans.<sup>19</sup> Methamphetamine tablets flow into the United States through mail services, and high-purity heroin from the Philippines and Southeast Asia has dominated U.S. markets since 1990.<sup>20</sup>

In 2000, 14 percent of Philippine barangays were described by the national government as "drug-infested" (United Nations Narcotics Control Board (2000). Moreover, Northern Mindanao exports each year significant amounts of marijuana, crystalline methamphetamine and heroin (Dikkenberg 1995). Philippines media and government agencies regularly document Ozamiz City's "rising criminality and illegal drug trade" and its high incidence of drug abuse and dependency. One media account describes Ozamiz City as "a factory of *shabu*."<sup>21</sup> San Roque households are threatened in two ways. First, their youngsters are at risk of drug dependency that will drain away precious household resources for their consumption and their health recovery. Second, drug trafficking offers youth an alternative income not available through other legitimate opportunities in the waged or informal sectors. One study of the roles of children and teenagers in

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<sup>19</sup> U.S. State Department. 2003. "International Narcotics Control Strategy Report," online at [www.usinfo.state.gov](http://www.usinfo.state.gov)

<sup>20</sup> U.S. Drug Enforcement Agency. 2004. "Drug Trafficking in the United States." online at [www.dea.org](http://www.dea.org)

<sup>21</sup> *Manila Times* (27 March 2004) <http://www.manilatimes.net/>, [www.thefreeman.com](http://www.thefreeman.com), (24 May 2004), <http://mobilemediaph.com> (25 October 2001), [www.accordplan.net](http://www.accordplan.net)

Philippine drug trafficking points to two salient trends, First, the interviewed youngsters consistently reported that some municipal and barangay officials are involved in the trade. Second, most of the children have left school due to family financial constraints. One local informant described the circumstances under which a young San Roque male had been integrated into the Ozamiz trade, arrested and incarcerated. The unease of parents is clear in their complaints about their children refusing to work in traditional ways to help support their households. Unlike the youngsters of Silanga and Lapinig, most of the teenagers of San Roque are not involved in either *guso* cultivation or supplementary fishing, preferring to resort to "new ways" of earning money.

### **Survival Strategies of Barangay Households**

When production is normal for small growers, one sack of green *guso* can provide the family's food for a week, including rice and milk. Protein is not part of the household cash budget since they catch fish in the seaweed gardens. A typical small *guso*/fisher must "allot one *kutay*'s growth" to support a child's schooling. At present, these families often do not have enough income to supply their basic survival needs. *Guso* farming provides an unstable and erratic income, so households must have *a diverse livelihood portfolio* which provides them economic hedges against failures in any one component of their survival package. Consequently, they pool resources from as many forms of labor as possible, including:

1. fishing;
2. waged labor;

3. livestock raising;
4. limited informal sector activities;
5. cash contributions from children;
6. and supplements from networks of family and friends.

### **"Guso Needs a Backup"**

While fishing agencies and environmental NGOs herald seaweed farming as an ecologically-friendly, and dependable livelihood, it is a risky occupation for the majority of small farmers. For that reason, San Roque households combine *guso* and fishing, always falling back on capture fishing to insure daily food. Because of weather changes and of the growing period of two to three months, "*guso* needs a backup," insists Nong Nick. Small farmers must have an alternative way to earn income while waiting for harvests or when *guso* production is low.

"Where there are *guso*, there are lots of fishes. We just go to *guso* and catch fish there," comments a wife growing *guso*. A mid-sized *guso* grower indicates that "people still fish for daily subsistence." The most popular method is "hook and line fishing during their time attending the *guso*. In addition to the small fishes, small shell fish like *talaba* attach themselves to the bamboo poles, providing another protein resource. *Pukot* and dynamite fishing are also prevalent methods, but some use more sophisticated gear. According to one long-term seaweed farmer, "many of those who have *guso* farms are *mamungsoray*. These people stock their *guso*, but they depend on *bungsod* for their daily subsistence". These households catch fish for selling and for consumption— both patterns supporting household subsistence. Using a hook and line, one small *guso*/fisher "can catch 2-3 kilos of fishes a day, many are sold to buy *bugas* (rice)." In order to

afford rice or corn, he sells the fish in the public market, marketing more than he holds back for family consumption. One small grower defines fishing as the only method to insure daily purchases of grains and essentials like salt. "*Pukot* is really for rice purchases," he explains. "I must go fishing for food. Now it's very difficult to get one or two, even when we cast the net in the afternoon and leave it until the next day. You can only eat if you work hard at fishing. Every day rice must be bought." Even though few have any land space to do so, about one-third of the San Roque households raise livestock, often in pens or cages attached to their dwellings. For example, it is not unusual to see pigs being raised in cages attached to stilted houses, the waste can drop directly into the Bay.

### **Other Crisis Backups**

Rural Philippine households cannot depend on barangay governments for anything other than water and some limited medical assistance. Consequently, these households share risks through networks of family and neighbors. In addition to outright gifts, these networks provide "quasi-credit," or flexible, informal loans with zero-interest (Fafchamps and Lund 2003). A *guso* planter states that it is common practice for friends and family to share food resources with adjacent households who are having a hard time. "Fisher-neighbors give us few pieces even of their small catch when we don't have any," she adds, "which I use sparingly. I dry or salt it to make it last longer. When we have extra and they need some, we do the same." Some *guso* growers also donate seedlings to small producers who cannot afford them. The exigencies of survival effect a pattern of *self-exploitation* in which households take on multiple forms of resource accumulation, and adults almost always have a diversified labor burden that combines

subsistence activities with cash-earning. "You can eat *only* if you work hard!" is a theme voiced over and over. Unlike Silanga and Lapinig households, these families do not have access to natural resources that will permit them to gather oysters, wild foods, or nipa from the mangroves. Moreover, wage-earning opportunities are very limited, and unemployment is high. Males occasionally work for wages planting or harvesting for larger *guso* planters. Some find erratic or seasonal employment in the city's small businesses. They can also drive pedicabs or *sikads*, if their households can afford the equipment. Since the barangay is situated so near the public market, household members can sell fish, *guso*, or home-made items, such as foods or desserts. A few women also supplement household income by selling Avon or Natasha cosmetics.

Children are an important source of resources and income for these households. Young children beg, do odd jobs on the streets like shining shoes, gather plastic bottles to sell to *guso* growers to use for floaters, or earn daily income doing tasks at the *guso* cooperative. Children also gather *guso* that washes up on the shores, dry and sell them. Daughters can work as salesgirls or as domestic servants in Ozamiz City. One *guso* wife reported that her teenaged son "is engaged in *guso-pa-ali*, with the backing of a financier who takes most of the revenue from selling the *guso*. Still the young man earns 1,500 pesos (\$US27.27) weekly. About ten local entrepreneurs have invested in this new technology to glean seaweed from the ocean floor. This requires diving under water for one-hour stretches, and most workers are young males.

According to one San Roque *guso* grower:

Harvesters don't plant but scavenge plants that have dropped to the sea floor. This is a very lucrative way to collect seaweeds. This requires an air compressor which can connect to a breathing tube. It usually takes about one hour under water to

gather the *guso* in a 200 meter net. The daily harvest is easily 300 kilos."

Some Tangub young adults and teenagers are entering the illicit drug trade. According to a recent study of children involved in Philippine drug trafficking:

The majority started between the ages of 14-16 years, although there are children who start as early as age 12. The majority are runners. Others are engaged in posting, repacking, or cleaning up paraphernalia, and as lookouts and barkers. Money is the children's main motivation for engaging in the drug trade. The income is primarily spent on the daily requirements of the family. . . . What drives these children to engage in the drug trade despite all the risks is the good pay received and the few skills needed. . . . Over one-fourth receive an income ranging between P100 to P500 (\$US 2-10). They could not earn this much as quickly by carrying out informal work (Lepiten 2002: xii).

Nor can they hope to earn so much working at the occupations of their parents. Some families also receive remittances from unmarried offspring working at distant waged jobs, especially daughters who work as domestic servants. A few households even receive periodic contributions from older children who are employed abroad.

### **Survival Strategies of a *Guso* Farming Household**

After her artisan fisher husband died in Cebu City, fifty-five-year-old Nang Cora migrated to Ozamiz City. She was enticed by popular claims that *guso* farming offers a better livelihood than subsistence fishing. She brought with her two children in their twenties. These adult offspring have attended only a few years of elementary school because they worked from a young

age to help sustain the family. Three adults and one child live in a rented one-room shack that has no electricity and "no toilet but the seas," and they carry water from public spigots. This household tries to survive on 20 cents (\$US) per capita per day, so they cannot afford to send the young child to school. To build savings to enter *guso* farming, she prepared and sold *ginanggang* (barbecued ripe bananas) in the public market. After about a year, she purchased two *kutays* in the shallows for 2,000 pesos (\$US36.36). The second year she was able to increase the number of *kutays* to ten and to hire a laborer to stamp the bamboo base into the sea floor. In addition, she invested 3,500 pesos (\$US63.63) in a non-motorized boat.

In 2002 and early 2003, she averaged 5,000 pesos (\$US90.90) monthly and thought her investments had been well-made. In the early months, both her adult children helped with daily *guso* maintenance, then she and the daughter took over the responsibilities alone. On those days, Nang Cora began her days at 4 a.m. with household chores and *higot*, preparing small strings needed to tie the *guso* plants to the *kutays*. Typically, they worked six or seven hours daily in the *guso*, starting early enough to be done by 2 p.m. when the heat became unbearable. As it was their only source of livelihood, they harvested every month, unlike the bigger gardens where they wait two to three months to insure peak production. By late 2003, however, her *kutays* in the shallows had stopped producing due to pollution and *ice-ice* disease, and the family fell upon hard times. At this point, Nang Cora did not have a cash-earning backup. She could no longer engage in her food selling because the prices of bananas, sugar and margarine had risen so high. Bananas alone had jumped 33 percent in cost. In these circumstances, she is afraid to risk limited household capital. "*Unason namo pagkaginansiya, butangan pa sugar and margarine! Wala man mopalit if mahal kaayo ganggang*, she says. "How can you make profit when commodities cost

so much? Who is crazy enough to buy such an expensive barbequed banana?" In her first two croppings of 2004, she lost 2,500 pesos (\$US45.04)-- all her accumulated savings from previous harvests. By late 2004, her savings are gone because she has had "failed production" for more than a year, and her "debt is piling up." At first, she borrowed seedlings from other *guso* farmers, but now she no longer attends the unproductive shallows garden. "*Kung mayo gani ang guso, mayo sad ta. Kung dili mayo ang guso, wa sad ta ayo!* When *guso* is fine, we are also fine. But if *guso* is not okay, we are not okay," she explains, demonstrating that she knows that her household does not have a sufficiently diversified "backup" to insure their needs.

The daughter has taken a waged job at 50 pesos (91cents in \$US) daily as a domestic servant in Ozamiz City, but she returns home every evening. Her adult son has an odd job tending fighting cocks for a rich man. He is not paid wages but is given a percentage if the cock wins. Since the cock almost never wins, he contributes nothing to the household and is dependent on his mother for his daily sustenance. The seven-year-old granddaughter contributes a little income by picking up *guso* that has washed onto the shores and by guarding pedicabs for one peso while the drivers rest. The girl has never attended school because the household cannot afford it. Nang Cora explained that while there is no fee for elementary school, "the school projects are many and are expensive."

To survive, they need cash to pay rent and to buy rice, salt, and charcoal for cooking. At present, she must stretch three kilos of rice or corn over three days. Since they live near the shore, she or the granddaughter can ask incoming fishers for a small part of their catch. "This really helps us," she says gratefully. She blames national government policies for the sharp inflation in their basic survival needs. While she hopes that somehow her 2005 *guso* production

will improve, she recognizes that their situation is precarious. "*Gukod pa ta sa bugas. . . .gukod pa ta sud-an.* You must run fast to catch the rice and something to eat with it."

## CHAPTER 6

### IMPACTS OF THE GLOBALIZED FOOD CHAIN ON THE PERIPHERAL POOR

The shrimp live better than we do. They have electricity, but we don't. The shrimp have clean water, but we don't. The shrimp have lots of food, but we are hungry (Negros Island Fisherman, Philippines).<sup>1</sup>

The Philippines and Panguil Bay are *food extractive enclaves* in the bust stage of export-oriented aquaculture and commercial fishing. Export-oriented shrimp farming has had several negative ecological impacts on the Philippines. Organic waste from shrimp farms smothers coral reefs and seagrass beds and build up high levels of sedimentation build up in seas, bays, and rivers. Monocultural shrimp and seaweed farms have caused loss of biodiversity, eliminating hundreds of fish, crustaceans, mollusks, and grasses. More than 400 Philippine plant and animal species are currently threatened with extinction. Salt-water contamination by adjacent shrimp ponds has made agricultural land barren, causing loss of valuable ricelands. The salinization and contamination of groundwater is also creating a major drinking water crisis in coastal communities. The country has lost most of its mangroves, more than half deforested for fishpond construction. By 1985, Panguil Bay was overfished, and the coastal habitats were seriously ecologically degraded (*Philippines Environmental Monitor* 2000).

The transformation of subsistence fishing, small-scale shrimp culture, and household seaweed gathering into export-oriented activities can be traced back to structural adjustment

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<sup>1</sup> Environmental Justice Foundation (2003: 1).

policies imposed on the Philippines. Devaluation of Philippine currency resulted in a 72 percent drop in the value of the peso. Subsequently, prices inflated at an average rate of 9.7 percent yearly while consumer prices rose as much as 27 percent in some years (Casino 2004: 1-2). Household incomes have steadily declined since 1995 (Schelzig 2005) while the external debt has grown dramatically. For every 10 pesos of income, 5 pesos are now earmarked for external debt repayment (IBON Foundation). Unemployment is also rising due to the loss of jobs after trade liberalization. Since shrimp farms are capital rather than labor intensive, they require few workers and have not generated new employment opportunities to offset the job losses their construction has caused. As Chossudovsky (1997: 26) explains:

The globalization of poverty is unprecedented in world history. This poverty is not, however, the consequence of “scarcity” of human and material resources. Rather it is the result of a system of global oversupply predicated on unemployment and the worldwide minimization of labor costs.

During the decades that shrimp aquaculture has boomed and busted in the Philippines, the economic conditions facing families have steadily worsened. Wealth and income have been increasingly concentrated into a few hands, and the Philippines now has a higher incidence of poverty than its Asian neighbors (Schelzig 2005). Nearly half of all Filipino families struggle to survive on less than 57 cents a day (\$US) per person. If the country’s poverty line were set at the World Bank’s cutoff point of \$1 day per person, probably two-thirds of Filipino households would fall among the impoverished. Fishing families are among the poorest and the most malnourished in the country.

## The Globalized Food Chain and Hunger in the Philippines

Worldwide, fish comprise 17 percent of the animal protein in the human diet, and fish are the most important source of animal protein in the diets of peripheral populations. However, nearly 70 percent of global fish stocks— including those of the Philippines— have been depleted (UN Food and Agriculture Organization 1996). Two-thirds of the world's fishing areas are now overfished and depleted, not to feed the world's hungry, but to supply luxury-level consumption to the rich countries.<sup>2</sup> Aquaculture has not expanded fish and marine foods for peripheral nations, like the Philippines. Instead, aquaculture has now integrated into global commodity chains peripheral fish and marine resources, resulting in two impacts on the food chains of those poor countries that undertake aquaculture projects. Aquaculture removes fish and marine resources from local consumption chains and exports those foods to rich countries— thereby threatening traditional food chains in producing countries. Because less fish is available to peripheral populations, malnutrition and hunger are on the rise, especially in those countries with large aquaculture and fishing sectors (Shiva 2000). Despite all its purported advantages, the Blue Revolution is really "food imperialism" (Yoshinori 1987). Aquaculture is an industry controlled by core-based transnational corporations, and it has concentrated control over the world's fish and marine foods into the hands of a few companies. Rather than eradicating hunger or expanding resources to feed peripheral populations, aquaculture has further polarized world food distribution and consumption. While poor countries supply 85 percent of the internationally traded fishery products, core countries consume 40 percent of the world total supply of fish

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<sup>2</sup> *New Internationalist*, Issue 325 (July 2000), [www.newint.org/issue325/contents.htm](http://www.newint.org/issue325/contents.htm)

(McGinn 1998). At the end of turn of the 21<sup>st</sup> century, the richest fifth of the world consumes nearly half of all meat and fish, the poorest fifth only 5 percent.

The hungriest, most malnourished people in the world are agricultural and fishing households which cultivate and process food for the rest of the world (Shiva 2000). Workers in *food extractive enclaves* are far less likely to have sufficient calories and to meet nutritional requirements than residents of richer countries who benefit from peripheral imports. According to Vandana Shiva (1995: 24), peripheral fishing communities today:

are refugees of aquaculture development, with no place to spread and mend their nets or park their catamarans (the traditional fishing vessel used by small scale fishermen) and no access to the sea from their villages. . . . The cost of fish locally has risen worldwide as a result of commercial fisheries. . . . While aid programmes put money into aquaculture development to boost world food production to help feed the hungry, the shrimp farming experience. . . shows that they take away from the poor the little they have. The destruction of clean ground water immediately translates into increased work burden for women.

Protein-energy malnutrition, iron deficiency anemia, iodine deficiency, and Vitamin A deficiencies are typical of the countries that export high levels of shrimp and fish.<sup>3</sup> At least one-third of the Filipino population is now chronically malnourished. In a country that produces iron-rich fish for export, per capita food consumption has declined dramatically. Because most Filipino diets lack adequate levels of fruits, green vegetables, fats and oils, cereals, poultry, and

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<sup>3</sup> See "Nutrition in South-East Asia" at [www.whosea.org](http://www.whosea.org)

meats, deficiencies of iron, iodine, calcium and Vitamin A are common.<sup>4</sup> In 2003, nearly one-third of the families in Northern Mindanao, where Panguil Bay is situated, lacked sufficient income to provide food for their households, and nutritional deficiencies are a major cause of death in this area.<sup>5</sup> Panguil Bay fishing households increasingly must compete in three ways with export fishing and agro-industrial aquaculture for dwindling animal protein. First, massive outputs of prawn, fish, and seaweed are exported to rich countries. Second, two-thirds of the species swimming in rich-nation aquariums derive from the Philippines and Indonesia, and many of these endangered species once comprised part of the local food chain of fishing households. Third, massive levels of food fishes and shellfish are fed to export prawn and fish. Fourth, massive levels of food fishes are destroyed and wasted by monocultural producers of export prawn and specialty fish. Shrimp aquaculture also threatens food security through loss of ricelands by pond conversion or salinization, shifting of culture ponds from milkfish and other domestic food crops to shrimp, and declining nearshore fish, crustacean and mollusc catches associated with mangrove deforestation. (Primavera 1997). While exporting high levels of fish and seaweed, the Philippines has become dependent on imports of rice and corn, and the country's agricultural sector now registers a trade deficit annually (IBON Foundation 2005).

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<sup>4</sup> See "Statistics" at [www.fnri.dost.gov.ph](http://www.fnri.dost.gov.ph)

<sup>5</sup> Philippine National Statistical Coordination Board, "Poverty Statistics," online at [www.nscb.gov.ph](http://www.nscb.gov.ph)

## **The Ecological and Economic Externalities of Philippine Export Aquaculture**

As shown in Figure 6.1, the export prices of prawn and seaweed do not truly reflect their real costs of production, for several losses are externalized to local ecosystems and to the Philippine economy. Export-oriented aquaculture generates numerous environmental costs that are not internalized by profit-makers, but are passed along to the community and to the country as a whole. In reality, final consumer prices in the United States, Japan and western Europe:

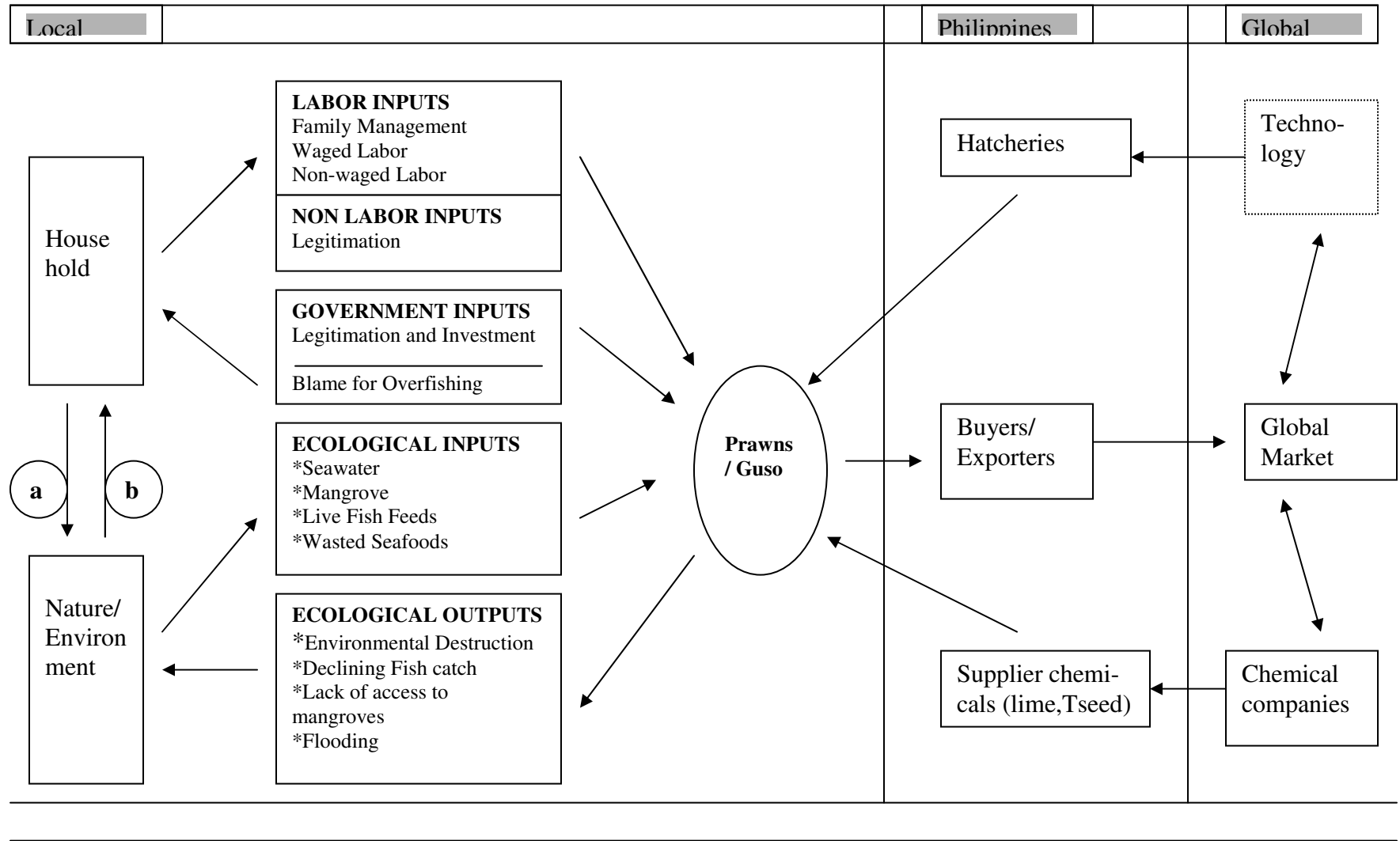
do not reflect the true costs of producing fishery products as long as externalities are not made to 'show up' in the value chain. With social and environmental costs missing from the equation, what is actually expensive and wasteful become apparently cheap (Jacinto 2004: 17).

Indeed, Philippine aquaculture producers amass enormous profits but do not take into account the value of natural resources nor the expense of repairing the degradation of the ecosystem that results from these economic activities. "For every acre of an industrial shrimp farm, 200 acres of productive ecosystem are destroyed" (Shiva 2000: 15).

Thus, the capitalist commodity chains of export-oriented aquaculture externalize to households and to nature much of the cost of production and ecological change. This is one of the mechanisms through which they minimize production expenses by not "paying their bills" (Wallerstein 1999a). To maximize profits:

capitalists must exploit as many "costless" social and natural conditions as possible. To put it differently, the capitalist mode of production structures and reshapes households

Figure 6.1 Inputs and Externalities of Export-Oriented Aquaculture in the Philippines



a- Mangrove Stewardship Program

b- Degradation Impacts

in ways that minimize production costs by allowing extensive use of conditions external to the production process. Thus, capitalists shift to society, to the culture, to the ecosystem, and to human laborers most of the real costs of commodity production. . . .

Consequently, semiproletarianized households subsidize commodity chains through their absorption of production costs that are externalized by capitalists (Dunaway 2002: 138).

If households and nature did not absorb so many externalities from commodity chains, the global production process could not endlessly accumulate the capital that is essential to capitalist economic growth (Dunaway 2001).

In this way, export-oriented aquaculture externalizes hidden costs to the Philippine economy. On the one hand, most Philippine citizens are convinced that their livelihoods have worsened, that the national economy is in crisis, and that there is widespread government corruption.<sup>6</sup> On the other hand, shrimp farming is grounded in short-term economic motives. In most instances, the fishpond has a productive lifespan of only five to ten years. Abandoned after that, the dead resource can no longer be utilized for agriculture or resource gathering activities (Naylor *et. al.* 2003: 886). Moreover, these industries have not exhibited a track record of economic growth. Not only has export-oriented aquaculture not generated long-term economic growth in the Philippines but it has also triggered the highest incidence of growing poverty in those regions where prawn farming has expanded most rapidly (Jacinto 2004). In fact, export-oriented shrimp cultivation has been a “rape and run industry” which decimates fifteen (15) jobs for each it creates and destroys \$5 of ecological and economic capital for every dollar earned through exports.

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<sup>6</sup> IBON Foundation, “Public Perceptions of Economy and Government,” online at [www.ibon.org](http://www.ibon.org).

For every dollar earned as foreign exchange from exports, six to ten dollars' worth of destruction takes place in the local economy. . . . The profits from exports of shrimp to U.S., Japanese and European markets show up in national and global economic growth figures. However, the destruction of local food consumption, ground-water resources, fisheries, agriculture, and livelihoods associated with traditional occupations in each of these sectors does not alter the global economic value of shrimp exports; such destruction is only experienced locally (Shiva 2000: 15).

One Philippine university study contends that “governance and distributional outcomes are often skewed to the advantage of traders, processors and other intermediaries resulting in marginalization of small producers” (Jacinto 2004: 18). The prices received by small producers do not pay them either true value for their products or compensate them for externalities, such as conservation, biodiversity, or ecological maintenance. Although shrimp comprises less than one percent of global fisheries output, it is the most valuable seafood product in international trade since 90 percent of it is exported to the United States, Japan, and the European Union, the world's richest countries. Despite its high value in world markets, Philippine prices remain low. On average in 2004, the typical prawn farmer received only \$6.00 per kilo while the subsequent Philippine corporate exporter was paid only \$8.60 per kilo (Jacinto 2004: 10). The underpricing of Philippine seaweed is even more striking. In May 2004, the typical small guso farmer was paid only 37.5 pesos per kilo of dried seaweed. By the time the resource left the hands of Philippine

exporters, it was priced at \$14.11 per kilo.<sup>7</sup>

### **The Human Externalities of Philippine Export Aquaculture**

Export-oriented aquaculture does not just externalize costs to economy and ecosystem, for human beings are also severely impacted. As Vandana Shiva (2000: 15) observes:

Socioeconomic costs include lost ecosystem services provided by mangrove forests, privatization of common resources, increased conflict over and degradation of land and groundwater resources, and increased food insecurity resulting from prioritization of resource utilization for export of local food needs.

According to a Philippine university analysis, “Shrimp farming for export is perhaps the most glaring example of social and environmental costs borne by small scale fishers and coastal communities so that consumers in developed countries can meet their increasing demand for cheap and affordable shrimp” (Jacinto 2004: 9). Because export-oriented growth has drawn local food resources into international markets, the Philippine food chain is increasingly “commodified” (Wallerstein 1983). “Traditional ways of life, which for centuries, have been sustained by fisheries, are collapsing. Fishing communities managed to sustain themselves well-enough until the arrival of modern technology” (Faire *et. al.* 1995). Globalization of the local food supply has led to the loss of subsistence reserves, the encroachment of capitalist enterprises into the territories of agropastoral and hunter-gatherer cultivators, and the reduction of

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<sup>7</sup> *Manila Times*, 1 July 2004, [www.manilatimes.net/national/2004/jul/10/yehey/businmess/20040701bus1.htm](http://www.manilatimes.net/national/2004/jul/10/yehey/businmess/20040701bus1.htm). San Roque respondents reported receiving \$35 per kilo in November 2004.

consumption resources in national as well as household budgets (Nash 1994: 10). Consequently, export aquaculture externalizes four costs to small fishing households and to ordinary Philippine families:

1. Disproletarianization;
2. Loss of access to community property resources;
3. Food insecurity;
4. Greater costs to women.
5. Increased threats and insecurity for men

In order to maximize profits, capitalists externalize to households as much as possible the actual cost of reproducing and maintaining the labor force (Dunaway 2001). Fishpond operators are no different, for they typically pay below-subsistence wages which will not cover basic survival needs. In addition, fishponds “disproletarianize” local fishers in two ways. First, they provide only a very small number of jobs. Second, fishponds eliminate past jobs or crafts from which they earned a livelihood and by threatening the ecosystem to the extent that fish catches are lowered too far to provide a livelihood. In addition, local fishers are displaced to make way for prawn farm construction. In the Philippines, the national government makes available long-term leases which legitimate the fishpond owner as having sole access to certain ecological zones. Those fishing households and female resource gatherers who have traditionally relied on mangroves, coastal waters, and rivers for subsistence and for livelihood must internalize the external costs associated with the elimination of community property rights. “Mangrove forested areas in the Philippines have been steadily transformed from a common property resource, of multiple use and benefit to a large number of people, to a private good, of single use for shrimp

ponds, whose benefits are narrowly channeled to the benefit of a select few” (Nickerson 1999: 279).

Third, countries which specialize in export-oriented aquaculture have grown less and less food self-sufficient over the last two decades. Since 1993, the Philippine seafood output has not kept pace with population needs, and there has been an annual shortfall of 600,000 metric tons annually.<sup>8</sup> At the level of municipalities and artisan fishers, there has been a 2 percent decline over the last decade, reflecting the depletion of coastal resources.<sup>9</sup> All over the country, household fish catches have declined to less than 1 kilo per day.<sup>10</sup> Export-oriented aquaculture has also threatened the country’s supply of rice, a traditional dietary staple. Many ricelands have been converted into prawn farms while others have been made uncultivable by fishpond contaminants and salinization (Primavera 1997). Because of shortfalls, the Philippines now imports a high percentage of annual rice for consumption, and consumer prices have steadily risen (Cabanilla 1997). In the face of high rice prices, more Filipino households are purchasing corn which is far cheaper but much less nutritious. Even though deficiencies of iron, zinc, Vitamin A, iodine, selenium, calcium, and protein-energy malnutrition are common in rice-based communities, rice is much more beneficial than corn.<sup>11</sup> Rice contains small amounts of fat, dietary fiber, calcium, phosphorous, potassium, sodium, Vitamin B<sub>1</sub> and Vitamin B<sub>2</sub>, and niacin,

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<sup>8</sup> Glenn D. Aguilar. 2002. "Present and Future Role of the College of Fisheries and Ocean Sciences." Working Paper, Institute of Marine Fisheries and Oceanology, University of the Philippines in the Visayas, [http://spore.cta.int/spore102/spore102\\_brief.html](http://spore.cta.int/spore102/spore102_brief.html)

<sup>9</sup> [www.oceanconserve.info](http://www.oceanconserve.info), 2003 news

<sup>10</sup> Aguilar 2002.

<sup>11</sup> International Rice Research Institute, "Rice Fact Sheet," online at [www.knowledgebank.irri.org](http://www.knowledgebank.irri.org)

in addition to 11 percent of the average daily requirement of protein.<sup>12</sup> In sharp contrast, corn contains phytate which binds iron, diets high in corn bind iron, causing the body not to absorb this essential nutrient. In a country in which iron deficiency anemia is problematic, corn meal like that which is increasingly consumed by poor Philippine households has "practically no food value" and actually can cause health problems.<sup>13</sup> Not only does corn have little nutrition value, but it also weakens the ability of the body to utilize the iron that is present in fish.<sup>14</sup> While providing unhealthy levels of sugar and empty carbohydrates, high consumption of corn and fish with few supplementary vegetables and fruits will also cause deficiencies in calcium, Vitamin A phosphorus, copper, niacin, amino acids, Vitamin K, Omega3 fatty acids, boron and magnesium deficient.<sup>15</sup> Thus, the substitution of corn for rice is a hidden externalized cost for impoverished Filipinos who cannot afford the more expensive grain because of the loss of national ricelands for aquaculture ponds. In a country that has a high infant mortality rate, the Philippine Food and Nutrition Institute now threatens the food security of babies by recommending a baby formula which contains half cup of corn, half cup of soy, and a teaspoon of shrimp powder.<sup>16</sup>

Export-oriented aquaculture also threatens food security in two other ways. First, farmed shrimp:

are fed nutrient-rich diets containing large amounts of fishmeal and fish oil

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<sup>12</sup> Thai Food Composition Table, Institute of Nutrition, Mahidol University, online at [www.pechsiam.com](http://www.pechsiam.com)

<sup>13</sup> *Scientific American*, June 2000, pp. 80-85.

<sup>14</sup> University of Pennsylvania Health System, [www.pennhealth.com](http://www.pennhealth.com)

<sup>15</sup> The Micronutrient Initiative online at [www.micronutrient.org](http://www.micronutrient.org)

<sup>16</sup> Philippine Food and Nutrition Institute, [www.fnri.dost.gov.ph](http://www.fnri.dost.gov.ph)

extracted from wild-caught fish. The input of fish products is two to four times the volume of fish outputs for these crops. Because of their dependence on wild-caught fish, [shrimp] aquaculture depletes rather than augments fisheries resources. . . . Shrimp feeds contains about 30% fishmeal and 30% fish oil, and intensive shrimp farming actually results in a net loss of fish protein (Naylor *et al.* 2003: 883-84).

For example, the depletion of *punaw* and *amahong*, small shellfish traditionally eaten by Panguil Bay households, directly resulted from massive harvesting of these species to feed export prawns. Now *agihis* are similarly on the verge of extinction. While shrimp are fattened for export through their consumption of such seafoods that once nourished small fisher families, one-third or more of Philippine households suffer malnutrition, the highest incidence among small fisher families. In contrast, one kilo of farmed shrimp must be fed five (5) kilos of wild fish that would otherwise be available for the human food chain.<sup>17</sup> Philippine households must compete for food with prawn farms in a second way. Every time a prawn farm opens its gates for seawater exchange or to flush out wastes, it destroys fish and shellfish that could be consumed in local food chains. When prawn farmers apply toxins, such as teaseed, to eliminate “unwanted” fish that stray into the pond, they once again waste part of the ecosystem and part of the human food chain. In fact, prawn fisheries catch one-third of the fish and shellfish that are wasted as part of the fishpond production process (Ocean Conserve 2003).

Filipino women are more negatively affected than men by the environmental degradation

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<sup>17</sup> *New Internationalist*, Issues 325 and 234, online at [www.newint.org/issue325/treehug.htm](http://www.newint.org/issue325/treehug.htm) and [www.newint.org/issue234/contents.htm](http://www.newint.org/issue234/contents.htm)

that is externalized by aquaculture commodity chains to fishing households. A degraded and depleted environmental resource base breeds poverty, results in the further overexploitation of natural resources and marginalizes women. In the past when the rivers and bay were public commons, men and women actively fished along with simpler technology. Men now undertake most of the fishing, using increasingly expensive technology that requires venturing deeper or farther out to the sea. Now that commercial fishponds have appropriated most of the waterways and mangroves are threatened, women have been pushed out of fishing in many communities to marginal activities, such as oyster and shell gathering or nipa thatching. Unable to attain higher education, younger women leave the villages to work as domestic helpers and factory workers in the cities and town centers. Environmental threats to water safety exacerbate women's multiple work burdens. Mangrove deforestation and fishpond construction result in salt-water intrusion into water. On the one hand, female water gathering becomes more difficult. On the other hand, females must assume greater caregiving responsibility when family members get sick from polluted water. Women are at high risk of certain diseases because they work in water on a consistent daily basis, such as those females who gather oysters every day or do laundry in polluted canals or rivers.

While women suffer more in providing the basic needs of the family, men are now exposed to greater risks because they must engage in life threatening fishing methods, such as *paboto* (dynamite fishing), *pangoryente* (fish electrocution), or *paali* (deep diving to harvest seaweed). Fishing also exposes them to a higher risk of death from respiratory diseases and from physical accidents. However, men are also disadvantaged by contradictory circumstances. On the one

hand, men are expected to fulfill traditional gendered social obligations as the primary "providers" for their families. On the other hand, husbands can no longer provide either cash or food security for their families in the face of depleted natural resources. Moreover, they cannot overcome the shortfalls of their ecosystems by obtaining waged employment because there are no available opportunities.

### **Household Subsidization of Export Aquaculture and Survival Strategies**

In line with world-systems analysts (Smith and Wallerstein 1992, Dunaway 2001), neo-Marxist feminists (Mies 1986) and ecofeminists (Salleh 1999, Mies and Shiva 2001), this study views the household as the basic unit for the material and non-material labors that are essential to reproduce and maintain the work force that is essential to the persistence of the capitalist world-economy. Because its members are underpaid in that capitalist system, the household is the unit which makes laborer survival possible through resource pooling and distribution (Smith and Wallerstein 1992, Dunaway 2001). In the periphery where waged work and employment opportunities are limited, most people survive because household members engage in numerous forms of non-waged work. Household members engage in subsistence production (such as gardening or handcrafts), livestock raising, and gathering of ecological resources (Salleh 1999). In order to supplement low and erratic wages, they frequently engage in income-generating activities in the *informal sector* (Carr *et al* 2000, Handelman 2003). Increases in unemployment and reductions in social expenditures push peripheral families to turn toward "self-generated

employment in the informal sector, either as supplement to formal-sector earning or as their sole source of support" (Myers and Evans 1998: 241). These forms of non-waged work subsidize the low wages or lack of cash incomes which typify the living conditions of most of the people of a world in which more than half the population struggles to survive on less than \$2 a day (United Nations 2002).

A subsistence household is an economically self-sufficient unit which reproduces itself fully from what it produces internally, but this ideal type is rare in the modern world-system.

Historically, such a household created:

surpluses which lowered the minimum-accepted-wage threshold. In this way, non-wage work permitted some producers to remunerate their workforce at lower rates, thereby reducing their cost of production and increasing their profit margin.

No wonder, as a general rule, that any employer of wage-labor would prefer to have his wage-workers located in semi-proletarian rather than proletarian households (Wallerstein 1983: 27).

At the other extreme from this subsisting household are those proletarians who sell their "free" labor in the market, thereby earning wages that do not fully fund their survival requirements.

Complete proletarianization is too expensive because wages and worker benefits increase the cost of production and lower profit. Consequently, the capitalist world-system has structured a controlling mechanism by which the demands of workers for increased compensation can be restrained. That mechanism is the *semiproletarianized* household which is now the dominant mode worldwide (Wallerstein 1983). In such households:

the wages paid to those members engaging in wage-labor activities can be reduced

below the level of household reproduction because the household supplements this income with its other income-generating activities. . . , the totality of which bring in a greater income per hour of work than does wage-labor (Wallerstein 1995: 5-6).

Integration of world workers into export commodity chains has not pulled peripheral families out of poverty, as neoliberals have promised. Instead, that small group who are drawn into the waged labor force are:

located in household structures in which the work on this new "export-oriented activity" formed only a small part of the lifetime revenues. . . . In this case, other household activities which bring in revenues in multiple forms can "subsidize" the remuneration for the "export-oriented activity," thereby keeping the labor costs very low (Hopkins and Wallerstein 1987: 777).

At every point in a commodity chain, households subsidize capitalists' low wages in order to sustain the laborers who produce the commodity. In fact, the hidden inputs of households are preconditions for the productivity of household members who engage in external waged labor required to produce the goods that are traded in the world-economy (Dunaway 2001). In reality, *non-waged* labors generate the bulk of household resources and subsidize the accumulation of profits within the commodity chain (Mies 1988, Salleh 1999).

Peripheral households subsidize commodity chains through low-paid, *non-waged direct inputs* (such as harvesting wild fish for prawn feeds) into the production process. Such household-based labor generates market commodities or informal sector inputs into the export production process, but such labor— especially that of women— has typically remained socially

invisible and has received below-market prices for those contributions (Mies 1982). In addition to their direct waged and non-waged inputs, women and households subsidize the commodity chain through several forms of invisible labor and hardship. Household inputs into commodity chains occur at three levels, only one of which is waged labor.

First, the biological reality of women's lives is sexual and reproductive; thus, mothers make their first subsidy to capitalism through the bearing and raising of successive generations of laborers. Despite its dependency upon this natural female contribution, however, capitalism has externalized laborer reproduction outside the realm of the economic. . . . Second, the household is the site in which women undertake unpaid labor for those members who are waged laborers. By keeping production costs lower, women's hidden inputs subsidize the production process throughout the commodity chain, thereby keeping consumer prices lower and profits higher. To generate family survival requirements, women engage in "shadow work" outside those formal capitalist structures in which labor is remunerated. . . . There is a third more deeply hidden way in which women subsidize the commodity chains in which their households are situated. The subsistence inputs of women and households at one node may subsidize other nodes of the commodity chain. In effect, the commodity chain structures a network in which consumer and laborer households at higher nodes actually exploit households and women at lower nodes (Dunaway (2002: 136-37).

Export aquaculture does not provide employment for enough workers to have a positive impacts on more than a tiny number of local residents. Those waged workers who make

contributions to the prawn or seaweed export sectors do not earn a living wage that is sufficient for the reproduction of the household unit. Her husband's fishpond income was "never enough," one Lapinig housewife explained:

*Kihahanglan molihok ko para mi mabuhi. Gi-antus lang to nako kay dili man gayud kasaligan ang suweldo nga menos gani sa 3,700 pesos. Usahay, ma-short pa.* I have to work in order for the family to survive. I bear the hardship because we could not depend solely on a monthly salary which is actually lesser than 3,700 pesos.

In order to eat and to accumulate their basic survival needs, these households straddle a multiplicity of economic sectors (see Table 6.1). Every day, fishers capture household protein, intending to consume about one-third of it and to sell the rest to be able to purchase rice (or substitute corn if they cannot afford the more expensive staple). Small *guso* growers must catch fish or shellfish every day and gather some of their crop in order to cover household food needs. In the face of declining catches, fishers have implemented more intensive harvesting strategies, including the use of illegal gears (such as dynamite), fishing in deeper seas, and new diving technologies to collect *guso* from the sea floor. In the face of a narrowing ecological base that has been devoured by large fishponds, they have also "parcelized the commons," each attempting to locate a permanent site in the shallows or deeper seas to set *bungsod* platform, *laya* net attached to bamboo poles, or lines loaded with *guso*. When desperate, some steal *guso* from other growers.

Because the daily catch has dwindled so much, fishing no longer is adequate to cover all household food needs. Consequently, households rely on other economic and subsistence

Table 6.1 The Diverse Survival Portfolio of Panguil Bay Fishing Households

<i>Type of Labor or Resource Earning Activity</i>	<i>Export Production</i>	<i>Ecological Subsistence</i>	<i>Informal Sector and/or Local Markets</i>	<i>Paid Waged Labor</i>
Family-operated small, semi-intensive or extensive shrimp farms	Majority exported; few small, impoverished producers involved	Some fish or prawn gifts from pond operators to friends or relatives	Some marketing of the "reject" prawns	Laborers for fishponds
Mariculture of seaweed	Majority exported; many small impoverished <i>guso</i> growers involved	Stealing <i>guso</i> from other farmers; Some growers give <i>guso</i> seedlings to poor cultivators.	Some local marketing of <i>guso</i>	Laborers for seaweed growers
Capture fishing	Some captured fish end up in the global food chain as canned fish produced by Manila-based corporations	About one-third of caught fish are consumed.  To overcome catch declines: Illegal fishing gears; More intensive fishing strategies	About two-thirds of captured fish are marketed to purchase rice, corn, food items	Limited labor for some fishers
Gathering of Oysters, Crabs, Crustaceans, and Mollusks		Gathering for household consumption	Salting and bottling of <i>uyap</i> and <i>sisi</i> for local sales; also crabs and shells marketed	
<i>Nipa</i> Thatching		Thatching to supply house building materials (women and children)	Thatching by piece rate for regular income (women and children); Some cash earning by delivering thatching supplies to buyers	Very limited waged labor for males
Women's Nonfishing Cash Earning			Selling foods, crafts; Laundry or sewing for other families	
Men's Nonfishing Cash Earning			Males operate pedicabs, <i>sikads</i>	Infrequent, very limited waged jobs
Contributions of Children		Assistance to adults fishing or gathering ecological resources	Thatching by piece rate; selling or income-earning at short-term tasks; begging; shoe shines; gathering <i>guso</i> from shores to sell; tending fighter cocks	Wages earned by offspring working in cities; local waged labor
Agriculture & Livestock		Family garden parcel; gathering crop reject; raising livestock	Selling surplus crops or crop rejects from others; raising livestock on shares; selling livestock	Waged farm laborers; also some farming on shares or tenancy agreements
Other		Networks of family and friends	Illegal activities, such as stealing, drug trade	Remittances from offspring or relatives abroad

activities, sometimes to a greater extent than they depend on resources from fishing. Ecological resources (such as fish, oysters, crabs) are sold in the informal sector, along with several other types of items. Women gather oysters and other food supplements, and they market salted oysters, *uyap*, crabs, and shells. Women also participate in a "putting out" system in which buyers provide *nipa* supplies, and women thatch *pawods* on a piece-rate basis. Women sell petty commodities in the informal sector or public market while some men operate pedicabs or *sikads*. Household foods are also augmented with crop rejects, prawn rejects, family gardening, livestock raising, or occasional farm labor or sharecropping. The contributions of children and networks of family and friends are also important sources of supplementary assistance. To a certain extent, Panguil Bay households have adopted survival and accumulation strategies which combine rural and urban resources. As offspring grow older, some migrate away to work in more distant waged jobs or even abroad, sending remittance home to their families. Food insecurity is the outcome of radically diminished fish and crustacean catches, mangrove degradation, the rising prices of grains and schooling, and the decline in household spending power. Having fish every day is a luxury in these fishing communities, and eating less is one of their survival strategies. "We put more water into the cooked corngrits," explains one housewife. When another mother's food supply is running low, she loses her appetite, so "the children can eat more."

It is not through waged labor that households are most inequitably exploited; it is through the *super-exploitation* of their non-waged and unpaid labors (Dalla Costa 1972, Mies 1986:48). As Nash (1994: 20-21) observes:

Subsistence systems are a diminishing part of world production measured in global statistics, but subsistence activities are on the increase as households

throughout the world resort to them for survival. . . . A range of subsistence activities persist while the people are increasingly integrated into the world system as wage workers or commodity producers. All of them are subject to the vicissitudes of currencies whose exchange value is determined in international financial circuits.

Subsistence is supposed to be the only dependable weapon of poor fishers against the insecurities and uncertainties of the market. Bust as experienced by Panguil Bay communities, export-driven aquaculture has virtually decimated their subsistence base. I argue this is the worst crime of so-called "development" against a people. In the face of the loss of ecological resources that once supported their livelihoods, devalued currency, steadily rising price inflations, and unemployment, the poor fisher households of Panguil Bay have developed a diverse range of labors in ecological subsistence, waged labor, informal sector activities, and unpaid household labors. To provide household basic needs, both husbands and wives juggle a multi-activity work portfolio, in order to have a security net that provides a "hedge against failures in any one component of their survival package" (Ilo and Polo 1990: 109-10). Or to put this in the words of one of the *self-exploiting* Panguil Bay wives: "You can only eat if you work hard."