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Impact Assessment of Climate Change in Quezon Province (Real-Infanta-General Nakar)

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Abstract: In this study, illogical exploitation of the earth's limited resources, and its palpable effects as changing climatic conditions, pose a serious risk to the communities of Quezon. Exclusive dependence on nature as a provider of sustenance, often coupled with high economic vulnerability, making the people and their own community highly susceptible to events that disrupt the natural cycles. Frequency of tropical cyclones, sea-level rise, and among others, constitute serious threats to the livelihood of these communities in their territories. The biophysical aspect of the study was undertaken.

The study was conducted in the three most vulnerable coastal hotspots in Quezon Province: Real, Infanta, and General Nakar.

Key Words: Climate Change; Risk Analysis; IPCC; HFA; CCA

1. Introduction

Coastal areas figure among the most vulnerable of all environments to global climate change. Coastal zones are also among the most dynamic natural environments on earth, providing a range of goods and services that are essential to human social and economic well-being. Many people have settled in coastal zones to take advantage of the range of opportunities for food production, transportation, recreation and other human activities provided here. The Philippines, being an archipelagic country, is rich in coastal resources. Most types of tropical coastal ecosystems such as reefs, sea grass bed and mangrove forests are found in the country's seas. Coral reefs are widespread and may be found around almost the entire archipelago. Coastal fishing activities account for 40–60% of total fish catch, with the fisheries sector accounting for about 4% of GNP and employing more than a million Filipinos.

The Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) noted that climate-related change represents potential additional stress on systems that are already under intense and growing pressure in coastal zones. Of these changes, accelerated sea-level rise has received much attention and may entail elevated tidal inundation, increased flood frequency,

accelerated erosion, rising water tables, increased saltwater intrusion, and other ecological changes. These biophysical changes are expected to cause various socioeconomic impacts, including loss of land infrastructure and coastal resources as well as declines in associated economic, ecological, cultural and subsistence values.

Many social, biological and geophysical systems are vulnerable from climate change. Vulnerability to climate change is the degree to which these systems are susceptible to, and unable to cope with, the adverse impacts. A focus on key vulnerabilities is meant to help policy-makers and stakeholders assess the level of risk and design pertinent response strategies.

NGOs for the Fisheries Reform (NFR) conducted a study that assessed the social and economic impacts of climate change in the fishing communities of Mambajao and Sagay in Camiguin Island. One of the study's findings is that the fishing season has become shorter due to heavy rains and strong waves. Families living near the sea are also displaced by the rising sea level

Objectives of the Case Study

The present case study aims to assess the impact of climate change in two fishing villages in Naic, Cavite in order to determine the following:

- Extent of biophysical changes that these villages are experiencing as a result of climate change
- The socio-economic and psychological effects on the villagers due to their perceived or experienced impact of climate change
- The different initiatives and programs of different local and/or national agencies in the two villages that address the impact of climate change in the area

2. METHODOLOGY

Participatory Action Research (PAR) is a structured method of inquiry that subscribes to the principle that people's participation is a moral right. As such, multiple stakeholders are involved, usually composed of NGOs, community, government, and the academe. This multi-stakeholder inquiry consequently generates diverse perspectives which are helpful in unraveling the multi-dimensionality of social issues. The goals are three-fold: contribute to the practical improvement of problematic situations, develop public knowledge, and develop the self-help competencies of people facing problems. In more concrete terms, PAR is a technique for data collection and analysis using a combination of methods wherein the participants are considered subjects and not objects, and are part of the research process itself. It is also a tool for empowerment, social action and transformation. This study utilized PAR to increase the community's awareness of the changes in their environment and its impact on their lives, and to encourage participation in collective decision-making.

3. RESULTS AND DISCUSSION

The results were all based from the Participatory Action Research:

Impacts

Temperature

-Warming of sea temperature

-Decline or disappearance of particular fish species

-Increase in seawater temperature during the dry season

-Upswell of colder seawater during the rainy season

Weather and climatic changes

-Unpredictability of weather patterns

-Uncertain rainfall changes

-Changes in climatic cycles

-Frequency of cold wind surge

-Presence of strong winds from March–June which used to unusual during that time of the year

-Increase in wind speed

Extreme events

-Increase in frequency and intensity of typhoons

-Frequency of flooding mostly coming from the mainland (since 2006)

-Increase in intensity of terrestrial heat

-Accelerated shoreline retreat

-Increase in magnitude of waves

Fish population

-Decrease in population and diversity of fish species

-Decline in abundance of specific fish species (e.g. barakuda, talakitok)

-Loss of specific fish species (e.g. bruha, salengga, asobe, tulingan and dolphin)

Subsistence

-De-emphasis on fish as food staple

Income and Livelihoods

-Decrease in abundance and diversity of fishcatch resulting to decline of the primary support system for the livelihood of fisherfolk

-Longer fishing expeditions with less yield (i.e., whole day or sometimes, even longer than 24 hours)

-No longer have the luxury of choosing high-value fish catch (need to make do with what is caught)

-Marginal and lower than expected increase in harvest during typhoons and sea turbulence

-Decrease in harvest when cold sea water surges during the rainy season

-Drastic decline in incomes; Earn only P150-P750 per day-long (or longer) fishing expedition

-Increased risk of incurring losses from fishing expeditions; Unpredictability of weather may thwart fishing expeditions midstream thus, preventing recovery of fuel costs (P200–2,500 per fishing expedition)

-Need supplementary sources of income

-Some go abroad or send their children abroad or to cities to find jobs

Risks to Health, Lives and Increased Anxiety of Families

-Increase in risks to lives of fisherfolk and associated increase in anxiety of families over their safety

-Increased exposure to extreme seawater temperatures and pressures, which results to risks to health (e.g. chest pains, stroke, lung collapse)

→ Necessary now to go farther at sea for a longer period of time, despite unpredictability of weather resulting to risks of drowning

→ Necessary now for arrow fishers to dive deeper underwater for longer hours despite colder temperature of seawater during rainy season resulting to chest pains, stroke and risk of death underwater

Health effects from water quality

-Increased susceptibility to saltwater intrusion of groundwater sources; low quality drinking water (at 60–100 feet); water insecurity

-Increase in vector-borne, water-borne diseases and common illnesses e.g. amoebiasis, urinary tract infection, diarrhea

-Necessary now to purify drinking water, depends if there is extra income

Health effects of weather/climatic changes

-Prevalence of common illnesses such as cold, cough, fever,

-Possibility of heat stroke

Social Relations

-Exacerbation of the 'double burden' and disempowerment for women as climate change lead to more time spent to find alternative income sources in addition to women's regular domestic work, increased workload and therefore less time to engage in decision-making and capacity building

-Under-recognition of women's contribution to the productive process as well as in disaster recovery

-Complacency over financial support from relatives thereby weakening the impetus for proactive community action

-Conflict over access to marine sanctuaries

-Successor generation gaps

Psychosocial effects

-Increased anxiety

Infrastructure

-Infrastructures, settlements and facilities located near the coast affected by coastal typhoons, compromising the socioeconomic well-being of the coastal communities

Migration of younger and more educated sections of the population

Adaptive capacities

- Access to financial support during financial stress, including from loan facilities, local cooperatives and relatives abroad
- Low level of self-organization and self-reliance consciousness
- Low recognition of women's role in production and disaster mitigation and risk management
- Low level of empowerment among women in the community
- Internal conflicts
- Low public confidence on the local government to undertake adaptation efforts
- Ecosystem degradation threatening the livelihood support system of fisherfolk
- Sudden social cohesion (but reactive response) during times of disaster

4. CONCLUSIONS

Based on the observations and data gathered, it can be concluded that climate change aggravates the existing problems of the fishing communities. The vulnerability of the area along with the effects of climate change such as sea level rise, coral bleaching, saltwater intrusion, increase in water surface temperature, and destruction of coral reefs clearly worsen the existing problems of the fisherfolks changes were likewise accounted by the fisherfolks such as the decrease of varieties of fishes and other marine resources, but they mainly attribute this to illegal fishing.

Meanwhile, it is interesting to note that some fisherfolks actually identified a few advantages of strong storms or typhoons such as increase in fish yields. However, climate change still remains as a threat in the long term productivity of ecosystems, and hence will consequently affect their livelihood.

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