

## **PHILIPPINE POLICIES ON AGRIBUSINESS AND RURAL DEVELOPMENT TO ADAPT TO CLIMATE CHANGE**

**Romeo R. Quilang**

Isabela State University  
Isabela, Philippines

### **Country Overview**

The Philippines is a teeming 7,107 island-archipelago in the east. Its strategic trade route in the early times, made the nation a favorable mixing cauldron of races, where Chinese, Arabs, Malays, Spanish and American blood contributed to the cultural, social and economic upbringing of its people. Recognized as the Pearl of the Orient Seas, its location in the Pacific Ocean in the middle of the equator made it one of the countries belonging to the strip of Tropical Forest and variety of climate conducive for agricultural production.

Its boundaries are formed by three large bodies of water: on the west and north by the South China Sea; on the east by the Pacific Ocean; and on the south by the Celebes Sea and coastal waters of Borneo. The total land area of the Philippines is 300 thousand square kilometers or 30 million hectares. It constitutes two percent of the total land area of the world and ranks 57<sup>th</sup> among the 146 countries of the world in terms of physical size. The Philippines invokes the archipelago doctrine, as such it gains exclusive to all resources living or non-living and at the bottom of an areas of about 276, 000 square nautical miles. It is divided into three major island groups; Luzon with an area of 141 thousand square kilometers; Mindanao with an area of 102 thousand square kilometers, and Visayas with an area of 57 thousand square kilometers.

Climate patterns are divided into four types based on seasonal rainfall distribution which dictates cropping patterns in the country. They are as follows:

- Type I: Two pronounced seasons with maximum rain period from June to September and a dry season which lasts from three to six or seven months.
- Type II: No dry season with a very pronounced maximum rain period from December to February .
- Type III: No pronounced maximum rain period with a short dry season lasting only from one to three months.
- Type IV: Rainfall more or less evenly distributed throughout the year.

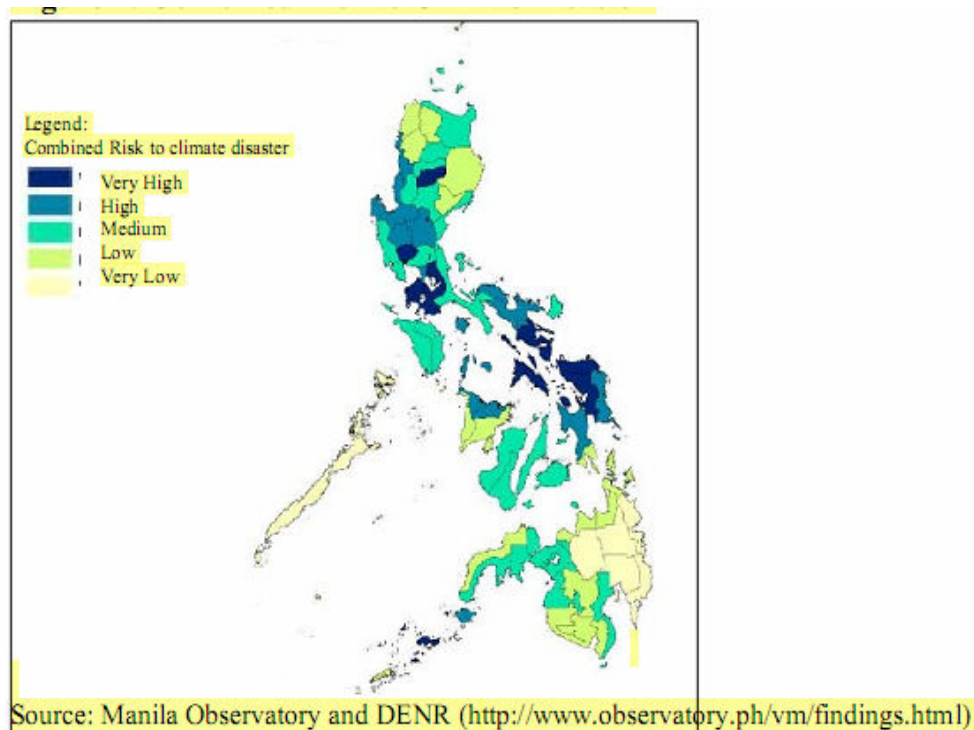
Tropical cyclone commonly known as “bagyo” season in the country is from June to December, with the months from July to September having the most frequent occurrence of more than three cyclones each month. Annual relative humidity ranges from 75 to 86 percent and annual mean temperature is between 19.20 and 28.20 while rainfall ranges from 914 to 4, 358 millimeters.

The Philippines is an agricultural country with land areas of 30 million hectares, 47% of which is agricultural land. In the Philippines, prime agricultural lands are located around the main urban and high population density areas. Land resources in the country are generally classified into forest lands and alienable and disposable lands. A total of 15.8 million hectares were classified into forest lands, and 14.2 million hectares are alienable and disposable lands. Out of the 14.2 million hectares alienable and disposable lands, 93% or 13 million hectares are classified as agricultural lands.

The total area devoted to agricultural crops is 13 million hectares, which is distributed among food grains, food crops and non-food crops. Food grains occupied 31% (4.01 million hectares), food crops utilized 52% (8.33 million hectare) while 17 % (2.2 million hectares) were used for non-food crops. Of the total land area under food crops, coconut accounted for the biggest average are of 4.25 million hectares, sugarcane with 673 thousand hectares; industrial crops with 591 thousand hectares; 148 thousand hectares for fruits; 270 thousand hectares for vegetables and root crops; 404 thousand hectares for pasture and 133 hectares for cutflower. According to land capability, 78.31% of the alienable and disposable land are prime agricultural areas, 6.1 million hectares are highly suitable for cultivation. With a projected population of 94.01 million in 2010, the country underscores intensive agricultural production in its compliance to the demand of food security.

## INTRODUCTION

The Philippines is considered a third world developing country, which faces growth in many aspects, notably in developing its rural communities into self sustaining ones and its agribusiness sector to contribute to food security and serve as a prime source of income for its people. These promising endeavours and development phases are presently challenged by the real time scenario of climate change. It is considered as the most natural disaster prone country due to a combination of high incidence of natural calamities such as typhoons, floods, landslides, droughts, volcanoes, earthquakes and the country's considerable vulnerability to these hazards. Prompted by these, the Philippine government sees its legislative prowess as a strong platform in advancing real time efforts to abate climate change in its many forms with prime call of safeguarding the countryside where its agribusiness and rural development frontiers thrive.



**Fig. 1.** Combined risk to climate disaster

## **Country Vulnerabilities: Actualized Drivers of Climate Change**

### **Typhoon**

As a country frequented by almost 20 typhoons every year, such calamities ranked number among the natural catastrophes battering the Philippines. According to United Nations 2007, typhoons are the largest killer in the Philippines among the various natural hazards it is experiencing (Rincon 2009). On the average, five are expected to cause major damage in terms of both lives and property. In the same report, typhoons have killed 28, 812 people and caused US \$5, 653 million worth of damage in the country. The typhoon season occurs during June to December, with peak months pegged every July to August. Casualties imprint social impacts in the communities affected, from 1975 to 2002, annual average number of casualties was 593 dead, and the annual damage to property costing around Php 4.6 billion, including damage to agriculture of Php 3.05 billion. Effects of climate change' wrath in Philippine typhoon occurrences, is said to be seen in the last three years (2006-2009), with typhoons becoming more stronger, which were one of a kind in terms of damage made in terms of lives and property loss, and number of communities affected. It was during these years, that typhoons such as Reming, Harurot, Ondoy and Pepeng devastated the country. Metropolitan areas such as the Metro Manila, Pangasinan, Nueva Ecija, Cagayan, Isabela, Southeastern Luzon, and eastern Visayas were the provinces greatly hit by the said typhoons.

### **Sea Level Rise**

The Philippines is endowed with the longest coastline in the world catering to the most visited beaches. Its 32, 400 kilometers of discontinuous coastline is threatened and vulnerable to the adverse impacts of climate change. Impacts of sea level rise seems not a distant scenario especially for the 70% of the country's 1,500 municipalities lying along the coast, dependent on fishing and related industries. Therefore, significant impacts will be directly related to sea level rise and would affect most provinces, including the top economically productive ones. According to CRU-WWF, 1998, based on a 40 year observation of five (5) primary tidal gauge stations in the country which include Manila, Cebu, Davao, Legaspi and Jolo show an increasing trend in the mean annual sea level. It was observed that all stations, except for Cebu and Jolo show an alarming sea level rise of near or bit above 15 cm, an indication that sea level rise is now prevalent in the country's shores. Findings from two Global Sea Level Observing System sites in the Philippines (Manila and Legaspi City) supports this information as the sites registered a small rise in relative sea-level before the 1960's and then a more rapid increase of between 20 cm and 40 cm up to 1997 ( CRU-WWF, 1998). These recent trend could be partly attributed to excessive land reclamation and possible land subsidence. The residual rise in sea-level around the Philippines coast is likely due to warmer ocean waters and melting glaciers in the world's mountain areas. It was forecasted that sea level rise by a single meter would displace 56 million people in 84 developing countries (Worldbank, undated as cited by ICRISAT, 2009)

**Table 3.** Trend in annual mean sea level (in meters).

<b>Station</b>	<b>1950 to 1959 Change</b>	<b>1950 to 1969 Change</b>	<b>1970 to 1979 Change</b>	<b>1980 to 1989 Change</b>
Manila	-0.7	+ 0.083	+ 0.183	+ 0.142
Legaspi	+0.0444	-0.071	+0.074	+0.165
Davao	-0.099	-0.024	+0.069	+0.165
Cebu	-0.09	-0.085	+0.027	+0.009
Jolo	-0.08	-0.078	-0.020	+0.069

Source: The Philippines' Initial National Communication on Climate Change

### **Change in temperature**

Based from the general circulation models (GCM) used in the Philippines' Initial National Communication on Climate Change (PINCCC, 1999 as cited by Rincon, 2009) predict an average increase of 2 to 3 degrees Celsius should there be a doubling of CO<sub>2</sub> in the atmosphere occur. Areas of major impacts will include Eastern Mindanao, portions of Samar, Quezon, Western Luzon, Metro Manila and other highly urbanized areas. Based on the Climatic Research Unit of the World Wildlife Fund (CRU-WWF) expects the Philippines to warm more slowly than the global average mainly due to its location in the tropical ocean. Future warming in the country will be uniform through out the islands and throughout the year. Change in temperature was estimated to proceed at a rate of between 0.1 degrees Celsius per decade to 0.3 degrees Celsius per decade.

### **Rural development in the Philippines: A country perspective**

The Philippines recognizes its rural areas as a stronghold of development undertakings in the country's quest to combat poverty alleviation. A country with almost 90 million citizens, it faces challenges in creating a liveable environment to its people. Recent studies on poverty alleviation in the Philippines indicate that three-fourths of the poor depend on agriculture and agriculture-related industries for their income (DAR, 2003). Current rural scene in the country includes stagnant productivity. Growth of agricultural output has not only substantially slowed down. From an annual average 5.8% in the 1970s to about 2% in the 1980s and 1990s but has also considerably fallen vis-a-vis the country's population growth.

Rural development concerns in the Philippine setting are complex and intricate web of interrelated factors encompassing health, socio-economic, political, and agribusiness. As such, development workers put into emphasis a holistic approach in implementing rural development undertakings. In a Philippine rural setting, economy is resource-based with households dependent to the incomes derive out of agricultural activities present their localities – making rural development concerns one that is leaning on agricultural enterprises which require defined climatic conditions. Despite improved efficiency in agricultural production and slowing population growth which in the past years had characterized the rural setting. The World Bank's Rural Development and Agriculture in East Asia and Pacific noted that most of the region's (including the Philippines) poverty and underemployment is in the rural areas. Also, the vast majority of East Asia's rural population continues to depend on agriculture, forestry or fishing for livelihood, which in the context of changing climate are the areas of most adverse impact.

### **Impacts of climate change**

These scenarios made the Philippine Rural Development Programs greatly affected by the impacts of climate change. Productivity is stagnant with the effects made by erratic weather conditions to the requirements needed in farming where most of the country's rural communities depended on, not to mention the great stress put by these activities to natural resources and resulted in degradation that diminishes the income-generating capacity of those resources. The poor plays the most vulnerable and at the greatest risk in the advent of climate change, with limited "climate change proofing mechanisms" at hand, they are the most directly hit by catastrophes brought by erratic weather and climate. This scenario is exacerbated by the rural folks' lack of capacities to recuperate after devastations.

The International Crops Research Institute for the Semi Arid Tropics in 2009 discussed that while economic growth and development are priorities in all countries, the needs in developing and least developed countries are on a different scale altogether that those in the developed world. Developing countries are constrained by their particularly vulnerability to the impacts of climate

variability. The poor in those countries are also at higher risks to both current and future climate change impacts, given their high dependence on agriculture, strong reliance on ecosystem services, rapid growth and concentration of human and livestock populations and relatively poor health services.

About 99% of the casualties due to the vagaries of climate take place in the developing world. As a result of global warming, the type, frequency and intensity of extreme events, such as tropical cyclones, floods, droughts and heavy precipitation events are expected to rise even with relatively small average temperature increases. New climate studies show that extreme heat waves are very likely to become common in the tropics and subtropics by century's end. Add to this gloomy scenario is the rural areas' insufficient capacity to adapt to future climate change impacts, inadequate infrastructure, meager household income and savings and the limited supporting public services in the face of a veritable time bomb in the offing. ICRISAT 2009, noted that unhindered climate change has the potential to negatively impact developing countries' prospects for sustainable development. This will greatly affect rural development efforts in the country as initiatives in line with such activities are anchored on existing resources in the locality.

What rural development and climate change have in common is that they two have the same target of greatest impact – the poor. In the Philippines, especially in the rural areas, the rural communities' poor reside in flood prone areas, landslide stricken slopes, the seashores and the ones who are greatly dependent on the incomes out of natural resources offered by these areas. It was supported by ICRISAT in 2009, stating that climate change threatens poverty reduction efforts because poor people depend directly on already fragile ecosystems for their well being. They also lack the resources to adequately defend themselves or to adapt rapidly to changing circumstances, and more importantly, their voices are not sufficiently heard in international discussions especially in the climate change negotiation tables. Conflict of interest will rise in the developing countries' rural areas as a result of diminishing resources brought about by rising sea levels and expansion of desert areas.

#### **Key policy interventions on rural development in line with climate change**

- Provisions in rural development programs crafting to incorporate natural resource management to inculcate sustainable development mechanism in resource usage.
- Translation of the climate change provisions at the LGUs implementation of rural development programs

#### **Agribusiness profile**

The agribusiness sector of the Philippines constitutes the bulk of the Gross Domestic Product. Philippine agriculture is characterized by a mixture of small, medium and large farms, with majority of the farms in the country are all small farms averaging about 2 hectares. These are simple farms which are owned and managed by single families ranging from subsistence to commercial production.

Farming is generally undertaken in small farms. Two thirds of all farms in 1988 were no larger than three hectares. Eighty five percent of all farms were no more than five hectares. Over a period of ten years ending in 1996, the proportion of small farms had been expanding. The Philippine Agrarian Reform Council Secretariat reported that the government had acquired and distributed about 4.1 million hectares of agricultural lands to agrarian reform beneficiaries. Under this Program implementing the comprehensive agrarian reform law, a farm household cannot own a farm larger than five hectares. A typical farming system consists of major crops, with rice, corn and coconut as common base crops, and a few heads of livestock and poultry.

Rice, corn, coconut and many crops are principally produced by small farms. Philippine agriculture plays a vital role in the economy. This attaches the high priority of transforming

agriculture into a modern, dynamic and competitive sector. A sustained expansion of the national economy requires sustained growth in the agricultural sector. Agriculture including forestry and fishery, plays a dominant role in the Philippine economy. The country's population is predominantly rural (70 percent of the total) and two-thirds of this population depends on farming for their livelihood. In terms of employment, about one-half of the labor force is engaged in agricultural activities. Primarily, Philippine agriculture consisted of rice, corn, coconut, sugar, banana, livestock, poultry, other crops and fishery production activities.

### **Impacts of climate change**

The complex adverse effect of climate change is funnelled in the agribusiness sector through the interrelated effects on agriculture, land/soil quality and forest cover. The country's 33.7 million labour force dedicated to agricultural, fisheries, and forestry activities are at the risk to suffer losses, along with their dependents, with climatic factors directly affecting productivity and income causing domino effects of unfortunate events. With the type of farming system in the country which is subsistence in nature, effects of climate change is inevitable. For example, the 1982-83 and 1997-98 El Nino Southern Oscillation events which is characterized by induced prolonged wet and dry seasons, caused a large drop in agricultural production and contributed to the sharpest fall point in the GDP in the past decades. While, the 1997-1998 El Nino resulted in a 6.6 percent contraction in agricultural production and the decline in construction and related manufacturing by 9.5% (Republic of the Philippines, 1999). This is attributed to estimated damage due to 1990-2003 ENSO-related drought was estimated to be more that US \$ 370 million (Lasco et al, 2008).

Reduced income sourced out from reduced productivity means lower purchasing power in every Filipino household whose purchasing capacity depends on agricultural profits. With major crops such as rice and corn requires large volume of water, the eminent impact of climate change to water supply-causing shortage will greatly affect the productivity of farmers especially smallhold farmers in the countryside. This is supported by the reports accounted by Valeroso 2002 in Lasco et al stating that climatic conditions are major determinant of crop production patterns. Decrease in production and gross value added for rice, maize, sugarcane and coconut in the Philippines coincides with El Nino years, while increases coincide with La Nina years. The 1997-1998 El Nino, led to a combined loss of 1.8 million tons valued at US \$ 248,000 in rice and maize production as the country's major crops as estimated by PCARRD, 2001 (Lasco et al 2008).

At the onset of 2009 and 2010, the wrath of climate change had started to creep in the recesses of the Philippines, as extreme weather conditions brought by changing climate battered the archipelago. Notably in the Northern part of the country in 2010, dry season started as early as December. Extreme weather during those times adversely affected cropping pattern, as rice and corn fields suffer losses without rains for months. Specifically in 2009-2010 El Nino phenomenon, dry spell started in June 2009 and terminated on April 2010. Impact of such was observed during the months of December 2009 to April 2010, in time for rice and corn critical phase of crop growth. Recorded impacts include rainfall condition below normal at 150 mm, resulting to dam water shortage of the Magat Reservoir to water the fields of arable land dedicated to rice and corn. This is also exacerbated by temperature above normal of 29 degrees Celcius. During the El Nino, the hottest recording temperature was recorded at 40.2 degrees Celcius in Isabela. This also contributed to increased precipitation juxtaposing water shortage in the areas. Meanwhile changes brought by climate change result not only to increased precipitation but also to increase precipitation in some areas, which has a direct link in climate variability. According to GCMs, a 60 to 100 percent increase in annual rainfall is projected in the Central Visayas and Southern Tagalog provinces, including Metro Manila, and the central and western parts of Mindanao. On the other hand, a decrease in annual rainfall is expected for other sections of the country such as northern and eastern Mindanao and parts of western Luzon.

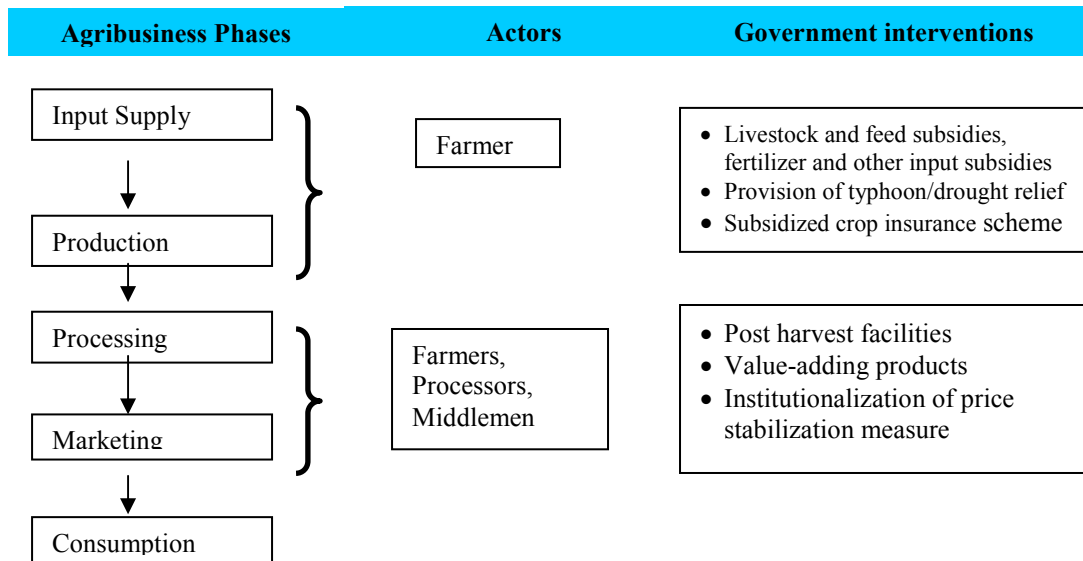
Prediction by CRU-WWF annual precipitation increases in the Philippines by the 2050s with some seasonal differences. The drier seasons of December-February and March-May are expected to become drier still, while the wetter seasons of June-August and September-November will become wetter. The projected rainfall increases ranged from a low of about 5 percent, which is not much larger than changes in 30-year average rainfall totals that may be caused by natural climate variability, to as high as 20 percent. These variations in climate at large scale greatly affect the yield and income of farmers especially the Northern Luzon which serve as the rice granary of the country which production feeds most of Metro Manila’s populace. This would and may threaten the food security of the country and cause scarcity in food supply. With the scenario at hand, the vicious cycle of poverty will come into play; economic stability in all its form will be affected.

**Key policy interventions on agribusiness in line with climate change**

The agribusiness sector is the lifeblood that provides income to the vast majority of resource-based income earners in the country. With agriculture considered as a vulnerable entity to the unpredictability of nature, the impact of natural disasters and other agricultural risks cannot be taken lightly. In this consequence, both agribusinesses and commercial farms that operate with higher capital and better technology and better lands are of the same footing with the smallhold farmers. The need to safeguard the interests and investments of local farmers and industry players is therefore of paramount importance (Crop Insurance in the Philippines, undated). With such in mind, the government has come up with a range of risk management programs contained in the many policies and laws enacted to counter the effects of climate change, such as:

- Institutionalization of price stabilization measures
- Government provision of typhoon/drought relief
- Government initiated livestock and feed subsidies, fertilizer and other input subsidies
- Subsidized crop insurance schemes

The agribusiness system in the country critical phase rests in the realm of the input supply and production phase which belongs to the farmers. Agricultural production is anchored in agro-climatic conditions required in growing crops.



**Fig. 1.** The Philippine agribusiness system model

**Philippine Crop Insurance System: Securing agricultural investments of farmers and agricultural stakeholders** (lifted from Crop Insurance in the Philippines, undated)

Crop insurance is a risk management mechanism designed to even out agricultural risks and blunt the consequences of natural disasters to make losses, especially to the marginalized farmers, more bearable. The Philippine Crop Insurance System was made into being given the vulnerability of the Philippines to natural disasters such as typhoons, floods and droughts causing agricultural producers and lenders of agricultural credit to suffer great losses. With this, the Philippine government created an Interagency Committee for the Development of the Philippine Crop Insurance System in 1976. As a start the team undertook a long period of nine-months studying the marketing, technical, management and financial aspects of a crop insurance program in the Philippines. With the Land Bank of the Philippines as one of the key implementer as funding unit, it is composed of multisectoral representation coming from private insurance industry, the cooperative movement, the state university, and other private agencies, technical personnel from DA, DAR, and AFP. Results of the study were later on approved by the President of the Philippines, ushering in the creation of the Philippine Crop Insurance Corporation. Through Presidential Decree No. 1467, promulgated on June 11, 1989 the insurance program as operationalized.

With initial insurance program for rice, the coverage expanded to include corn in 1982. Agriculturap insurance program became a more fitted term for the program when it further expanded coverage to non-crop commodities such as livestock, swine and poultry. Apart from insulating farmers from financial losses, the system was also considered as a confidence building instrument/financial security that can be offered as “surrogate collateral to banks and other financial institutions to influence and encourage them to continue participating and supporting government credit programs like the one offered under “Masagana 99”.

In retrospect, the agricultural insurance is a tool in securing income for farmers amidst the foreseen adverse effects of climate change. It is a Philippine government program that provides insurance protection to agricultural producers against loss of the crops, livestock and agricultural assets on account of natural calamities, plant pests and diseases and or other perils. The introduction of agricultural insurance system in the country was thought to have more social and economic relevance. The system was designed to address not only the welfare aspect of the after-loss event, but also help in achieving the objective of stabilizing farm incomes more equitably. It also aims to reverse the risk –adverse nature of farmers and goad them to invest more in new technologies that would help increase national productivity.

**Philippine policies on climate change**

With great stake at hand, the Philippines could not afford to lose the war against climate change. Being one at the great threat of climate change impacts, the country had committed itself to address its impacts in all its forms. The problems at the Philippines viewpoint were translated into a sea of tumultuous challenges and recognized as an opportunity for the country to reinvent itself. One of the strongholds of the country is its legislative prowess. With this, the Philippines is one of the pioneers of climate change initiatives embedded in the laws and policies of the country. As early as 1991, Philippines underscored the creation of republic acts dedicated to combat and create mitigation and adaptation measures towards this cause.

**Brief history: A roadmap to the country’s legislative initiatives on climate change**

Even before 1992, the country began to address the issue of climate change in its thrust to achieve sustainable development with the formulation of the Philippine Strategy for Sustainable Development (PSSD). The Agenda 21 adopted by the Philippines translates to the formulation of the



Philippine Agenda 21. The document served as the umbrella framework to lay down the national agenda for sustainable development for the 21<sup>st</sup> century geared towards having a “harmonious integration of a sound and viable economy, responsible governance, social cohesion and harmony and ecological integrity to ensure that development is a life-enhancing process.

Recognizing that climate change should be addressed in a global perspective, the Philippines networked itself in a multilateral efforts aiming to address the global problem of climate change and achieve sustainable development. The Philippines participated to venues which include discussions and negotiations towards combating climate change especially under the United Nations umbrella programs. These venues led to the crafting and or infusing climate change mitigation in various international agreements. Important outcomes include the United Nations Framework Convention on Climate Change (UNFCCC) ratified on August 2, 1994 and the Kyoto Protocol, which was ratified on November 20, 2003. Outputs of these negotiations translated at the national level, through the Medium Term Philippine Development Plan of 2004-2010 stating that capitalization of the need to manage the environment more effectively in order for the country to address the problem of poverty particularly in the rural areas since these areas are the most vulnerable areas with climate change.

As early as 1992, the Philippines joined the international initiatives as one of the first countries to sign the UNFCCC. In the signing, the country expressed adherence to the principles of sustainable development and environmental preservation based on notion of equity and the unique capabilities of the participating countries. In retrospect, the Philippines manifested its support to the UNFCCC and a signatory to at least ten more international conventions. Though the Philippines position in the war against climate change, is that it is not one of the major GHG or greenhouse producers, it is at the center of the problem receiving all the threats, vulnerabilities and impacts of climate change, with its position in the world, where all known impacts of climate change is at its highest risk. As such, the Philippines was one of the first countries to set up a national committee to discuss and develop positions on climate change prior to the establishment of the Intergovernmental Negotiating Committee, which then negotiated the UNFCCC.

These international efforts become the basis for the country to initial legislative activities by translating key provisions based on the scenarios at the Philippine setting. After eight (8) years of signing the UNFCCC, the country forwarded its Initial National Communication (Rincon 2009) stating the milestones of the country insofar accomplishing the objectives of the convention are concerned. The report underscored the gains made in the fields of greenhouse gas abatement and inventory. With this, the country established significant baseline information in climate change statistics in the country.

At the onset of activities, the Philippines was one of the earliest countries to recognize the importance of systematic institutional response to the problem of climate change. As such, the country forwarded significant accomplishments from strengthening institutions and processes in relation to the mitigation, prevention and adaptation initiatives in the country, although many still needs to be done. Part of the recommendation stands in the institutionalization of the process of greenhouse inventory, particularly among the government agencies concerned and greater involvement of the academe through researches and related studies. Currently, studies on adaptation and vulnerability assessments under climate change are being undertaken as suggested by the country report.

Another milestone in the country’s commitment to climate change along legislation is stipulated in the country’s signing of the Kyoto Protocol, which states that developing countries where the country belongs are called to pass and implement national measures that shall advance international community’s agenda pertaining to environmental preservation through reduction of greenhouse emissions in the atmosphere. As compliance the Philippines passed national legislations to

uphold the agreements embedded in the Kyoto Protocol. Through this, the Clean Air Act of 1999 (Republic Act 8749) was passed to law in order to arrive at an effective air quality management program that will mitigate worsening problem of air pollution in the country. In 2000, the law pertaining to solid waste management was brought to legislation, thru the passing of the Solid Waste Management Act of 2000 (RA 9003), which reinforced RA 8749 in providing a comprehensive solution to the country's solid waste management problem.

One of the milestones made by the country in making sound climate-change related decision was brought into place through the establishment of the Inter-Agency Committee on Climate Change (IACC) in May 8, 1991 under the Environmental Management Bureau of the Department of Environment and Natural Resources (DENR), prior to the signing and ratification of the UN Framework Convention on Climate Change was a concrete manifestation of the Philippines attempt to institutionalize the efforts in addressing issues of Climate Change. IACC is a multisectoral arm composed of government agencies as well as NGO representatives. Presidential Order No. 220 served as the legal backbone of the IACC with the secretary of the DENR sitting as chair and the secretary of DOST as co-chair. The mandate of the committee is to harness and synergize the various activities being undertaken by the national government and civil society in response to the crisis posed by growing problem on climate change.

Series of policy planning resulted in several policies in line with climate change mitigation and adaptation.

#### **Policies on Climate Change**

- **Agriculture and Fisheries Modernization Act (1997).** This republic act establishes that the Department of Agriculture together with other appropriate agencies should take into account climate change, weather disturbances and annual productivity cycles in order to forecast and formulate appropriate agricultural and fisheries programs.
- **Philippine Clean Air Act (1999).** This law provides that the DENR together with concerned agencies and LGUs prepare and implement national plans that are in accordance with UNFCCC and other international agreements, conventions and protocols on reducing greenhouse emissions. In addition it establishes that meteorological factors affecting ozone depletion and GHGs should be monitored and standards set ( Merilo, 2008)
- **Biofuels Act (2006).** This Republic act mandates and provides incentives for the use of biofuels and the phasing out of harmful gasoline additives and/or oxygenates in order to, among others, mitigate toxic and greenhouse gas emissions.
- **Renewable Energy Bill (2008).** This bill seeks to, among others, encourage the development and utilization of renewable energy resources as tools to effectively prevent or reduce harmful emissions and thereby balance the goals of economic growth and development with the protection of health and the environment.
- **Climate Change Act of 2010.** This act explicitly undertook the crucial step in climate change adaptation and mitigation. It spells the key initiatives needed to be done in addressing impacts and challenges brought by climate change.

In adherence to the Kyoto Protocol, the Philippines set out to participate in the Clean Development Mechanism (CDM). This concept encourages developing countries to participate by matching their development priorities and initiatives with GHG mitigation efforts of developed countries (IGES, 2005). Although many of the identified laws have in one way or the other have

impact on combating climate change, Lasco et al cited that policy makers do not see climate change as a high priority issue in the context of national development plans.

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