**003 PHI**

**Report on compilation and review of policies on Climate change and natural disasters**

**I. BACKGROUND AND RATIONALE**

In its April 2007 summary report, the Intergovernmental Panel on Climate Change (IPCC) reaffirmed its consensus on the reality and urgency of climate change as an environmental issue that must be analyzed, prioritized and squarely addressed by the international community. To do this, three important aspects must be considered—identified key impacts, risks brought about by such impacts, and adaptation mechanisms of vulnerable groups: countries, geographical regions and social sectors.

Vulnerability is defined as the degree of capability to cope with the consequences of climate change and the IPCC states that developing countries in tropical regions are highly vulnerable to the impacts of climate change due to lack of capacity and resources. Adaptation mechanisms based on intensive biophysical and socioeconomic studies need to be institutionalized to address these concerns.

Coastal areas, fishers’ communities and the fisheries sector are particularly vulnerable to climate change. Rise in sea level and warming of sea surface temperature will result in damage to coastal ecosystems and displacement of fishing communities. Coastal inundation will threaten the stability of wetlands, mangroves and coral reefs and negatively affect the viability of the aquaculture industry. Sufficient information for coastal managers to address the risks brought about by climate change is needed as well as identification of policy options and possible response strategies, and initiation of stakeholder dialogues with focus on gender-differentiated impacts.

The Philippine fisheries sector has yet to fully realize the effective management of the country’s coastal and marine resources but it is slowly getting there. Stakeholders are constantly engaging in activities to promote judicious and sustainable use of coastal and marine resources. Systems to address socio-economic and environmental risks in fisheries production are being developed and installed. However, climate change poses serious threats that would undermine such efforts.

**Impacts of Climate Change**

The more observable cases of climate change and its impacts in the Philippines and elsewhere are the following:

* The Manila Observatory and the Department of Environment and Natural Resources have tracked a historical increase in sea temperature in the Philippines ranging from less than 0.2°C to more than 0.5°C in the last millennium.
* An increase in sea surface temperatures of about 0.5°C can already initiate coral bleaching.
* Warming seas also mean less photosynthesis, less oxygen and food and therefore, less fish.
* More intense and longer droughts have been observed since 1970, particularly in the tropics and subtropics, due to increase in temperature and decrease in precipitation.
* Since the 1970s, the worsening inundation of residential and industrial areas near the coast in Navotas, Metro Manila, which is attributed to both rising sea level and land subsidence due to the drying up of underground water aquifers.

#### Any impact of climate change in coastal areas is significant considering that the Philippines has 915 municipalities that are classified as coastal and 62 percent of the country’s population are found in these coastal municipalities. These impacts are shown per coastal ecosystem in the following matrix:

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| --- | --- |
| Ecosystem | Impact of Climate Change |
| Mangrove Forests | Sea-level rise will decrease precipitation and run-off and increase salinity resulting to a lesser mangrove production.[[1]](#footnote-2) This may affect reproductive patterns thus deviating from their normal seasonality. If these organisms can’t cope, mortality will most likely result. |
| Seagrasses | Too much warming exposure will make sea grasses susceptible to other stresses leading to mortality.Warm waters primarily alter their growth rates and physiological functions as well as change distributions and patterns of reproduction.  Increased concentrations of atmospheric CO2 will also enhance primary production for carbon limited sea-grass areas. Impacts of increased CO2 concentration will vary among species but will most likely disrupt competition among species and between sea grass and algal populations.[[2]](#footnote-3)  Warm waters primarily alter their growth rates and physiological functions as well as change distributions and patterns of reproduction. Increased concentrations of atmospheric CO2 will also enhance primary production for carbon limited sea-grass areas. Impacts of increased CO2 concentration will vary among species but will most likely disrupt competition among species and between sea grass and algal populations.[[3]](#footnote-4) |

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| Ecosystem | Impact of Climate Change |
| Coral Reefs | Increased sea-surface temperature brings out stress and bleaching. While the extent of decrease attributed to warming is yet to be established, there has been an increase in temperature induced bleaching occurrence, disease incidence, elevated sea level, and lowered ocean pH threatening coral reef survival around the globe.  There were incidences of coral bleaching 1995 & 1998, one of which happened in the TubbatahaReefMarinePark northwest of PalawanIsland.   * The coral bleaching that happened in June-November 1998 led to a 46% decrease in coral cover and comprised about 49% of overall coral death in the area.[[4]](#footnote-5)   The increase in temperature shifted the abundance and distribution of plankton species (autotrophs) and affected the abundance of herbivores, fishes and other organisms occupying higher trophic levels in the food web. Plankton decrease will result in exponential fisheries yield decrease. |

Temperature changes will also have significant effects on their thermal habitats leading to redistribution of fish populations and disrupt the migration patterns of pelagic fishes. Indeed, increasing temperature combined with fishing pressure may reinforce fishery collapse.[[5]](#footnote-6)

Capili*et al.* (2005)[[6]](#footnote-7) summarizes the impacts of climate change on the social system of Philippine coasts as follows:

“Any change in the natural systems will also alter the dynamics of coastal communities. Coral bleaching and mortality, changes in the chemistry and physical dynamics of the waters plus disruption of migratory and reproductive patterns of marine organisms translate to significant changes in coastal fishery demands. Fish decline will surely affect productivity. The demand for searching other means of livelihood will increase migration in other places and shifting of livelihood sources. In other words, these will create a domino effect by changing people’s way of coastal living and sustainability.”

One of the major impacts of warm temperatures in the country is decrease in fisheries yield. After the 1998-99 *El Niño* Southern Oscillation Event, the total estimated loss was PhP7.248 billion (PhP stands for Philippine Peso, the monetary unit in the country). The aquaculture sub-sector suffered approximately 85 percent economic loss (about PhP6 million), followed by marine fisheries at 14.78 percent (about PhP1 million pesos) and inland fisheries at 0.26 percent (PhP18,000). The loss can be further classified in terms of tonnage i.e., municipal (subsistence) fishing lost 18,401 tons (worth PhP850,000), commercial fishing in marine waters lost 4,522 tons (worth PhP1 million pesos) and inland fishing lost 599 tons.[[7]](#footnote-8)

### Tambuyog’sFramework on Climate Change

### Climate change is a phenomenon in nature that is largely induced by human activities. The main factor in global warming, for instance, is the accumulation of greenhouse gases in the atmosphere due to the heavy use of fossil fuels in production and other related human activities.

The impacts of climate change are often worsened by the social and environmental costs of human productive or economic activities. Trawl fishing, for example, degrade corals and in so doing, increase their vulnerability to coral bleaching due to rising sea temperature. For coastal communities, the loss of corals means less food fish and loss of barrier protection from high waves. Similarly, the cutting of mangrove forests to develop fishponds deprives coastal communities of mangroves as source of food fish and their protection from rising seas and typhoons (as extreme weather phenomena are predicted to become more common due to climate change).

Responding thus to the challenge of climate change means that the impacts of climate change on coastal and near-shore fishery resources are taken into account in coastal resource management to ensure the maintenance of coastal or marine biodiversity.

On the other hand, it also requires recognizing the importance of coastal areas since the majority of Filipinos now live in coastal communities, depending on the coastal resources for their food and livelihood. So far, an assessment of the risks to the impacts of climate change *specific to coastal areas and communities*, together with the appropriate mitigating and adaptive measures, has yet to be taken into account in government’s researches, policies and programs.

Moreover, there is the need to mainstream fishery and coastal resource management as a vital component of a holistic approach to managing the impacts of climate change. This is becausein a situation where climate change is likely to continue in the long term, maintainingbiodiversity and healthy ecosystems—not least in the coastal zone—provide the means for adapting to climate change.

Therefore, measures to reduce greenhouse gas emissions should go hand in hand with measures to improve the capacity of coastal ecosystems and communities to adapt to climate change impacts.

#### Development NGOs are primarily concerned with the impact of climate change on marine biodiversity that have a direct bearing on the food security and livelihood of people in coastal communities.Hence, climate change mitigation and adaptation policies and measures should include biodiversity concerns. On the other hand, fishery and coastal resource management policies and actions that adapt to the impacts of climate change should be adopted and implemented.

#### Philippine Policy & Institutional Environment

There are several policies and implementing structures pertaining to climate change and disaster risk management.

However, climate change in coastal areas where the majority of Filipinos now live is conspicuously absent if not given priorities in these policies. So far, an assessment of the risks to the impacts of climate change specific to coastal areas and communities, together with the appropriate mitigating and adaptive measures, has yet to be taken into account by government instrumentalities in their researches and other programs. Given this context, there is the need to conduct vulnerability assessments and formulate appropriate mitigation and adaptation actions that mainstream impacts on fisheries and aquaculture as well as impacts on coastal communities in government policies and programs.

###### **Current Policies**

The national policies pertinent to climate change are the following:

* National Action Plan on Climate Change (1997) - a policy document aimed at determining Climate Change-related issues and concerns of stakeholders.
* Philippine Environment Code of 1977 (PD 1152) - put in place specific environment and natural resource management policies and prescribes environmental quality standards. It promotes environmental protection that indirectly enhances resilience to climate risks.
* Environmental Impact Statement System of the Philippines of 1978 (PD No. 1586) - aimed to facilitate and maintain a rational and orderly balance between socioeconomic growth and environmental protection in the implementation of programs and projects in the country.
* Improving the Environmental Impact Statement System (EO 291) - issued in January 1996, it seeks to integrate the EIS system early into the project development cycle to promote its ultimate function as a planning tool for sustainable development and environmental planning and conservation.
* Philippine Clean Air Act of 1999 (RA No. 8749) - promotes the participation of LGUs, NGOs, POs, the academe and other concerned entities from the private sector, in the formulation and implementation of the Integrated Air Quality Improvement Framework, a comprehensive air pollution management and control program that prescribes the emission reduction goals using permissible standards, control strategies and control measures to be undertaken within a specified time period, including cost-effective use of economic incentives, management strategies, collective actions, and environmental education and information.
* The Bio-fuels Act of 2006 (RA No. 9367) - mandates direct use of bio-fuels and establishment of a bio-fuels program that mandates the development and use of indigenous renewable and sustainably sourced clean energy sources to reduce dependence on imported oil; mitigation of toxic and greenhouse gas emissions; increase in rural employment and income; and ensuring the availability of alternative and renewable clean energy without any detriment to the natural ecosystem, biodiversity and food reserves of the country.
* The Ecological Solid Waste Management Act of 2007 (RA No. 9003) adopted a systematic, comprehensive and ecological solid waste management program.

**Instrumentalities**

On the other hand, the public institutions with mandate to implement climate-change policies and programs are the following:

* Inter-Agency Committee on Climate Change (IACCC) was created by virtue of AO No. 220 on May 1991, to coordinate various climate change related activities, propose climate change policies and prepare the Philippine positions to the UNFCCC negotiations. One of the initiatives of the IACCC is the implementation of the Philippine Climate Change Mitigation Program(1998-2001) whose basic strategy is to slow down the growth of greenhouse gas emissions through the expanded use of clean fuels in power generation conducted in partnership with the Department of Energy (DoE).
* The Climate Change Information Center (CCIC)/KLIMA was established in 1999 under the Climate Studies Division of the Manila Observatory at the Ateneo de Manila University as a joint venture of the IACCC, DENR and DoE under the Philippine Climate Change Mitigation Program with funding assistance from the USAID.
* DENR is the Designated National Authority (DNA) for Clean Development Mechanism (CDM) by virtue of Executive Order No. 320 (2004) in accordance to the ratified CDM by the Philippines. Its Implementing Rules and Regulations were issued in August 2005 under DENR AO 2005-17.
* The Presidential Task Force on Climate Change (PTFCC) was created by virtue of Administrative Order No. 171 on February 20, 2007. The Task Force is headed by the DENR. However, Angelo Reyes remains the Chairman despite his transfer to the DoE in 2008 and despite the rest of the Secretariat remaining in the DENR.
* The

Advisory Council on Climate Change Mitigation, Adaptation and Communication was created by virtue of DENR Special Order No. 2007-653 on September 25, 2007.

* Climate Change Act of 2008. An Act Mainstreaming Climate Change Into Government Policy Formulations, Creating for This Purpose the Climate Change Commission, and for Other Purposes
* Climate Change Education Act of 2008. An Act Institutionalizing the Climate Change Education and Awareness Program and for Other Purposes
* *Republic Act 10121: The Philippine Disaster Risk Reduction and Management Act of 2010*

The Philippine Disaster Risk Reduction and Management Act was signed on May 27, 2010. It aims to strengthen disaster risk management in the country. It repealed Presidential Decree 1566 that created the National Disaster Coordinating Council. The new body formed is the National Disaster Risk Reduction and Management Council (NDRRMC) with counterparts at the local level, the Local Disaster Risk Reduction and Management Counterpart (LDRRMC).

The law also mandated the formulation of National Disaster Risk Reduction and Management Framework (NDRRMF) and corresponding National Disaster Risk Reduction and Management Plan (NDRRMP). As with the Climate Change Act, this law also mandates coordination between NDRRMC and CCC for the Climate Change Adaptation-Disaster Risk Reduction (CCA-DRR) framework from which all policies, programs and projects shall be based.

The law also mandated that the former calamity fund appropriated under GAA will be known as National Disaster Risk Reduction and Management Fund and shall be used not only on disaster response but more so on disaster risk reduction or mitigation.

* *Republic Act 9729: The Climate Change Act of 2009 and People’s Survival Fund (RA 10174)*

The Climate Change Act was approved on October 23, 2009, after the country was hit by Typhoon Ketsana in September of the same year. The law aims to mainstream climate change as well as disaster risk reduction into government policy formulations, establishes the framework strategy and program on climate change and creates the Climate Change Commission as the mechanism to ensure implementation of the law.

As mandated by the law, the Climate Change Commission (CCC) facilitated the formulation of National Climate Change Action Plan (NCCAP), which was supposed to be translated into Local Climate Change Action Plan (LCCAP), however there was no clear mechanism on how the NCCAP will be adopted by the local government units to form basis of their LCCAPs.

Meanwhile the law was amended by the People’s Survival Fund (PSF) law in August 16, 2012. The amendment aims to provide long-term finance to enable to government to effectively address the problem of climate change. The law mandated that Php 1 billion under the General Appropriations Act (GAA) be set-aside for the said fund, and in case it is not fully disbursed, it shall not revert to the general fund.

PSF may be augmented by donations, endowments, grants and contributions which shall be exempt from donor’s tax and be considered allowable deductions from gross income of the donor.

PSF funds shall be used to support adaptation activities of local governments and communities. A PSF Board is formed to facilitate the local government and community access to the fund.

1. J.T. Hardy, *Climate Change: Causes, Effects and Solutions*, West Sussex: John Wiley & Sons, Ltd, 2003. [↑](#footnote-ref-2)
2. F.T. Short and H.A. Neckles, “The Effects of Global Climate Change on Seagrasses,” *Aquatic Botany*, vol. 63, pp. 169-196, 1999. [↑](#footnote-ref-3)
3. F.T. Short and H.A. Neckles, “The effects of global climate change on seagrasses,” *Aquatic Botany*, vol. 63, pp. 169-196, 1999. [↑](#footnote-ref-4)
4. Arceo, et. al., “Coral Bleaching in the Philippines,” *Climate Change Scenarios for the Philippines*. World Wildlife Fund, 2001. [↑](#footnote-ref-5)
5. J.T. Hardy, *Climate Change: Causes, Effects and Solutions*, West Sussex: John Wiley & Sons, Ltd, 2003. [↑](#footnote-ref-6)
6. Capili EB, ACS Ibay and JRT Villarin, 2005. Climate Change Impacts and Adaptation on Philippine Coasts. Proceedings of the International Oceans 2005 Conference. 19-23 September 2005, WashingtonD.C., USA. pp. 1-8. [↑](#footnote-ref-7)
7. R.D. Guerrero III, “The impacts of El Niño on Philippine fisheries,” *Naga:* t*he ICLARM Quarterly*, vol. 22(3), pp. 14-15, 1999. [↑](#footnote-ref-8)