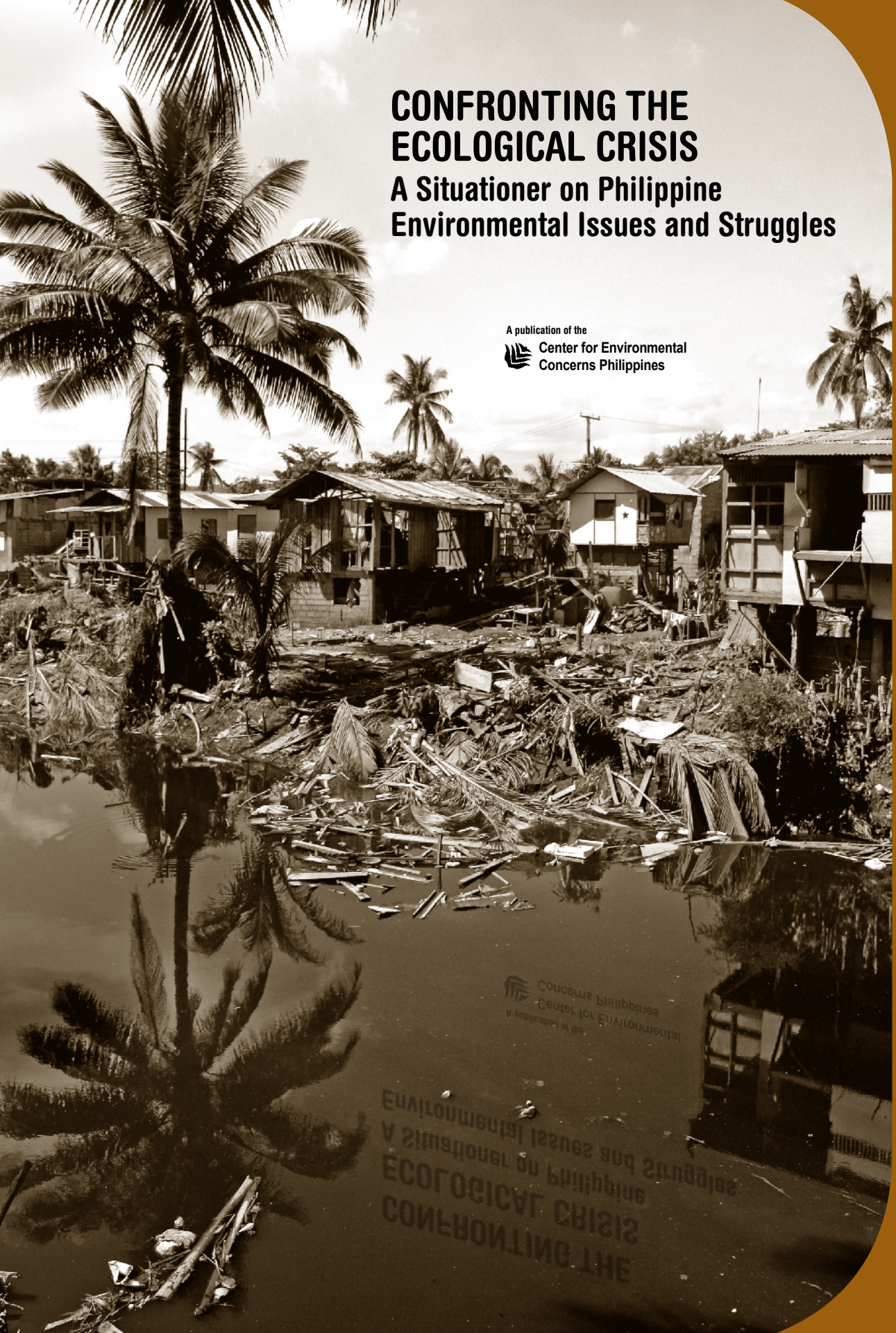
CONFRONTING THE ECOLOGICAL CRISIS

A Situationer on Philippine Environmental Issues and Struggles

A publication of the
Center for Environmental Concerns Philippines



CONFRONTING THE ECOLOGICAL CRISIS

A Situationer on Philippine Environmental Issues and Struggles

A publication of the
Center for Environmental Concerns Philippines

In cooperation with
Development and Peace

CONFRONTING THE ECOLOGICAL CRISIS:
A Situationer on Philippine Environmental Issues and Struggles
Copyright 2012 by the Center for Environmental Concerns-Philippines

The Center for Environmental Concerns-Philippines is a SEC-registered non-government organization promoting patriotic, scientific, and people-oriented environmental education, research, and advocacy work with grassroots communities and sectors.

Office Address: #26 Matulungin Street, Barangay Central, Diliman, Quezon City
1100 PHILIPPINES
Telefax: (632)920.9099
Web: www.cecphils.org
Email: info@cecphils.org

A publication of the
Center for Environmental
Concerns-Philippines

EXECUTIVE DIRECTOR: Frances Q. Quimpo
EDITOR: Lisa Ito
RESEARCH: Cheamson Boongaling, Rog Amon, Lisa Ito
Ryu Koide, Linda Pracejus and Rong Sun
LAYOUT: R. Jordan P. Santos
COVER DESIGN: R. Jordan P. Santos
PRINTING: Southern Voices Printing Press

PHOTO CREDITS: Arkibong Bayan, CEC archives, CEC volunteers,
Clemente Bautista Jr., Justice for Leonard Co Movement,
Kalikasan People's Network for the Environment, and Raymond Panaligan

COVER PHOTO: Barangay 15 between the Carmen and Cagayan de Oro Rivers in Misamis Oriental was among the many urban poor communities affected by the aftermath of Typhoon Sendong (Washi) in December 2011. (Photo by Clemente Bautista, Jr.)

TITLE PAGE PHOTO-COLLAGE: Lisa Ito

This publication was produced with the support of the
Development and Peace

This publication may not be reproduced or transmitted without
written permission from the publisher.

ISBN: 978-971-91513-3-3

TABLE OF CONTENTS

INTRODUCTION....4

RESOURCES FOR DEVELOPMENT....6

TROUBLE AND POVERTY IN PARADISE....10
- a. Exploitation, extraction, and plunder of our national patrimony and natural resources
- b. Poverty and the lack of access, ownership and control of people of their ecosystems
- c. Threat of climate change impacts on the Philippines
- d. Threats to environmental defenders and advocates

DOWN THE WRONG ROAD: CURRENT POLICY AND GOVERNANCE....40

ENVIRONMENTAL ACTION AND COLLECTIVE STRUGGLE....44

INTRODUCTION

The current state of the Philippine environment poses a familiar paradox: how a country blessed with abundant and unparalleled natural wealth can also be the site of so much poverty, tragedy and strife?

The country possesses natural resources that have the potential to meet the basic needs of the people and to support a far more prosperous and equitable society if not for the historical confluence of different factors: a legacy of colonial plunder and its current-day forms, the inability to address the roots of the worsening global climate crisis, and the failure of governance to address the ecological and socio-economic realities of our times. It will become a matter of survival in the coming decades to seek answers and solutions to these problems.

The Center for Environmental Concerns-Philippines (CEC-Phils) first compiled its survey of Philippine environmental data in 1994 for the benefit of the growing people's movements in the country. Since then, CEC-Phils has released various situationers to document the current ecological crisis and help people's initiatives to address this problem.

The country possesses natural resources that have the potential to meet the basic needs of the people and to support a far more prosperous and equitable society.

The Philippines is now experiencing various disasters and environmental problems arising from decades of natural resource exploitation from the time of direct colonial rule under the United States. This persists up to the present, where subsequent Presidential administrations imposed more policies and programs adversely affecting our ecosystems and the communities dependent on them. It is important to ask: *What is the current state of environmental crisis? How has the Aquino administration responded—or failed to respond—to this situation? And what are Filipinos doing about this?*

This publication attempts to answer these questions by presenting an overview of the state of our environment and identifying issues for further action and advocacy. The objectives of this paper are:

1.) To relay updates about the Philippine environmental situation that affects the lives of grassroots communities and the most vulnerable social sectors in the country

2.) To show the link between environmental, human rights, and other developmental issues

3.) To affirm that the struggle to protect and defend the Philippine environment is foremost an issue of advancing the people's welfare—as well as the country's welfare over foreign interests and policies.

RESOURCES FOR DEVELOPMENT

The Philippines can be considered a paradise of sorts in terms of ecological wealth. It has enough resources to support domestic agriculture and industries, economic self-sufficiency, and national sovereignty–to dispel the current state of hunger, debt, and poverty. Its natural wealth can meet the people's needs and build a more sustainable, equitable, and prosperous society.

Strategic location. The Philippines is an archipelago of approximately 7,100 islands, located nearly in the center of Southeast Asia, facing the vast Pacific Ocean to the east. It is composed of three major island groups: Luzon (141,000 square kilometers), Visayas (57,000 km^2) and Mindanao (102,000 km^2). Administratively, it is divided into 17 regions (8 in Luzon, 3 in the Visayas and 6 in Mindanao), 80 provinces, 137 cities, 1,497 municipalities, and 42,023 barangays, as of 2009.

Tropical climate. The country has two seasons: rainy (June to November) and dry (December to May), which bring about temperatures from a cool of 18.7 degree Celsius in January to a peak heat of 36 degree Celsius in March. Annual rainfall varies widely in amount (1,000–4,000 millimeters) and distribution (from pronounced dry and wet seasons to more or less even rainfall).

Land classification. The country's total land area is approximately 30 million hectares. 53% of these (15,805,325 hectares) are currently classified as forest lands,[i] while the remaining 47% (14,194,675 hectares) are categorized as alienable and disposable land as of 2008.

Varied topography. The country's terrain is extremely varied. The larger islands are dominated by hills and mountain masses, such as Mt. Apo in Mindanao and the Sierra Madre and Caraballo ranges in Luzon. Its narrow coastal lowlands stretch to around 36,269 kilometers, making up the longest discontinuous coastline worldwide (twice larger than that of the United States). Larger plains include Cagayan Valley and Central Plains in Luzon, Cotabato and Davao-Agusan valleys in Mindanao, Negros and Panay.

Located in the tectonically-active region in the Pacific Ring of Fire, the country has 37 volcanoes, 18 of which are considered active. Sandwiched between the Eurasian plate in the West and the Philippine Sea Plate in the East, the Philippines lies within the tectonic boundaries of the Manila and Philippine trenches. The movement of these faults constantly subjects the islands to destructive earthquakes. The country also lies within the Pacific typhoon belt and experiences intense rainfall brought by monsoons or typhoons, being located within the Pacific typhoon belt.

Now, consider the wealth cradled in the country's own forests, mountains, lands, waters, and seas:

Unparalleled biodiversity. The Philippines is one of the 18 mega-diverse countries globally. On a per unit area basis, the country is said to be the most diverse. It ranks 25th worldwide in the total number of amphibian, bird, mammal, reptile, and vascular plant species with 10,127 terrestrial species. The country's rate of endemism (having species unique to a particular area) is one of the highest worldwide (Table 1). All these have great potential for scientific research and development of raw materials, textiles, and pharmaceuticals, to name a few.

The Philippines can be considered a paradise of sorts in terms of ecological wealth. It has enough resources to support domestic agriculture and industries, economic self-sufficiency and national sovereignty.

TABLE 1. SPECIES ENDEMIC TO THE PHILIPPINES

Taxonomic Group	Species	Endemic Species	Percent Endemism
Plants	9,253	6,091	65.8
Mammals	167	102	61.1
Birds	535	186	34.8
Reptiles	237	160	67.5
Amphibians	89	76	85.4
Freshwater Fishes	281	67	23.8

Source: Conservation International (2011)

[i] Forest lands are further categorized as follows: established forest reserves (3,270,146 ha); established timberland (10,056,020 ha); national parks GRBS/WA (1,340,997 ha); military and naval reservations (126,130 ha); civil reservations (165,946 ha); fishponds (91,077 ha); and unclassified forestlands (755,009 ha).

Epicenter of marine biodiversity. As an archipelagic nation, the Philippines has rich marine wealth and diverse wetland ecosystems. There are 61 bays and 20 straits, including Manila Bay–one of the world's finest natural harbors. Historically, these provided a stable base for trade, settlement, and food.

The Philippines is located within the Coral Triangle, a six million km^2 area considered as the most biologically diverse region on Earth. At the heart of the Coral Triangle is the Sulu-Sulawesi Seascape, identified by marine biologists in 2005 as the center of the world's marine biodiversity. In this area lies the Verde Island Passage corridor, encompassing the provinces of Batangas, Mindoro, Marinduque and Romblon, which contains the greatest concentration of marine species in the plant and is known as the "center of the center of marine biodiversity." The total number of Philippine fish species (for both marine and freshwater ecosystems) currently estimated at more than 3,000 species (2,819 marine and 308 freshwater) by the World Fish Center.

The Philippines is predominantly agricultural with fertile lands for food production.

Rich forest ecosystems. Considered as 'focal ecosystems,' forests are essential for the sustenance, development and general well-being of the people. They provide resources such as timber and non-timber forest products and critical ecological services such as maintaining the water cycle, replenishing freshwater supply, stabilizing slopes, regulating groundwater levels, increasing soil drainage, and serving as a carbon sink by trapping carbon dioxide in the atmosphere. They are the habitats of flora, fauna, and human communities. In the Philippines, around 25 million people or 33% of the total population[1] live in or near forest lands and directly depend on these for livelihood as of 2000. The ancestral domains of the nation's estimated 12 million indigenous peoples are generally located in forest lands.

Abundant agricultural lands. The Philippines is predominantly agricultural with fertile lands for food production. Around 4.8 million farms occupy 9.7 million hectares or almost 32% of the total land area.[2] According to the Bureau of Agricultural Research (BAS), major crops include rice (33.8%), corn (20.3%), coconut (27%) and sugarcane (3.1%).[3] Other main products are sugar, bananas, mangoes, and pineapples. From 2004 to 2010, the agriculture and fisheries sectors contributed an average of 18.4% to the country's gross domestic product (GDP), although this figure is declining.[4] The country is one of the largest exporters of coconut oil and sugar worldwide, though this has declined over the years due to the development of substitutes and the increase in number of other exporting countries. The sector remains the biggest employer of Filipinos, comprising 34% of the labor force or around 12.04 million of the 35.06 million people employed as of 2009. Of these, more than 90% are small farmers, according to a study by the Department of Agriculture (DA).[5]

Vast mineral wealth. While agriculture can be considered as gold above our soil, the Philippines literally contains gold underneath its fertile lands. Located in the

Pacific Ring of Fire, volcanic processes and plate convergences have resulted in the deposition of vast mineral resources. The country is the 5th most mineralized country worldwide, the 3rd country in terms of gold reserves, 4th in copper and 5th in nickel. According to the DENR, around 9 million hectares, or 30% of the total land area, contain around 7.1 billion metric tons (BMT) of metallic mineral deposits including gold, copper, iron, chromite, nickel, cobalt and platinum; while 5 million hectares are also known to be potential sites for 51 BMT of non-metallic minerals such as gravel, limestone, marble, clay, and other quarry materials.[6] Their total value could reach around $840 billion to $1 trillion: ten times the country's GDP and 14 to 17 times larger than its entire foreign debt. These reserves could be used to support national industrialization and agricultural modernization if properly regulated and developed.

The country has a variety of renewable and non-renewable energy sources which can lessen dependence on fuel imports.

Renewable and non-renewable energy sources. The country has a variety of renewable and non-renewable energy sources which can lessen dependence on fuel imports. Palawan has around 138 million barrels in oil reserves as of 2006, according to the Oil and Gas Journal (OGJ): 30-40 million barrels in the Malampaya oil fields, 10-20 million barrels in the Galoc oil fields and over 100 million barrels in the West Linapacan oil fields. This figure excludes potential reserves in Mindanao, Mindoro, the Visayan Sea and the Spratlys. The OGJ also estimates that the Philippines has 3.48 trillion cubic feet (Tcf) of natural gas reserves as of 2008 concentrated in Malampaya. Recent seismic surveys discovered 3.4 Tcf of gas reserves in the Sampaguita gas field, 250 kilometers west of Palawan.[7]

There are many renewable energy sources for domestic development. The country is the second-largest producer of geothermal energy in the world after the U.S. with around 1,977 megawatts (MW) of installed capacity, supplying 17% of electricity needs. Other sources which can be further tapped are hydro-electric, wind, wave, biomass, and solar energy.

Waters of life. Compared to other countries, freshwater supply in the Philippines is abundant through rainfall and the country's various surface water resources, including 18 major river basins (areas greater than 1000 km^2), 421 principal river basins in 119 proclaimed watersheds, 59 natural lakes, reservoirs, and more than 100,000 hectares of freshwater swamps. The total available freshwater resource is estimated at 145,900 MCM/year.[8] Rivers are crucial for commerce, transportation and irrigation while lakes are used for fish production. The country's largest lake is Laguna de Bay, which encompasses 3,813.2 km^2 in the Southern Luzon and National Capital Regions, while the Cagayan River in Region II is the country's longest river.

TROUBLE AND POVERTY IN PARADISE

The Philippines is among the richest countries worldwide in terms of ecological wealth and diversity. However, all around the archipelago, our ecosystems are currently mired in a rapid state of destruction, degradation, and decline. To date, we have to address the following issues:

- Rising exploitation, extraction, and plunder of our national patrimony and natural resources
- Rising poverty alongside the people's lack of access, ownership and control of their ecosystems
- Rising threat of climate change impacts on the Philippines
- Rising threats to environmental defenders and advocates

A. EXPLOITATION, EXTRACTION, AND PLUNDER OF OUR NATIONAL PATRIMONY AND NATURAL RESOURCES

Our country's rich but finite natural resources have been depleted at unsustainable rates and ways. They have been generally treated as resources to be exploited, exported, and extracted without regard for their role in sustaining the country's ecosystems and their communities. Now, our forests and mountains, mineral and energy resources, and agricultural lands are reeling from the effects of such plunder.

A.1. Unprecedented Deforestation and Forest Plunder

Biodiversity hotspots. As of 2008, Philippines ranks as the 4th country in Asia-Pacific with the highest number of threatened species, with 221 species of fauna and 526 species of flora considered as threatened. A major factor behind this is the destruction of their forest habitats.

Most of the country's vast forests, which covered around 70% of the country's total land area of 30 million hectares at the beginning of the 1900s, were destroyed in the past 100 years. By the 1960s, less than 40% of actual forests were left, dropping to 23.7% in 1987. The downward trend continued in the 1990s despite log bans. According to United Nations Food and Agriculture Organization (FAO), the Philippines lost an average of 262,500 hectares of forest per year between 1990 and 2000, with an average annual deforestation rate of 2.48 percent. By 1999, forest cover shrunk to 5.5 million hectares or 18.3% of the total land area. As of 2010, Philippine forest cover has plunged to approximately 25.6% or 5.39 million hectares according to the government or to as low as 6.6 percent, according to independent researchers. The country continues to lose forests at a rate of 1.98% per year from 2000-2005 (UN FAO). An Asian Development Bank (ADB) study reveals that the country's deforestation rate is now the highest in East Asia and Southeast Asia regions at 1.4% annually.[9]

Our ecosystems are currently mired in a rapid state of destruction, degradation, and decline.

Distorted definition of forest. It is a difficult task to determine the exact extent of official forest cover in the Philippines as the government has yet to update its statistics on official forest cover using reliable and generally undisputed methods for the past decade. The huge discrepancy in current forestry data is attributed to the government's adoption of a new definition of forests in 2003. Up until 2002, data from Department of Environment and Natural Resources-Forest Management Bureau (DENR-FMB) pegged actual forest cover at around 5.39 million ha or about 18% of the total land area, based on analysis of data generated by the Second National Forest Inventory in 1988.[10]

In 2003, the DENR-FMB estimated the country's forest cover at 7.2 million hectares (24% of the total land area)–up by 1.8 million hectares (33%) from the previous year. This was because their study used a new definition of forests by the UN FAO, which included reforested areas, plantations in private lands, privately-owned natural forests, monoculture plantations and degraded forests.

The FAO defines forests as "area of more than 0.5 hectares with a tree crown of more than 10% and trees capable of reaching a minimum height of 5 meters at maturity *in situ*." This is a limiting redefinition because forests are defined only by the presence of trees and by the absence of other predominant land uses. It fails to consider the characteristics and functions of forest ecosystems and the complex relationships among diverse species in these ecosystems. In contrast, other definitions, such as the US National Vegetation Classification System, describe forests as an ecosystem where trees are the dominant life form, as a community of plants and animals interacting with one another and its physical environment, and consisting of trees with overlapping crown of 60-100% forest cover. (Table 2)

The government's new definition of forests was explicitly outlined when the DENR issued Memorandum Circular 2005-005, which classified tree plantations, bamboo, palm and fern formations, logging roads and open spaces adjacent to logging sites of corporate forest concessions as "forests."

TABLE 2. DIFFERENCES IN OFFICIAL DEFINITION OF FORESTS

Agency	Parameters			
	Crown cover	Minimum height of trees	Minimum area	Other distinct features
FAO (2000)	10%	5 meters	0.5 hectare	Includes: bamboo and palms, plantations, roads, firebreaks, parks, areas for reforestation
UNFCCC (2001)	10-30%	2-5 meters	0.5-1 hectare	
UNEP (2001)	40%			
US National Vegetation Classification System (1994)	60-100%		A whole ecosystem	Community of plants and animals interacting with one another and physical environment

Sources: UNEP Vital Forest Graphics 2008, forestfacts.org

Forest cover has dropped to 19% at best or to 6.6% by 2010 at the current deforestation rates

The FAO definition uses a lower threshold for tree crown cover,[ii] minimum area requirement and tree height. These are technical changes which have critical implications on forest protection and policy. A scientific study[11] reveals that setting the lower limit at 10-30% can cause actual deforestation to be euphemistically reflected only as forest degradation, limiting policy actions by authorities. The study concluded that plantations should not be classified as forests, recommending the lower height limit for trees to be set at more than 5 m tall and the minimum cover of trees at more than 40%.

Subsequent statistics were based on this new and distorted definition. The 2010 country report to the FAO's Global Forest Resources Assessment, for instance, estimated forest cover for 2010 at 25.6%, up from 24.6% in 2005. These official figures have been disputed by civil society organizations which have conducted their own independent assessments of Philippine forest cover statistics:

- The NGO Environmental Science for Social Change (ESSC), estimates that forest cover dropped to 19% at best or to 6.6% by 2010 at the current deforestation rates
- A 2007 study by the European Union's Joint Research Centre using satellite-based maps similarly reveals that only 19% of the country's land area remains forested.[12]
- The NGO Conservation International (CI) revealed that only around 7% of Philippine forests are left as original habitats for 6,091 endemic plant species out of 9,253 species and 591 endemic vertebrates out of 1,309 species. In

[ii] Crown cover, also known as canopy cover, represents the aggregate of all vertically projected tree crowns or canopy in relation to the ground surface (Jennings, S.B. et al. 1999)

February 2011, CI ranked the Philippines as the fourth in its list of the *World's 10 Most Threatened Forest Hotspots*.

Continuing Deforestation. 57% or more than half of currently declared 15.9 million hectares of forestlands are covered by tenurial instruments and commercial logging permits, mostly located in remaining forests and watershed areas. From 2001-2006, commercial loggers were allowed to increase production by 81%. This is not surprising as 75% of our forests is allocated for production and only 23% is left for conservation and protection.[13]

In the past, logging permits took the form of Timber License Agreements (TLAs), which were liberally dispensed as a form of patronage under the Marcos dictatorship. While the government announced the eventual phase-out of TLAs, it has allowed the conversion of expired or expiring TLAs into other types of tenurial agreements, such as the Integrated Forest Management Agreement (IFMA).[14] IFMAs grant permit holders timber rights and the right to extract other forest products within its concession area. This has resulted in a perceived decrease in the number of TLAs but an actual and rapid increase in the number of IFMAs and other permits. The total area covered by IFMA permits increased from 713,000 hectares in 2005 to 907,000 hectares in 2010.

57% or more than half of currently declared 15.9 million hectares of forestlands are covered by tenurial instruments and commercial logging permits

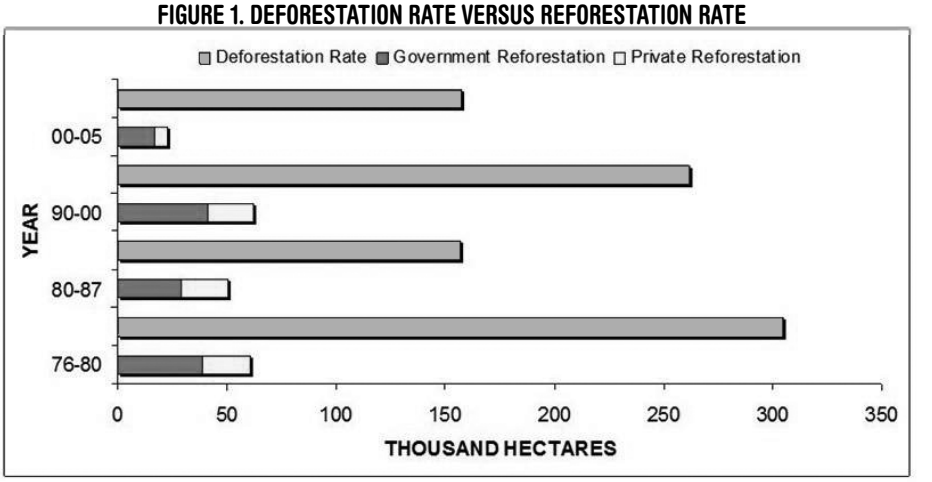
Active TLA holders, such as Surigao Development Corporation in Surigao del Sur and Inter Pacific Forest Resources Corporation in Aurora, were given IFMA permits even as their TLA permits have not yet expired. There are still six operating TLAs covering 325,310 hectares of forest lands in Aurora, Quirino, Quezon , Samar, Zamboanga del Norte, and Surigao del Sur as of December 2008.

The government also grants other tenurial instruments such as the Community Based Forest Management Agreement (CBFMA), and Socialized Industrialized Forest Management Agreement (SIFMA). CBFMAs covering 1-30,000 has can be issued to local people's organizations. SIFMAs covering 1-500 has can be issued to individuals or families who are preferably (but not necessarily) local residents. Grantees can harvest timber and non-timber products, build agro-forestry plantations, and enter into contracts with private entities. Although meant to increase the participation of local communities in forest management, weak implementation on the ground has resulted in the inequity among stakeholders, lack of transparency, failure to address the community's needs, and corruption as case studies of CBFM areas in Nueva Vizcaya and Quirino show.

Privately-owned forests, plantations on the rise. Private ownership of forestlands have been increasing. By 2005, 1.1 million hectares of forestlands are privately-owned, increasing by 41,000 ha since 2000. Only 2% of these are owned by communities; most are controlled by corporations, institutions and individuals. Plantations have also significantly increased in recent years, perhaps as a result of current government greening programs such as the National Clonal Forestation Program, which aimed to increase production in partnership with private corporations. In 2008, a USAID land satellite survey of Mindanao forests

noted a decline in natural forest cover of around 40,000 ha per year and an increase in tree plantation cover by an average of 70,000 ha per year—possibly reflecting national trends.[15]

FIGURE 1. DEFORESTATION RATE VERSUS REFORESTATION RATE



Sources: Deforestation data from 1976-1987 from Garrity, et al. (1993); 1990-2005 from FAO (2005); and 1976-2005 from DENR-FMB.

The Philippines is crossed by typhoons each year, making severely denuded and deforested areas vulnerable to landslides and flash floods.

Reforestation not catching up with forest loss. From 2000 to 2005, the FAO estimates 157,400 ha of forest were lost annually while the government was only able to reforest 294,625 ha from 1997 to 2006. Current reforestation efforts by both the government and private sectors are not enough to stop forest loss. Our remaining forest cover will be wiped out in 40 years if there are no urgent and decisive actions taken to halt the current pace of deforestation.

While government's reforestation efforts increased since 2007, these did not alter the steady downtrend of reforestation efforts within the past 30 years. When CBFMAs and SIFMAs were introduced in 1995 and 1999 respectively, they required logging permit holders to conduct reforestation activities. However, compliance remains lax and inconsistent, as there is still a downtrend of reforestation activities done by logging permit holders.

Reforestation efforts must also consider the type of plants used. Fast growing, invasive and exotic tree species such as *gemelina* and mahogany were favored in the past but later on had negative consequences, such as the loss of native trees due to diseases, pests, and nutrient imbalances triggered by exotic species in the "reforested" area. In Kalinga province, for example, farmers observed that crops planted near *gemelina* trees were dying. They later found that the trees have allellopathic properties that cause soil acidity.[16]

Less forests mean more disasters. The Philippines is crossed by typhoons each year, making severely denuded and deforested areas vulnerable to landslides and flash floods. This decade has seen more disasters related to typhoons and deforestation, including the following:

TABLE 3. DISASTERS RELATED TO TYPHOONS AND DEFORESTATION

YEAR	Location	Incident	People Affected	Role of Deforestation
2004	Real, Infanta, General Nakar in Quezon	Landslides and mudslides triggered by typhoons Unding, Violeta and Winnie	992 people killed 1004 injured 529 missing	Deforestation and denudation along Sierra Madre mountains
2006	Guinsaugon , Southern Leyte	Landslide buried an entire village in St. Bernard town	1,126 killed	Rampant logging in Mt. Can-abag since the 1980s
2008	Western Visayas	Typhoon Frank hit 16 provinces; Iloilo province was hardest-hit, submerged in 15-feet floodwaters.	540 killed–101 from Iloilo alone Almost 2 million residents affected	Lack of forest vegetation in the province enhanced flooding
2009	Cagayan de Oro	Rains triggered flashfloods never experienced before	10 killed 5,500 affected	Flooding believed to be related to mining and logging
2010	Western Visayas	Flashfloods and landslides	36 killed, 32 injured, 3 missing, 118,728 affected families	Compiled by the Office of the President as a logging-related disaster

A.2. Mining Liberalization

While the Philippines has rich mineral deposits needed for the nation's industrialization, these finite supplies have been exploited for mostly private and foreign profit. The government's policy of liberalization has left the mining industry stunted at the level of extraction, controlled by foreign and private interests and dependent on ore exports, foreign capital and foreign technology.

The mining rush was carried over from the Arroyo to the Aquino administrations. The country's 16-year old mining law, Republic Act 7942 (Mining Act of 1995), was fully implemented under Arroyo's term, which promulgated Executive Order 270 (National Policy Agenda on Revitalizing Mining in the Philippines) and its implementing framework, the Minerals Action Plan (MAP). These aimed to draw in as much foreign mining investments possible.

Our rich but finite mineral deposits have been exploited for mostly private and foreign profit.

Renewed mining offensive. Despite the global financial crisis in 2008, demand for gold and speculation over precious metal prices rose over the past three years, fuelling more mining investments. Current MGB data shows that the number of approved large-scale mining permits rose from 504 in 2007 to 785 in 2011. As of 29 March 2011, the government has approved a total of 785 large-scale mining agreements covering 1,042,531 hectares or nearly 3% of the country's total land area. These include six Financial and Technical Assistance Agreements (FTAAs), 339 Mineral Production and Sharing Agreements (MPSAs), 115 Exporation Permits (Eps), 57 Mineral Processing and Production Permits (MPPs), 212 Industrial Sand and Gravel Permits, and 56 lease contracts as of March 29, 2011. Most are foreign owned and/or have major foreign partners.

As of 6 March 2012, the country has 30 officially operating metallic mines,

1 copper smelter, and 1 nickel processing plant. The total number of operating metallic mines increased from 24 in 2007 to 30 in 2011, while the total number of operating non-metallic mines is estimated at 2,358 as of 2009 (no data available yet for 2010 onwards). 1,818 mining applications are currently under process, including 628 MPSAs, 40 FTAAs, and 957 EPs.[17] There are currently 21 abandoned mines throughout the country.

The largest producers of copper and gold are Baguio and Mankayan districts in Benguet, followed by the Surigao-Davao districts. Major producers of nickel are in Palawan and Surigao.[18]

In the past three years, the biggest local corporations owned by some of the richest Filipinos expanded their interests into mining.

New trends in the mining industry. Defend Patrimony, a nationwide alliance against mining liberalization in the Philippines, has identified new developments within the industry since 2010:

a. More corporate greenwashing. Investors and international financial institutions aggressively financed more corporate social responsibility (CSR) projects. The Chamber of Mines released guidelines for "responsible mining" in 2010 and the World Bank started a financial transparency campaign, the Extractive Industry Transparency Initiative. DENR DAO 2010-13 also requires mining companies to give 1.5% of total operating costs to Social Development and Management programs (SMDP). But compliance remains lax and not all of SMDP funds go to actual livelihood, infrastructure and education projects for the community as around 25% is spent on technological improvements for operational efficiency and company publicity. CSR projects may seem to be motivated by charity but are in reality mostly driven by profit. These divide communities on the ground and can never be a long-term substitute for comprehensive rural development plans and the delivery of basic social services to the people.

b. More Filipino billionaires in mining. In the past three years, the biggest local corporations owned by some of the richest Filipinos expanded their interests into mining. In 2009, telecommunications magnate Manny V. Pangilinan bought a controlling share in Philex Mining previously controlled by UK investors. San Miguel Corporations (SMC) owner Eduardo Cojuangco acquired mining shares and controls several power plants, mining firms and coal mining concessions, such as the Tampakan Gold Project; Sultan Mining and Energy Development Corp; Bonanza Energy; and Agusan Petroleum and Mining Corp. Lucio Tan, owner of Philippine Airlines, Philippine National Bank and Fortune Tobacco Corporation, has acquired concessions through MacroAsia in Southern Palawan and Samar Island.

c. Using small-scale mining (SSM) as a front for large-scale projects. More large foreign mining firms took advantage of regulatory loopholes and acquired SSM permits in cahoots with local officials and dummies, in order to avoid or minimize scrutiny and regulation. The number of large-scale

mining firms using SSM as a means to start or extend operations has risen, as reflected in the number of SSM permits which doubled from 70 in 2004 to 173 in 2007.[19] This trend is seen in magnetite mining operations in Northern Luzon (Cagayan, Ilocos and Zambales), Eastern Visayas (Samar, Leyte and Biliran) and Palawan. SSM permits were used by Chinese and Taiwanese firms San You and Shaitan to dredge the Cagayan river for magnetite and by Chinese firm Peng Cheng for magnetite operations in Leyte.[20] Conversely, SSM communities in Diwalwal and Pantukan in Compostela Valley are being evicted by large miners. Around 6,575 hectares in Pantukan with 48,000 people, was claimed by Nationwide Development Corporation, US-based Russel Mining Co. and Napnapan Mineral Resources, Inc. In the mineral reservation area of Diwalwal, with more than 50,000 small miners, 950 hectares are under exploration by large-scale firm Jake Mining Co.

d. Unregulated mining in coastal areas. In recent years, many magnetite mining operations started across the country's shorelines. There are around 158 applications in provinces such as Ilocos Norte, Ilocos Sur, La Union, Pangasinan, Bicol, Negros Island and Cebu.

Wide-reaching impacts on ecosystems and peoples. Most of the country's mineral deposits are located in remaining forests, key biodiversity areas (KBAs)[iii], geo-hazard zones, typhoon-prone provinces, and the ancestral domains of indigenous peoples.

Destroying forests and biodiversity. Currently, the country has 228 KBAs. 92 KBAs are major forest areas found in mountainous areas; of these, 58 KBAs or 63% of forest areas are currently covered by mining permits, including 4 FTAAs, 174 MPSAs, and 50 EPs. In the ecological frontier of Palawan, for example, large-scale mining permits cover 39,202 hectares[21] out of the island's total land area of 1,489,655 hectares (56% of which are forests). In Bataraza, mining by Rio Tuba Nickel Mining Corporation and Coral Bay Nickel Corporation has significantly altered the forested Bulanjao mountain range along Palawan's southern tip. This occurred despite the fact that the area falls under so-called "Core Zones' for maximum protection under the Ecological Critical Areas Network zoning scheme of the Palawan Council for Sustainable Development.[22]

Ravaging our shores and rivers. Mining operations have significantly contributed to the massive pollution and destruction of the country's water

Mining operations have significantly contributed to the massive pollution and destruction of the country's water bodies.

[iii] KBAs are fine-scale delineated areas targeted for conservation that is based on the following criteria: 1. presence of vulnerable or globally threatened species and 2. presence of geographically concentrated species that are irreplaceable. KBA identification was a refinement and integration of previous initiatives such as 117 Important Bird Areas by Haribon Foundation and Birdlife International, the 206 Conservation Priority Areas through the Philippine Biodiversity Conservation Priority-setting Program, and the 2004 IUCN Red List of threatened species in the country."

bodies. A partial list of mine tailings dam failures compiled by the Philippine Indigenous Peoples Links from 1982 to 2007 shows that there have been at least 21 tailings dam failures in the past 25 years. These have caused fish kills, flash floods, river siltation and inundation of agricultural lands in affected areas, such as Marinduque Island, Rapu-Rapu, Albay; Sipalay, Negros Occidental, and Placer, Surigao del Norte.

The Mogpog and Boac rivers in Marinduque, for instance, were left biologically dead since 1993 and 1996, when the tailings dam of Canadian company Placer Dome collapsed. The Abra river–which stretches from Mankayan, Benguet to Vigan, Ilocos Sur–has been found in 2005 to have poor water quality and elevated concentrations of heavy metals such as cyanide, mercury and chromium at various points, due to the upstream operations of Lepanto Consolidated Mining Co.[23] Rapu-Rapu island experienced fish kills from 2005 to 2007 after mining operations started; subsequent scientific studies showed high levels of cadmium, copper, zinc and arsenic in affected rivers and creeks, attributed to the occurrence of acid mine drainage (AMD).[iv] The presence of these heavy metals pose health risks to living organisms. Black sand or magnetite mining in Cagayan Valley has also contributed to erosion along the coastal towns of Aparri, Buguey and Gonzaga and along the Cagayan river.

Conflict in grassroots communities. Large-scale mining has directly caused community displacements, loss of livelihood, and human rights violations, especially among indigenous peoples (IP). According to the Kalipunan ng Katutubong Mamamayan sa Pilipinas, roughly 56% of the 1,046,351 hectares covered by approved mining applications will affect or encompass IP ancestral territories. Almost 600,000 hectares of ancestral lands are now appropriated for mining operations.[24]

Thousands of IPs will be displaced by the two largest mining projects in the Philippine pipeline. In Northern Luzon, New Zealand-based Oceana Gold in Nueva Vizcaya and other mining firms in Nueva Vizcaya province encroach on the ancestral land claims of the Bugkalot tribes, in addition to the lands inhabited by the Ifugao, Gaddang, Isinai, Ikalahan, and Ilongot tribes.[25] Large-scale mining in these lands has caused displacement, illegal demolition of homes, and human rights violations of residents.[26] Down south in Mindanao, the Tampakan project straddling four provinces in the Far South Mindanao region will displace more than 40,000 residents, including around 3,000 peoples of the B'laan tribe. The project proceeded without the free, prior and informed consent of affected communities, replying on military troops to clear any opposition to the mine by civilians.

[iv] AMD is a phenomenon where iron sulfide rocks are exposed to oxygen in the air and water, resulting in a chemical reaction that produces sulfuric acid and red iron sulfate precipitate. The acid dissolves heavy metals contained in the rocks. The acid and heavy metals are toxic to living organisms, killing them, and rendering the river biologically dead.

Economic development or profit for a few? Various administrations welcomed the policy of mining liberalization with open arms, in the belief that foreign investments would generate significant revenues, jobs, livelihood and development. While the mining revitalization program has poured $955.8 million in investments, statistics indicate that the profit windfall did not make it back to the national and local government coffers, much less into the hands of mining-affected communities.

While mineral exports and prices continue to rise, the industry's contribution to the GDP has remained miniscule, pegged at 1.1 to 1.2% from 1997 to 2007, according to Bantay Kita network. Taxes, fees and royalties collected from 2006 to 2009 reached only P36.9 billion (including workers' and individuals' taxes): less than 5% of the total wealth produced by the industry.

The mining industry has contributed only 0.33% to total employment from 1997 to 2007. In 2011, mining contributed only 0.6% or 210,000 jobs to total employment, most of it through quarrying and small-scale mining. Economic thinktank Ibon Foundation reveals that the combined labor of Filipino domestic help contributed more to the economy than mining, with the former generating 5.2% of total employment (or 1.95 million jobs) locally.

Local communities opened to mining are still mired in poverty. Poverty rates in decades-old corporate mining areas are observed to be higher than in areas without large-scale mining. The Cordilleran municipalities of Itogon, Mankayan and Tuba exhibited low LGU incomes per hectare (P3,782 compared to P15,805 in other municipalities as of 2006) and per capita income in comparison to vegetable and banana production municipalities, as a study by a UP Economics professor indicated.[27]

Poverty rates in decades-old corporate mining areas are observed to be higher than in areas without large-scale mining.

A.3 Energy Resource Privatization

The country's vast energy resources either remain untapped by the government or controlled by foreign monopolies and their local partners. The privatization, deregulation and liberalization of the energy sector has left the Philippines with the highest electricity rate in Asia yet with insufficient power supply in Mindanao and other parts of the country.

Historically, the Philippines has been dependent on imported conventional energy sources such as oil and coal to meet its needs. Various energy-related laws were passed in the last decade: RA 8479 (Oil Deregulation Law) in 1998, RA 9136 (Electric Power Industry Reform Act (EPIRA) in 2000, RA 9367 (Biofuels Act) in 2006, and RA 9513 (Renewable Energy Act) in 2008. But they did not reverse the country's dependence on imports and fossil fuels nor make power prices cheaper.

Reliance on imported energy. The country's total consumption of oil and other petroleum products as of June 2011 is 307,200 barrels per day (bbl/d) while the country was only able to produce 9,671 bbl/d. This means that more than 90% of its oil and petroleum requirements are imported. According to the Department of Energy's Oil Supply/Demand Report for June 2011, a total of 34.6 MMB was

The country's vast energy resources either remain untapped by the government or controlled by foreign monopolies and their local partners.

imported for the period (an increase of 2.4% from 33.8 MB in the first half of 2010).

The Philippines currently sources 81% of its crude oil imports from countries in the Middle East, (mainly from Saudi Arabia), making the country hostage to a volatile world market dominated by oil cartels. While the Biofuels Act mandated a minimum 5% substitution of bioethanol into the current gasoline blend, this did not decrease our reliance on imports as 493 MB of ethanol was still imported for fuel use during the first half of 2011.

Neither has deregulation been able to break the current monopoly over the oil industry. The "Big Three" oil firms (Petron Corp., Chevron Phils. and Pilipinas Shell Petroleum Corp.) hold 76.2% of the market share as of 2011. According to Ibon Foundation, they earned a combined income of at least P141.7 billion in the past 10 years.

Soaring electricity rates. After the oil industry was deregulated in 1998, the Philippine power sector was privatized and deregulated in 2001 through the EPIRA. Since then, power rates have doubled. More than half of the total generation capacity (52%), the entire transmission system and a large part of distribution is now controlled by only three groups: San Miguel Corporation, Aboitiz, and Lopez.

Under the EPIRA, consumers pay for electricity that they do not actually use due to the imposition of automatic cost recovery mechanisms such as the Purchased Power Adjustment (PPA). Power rates have risen higher with the removal of the lifeline-rate subsidy (for consumers of 100 kWh or less) last June 2011, affecting some 6.9 million lifeline users nationwide. MERALCO's rates, for instance, increased by more than 112% from P4.87 per kwh in 2000 to P10.35 in 2010; NAPOCOR power generation rates have jumped by more than 95% in the past 10 years.[28]

Energy insecurity. The DOE estimates that the country needs an additional power capacity of 16,550 megawatts by 2030 to avert shortages. Despite the perks given to them under EPIRA, private power producers and IPS give little, if any, assurance that they will provide these needs once the project is no longer viable in terms of profitability. One example was when the Cebu Private Power Corp (CPPC) threatened to shut down operations of its 65 MW plant due to financial constraints, aggravating the projected shortage in the Visayas.

Increasing reliance on dirty coal. Coal mining and coal power plants are among the highest sources of carbon emissions and are among the main contributors to global warming. The Renewable Energy Act was supposed to initiate the shift to cleaner renewable energy. However, this has not prevented the increase in the number of new coal plants and mines. The government has continued to actively promote the construction and expansion of coal projects to attract foreign investments. By November 2009, the DOE awarded 60 coal operating contracts, 26 production contracts and 34 exploration contracts. As of July 2011, there are already 12 operating coal plants; five more are expected to be constructed in the next three years. Not surprisingly, the country's coal emissions have increased from

16.52 metric tons of carbon dioxide equivalent ($MtCO_2^e$) in 2003 to 24.85 $MtCO_2^e$ in 2009 exhibiting an average annual growth rate of 7.9%.[29]

The proliferation of dirty coal plants have been supported by IFI loans, including the World Bank's $271 and $300 million rehabilitation and privatization loan for the Masinloc and Calaca coal plants, respectively and the ADB's $120 million loan for a 200 MW coal plant by Korean Electric Power Corp. & Salcon Power Corp. in Naga, Cebu.

The country's largest coal producer is Semirara Mining Corporation in Antique which contributes about 92% of the local coal production. It is being challenged by San Miguel Corp. which bought three coal mines in South Cotabato in 2010. Coal mines are also located in Cebu, Zamboanga Sibugay, Albay, Surigao and Negros Provinces.

The government, however, has continued to actively promote the construction and expansion of coal projects to attract foreign investments.

Privatizing renewable energy sources. The Renewable Energy (RE) Act attempts to promote indigenous alternative energy sources over fossil fuels through dependence on market-driven, foreign and private investments instead of government infrastructure. Corporate investors, however, still prefer conventional energy sources such as coal and oil due to their relatively lower costs and higher profit yields. Firms that do invest in RE sell their electricity at even higher prices to recoup investments and losses from heavy government taxes (for geothermal and natural gas), such as the case of the Casecnan Hydroelectric Power Plant in Nueva Ecija and the geothermal steam projects of Tiwi in Albay and Makban in Laguna. Lastly, the DOE's own targets for RE projects remain low compared to their total estimated potential while the law's current state of implementation remains slow.

B. RISING POVERTY AND PEOPLE'S LACK OF ACCESS, OWNERSHIP AND CONTROL OF OUR ECOSYSTEMS

Rising economic and social disparities can be seen between those who control the nation's natural resources and those who do not. Poverty is rife among the people most dependent on nature. While environmental destruction is often blamed on the poor, the few who control the use of natural resources are often cleared of accountability.

Ironically, the ecosystems upon which the poor depend on to survive are among the richest and most abundant in Southeast Asia. The country's lands are fertile and suitable for food production yet severe hunger stalks millions of Filipino farmers every year. The country's marine and coastal resources are considered the richest worldwide, yet the fisherfolks sector remains among the poorest of the poor in the archipelago. The country's abundant sources of freshwater are becoming an expensive commodity, accessible only to the few who can pay. Vast tracts of fertile land have not prevented hunger from affecting millions of farmers and their families every year; neither have rich seas been able to ensure the basic needs of fisherfolks.

Data from the National Statistical Coordination Board reveals that one-third (33%) of the population lives below the poverty line of P46 daily (approximately $1) in 2009. Almost 50% of people in rural areas live below the poverty line, while

While environmental destruction is often blamed on the poor, the few who control the use of natural resources are often cleared of accountability.

poverty in urban areas is at 20%. Poverty statistics will be much higher if the government uses the $2 poverty threshold set by the United Nations. This would translate to more than 70% or 65 million poor Filipinos living at P104 or less daily. Based on the national survey conducted by Ibon Foundation in April 2010, 66% of respondents perceive themselves as poor.

The Social Weather Station survey for 2011 estimates that 15.1% of Filipinos or more than 3 million families have experienced involuntary hunger, with hunger levels reaching record highs in the Visayas (est. 804,000 families) and Mindanao (1 million families). This is consistent with earlier surveys indicating a steady rise in hunger rates since 1983 to 2003, particularly in Mindanao which is considered as the country's food basket. And while the country remains among the top fish producing countries in the world, 1 out of every 2 Filipino fishermen are considered poor. The following sections discuss the state of the nation's productive natural resources and why current systems and modes of production have been unable to prevent poverty from worsening.

B.1. Agricultural Instability and Food Insecurity

Agriculture is the backbone of the Philippine economy. However, it is being threatened due to the government's lack of support for the sector and the millions of farmers who rely on the land. Less and less land is now available for food to feed Filipinos. Factors which have contributed to this situation are massive land conversion, expansion of plantations for agrofuel and export crop production and farmland pollution. These aggravate existing conditions which have historically left farmers destitute and disempowered, such as the utter failure of agrarian reform in the country and monopoly control of TNCs and landlords over farm inputs.

Lack of agrarian reform. Landlessness is a long-standing problem among Filipino farmers. National peasant organization Kilusang Magbubukid ng Pilipinas maintains that seven out of ten farmers do not own the land they till. In contrast, only 9,500 families own 20 percent or 2,820,000 hectares of agricultural lands.[33] Among the landowning families controlling up to tens of thousands of hectares are the Cojuangcos (with landownings in Hacienda Luisita in Tarlac, Negros, Isabela, Cagayan, Davao Del Sur, Cotabato, and Palawan), Almagros (Cebu), Dimaporos (Lanao del Norte), Ayalas (Calatagan, Batangas), Floreindos (Davao and Davao del Norte), Santos, Roxases, Yulos, Tinios and Escuderos.[34]

Historically, the lack of agrarian reform has posed dire consequences for the country's agricultural ecosystems and the people who rely on these. The access, ownership and control of farmers over the lands they till largely defines how they act to protect this valuable resources. However, lands have been mostly controlled by landlords and/or foreign investors who have imposed policies which promoted production for profit, at the expense of the environment and tillers' welfare. These include agricultural production for export or non-food use (such as agrofuels), underdevelopment of domestic technology and agricultural infrastructure, dependence on imported inputs such as agrochemicals and GMOs and increasing

conversion of productive lands for industrial, residential, or commercial use. There has been little incentive to modernize agricultural production, with most of the tools and technologies made available to small farmers being very backward, labor-intensive and dependent on commercial inputs controlled by landlords or TNCs themselves.

Lands have been largely controlled by landlords and/or foreign investors who have mostly imposed policies which promoted production for profit, at the expense of the environment and tillers' welfare.

Policies buttressing agrarian injustice. Instead of working towards the attainment of agrarian reform, most Philippine policies have favored landlord and corporate control over farmlands. Existing laws, such as RA 6657 (Comprehensive Agrarian Reform Law of 1998), RA 8435 (Agricultural and Fisheries Modernization Act of 1997), RA 9168 (Plant Variety Protection Act of 2002), have supported landlessness among the tillers, agro-industrial ventures with foreign TNCs, promotion of genetically-engineered crops and corporate appropriation of traditional plant varieties. Elite and corporate interests still dominate the rationale behind recent laws passed, such as RA 9700 (Comprehensive Agrarian Reform Program Extension with Reforms or CARPER of 2009) and even supposedly "green" laws such as the Biofuels Act of 2006 and RA 10068 (Organic Agriculture Act of 2010) which promotes the commercialization of organic agriculture.

Massive land use conversion (LUC). Under the Arroyo administration, land converted for residential, commercial and eco-tourism purposes reached 37,057 hectares of farmlands,[35] surpassing the 11,721 hectares approved for LUC during the Estrada administration and 19,726.53 hectares under Ramos.[36] Land distribution remained elusive due to policy loopholes in RA 6657 such as:

(1) Stock Distribution Option (SDO) where farmers were given shares of stock (tied to the number of work or "man days") instead of actual land. This was applied in Hacienda Luisita in Tarlac.
(2) Joint-venture, leasehold and contract-growing agreements with agro-corporations such as Dole and Del Monte for 25 years, renewable for another 25 years.
(3) LUC for industrial estates, commercial establishments, residential areas and centers of tourism. This has decreased farm area by 304,078 hectares between 1991 and 2002.

Some of the cases of massive farm land conversion in the country include:

Year	Area	Policy	Effect
2007	Nasugbu, Batangas	Executive Order 647	21 barangays covering 14,000 hectares of rice lands, sugar farms and coastal areas were declared a major tourism destination / part of the Tourism Economic Zone.
2008	Central Luzon, Calabarzon	DOJ Opinion No. 44	Department of Agrarian Reform (DAR) approved 22,900.34 hectares of agricultural lands for exemption from CARP coverage for conversion to either residential or commercial use.

Growing for fuel and food exports. The government has given more agricultural land for export crops and use of foreign agro-corporations. According to the Department of Agriculture-Philippine Agricultural Development and Commercial

The government has given more agricultural land for export crops and use of foreign agro-corporations.

Corporation, more than 1.5 million hectares of land have been developed for agribusiness since 2005 (most for planting high-value commercial crops for export) and 3 million hectares of land were approved for agrofuels production since 1995.[37] As of 2011, at least 50 biofuel projects spanning 983,000 hectares have already been targeted. Of these, 343,150 have been matched by the DA-PADCC and operations have already started (See Annex I).

The conversion of lands for food crop generation to agrofuel plantations steeply rose after the implementation of the Biofuels Act in 2007. The government's Joint Administrative Order (JAO) 2008-1 issued guidelines for biofuels production and sale, (supposedly to protect food crop lands from being converted) while seeking more investors. However, its many exemptions essentially expand the coverage of lands for conversion to biofuel production. The JAO also stipulated that the total area required to meet the mandated biofuels blend (2% biodiesel blend, 5% bioethanol blend) is around 660,000 has. The 2009 investor interest already spans some 994,800 hectares with at least 38 projects–way beyond the government's own target. This indicates that biofuels production expands not to meet local demand (as mandated by law), but to meet increasing export demand, encroaching on food security. For example, Eastern Renewables Fuels Corp. which operates a cassava plantation in Zambales and General Santos has entered into a long-term contract since 2008 with Chinese company Guanxi Estates Corp. which exports ERFC's cassava produce as feedstock for ethanol production at Guanxi province in China.[38]

Biodiversity loss, pollution and degradation of farmlands. Under the Marcos dictatorship, the *Masagana 99* program encouraged the use of high-yielding varieties (HYVs), converting 93% of the country's irrigated lowlands to HYVs by the early 1980s.[39] HYVs rely on intensive chemical inputs such as synthetic fertilizers and pesticides, which studies have shown to be causing chemical pollution, soil acidification, erosion, and decline in soil fertility. This agro-chemical based technology has not only adversely affected the health of the soil and agricultural ecosystems; it also paved the way for the loss of the country's rice biodiversity and the farmers' control of seeds of traditional rice varieties.[40] This is not to mention the health impacts on farmers who have inadequate means to access protective gear, or who have their air and water systems contaminated by these chemical inputs. It is estimated that the primary expenditure in conventional farms in the use of agrochemical inputs is 65% for fertilizers and 18.2% for pesticides.[41] These TNCs profit from the sale of patented seeds such as those of Bt-Corn (Monsanto), fertilizers and pesticides.[42]

Declining productivity. Due to the lack of support for agrarian reform and modernization, it is not surprising that the sector remains crippled by the lack of productivity, with its contribution to the country's overall GDP (17%) remaining nearly stagnant or declining over the years. Production is unable to keep pace with the annual average population growth rate of 2.3%. Palay production rates during the last two decades have been relatively flat, hitting the negative mark

in 2009 and 2010. The only instance when this happened before was in 1998 during a rice supply crisis.

The sector's contribution to domestic employment declined from 46% during the past 15 years to 33% in 2010. Land productivity in terms of traditional crop yields (e.g., rice, corn, sugarcane and coconut) has likewise declined. In terms of producer price, rice in the Philippines is the most expensive at US$318.8/MT. From being a rice exporter, the Philippines became the largest rice importer in the world in the span of a few decades. Various factors have affected the productivity of Philippine agricultural lands, particularly the lack of genuine agrarian reform and modernization programs, land use and crop conversion and degradation of agricultural lands.

B.2. Degraded coastal ecosystems and depleted marine resources

In 2005, the Philippines was declared as the "center of the center of marine biodiversity" by scientists. However, this distinction is threatened by the rapidly declining state of our seas and coastal ecosystems. The numbers of endangered marine and coastal species are rising, reaching up to 625 threatened fish species in 2010 (IUCN).

Fisherfolks among the poorest. In 2008, the Philippines was the 6th top fish producing country in the world with its total production of 4.97 million metric tons of fish, crustaceans, mollusks, and aquatic plants. This constitutes 3.12% of the total world production of 159.1 million metric tons.[43] The country also ranks as the 9th worldwide in terms of aquaculture as of 2008, producing 0.741 million metric tons of fish, crustaceans and mollusks valued at over $1.58 billion, and the world's 3rd largest producer of aquatic plants (including seaweeds), yielding 1.67 million metric tons or nearly 10.6% of the total world production of 15.78 million metric tons. According to the NSO in 2008, the fisheries sector provides livelihood for around 1,614,368 or 4.3% of the country's total labor force. 85% are municipal or subsistence fisherfolk.[44]

Ironically, most fisherfolk, or 51 out of Filipino 100 fishermen, count among the nation's poorest, along with farmers and children.[45] The NSCB ranks the fisherfolk sector as the poorest basic social sector in 2009 and 2006, with poverty incidence ranging from 66.7% (highest) to 23.9% (lowest), mostly from ARMM, CARAGA and Region V. It also noted that the fisherfolk sector posted the largest deterioration in poverty incidence from 2003 to 2006.

Among the factors contributing to such a state of poverty is the sorry state of depleted marine wealth, degraded coastal ecosystems, and policies which leave the country's municipal or small fisherfolk at the mercy of big commercial operators and the market, or defenseless against displacement caused by coastal development projects. The degradation of coastal ecosystems–the habitats of the country's rich marine life–due to overexploitation and development aggression are already taking their toll on the seas which sustain so much life.

The degradation of coastal ecosystems–the habitats of the country's rich marine life–due to overexploitation and development aggression are already taking their toll on the seas which sustain so much life.

Coral reefs in critical condition. Up to 98% of coral reefs are threatened due to human activities and coastal development. Philippine coral reefs are considered as among the most degraded globally and have consistently topped Conservation International's list of 11 world "coral hotspots" from 2002-2011.

The World Resources Institute, which released a study of the state of the world's reefs in 2002, found that the Philippines had the most degraded reefs of all sampled countries. It estimated that 98% of reefs in the Philippines were at risk from human activities, with 70% at high or very high risk. This is still the case in 2011, when the WRI again warned that Philippine coral reefs are some of the most endangered in the world from overfishing, pollution and climate change.[46] Only 5% of Philippine coral reefs are in excellent condition, with 75-100% live coral cover.[47]

Disappearing mangroves. More than 340,000 hectares or 75.6% of mangroves were lost in the past 82 years (1918-2000), with most being converted into aquaculture ponds for fish exports. In 1918, there were around 450,000 hectares of mangroves in the Philippines. By 2000, national inventories based on remote sensory imaging data estimated remaining mangrove forest cover at 109,700 hectares (FAO 2003). This rapid decline has been attributed to mangrove conversion into areas for aquaculture, salt production, and human settlement—with fishpond conversion representing at least 289,000 hectares of the losses. From 1951 to 1988, about 50% of mangroves were converted to aquaculture ponds for fish and shrimp, goaded by economic incentives such as soft loans and low fishpond fees.

The country's extensive coastal areas are foremost threatened by erosion, pollution, ecotourism and reclamation projects.

Degraded seagrass beds. Half of the country's seagrass beds of 978 square kilometers have either been lost or severely degraded in the past 50 years. Major distributions of seagrass beds in the Philippines are found in Bolinao Bay in Luzon, Palawan, Cuyo Islands, the Cebu-Bohol-Siquijor area, Zamboanga, and Davao. Factors contributing to this include coastal development, waste disposal, increasing sedimentation, destructive fishing (raking, trawling, and the construction of fish corals), eutrophication (water pollution caused by excessive plant nutrients), boat traffic, aquaculture, and marine pollution. In 2006, for instance, the Guimaras oil spill by the MT Solar I decimated an estimated 70% of sea grass meadows in Tando, Nueva Valencia, (one of the worst hit areas) affecting other marine species dependent on seagrass for survival.[48]

Threatened beaches, foreshore, and shoreline areas. The country's extensive coastal areas are foremost threatened by erosion, pollution, ecotourism and reclamation projects:

- Erosion from natural causes occurs in "high-energy" or wave and storm-prone coasts along northern Luzon, Lingayen Gulf, and along the eastern seaboard. Internal seas can also be vulnerable to erosion due to coastal development and magnetite or black sand mining.
- Contamination by organic pollution is rampant along coastal areas. Nearly 2.2

million tons of organic pollution are produced annually by the domestic (48%), agricultural (37%), and industrial (15%) sectors,[49] with the industrial sector accounting for most, if not all, of the toxic and hazardous waste discharged into water bodies, according to the Environmental and Natural Resources Accounting Project.

- Projects actively promoted by the Philippine Reclamation Authority threaten the country's remaining natural beaches. In Manila Bay, 615 hectares of foreshore waters (including a 175-hectare lagoon, bird sanctuary area for endangered Philippine ducks and Chinese egrets, and mangrove forest) are to be reclaimed, leading to a potential ecosystem breakdown. [50] Reclamation projects in Caticlan and Boracay were found by marine scientists to alter the surrounding waters' current patterns and the white-sand shore of the country's premier tourist destination and were suspended by the Supreme Court in June 2011.[51] In Bohol, a planned 450-hectare Panglao reclamation project by Oasis Leisure Islands and Development Inc. was found by the Sanggunian Panlalawigan to clearly endanger the state of marine biodiversity in Panglao Bay.

Disasters related to large-scale mining (such as the Rapu-Rapu mine spill in 2005 and the Marinduque disaster in 1996) have wreaked immense damage on marine ecosystems and small fishers.

Fishy policies and laws. Fisheries laws passed over the years have clearly favored corporate and foreign fishing interests over that of small Filipino fisherfolk and the domestic fishing industry. 14 years under RA 8550 (Fisheries Code of 1998) have failed to meet the law's objective of protecting the rights of municipal fisherfolk and marine ecosystems due to its loopholes. These include the issuance of private fishpond lease agreements for up to 50 years (practically giving entire fisheries areas to corporate control), allowing corporate fishers to encroach into municipal waters, designating marine sanctuaries at the cost of displacing municipal fishers, and imposing stiff regulations and penalties on subsistence fisherfolk, to name a few. The few support mechanisms for municipal fisherfolk outlined in the law have been generally not been enjoyed by the majority of small fisherfolk families.

As small fisherfolk struggle for survival in increasingly scarce seas, current policies continue to support corporate control over the Philippine fisheries industry. In 1997, RA 8435 or the Agricultural and Fisheries Modernization Act further encouraged fish production for export while disadvantageously slashing tariff rates for imported fish and fish by-products from 60 to 15% by 2000. In 2008, the country ratified the Japan-Philippines Economic Partnership Agreement (JPEPA), a bilateral and comprehensive trade agreement signed in 2006 which allows 8,000 ton commercial fishing vessels from Japan to explore the country's waters and directly compete with the backward local fishing industry.

B3. Freshwater for profit, not for the people

The country's many free sources of freshwater are becoming an expensive commodity accessible only to those who can pay. While freshwater is abundant, water services remain scarce and privatized by big foreign and private corporations.

Water resource availability is influenced by different factors, including increasing demand due to rapid urbanization, water pollution, over-harvesting and exploitation by big private companies, wasteful and inefficient use of water, degradation and deforestation of watershed areas, massive land conversion, and the additional stress created by the impacts of climate change.

No water for the people. The government acknowledges the country as having the 2nd lowest annual per capital availability of freshwater in Asia: 2 out of 5 Filipinos (or more than 15 million households) do not get water from formal sources for domestic consumption while only 45% of irrigable farms are served by state and private irrigation systems.[52] Most water allocated by government goes to the power sector which represents only 1% of permit grantees. While Metro Manila has already been experiencing water shortages since 1995,[53] 9 other major cities with high levels of urbanization (Metro Manila, Cebu, Davao, Baguio, Angeles, Bacolod, Iloilo, Cagayan de Oro and Zamboanga) will face similar water shortages by 2025.

The country's many free sources of freshwater are becoming an expensive commodity accessible only to those who can pay.

Dead rivers and dirty groundwater. The ADB (2009) reports that only 33% of the country's river systems are still clean and safe and up to 58% of groundwater supplies are now contaminated. As many as 50 out of 421 rivers nationwide are already considered biologically dead, or incapable of sustaining life. The major pollutants monitored are Biochemical Oxygen Demand (BOD) and Dissolved Oxygen (DO). In Metro Manila, 58% of BOD pollution comes from domestic waste while 42% comes from industries, according to the World Bank.[54] The Pasig River, for instance, receives wastewater and sewage coming from 367 barangays and over 30 industries.[55]

Nonexistent sanitation services. According to a World Bank study, only 5% of the population have a sewer network connection. Most water utilities focus only water supply services. While water service providers are mandated to provide essential services, including water and sanitation services, 97% of its investments are for water supply and only 3% is for sanitation and wastewater treatment.[56] Untreated wastewater leads to water contamination, making it unfit for drinking and recreational use; affects health by spreading disease-causing bacteria and viruses such as gastroenteritis, diarrhea, typhoid, cholera, dysentery, and hepatitis; and threatens biodiversity and the overall quality of life.

While domestic waste pollution in waterways continues unabated, water pollution by large corporations and extractive industries is sanctioned through RA 9275 or the Clean Water Act passed in 2004, which legalizes discharge permits under the 'polluters pay' principle.

Corporate control behind water scarcity. Most of our water resources are controlled and used by big foreign and private corporations through water permits. The 2007 summary of water permits granted by the National Water Resources Board (NWRB) lists 19,695 grantees with a total volume of 60,164,70.752 liters per second. The power sector uses 57% of the total volume granted to all the water permit holders, while other sectors such as irrigation (35%) and domestic (3%) receive much less. While the power sector gets the lion's share, it only has 235 water permit grantees or just 1% of the total number of grantees. In contrast, irrigation has the most number of grantees at 10,329 (52%), followed by domestic at 6,447 (33%), industrial at 1,403, fisheries at 482, and commercial users at 343.

The Mining Act of 1995 gives water rights to mining firms, considered as among the main industrial users of surface water.[57] Water is channeled to mining operations, denying host communities the right to access clean water. In 2007, Oceana Gold filed four permit applications with the National Water Resources Board to divert 3.8 million cubic meters of freshwater annually from the Tubo Creek and Dinauyan River in Kasibu, Nueva Vizcaya, affecting local agriculture and indigenous peoples.[58]

Instead of looking at water as a common good, water is treated like any other commodity attached with a price tag.

Effects of privatizing water commons. The World Bank pressured the Ramos administration to pass the National Water Crisis Act of 1995, paving the way for the privatization of the Metropolitan Waterworks and Sewerage System, which handles water supply in the National Capital Region and outlying provinces. This policy of privatizing water resources continues up to the present administration. Instead of looking at water as a common good, water is treated like any other commodity attached with a price tag. This becomes the mechanism which determines the allocation, distribution, and consumption of water. Privatization, however, has failed to ensure corporate responsibility for water projects and public access to clean and affordable water services:

- **Higher water rates for consumers.** Ibon Foundation notes that, after more than a decade of privatization, prices per cubic meter have increased by 650% for Manila Water concessions and by 360% for Maynilad concessions from 1997 to 2010, way beyond the inflation rate.
- **More dam-related disasters.** The privatization of major water infrastructures, such as large dams, has created mixed-use structures which often prioritize profiteering over water allocation and distribution. In October 2009, the San Roque dam in Pangasinan suddenly released water during super typhoon Pepeng without adequate warning to the communities, triggering massive flooding.[59] In 2011, six major dams in Luzon (Ipo and Angat in Norzagaray, Bulacan, Bustos in Bulacan, San Roque in Pangasinan, Binga in Itogon, Benguet, Magat in Isabela, and Ambuklao in Benguet) released water in anticipation of typhoon Quiel and caused deep flooding in Nueva Ecija, Bulacan and Pampanga. All large-dams in Luzon are owned by private and foreign companies except for Angat Dam, which is still undergoing privatization.[60]

- **No assurance of clean water.** Privatization does not automatically lead to improved services and safe drinking water. This was the lesson learned by Legazpi City, when the city government declared that water provided to thousands of households by Phil Hydro, a private contractor, did not conform to national standards for drinking water after tests revealed that it contained high levels of magnesium, calcium carbonate, and dissolved solids. Phil Hydro holds a water supply contract for 25 years.[61]

B4. Urbanization without development

Ideally, urbanization is a process where overall development of a particular region takes place. New industries are set up to create employment; more jobs means a rise in the per capita income of the people. Urbanization also implies better infrastructure, medical, educational and cultural facilities, providing opportunities for people to achieve their goals.

However, in the Philippine context, the growth of cities did not necessarily translate into genuine development. Instead, the archipelago's urban centers are concrete testaments to the rising social disparities and the lack of centralized planning for the public good. The influx of landless and rural poor, the lack of domestic industries for employment, and the dearth of public housing have contributed to the proliferation of informal settlements throughout cities. As of 2007, 23.9 million Filipinos reside in slums. Such rapid and unplanned urbanization poses a wide range of challenges.

The archipelago's urban centers are concrete testaments to the rising social disparities and the lack of centralized planning for the public good.

Unplanned urbanization. The Philippines is estimated to be 52% urbanized and is expected to increase to 60% by 2010.[62] The urban population grew very rapidly at an annual rate close to 5% from 1960 to 1995. The most densely populated urban area is Metro Manila with a population of 10.7 million.[63] By the year 2030, the urban population is estimated to reach 85 million or approximately 70% of the total population.

Such rapid urbanization has taken place because of uncontrolled rural-urban migration, driven by lack of employment and livelihood opportunities in the countryside. Because the influx of people is faster than employment creation, urban poverty remains high while many problems arise. These include congestion and shortages of housing and basic services like potable water supply, health, waste collection and management.[64]

Rise of the urban poor. The growth of large cities has been accompanied by an increase in urban poverty. Slum population is increasing at an annual rate of over 3.5% compared to urban population growth rate of 2.3% for the period 2000-2006. Based on a 2007 survey by the NHA and local government units of Metro Manila, an estimated 544,609 (21% of total households) are informal settlers. 1 out of 5 or 109,200 households live in danger areas such as riverbanks, floodways, roads, aqueducts and under bridges, according to the Metro Manila Inter-Agency Committee on Informal Settlers.[65]

People living in slum areas are more vulnerable to various natural and man-made risks. Studies show that slum poverty is a major cause of stress through pollution, congestion, noise, stagnant water and flooding. Households living in these environments pay more for basic services, have poorer health, school performance and productivity and are vulnerable to more crime and violence.

Air, water and solid waste pollution. Air, solid waste, and water pollution remain major problems and pose serious risks to the people's health. The country produces around 35,000 tons of solid waste daily in addition to the lack of adequate waste storage and recycling facilities. According to the DENR, Metro Manila residents generate a total of 8,700 tons of garbage every day. This represents 25% of the country's daily solid waste generation of about 35,000 tons.[66] According to EMB, only 73% are of waste generated daily are collected by dump trucks hired by local government units, assuming that LGUs implement regular waste collection. The remaining 27% of our daily waste ends up in canals, vacant spaces, street corners, market places, rivers and other places.[67]

Air, solid waste, and water pollution remain major problems and pose serious risks to the people's health.

In December 2011, the National Solid Waste Management Commission reported that local government units continue to post low compliance with RA 9003 or the Ecological Solid Waste Management Act of 2000. 64% or 1,025 out of 1,610 LGUs nationwide still host open dumps which are prohibited under RA 9003, while the whole country only has 38 sanitary landfills. Only 360 out of 1,000 cities and municipalities have long-term plans for solid waste management.

Metro Manila is also among the dirtiest cities worldwide in terms of air pollution. The average level of total air particulates in 2008 was 138 micrograms per cubic meter. This figure is way above 90 micrograms, the national standard set by the DENR.[68] Due to its poor air quality, 98% of inhabitants in Manila recognize that they are affected by air pollution and 50% hope to move to less polluted areas. Health impacts of pollution vary: irritation to eyes, nose and throat has been experienced by 82% of people, difficulties in breathing by 57%, and skin problems by 27%.[69] Tuberculosis, pneumonia and asthma are typical diseases which are induced by air pollution.[70] According to the World Bank and the DENR, 12% of all deaths or 5,000 people are killed in Metro Manila each year by air pollution–related diseases.

C. RISING THREAT OF CLIMATE CHANGE IMPACTS ON THE PHILIPPINES

The world is getting warmer and the Philippines is one of the countries to be most affected by climate change. By 1995, the Intergovernmental Panel on Climate Change formed by the United Nations established a strong link between the rapid increase of human-induced greenhouse gases (GHG) in the atmosphere and the observed warming of global temperature. This means that climate change in our time is caused by human activity.

Economic activities since 18th century Industrial Revolution in Europe and the US (such as burning fossil fuels including oil, gas and carbon) have emitted huge amounts

of GHGs. Of these, carbon dioxide accounts for the largest share (77%). GHGs create a *greenhouse effect* by trapping heat coming from the sun in the atmosphere, keeping the earth warm. Excessive amounts of these can trigger more drastic changes such as higher temperatures, rising sea levels, and extreme weather events. Now, carbon dioxide emissions have reached unprecedented levels: from 275 parts per million (ppm) 200 years ago to 392 ppm at current levels, rising 2 ppm annually. Leading climate scientists say that the world needs to reduce concentration of carbon dioxide in the atmosphere to 350 ppm to prevent disastrous and irreversible climate impacts.[71]

Climate change will affect the entire world. But its impacts are differentiated across countries and hemispheres. While rich countries largely responsible for soaring GHG emissions will be affected, poorer countries such as the Philippines will be doubly hit by the ecological, social, and economic impacts of climate change.

The Philippines ranks as among the top countries worldwide in terms of vulnerability to climate change.

Vulnerable to climate disasters. The Philippines is nowhere among the biggest GHG emitters, contributing only 0.24% of total global emissions in 2009. However, it ranks as among the top countries worldwide in terms of vulnerability to climate change. Global warming will increase the damage of existing natural hazards (such as floods and landslides) and trigger more intense tropical cyclones, rainfall pattern changes, sea level rise, and increasing temperatures.

The Philippines as an archipelagic nation is not new to geophysical, hydrological and meteorological disasters. With climate change however, the country faces various threats that will worsen the impacts of existing natural and human-induced calamities:

a. Rising temperatures. PAGASA notes an observed increase of 0.57 degree Celsius in the mean temperature from 1951-2009 (59 years). An increase of half a degree Celsius can already damage coral reefs. PAGASA warns that all areas in the Philippines will get warmer, from 0.8 ºC to 1.3 ºC in 2020, and by 1.5 -2.6 C in 2050.[72] According to the Stern Review on the economics of climate change, such levels will have effects such as falling crop yields, significant decrease in water availability, extinction of some species, and a rise of extreme weather events such as typhoons and droughts. Areas in Mindanao (particularly Sulu, Basilan, Lanao del Sur and Maguindanao) have a very high risk of increased temperature based on projection maps from the Manila Observatory and DENR.

b. Changes in rainfall patterns. PAGASA noted that certain provinces have experienced significant increases in rainfall patterns from 1951-2009. Baguio, Tacloban and Iloilo registered heavier rainfall while Calapan, Laoag, Iloilo and Tacloban recorded more frequent events of extreme rainfall. A decrease in rainfall will be experienced in Mindanao for both dry and wet seasons (March-November) by 2020 and is bound to worsen.

c. Sea level rise. Rising temperatures cause glaciers to melt and sea level to rise, making archipelagic nations such as the Philippines vulnerable to inundation and displacement. PAGASA notes that the country's sea level

rose by around 1.8 millimeters per year from 1961-2003; while coastal areas of Navotas, Malabon, Cavite, Legazpi and Davao sank by 15 centimeters from 1970-1999. These are also affected by ground subsidence due to excessive groundwater extraction

Extreme poverty in third world countries such as the Philippines increases the vulnerability of Filipinos to climate change impacts.

d. Extreme weather events-Increasing sea surface temperature (SST) related to global warming is expected to bring stronger tropical cyclones. Two scientific studies (Emmanuel 2005, Webster et al 2005), found that significant increase in the maximum velocities of tropical cyclones in the Pacific and Atlantic Oceans was closely related to the rise in SST.[73] Monitoring by the U.S. National Oceanic and Atmospheric Administration from 1945-2006 shows that the Philippines is a constant pathway of the most intense tropical cyclones in the world. According to PAGASA, the average number of tropical cyclones in PAR is 20 per year, about 8 to 9 landfall each year in the period 1948-2008 (60 years).[74] The Manila Observatory study in 2005 also found a small but steady increase in the number of cyclones, mostly over the Visayas. From 1990 to 2003, the IPCC AR4 also noted an increase of 4.2 cyclones entering the Philippines.

d. More killer typhoons. Half of the top 20 worst typhoons recorded by PAGASA and NDCC from 1947 to 2009 in terms of strength, number of people killed, and amount of damages happened more recently from 1990 up to present. Four of these, (Reming, Frank, Ondoy, Pepeng) happened from 2006-2009.

e. More killer landslides. According to the MGB, up to 80% of the country's total land area is prone to landslides. The Philippines the fourth most exposed to landslide risk, after Indonesia, India and China.[75] Southern Leyte province witnessed a 40 hectare-farming village in the municipality of St. Bernard disappear from the map due to a landslide in February 2006. The Cordillera region has the highest risk of landslides and all its six provinces are on the list of the MGB's top 10 landslide prone provinces: Benguet (90.3% risk), Mountain Province (87.1%), Nueva Vizcaya (86.7%), Kalinga apayao (84.7%), Southern Leyte (82.8%), Abra (82.1%), Marinduque (78.6%), Cebu (77.8%), Catanduanes (77.4%) and Ifugao (77.3%).[76]

f. Greater Floods. Metro Manila is among the top 10 provinces in the country most prone to flooding, according to the Geo Hazards Mapping and Assessment Program done by the DENR-MGB in 2010. In September 2009, tropical storm Ondoy submerged most parts of the capital including Marikina, Pasig, Quezon City and major rivers and creeks. Other cities vulnerable to flooding are Pampanga, Nueva Ecija, Pangasinan, Tarlac, Maguindanao, Bulacan, Metro Manila, North Cotabato, Oriental Mindoro and Ilocos Norte.

Highly vulnerable. Aside from the natural factors and hazards, extreme poverty in third world countries such as the Philippines increases the vulnerability of Filipinos to climate change impacts. While the frequency of calamities happening at

any given place is one factor, the vulnerability of people exposed to such calamities is another thing that should be addressed by both the government and the community in order to minimize the impacts of natural threats.

In 2010, the Centre for Research and Epidemiology Disasters disclosed the Philippines as the most disaster-prone country in the world, with 25 disasters occurring in 2009.[77] The country is ranked highest in the world in terms of vulnerability to tropical cyclone occurrence and third in terms of people exposed to such seasonal events, according to the Climate Change Commission.[78] A study by the World Bank in 2008 also shows that approximately 50.3% of the country's total land area and 81.3% of its population are vulnerable to natural disasters.[79] In 2010, the Philippines was ranked as 6th out of 170 countries based on global risks advisory firm Maplecroft's Climate Change Vulnerability Index.[v]

Filipinos are less able to adapt to the downstream impacts of climate change.

Filipinos are less able to adapt to the downstream impacts of climate change. This is seen in various socio-economic areas:

a. Food security. The country's food production systems currently lack resiliency to withstand extreme weather events. Each year (from 1990-2006), the agricultural sector incurred P12.43 billion worth of damages due to natural hazards: 70% by typhoons, 17.9% by drought and 5% by floods. This will have a negative impact on the availability, stability, accessibility, and affordability of food. Ironically, the country's top rice-producing provinces are also the most vulnerable to natural hazard. Six provinces in the top 10 are listed by the NSCB in 2006 as typhoon-prone provinces in the country:

TABLE 4. TOP 10 RICE PRODUCING PROVINCES (2007-2010)

Province	Palay Production*	Listed as Typhoon-Prone Areas	Top Flood-Prone Provinces	At Risk of El Nino
1. Nueva Ecija	1.37	High	1. Pampanga	1. Sulu
2. Isabela	1.01	very high	2. Nueva Ecija	2. Basilan
3. Pangasinan	0.95	High	3. Pangasinan	3. Maguindanao
4. Iloilo	0.84	Low	4. Tarlac	4. Lanao Del Sur
5. Cagayan	0.68	very high	5. Maguindanao	5. Lanao Del Norte
6. Leyte	0.56	not in the list	6. Bulacan	6. Davao Del Sur
7. Camarines Sur	0.55	High	7. Metro Manila	7. Misamis Occidental
8. Tarlac	0.54	High	8. North Cotabato	8. Sarangani
9. North Cotabato	0.47	not in the list	9. Oriental Mindoro	9. Zamboanga Del Sur
10. Maguindanao	0.43	not in the list	10. Ilocos Norte	10. South Cotabato

** annual average in million metric tons*

Sources: Bureau of Agricultural Statistics (2010), NCSB (2006), DENR-MGB Geohazards Mapping and Assessment (2010), Manila Observatory & DENR

[v] The CCVI evaluated 42 social, economic and environmental factors to assess national vulnerabilities across three core areas, including exposure to climate-related natural disasters and sea-level rise; human sensitivity; and future vulnerability to combat climate change.

b. Fisheries production. 70% of Philippine communities are located in coastal areas and are dependent on the fisheries sector for food. Climate change threatens this by inducing species migration, species depletion, algal blooms, and coral bleaching which are all related to the warming of sea water. In 1998, an El Niño event caused a decrease in live coral cover nationwide by about 49%, including reefs in Palawan. Marine areas and reefs hit by such incidents have not yet recovered at present.[80]

c. Water availability. Climate change will exacerbate the country's existing water problems, which are caused by a combination of factors including degraded watersheds, indiscriminate development projects, lack of proper urban planning, poor water infrastructures, and deterioration of water quality due to pollution. This is already seen in the lack of available freshwater especially during the dry season, due to changing rainfall patterns. Existing water systems and infrastructures are still not able to cope with extreme weather events.

d. Climate-sensitive diseases. The WHO identified 5 major health concerns related to climate change, especially in tropical countries: malnutrition, due to the failure of food production systems; cholera, due to impacts on water and sanitation services; diarrheal diseases, related to water scarcity; cardiovascular and respiratory diseases due to rising temperatures; and malaria and dengue outbreaks due to migration of insect vectors to warmer climes. In the Philippines, the Department of Health (DOH) lists these same climate-related diseases (dengue, malaria, respiratory illnesses and diarreah) among the top 10 causes of morbidity in the country.

e. Vulnerability of women, children. All humans are affected by climate change impacts, but women and children have less capacity to adapt because of existing economic and social vulnerabilities. Pregnant and lactating women, along with the very young and the very old, suffer the most health threats. Lack of access to health care services, immunizations, family planning and reproductive health care are among the challenges faced by Filipino women. The 2008 National Nutrition Survey by the Food and Nutrition Research Institute revealed that the number of underweight and under-height children (aged 0-5) increased from 24.6 to 26.2% and 26.3% to 27.9% respectively, from 2005–2008, equivalent to more than 3 million children.

Climate change will exacerbate the country's existing water problems,

New but inadequate laws and policies on climate change, disaster risk reduction. The Philippines is one of the first countries to have a national policy on climate change. In October 2009, Republic Act 9729 (Climate Change Act of 2009) was enacted by former President Gloria Arroyo. It created the Climate Change Commission (CCC), headed by the President, and designated the CCC as the sole policy-making body on the issue of climate change. It produced a National Framework Strategy on Climate Change (NFSCC) in April 2010, which supposedly provides a framework for all the government's climate-related efforts and initiative. A National Climate Change Action Plan (NCCAP) was formulated by the CCC and

RA 9729 and RA 10121 still fail to substantially address larger issues of development and are not enough to address current vulnerabilities to climate change and disasters

corresponding Local Climate Change Action Plan (LCCAP) will be drafted by LGUs based on this. The NCCAP was signed by President Aquino in November 2011. In 2010, Arroyo also enacted RA 10121 (Disaster Risk Reduction and Management Act of 2010) to replace PD 1566 issued by President Marcos in 1978.

While these are new and welcome policy developments which give CSOs and people's organizations a little space to engage in policy consultations, RA 9729 and RA 10121 still fail to substantially address larger issues of development and are not enough to address current vulnerabilities to climate change and disasters, such as the persistence of poverty among the majority of people. These two laws exist side by side with other laws promoting the unsustainable extraction of natural resources, the deregulation and liberalization of resource-based industries, and the privatization of common goods and resources–policies which cancel any gains from these two new laws. These two laws also still abide by the old cycle of debt and donor-driven climate financing and will cause the country to incur more loans that are beyond it's capacity to pay.

The disaster of bad governance. The lack of good governance is also a formidable challenge. Funds for climate change and disaster risk reduction and management need to be constantly monitored and accounted for. This was the lesson learned in 2009, when the Office of the President under the Arroyo administration used up the P800 million ($18.36 million) emergency fund for calamities for foreign travel and ran short of funding when super typhoons Ondoy and Pepeng devastated the country. When Pres. Aquino assumed office in 2010, he immediately complained that 70% of the P2 billion ($45.9 million) calamity fund earmarked for 2010 was already spent by the previous administration while the allocations for 2011 are decidedly insufficient.[81]

Philippine emission sources. In addition to the issue of vulnerability and adaptation to climate change impacts, the issue of mitigation (or the reduction of GHG emissions) needs to be addressed. In the Philippines, the energy sector is the highest contributor to GHG emissions with 55% of the total. This increased from the first GHG inventory in 2000, where the energy sector accounted for 49% of the total for that period. Most emissions come from electricity generation and transport by oil companies, utilities providers, coal fired power plants, and the like. Carbon emissions in the country continued to rise from 1994-2000, mainly from the energy and waste sectors.

Top emitters are rich countries and corporate polluters. The 41 richest countries, led by the US, refuse to substantially limit their GHG emissions to prevent catastrophic climate change. The US alone accounts for almost 29% of historical carbon emissions since 1850, while the Philippines accounts for 0.17%. While China has overtaken the US since 2007 as the top annual emitter due to its rapid industrialization, the US still leads in terms of per capita emissions with 17.7%

as opposed to China's 5.8% in 2009. According to the 2011 *Fortune Global 500*, an annual ranking of the largest corporations in the world in terms of revenue and profits, 8 out of the top 10 richest firms are from the energy, oil and transportation industries, profiting from their pollution of the planet. (See Annex 2)

The 41 richest countries, led by the US, refuse to substantially limit their GHG emissions to prevent catastrophic climate change.

Control of global banks over climate finance. International financial institutions (IFIs) such as the World Bank, ADB and USAID have strategically positioned themselves to influence the government's climate change policies and programs by providing funding, mainly in the form of foreign loans and Official Development Assistance already committed to developing countries even with the absence of climate change. The DENR's National Economic, Environment and Development Study Assessment Report reveals that multilateral agencies and donor countries have the most influence in setting the direction of the country's climate programs.

Dubious mitigation projects funded by IFIs. Most money for climate change initiatives goes to mitigation (about $8 billion annually) mainly through transactions in the carbon market under the Clean Development Mechanisms and the recently launched Climate Investment Fund by the World Bank. In the Philippines, $657 million is available in grants for mitigation projects, more than 90% of which is financed by IFIs–despite the country being only a "minor" emitter of GHGs worldwide. In 2008, the World Bank got an initial pledge of $6.1 billion from 10 industrialized countries to develop a low-carbon economy for developing countries. In the Philippines, the World Bank allocated $250 million "low-interest" financing allocations to promote renewable energy and more efficient urban transport. Ironically, multilateral banks have also funded dirty technology which do not reduce the country's emissions, such as the WB-financed Calaca Power Plant in Batangas and the ADB-funded Masinloc coal plant in Zambales. In constrast, historical and projected data from 1992- 2019 indicates that most funding for adaptation in the Philippines is in the form of loans provided by IFIs and bilateral institutions ($658 million) as compared to grants ($236 million).

Failed global negotiations. The Philippines has been an active party in the global negotiations. It ratified the United Nations Framework Convention on Climate Change in 1994, a multilateral agreement between 192 countries aimed at achieve a lasting solution to the crisis. Since then, it has been part of the 16 annual Conference of Parties (COP) aiming to arrive at a legally-binding agreement to cut GHG emissions and provide adaptation support for developing countries. These COPs have so far yielded the following agreements:

a. The Kyoto Protocol–a legally binding agreement to cut GHG emissions especially by developed countries that was ratified by all parties except the US. However, its targets remain too low (5.2% only by 2008-2012 against a 1990 baseline) and were not translated into actual emission cuts. This was because rich countries employed market-based mechanisms such as CDM and emissions trading.

Defenders of the environment are themselves subjected to various threats.

b. The Copenhagen Accord (COP 15)–a three-page non-binding deal brokered by the US and supported by the European Union countries, China, Brazil, India, and South Africa, in the absence of a legally binding agreement to replace the Kyoto Protocol. The deal evaded the issue of historical responsibility by top GHG emitters and instead proposed a system of pledges from developed countries to cut emissions while promising a $30 million Green Climate Fund, without any assurance of its sources and how it will be used.

D. RISING THREATS TO ENVIRONMENTAL DEFENDERS AND ADVOCATES

Confronted with such a state of crisis, more and more Filipinos have taken steps to protect the environment, the country's national patrimony and the people's welfare. However, defenders of the environment are themselves subjected to various threats. Over the years, more advocates have been harassed, sued, threatened, and even killed for pursuing what is right. These rights violations occurred in addition to those committed against government employees, such as foresters, who have also had their share of danger in the process of enforcing environmental laws.

What follows are some major violations of human rights related to environmental advocacy, monitored by the Task Force Justice for Environmental Defenders, Kalikasan People's Network for the Environment and human rights watchdog Karapatan.

Extrajudicial killings. Eight environmental activists have been killed under the Aquino administration to date. Since 2001, there are 35 other cases of extrajudicial killings (EJK), 2 victims of attempted assassination and 2 victims of enforced disappearance monitored among the ranks of environmental activists that remain unresolved up to today. Many of the victims were active leaders of grassroots campaigns against large dams, commercial logging, and large-scale mining operations in their respective communities. Recent victims include:

a. Father Fausto "Pops" Tentorio. On October 17, 2011, an Italian missionary from the Pontifico Instituto Missioni Estere, Fr. Fausto "Pops" Tentorio was killed in Kidapawan City by an unidentified assassin. Tentorio spent the past three decades as a missionary in Mindanao, ministering to peasant and lumad communities and supporting their struggles for the environment, land and rights. He was also a vocal critic of large-scale mining projects in the region, such as that of Xstrata-SMI.[82] A citizens fact-finding mission linked Tentorio's murder to the military. The Department of Justice (DOJ) has yet to act on this case.

b. Dr. Gerry Ortega. On January 4, 2011, radio broadcaster, former Palawan board member and prominent environmentalist Dr. Gerry Ortega was killed in broad daylight by a hired gunman in Puerto Princesa City, Palawan. The alleged gunman Marlon Recamata claimed it was a hit job commissioned by Rolando Edrad, Jr. an aide of former Palawan Governor Joel Reyes, who was

the prime suspect in the killing. The DOJ absolved Reyes in its investigation in June 2011, prompting Ortega's family to file a motion for reconsideration. A new DOJ panel was formed in September 2011 despite Reyes' attempts to prevent a reinvestigation. In March 2012, the Regional Trial Court in Palawan ordered the arrest of Reyes and his accomplices for the killing of Ortega. The suspects remain at large.

c. The 'Kananga 3': Leonard Co, Sofronio Cortez and Julius Borromeo. On November 15, 2010, esteemed ethno-botanist Leonard L. Co, forest guard Sofronio Cortez and farmer Julius Borromeo were completing a field research survey of native trees in the forests of Kananga, Leyte when they were shot and killed by gunfire. Soldiers of the 19th Infantry Battalion present in the area said that it was a crossfire with New People's Army (NPA) rebels, but two survivors from Co's group contradicted this claim, saying that only the military was in the vicinity. This was confirmed by an independent citizens' fact-finding mission held shortly after the killing.[83] A later report by the DOJ and the National Bureau of Investiation (NBI) in January 2011 cleared the military from the killing, prompting the Co family to file formal criminal charges against the 19th IB. The case is still pending with the DOJ. The Commission on Human Rights (CHR) has not yet released its findings to date.

d. Eliezer Billanes. Eliezer Billanes, a community leader, was shot dead in a public market in Korondal City, Mindanao on March 11, 2009 allegedly by elements of the Philippine Army operating in his hometown. He was the Chairperson of Alliance for Genuine Development in Mindanao which led the opposition to the Tampakan Copper Gold Project in South Cotobato and a vocal critic of the operations by Xstrata Sagittarius Mine, Inc. in their area. Two weeks before he was killed, he received threats and found out that his name was in the military's Order of Battle. The local NBI office conducted its own investigation shortly after the incident but terminated it due to the failure of Billanes' widow to file a complaint. Billanes admitted she failed to appear before the NBI office in General Santos City, some 70 kilometers from home, due to financial problems.[84] The case remains unresolved to date.

Around 120 people including forest rangers, inspectors and activists, have been killed or injured in the line of duty since the early 1990s.

The DENR itself has decried the growing number of environmental workers, citing that around 120 people including forest rangers, inspectors and activists, have been killed or injured in the line of duty since the early 1990s. Unarmed forest rangers and inspectors are also likely targets for illegal loggers with private armed guards in forest hot spots.

Killings of anti-mining advocates. An alarming trend in recent years is the killing of advocates who opposed mining projects in their communities. This is related to the upsurge of large projects without the community's consent, which increased as the mining liberalization policy went full steam.

An alarming trend in recent years is the killing of advocates who opposed mining projects in their communities.

Other anti-mining activists killed were:

a. **Jimmy Liguyon**, a leader of the Matigsalog tribe and Barangay chairperson of Dao, San Fernando in Bukidnon who protected his village from the intrusion of large-scale mining operations and biofuel plantations. Liguyon was shot dead inside his home on March 5, 2010 by members of a paramilitary group named the New Indigenous People's Army Reform (NIPAR). Liguyon previously refused to give in to NIPAR's demands for him to sign documents that would consequently open the village to large-scale mining.

b. **Rudy Segovia**, a farmer in Siocon, Zamboanga Sibugay was shot by a security guard of TVI during a protest in front of the TVI office last March 6, 2011.

c. **Santos Manrique**, a member of an anti-large scale mining group in Compostela Valley, was killed while having dinner in his home by two armed men on April 12, 2011.

d. **Leodinio Monson**, a Mandaya leader from the Nagkahiusang Mag-uuma sa Boston (United Farmers of Boston), Davao Oriental, was gunned down on April 29, 2009. He led his community's struggle against encroachments on their ancestral domain by Australian-owned Omega Gold Mining Company.

e. Arman Marin, a councilor of Sibuyan Island in Romblon, was shot dead on October 3, 2007 by a security guard of Australian firm Pelican Resources, while leading a protest rally against the mining firm's entry in their community.

f. **Rogelio Lagaro**, a member of the La'Bugal tribal association and an active campaigner against the operations of mining corporation Tampakan Mineral Resources, Inc., was killed in Columbio, Sultan Kudarat by suspected elements of the 25th IBPA on June 1, 2006.

g. **Marcus Bangit**, coordinator for the Cordillera Peoples' Alliance Elders Desk, was killed in San Isidro Echague, Isabela on June 8, 2006.

Militarization in mining communities. Both military and para-military elements have been historically used to quell and stifle opposition to large-scale projects in rural areas. This was again affirmed in February 2008 when former Pres. Gloria Arroyo created the Investment Defense Force (IDF), which mobilized the military and police to secure mining, agricultural plantations, power facilities and other infrastructure against attacks by revolutionary groups throughout the country. An offshoot of the IDF is the Integrated Tribal Defense Systems, such as the Task Force Gantangan, which are used by the government and foreign TNCs to harass and contain indigenous peoples' opposition to their projects and operations in Mindanao.

President Aquino's decision to support the call of the military to deploy paramilitary groups in mining areas have signaled more human rights violations. Leaders and members of indigenous groups have sounded the alarm over the worsening militarization in their communities. In October 2011, for example, six leaders of the indigenous people's organization Linundigan in Agusan del Sur went

into hiding after being threatened by members of paramilitary forces known as Salakawan ("enforcer of all laws" in the local dialect). In June that year, the group's director, Arpe Belayong and his nephew Solte San-ogan, a 21-year old deaf mute, were killed by elements of Salakawan, reportedly because he refused to sign a document which would enable loggers to operate within their ancestral domain.

More environmental defenders are being subjected to forms of legal harassment.

Harassment suits. More environmental defenders are being subjected to forms of legal harassment through Strategic Legal Actions Against Public Participation (SLAPPs). SLAPPs affect public participation by limiting freedom of speech and the right to seek redress of grievances. The CEC has monitored several SLAPP cases, including the following: [85]

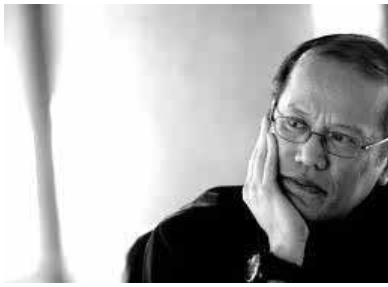
a. P10 million libel suit filed in July 2007 against CEC's board members by the Philippine partners of Lafayette Mining Limited, an Australian-owned mining firm that used to operate a mine in Rapu-Rapu island. The suit was filed against CEC for publishing a primer discussing the ecological, economic, and social impacts of the project on the island and its residents. After nearly four years, the case was withdrawn by Lafayette.
b. Charges of grave coercion filed in November 2007 by Sibuyan Nickel Properties Development Corporation against 85 anti-mining advocates for joining the October 3, 2007 protest in Sibuyan Island, where councilor Armin Marin was shot dead. Among those charged were 14 elementary school teachers and witnesses to the killing of Marin.[86]
c. Civil charges of alleged obstruction of operations and a Temporary Restraining Order was sought by Oxiana Philippines in July 2007 against IP leaders from seven tribes who set up a barricade in Kasibu, Nueva Vizcaya province, to bar the entry of a mining firm's equipment into their community. Both cases were dismissed by the local courts.
d. Charges of libel filed in January 2006 against Josefina B. Montes, a citizen of Homonhon, Eastern Samar and a member of a local environmental organization, by Heritage Resources and Mining Corporation. Montes was accused of libel for giving a radio interview where she expressed concerns about the company's operations. The case was eventually dismissed.
e. Charges of libel in 2006 against Dipolog City Bishop Jose Manguiran, Fr. Albert Bael and seven clergy by Canadian Mining firm Toronto Ventures Inc. Pacific in Siocon. Prosecutors later dismissed the suit for lack of merit.[87]

DOWN THE WRONG ROAD: CURRENT POLICY AND GOVERNANCE

The environmental crisis that the Philippines faces—as manifested in the various problems outlined above—continues to worsen. Sadly, two years under President Benigno "Noynoy" Aquino III have done little to reverse this reality.

Back in 2010, President Aquino hardly registered as a "green Presidential candidate" during the electoral campaign period, with a scant environmental agenda, barely existent track record, and lukewarm attitude towards civil society's calls for urgent ecological reforms. His first State of the Nation Address (SONA) in July 2010 expressed little concern for the environment and emphasized public-private partnerships (PPPs) which opened up more national assets and natural resources to private and foreign control. His silence on environmental concerns was also seen in his first and second SONA speech, which conspicuously failed to mention critical issues, such as plans for dealing with the impacts of climate change and the successive killings of environmental advocates, and again stressed his support for PPPs.

While the administration of President Aquino has inherited many existing environmental problems from the past administrations which need to be resolved, it has also pursued and enhanced problematic economic, social, and environmental policies and programs of the past which have largely contributed to these problems. It has failed to decisively reverse the policies of the previous administration which have



promoted the large-scale exploitation and plunder of Philippine national patrimony, ravaged our already critical marine, freshwater, and terrestrial ecosystems and left environmental advocates vulnerable to all sorts of violations against basic civil and human rights. The Aquino administration generally maintained a development framework premised what external investors want, not on what the people need and on how Philippine ecosystems and natural resources should be strategically managed. This brand of governance comes at a time when the Philippine environment is already in a state of crisis, and when the basic social sectors dependent on the country's natural wealth are facing among the gravest spells of poverty and hunger.

In 2011, the Aquino administration continued to pursue the road of inaction. While it has attempted to respond to some environmental concerns, it has largely failed to address larger questions of governance, policy, political will and implementation of environmental laws. It has never questioned the larger economic and political frameworks which have promoted the widespread exploitation and plunder of Philippine natural resources. It has never lifted a finger to ensure ecological and social justice for the various atrocities plaguing the environment sector. 2011 has seen the administration fumble and flail over several major environmental issues, including the following:

Inadequate logging ban, reforestation projects. On February 1, 2011, following a series of landslides and flash floods, Pres. Aquino issued Executive Order 23 declaring a moratorium on the cutting and harvesting of timber in the natural and residual forests and creating an anti-illegal logging task force. Shortly afterwards, DENR-MO No.52 suspended the issuance of new logging contracts. EO 23, however, has not revoked or categorically banning commercial logging but only stopped the DENR from granting new contracts while reviewing existing contracts. Loopholes, such as allowing logging in plantation forests and mining concession areas and failing to cancel existing permits, remained, setting up this policy for failure. On February 24, 2011, Pres. Aquino issued EO 26 or the National Greening Program to plant 1.5 billion trees from 2011 to 2016. This ambitious project, while commendable, still faces challenges of sustained funding and weak or faulty implementation.

Skewed policy direction under the PDP. The policy directions of the current administration were revealed in full by mid-2011, when the Aquino administration released the Medium-Term Philippine Development Plan (PDP), which serves as a blueprint for the government's overall strategies for growth and development. A closer look at the PDP reveals issues affecting existing ecological concerns:

- PPPs encompassing the privatization of the power, water, sewerage and sanitation, agro-industries, agri-services, agro-forestry and fisheries, and disaster risk reduction sectors and their effects on project accessibility, affordability, and relevance to the needs of the poorest social sectors.
- More incentives for big business and promotion of big infrastructure projects and support for the large-scale mining industry .

If the PDP is any indication of the Aquino administration's commitment to ecological concerns, there is much cause for dissatisfaction and dissent. The administration promised change, but has pursued an economic platform no different from that of its predecessor.

Continued support for mining liberalization. The rabid liberalization of the Philippine mining industry was one of the infamous legacies of former Pres. Arroyo, who is also the author of the Mining Act of 1995. The Aquino administration merely pursued what its predecessors left behind. Pres. Aquino has prioritized support for foreign and large-scale mining in the same fashion as Pres. Arroyo. While it issued a moratorium on all existing mining applications pending review in February 2011, the administration nonetheless approved 353 new mining contracts.

The Aquino administration has largely failed to address larger questions of governance, policy, political will and implementation of environmental laws.

By the third quarter of 2011, the Aquino administration began openly giving concessions to mining firms, such as exempting them from the EO 23, and pushed the number of approved mining applications to 730 despite calls for a similar moratorium on mining. It identified five priority projects in Nueva Vizcaya, Surigao del Norte, Compostela Valley, Palawan, and South Cotabato. It has also inked more agreements with foreign mining investors, targeting around $14 billion more in investments in the next five years. In addition, hundreds of mining applications for magnetite have mushroomed all over coastal areas.

The administration's bias for large-scale mining was made more evident by January 5, 2012, after a major landslide in the small-scale mining community in Pantukan, Compostela Valley left almost 66 people dead and more than 100 missing. The government continued to enforce its order to evict small-scale miners away from the areas targeted by favored large-scale miners.

Disastrous unpreparedness. In this time of climate change impacts, the Aquino administration failed to prepare communities for any coming disasters with its lackluster leadership over the newly-instituted climate body, inaction over policy reforms, and continuation of the part programs under Arroyo. While Pres. Aquino is designated as the head of the Climate Change Commission, the administration seems to merely pay lip service to the issue of global warming as it inaugurated more coal-fired power plants—among the larger greenhouse gas emitters—within the year. Currently, there are around 11 proposed coal plants to be built in various parts of the country: in Isabela, Batangas, Manila, Quezon, Zambales, Davao del Sur, Saranggani and South Cotabato provinces.

The administration was thrice tested by extreme weather events in 2011. Among these were Typhoons Pedring and Quiel in October which damaged P15 billion in agriculture and infrastructure, and Typhoon Sendong (Washi) on December 16 in Northern Mindanao and Central Visayas—considered the world's deadliest storm in 2011 and the Philippines' deadliest cyclone in the last 12 years. Sendong left more than 1,268 dead and more than 1 million affected. Bitter lessons

learned from fresh tragedies—such as Typhoon Ondoy in 2009—were seemingly ignored, as the administration scrimped on the national budget for disaster preparedness in 2011.

Killings, rights violations continue. The killings, harassment, and rights violations of environmental advocates continued under the Aquino administration. Nine environmental activists have been killed under Pres. Aquino's watch to date, including Leonard Co, Dr. Gerry Ortega and Fr. Fausto Tentorio. Some other 33 killings of environmental activists since 2001 remain unresolved up to today.

Pres. Aquino has prioritized support for foreign and large-scale mining in the same fashion as Pres. Arroyo.

ENVIRONMENTAL ACTION AND COLLECTIVE STRUGGLE

The Aquino administration continues to stray from the path of good governance, social justice, and the protection of our ecological wealth. It has yet to pursue a path of genuine reform to stop and undo the pillage and plunder of our soil, seas, forests and mountains. Its actions have only contributed to worsening the state of the country's endangered and vulnerable ecology; to further protecting elite and foreign interests in industries related to natural resource extraction; to evading the pursuit of justice for environmental defenders killed for pursuing their advocacy.

On the other hand, 2011 was also a year for civil society organizations, peoples organizations, progressive legislators and local government officials, and countless communities to unite in our resolve to protect the environment and people's welfare. More and more citizens and communities feel the urgent need to be informed and to act on the many ecological issues they encounter. More people are increasingly adopting and also going beyond lifestyle changes to embrace and support the broader struggle of communities for the environment and people's welfare.

Since last year, the people's rising resistance to destruction, poverty and plunder is reflected in various initiatives from the provincial level to the national level:

Growing grassroots resistance. The crescendo of grassroots opposition, particularly against large-scale and foreign mining projects, should serve as a wake-up call to the Philippine government to embark on comprehensive and wide-reaching environmental, social, and economic reforms. Among the nationwide people's actions this year were the protest caravans of indigenous peoples from Northern Luzon to Metro Manila to protest the Mining Conference 2011 organized by the Philippine Chamber of Mines at the Sofitel Plaza on September 2011. Down south, more than 2,500 people joined a five-day, 150-kilometer long march from Davao del Sur to Koronadal, South Cotabato in December 2011 to protest against the XStrata-SMI mining project and human rights abuses in the countryside. Other various campaigns and protest actions in response to a wide range environmental problems have mushroomed all over the country throughout the year, underscoring the rising resistance of communities, citizens and advocates to the threat against their lands, livelihood and lives.

Changing current policies. The need to change current policies and laws governing the use and management of our natural resources was exemplified in the filing of progressive legislation such as House Bill 4315 or the People's Mining Bill in Congress last March 2, 2011. The bill has since then been consolidated with other similar proposals and is being deliberated in the House of Representatives. Countless other bills and resolutions have also been filed in Congress and the Senate response to other ecological and people's concerns, reflecting the need to rethink and challenge current environmental policies and practices.

More local governments take a stand. Several local governments have supported the calls of people's organizations to oppose development aggression, many against mining projects. From 1999 up to the present, ten provincial governments have imposed mining moratoriums ranging from 25 to 50 years and banned open-pit mining in Zamboanga del Norte and South Cotabato. In 2011, the local governments of Albay, Zamboanga del Norte, Batangas, Negros Occidental and Romblon have issued their own versions of mining moratoriums. In January 2011, for instance, the provincial government of Romblon issued an indefinite moratorium on metallic mining, particularly in Sibuyan, despite 24 pending applications for large-scale mining permits which would cover 42% of the entire Sibuyan Island. In November 2011, the provincial government of Zamboanga del Norte passed an ordinance banning open-pit mining.

In December 2011, Davao Mayor Sara Duterte vetoed a city ordinance supporting a 300-megawatt coal fired power plant by Abiotiz Corporation in Toril, Davao.[88] In the same month, the Bohol provincial board scrapped the controversial 450-hectare Panglao reclamation project by Oasis Leisure Islands and Development Inc. and approved another resolution "opposing the establishment of any form of reclamation within the shores of Panglao Island."[89]

Challenging the courts. The year 2011 also saw more citizens testing the *Writ of Kalikasan*, a legal remedy to protect the right to ecology, first proposed by the Supreme Court (SC) in its Rules and Procedures on Environmental Cases in April 2010. In 2010, Makati residents and West Tower Condominium filed the first case against First Philippine Industrial Corporation in the wake of the latter's petroleum pipeline leak. This was followed in 2011 by petitions for a Writ of Kalikasan in response to various issues, including illegal mining operations in Surigao del Norte and Surigao del Sur, the Irisan dump in Baguio City, a garbage dump in Salambao off Manila Bay, and the reclamation project along the Bacoor-Las Pinas-Parañaque coastline.

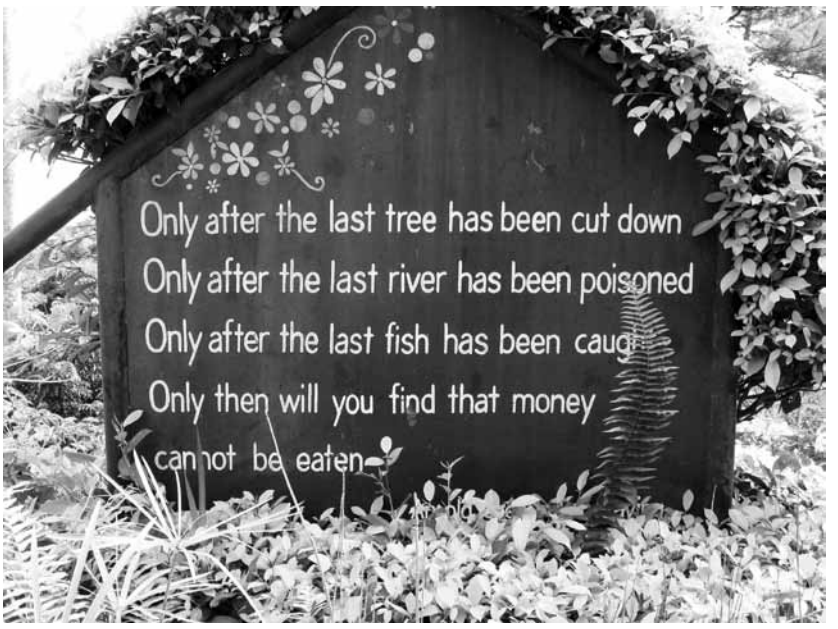
In another development, the SC in November 2011 finally decided in favor of the petition filed by farmers of Hacienda Luisita and ordered the distribution of 4,916 hectares of lands to the original 4,296 farmworker beneficiaries. Vigilance in needed to ensure that this is followed through and not used as a mechanism to continue evading calls for genuine land reform.

Up in arms against mining. Armed revolutionary groups also launched offensives against mining firms Philex (July 2011 in Sipalay, Negros Occidental), Taganito Mining Corp. and Platinum Group Metals Corp. (July and October 2011 in Claver, Surigao del Norte). Such incidents underscore the extent of how large-scale mining has contributed to the current conflict and how the issue of development must also be addressed in the quest for a just and lasting peace.

Continuing the search for justice. Families and colleagues of slain environmental advocates have convened formations seeking accountability for the unresolved crimes against their loved ones, including the Task Force Justice for Environmental Defenders, Justice for Leonard Co Movement, and Justice for Gerry Ortega Movement.

Calling for climate justice and social justice. More Filipinos united with advocates from other countries in seeking accountability and genuine solutions to the global threat of climate change, through events organized by networks such as the International League of People's Struggles and the People's Action on Climate Change. These included the International Festival for People's Rights and Struggles on July 2011 in Manila and protests at the annual COP 17 in Durban, South Africa.

More and more people can be united for change through the path of environmental and social awareness, action and struggle. Thus, the years 2012 and 2013 offer both a challenge and an opportunity to all those concerned about the country's ecology and natural wealth: in various communities, workplaces and classrooms by planting the seeds of environmental awareness and action; in the international arena by building more solidarity with environmental advocates worldwide; in the judicial arena by pushing legal battles and available remedies to their limits; in the legislative arena by working for more champions of the people and the environment; and in the parliament of the streets by advocating for real social and environmental change for the common good.



ANNEX I: LIST OF AGROFUEL INVESTMENTS FOR BIODIESEL AND BIOETHANOL PLANTS & PLANTATIONS (COMPILED AS OF 2011)

BIODIESEL								
1	Highlands Development Corp.	Lamut, Ifugao	jatropha	20000	20000			
2	BioEnergy North Luzon Inc. (BENLINC)	Ilocos Sur,	coconut	100000	15000	$74 million		Pacific Biofields Corp. (Japan)	
3	Toyo Engineering Corp. (Japan)	Pangasinan, Ilocos Sur, Ilocos Norte La Union.	coconut	600000		$1.3 billion		Toyo Engineering Corp. (Japan)	
4	PNOC-AFC & LGU of Zambales	Botolan & Iba, Zambales	jatropha	32000	30000		PNOC-AFC & LGU of Zambales		
5	BioEnergy Farms Inc	Cabangan & Iba in Zambales	jatropha	10000	10000				
6	DK Biofuels Inc.	Tarlac	jatropha	30000					
7	PNOC-AFC	Fort Magsaysay, Laur, Nueva Ecija	jatropha	500	500				started planting since 2007
8	Curcas Energy Ltd	Palawan	jatropha	100000				Curcas Energy Ltd (Australia)	
9	PNOC-AFC & Royal Green Energy Dev't Co.	Iwahig, Puerto Princesa, Palawan	jatropha	10000	10000		Palawan Biodiesel Development Corp.		approved since 2007
10	PNOC-Alternative Fuels Corp. (AFC)	Duero, Bohol & Cebu	jatropha	15000	10000	P25 million			started planting since 2009
11	Nimmo-Bell & Co. Ltd.	Ubay, Bohol	jatropha	500	500			Nimmo-Bell & Co. Ltd. (New Zealand)	
12	Kibio 2007 Corp.	San Roque, Northern Samar	jatropha	180000	10000	$5 million		KIBIO 2007 Co. Ltd. (South Korea)	started planting since 2008
13	Herminio Teves Group	Zamboangita & Tamlang Valley, Negros Oriental	jatropha	10000	10000			Global Tree Trust (Spain)	started planting since 2009

14	PNOC-AFC	Bukidnon & Misamis Oriental			10000				
15	Abundant Biofuels Corp.	Cagayan de Oro, Misamis Oriental	jatropha	100000	100000			Abundant Biofuels Corp. & BioJet Corp. (U.S.)	
16	PNOC-AFC	Bukidnon & Misamis Oriental	jatropha	10000	10000				
	PNOC-AFC	General Santos City	Jatropha	1200000	32000	$105 million	Jubilee Agri-Advancement Corporation		started planting since 2008
17	Eco Global Bio Oils Inc.	Region 12	jatropha	100000	5000			Eco Solutions Co., Ltd (South Korea)	
18	Guidance Management Corp.	Laak, Compostela Valley & San Isidro & Asuncion, Davao	oil palm	30000					
19	Chemrez Technologies Inc.	Bagumbayan, Quezon City	coconut			P650 million	Chemrez Technologies Inc.		approved by DOE since 2009
20	Golden Asia Oil Int'l Corp.	Bagong Ilog, Pasig	coconut			P460 million	A. Y. Tantuco Manufacturing Inc.		approved by DOE since 2009
21	Pure Essence Int'l Inc.	Bagong Ilog, Pasig	coconut			P404million	Pure Essence Int'l Inc.		approved by DOE since 2009
22	Senbel Fine Chemicals	Lucena City, Quezon	coconut						approved by DOE since 2009
23	Mt. Holly Industrial Co. Ltd.	Brgy. Domoit, Lucena City	coconut						approved by DOE since 2009
24	BioEnergy 8 Corp.	Sasa, Davao City	coconut						operational since 2008
BIOETHANOL									
25	Eastern Renewables Fuels Corp.	Quirino & Delfin Albano in Isabela	cassava	2000	1000	$30 million	Eastern Petroleum Corp.		endorsed by DOE since 2007
26	Green Future Innovation, Inc.(GFII)	San Mariano, Benito Soliven, Naguillian & Ilagan City in Isabela	sugarcane	15000	11000	$120 million	Phil. Bioethanol and Energy Investments Corp./ EcoFund Land Dev. Inc	Itochu Corp. & JGC Corp. (Japan), GCO & Company Ltd. (Taiwan)	operational by 2010-11

	Company	Location	Feedstock	Feedstock Area (hectares)		Investment	Owners / Partners		Status
				Target	Matched		Filipino	Foreign	
28	E-Cane Fuel	Lal-lo, Cagayan	sugarcane, molasses	20000	20000	$150 million	Pampanga Industrial Park Corp.	E-Cane Fuel Corp. (U.S.)	operational by 2011-12
29	Central Luzon Bioenergy Inc.	Tarlac, Pampanga & Nueva Ecija	Sugarcane	50000	46000	$ 300 million	Central Luzon Bioenergy Inc.	Environment Plasma Co. Ltd. (South Korea)	plant operational by 2012
30	First Pampanga Biofuels Corp	Florida Blanca, Pampanga	cassava, sweet sorghum	13400	13400	$ 100 million			endorsed by DOE since 2007
31	Eastern Renewables Fuels Corp (ERFC)	Botolan, Zambales	cassava	10000	1000		Eastern Petroleum Corp	Guanxi Estates Corp. (China)	started planting since 2008
32	Biofuels 88 Corp	Bataan	molasses			P700 million	Flying V		operational by 2010-11
33	Capas Bioenergy Inc.	Capas, Tarlac	sugarcane, molasses	15000	5000	$30 million		Bronzeoak Ltd. (UK)	operational by 2010-11
34	Cavite Biofuel Producers Inc.	Magallanes & Maragondon, Cavite	sugarcane, molasses	6000	2500	P3.4 Billion	Lopa family, VG Puyat Group, Zamora family		approved by DOE since 2009
35	Palawan Bioenergy	Aborlan & Narra in Palawan	sugarcane, molasses	29000	7000				
36	Roxol Bioenergy Corp.	La Carlota, Province of Negros Occidental	molasses				Roxas Holdings Inc.	KBK Chem-Engineering Pvt. Ltd. (India)	commenced operation in 2010
37	Biofuels International Phils. Inc.	Murcia, Negros Occidental	sugarcane, sweet sorghum, molasses	10000	2000	P5 billion			commenced operation in July 2011
38	San Carlos BioEnergy Inc.	San Carlos City, Negros Occidental	sugarcane, molasses	5000	5000	P3 billion	Zabaleta & Company	Bronzeoak Ltd. (UK)	commenced operation in 2009
39	Fuel Inc.	Binalbagan, Negros Occidental	sugarcane, molasses	7000	7000				

40	Negros Biochem Corp.	Bago, Negros Occidental	sugarcane, molasses	7000	7000				
41	Daebong LS Ltd.	Negros Occidental	molasses					Daebong LS Ltd. (South Korea)	
42	Bogo Bioenergy Inc	Bogo, Cebu	sugarcane, molasses	8500	6500				
43	JG Summit Holdings Inc.	Manjuyod, Negros Oriental	molasses			P800 million	John Gokongwei		endorsed by DOE since 2007
44	Leyte Agri Corp.	Leyte Agri Corp.	molasses			$33.6 million	Phil. Agribusiness Dev Corp.	PRAJ (India)	approved by DOE since 2009
45	Basic Energy Corp.	Gutalac, Labason & Kalawit, Zamboanga del Norte	sugarcane, molasses, cassava	10000	6250			Nexum Energy (Canada)	commercial operations by 2011
46	Alsons Power	Misamis Oriental	cassava	18300	8000			Electricity Generation Public (Thailand) & Toyota Tsusho (Japan)	operational since 2010
47	Isabela Alcogas Corp.	Misamis Oriental	sugarcane	20000	20000				operational since 2009
48	Southern Bukidnon Bioenergy Inc.	Kibawe, Bukidnon	sugarcane, molasses	11000	9000	$ 30 million		Bronzeoak Ltd. (UK)	commercial operation in 2010
48	Eastern Renewables Fuels Corp. (ERFC)	General Santos, Saranggani	cassava	50000	4500		Eastern Petroleum Corp.		started planting since 2008
50	Robson Agroventures	Cotabato, Saranggani & Sultan Kudarat	cassava	25000					started planting since 2008
	Total			**983000**	**343150**				

Sources: *DA, PADCC, SRA, company websites, pia.gov.ph, malaya.com.ph, philstar.net, businessmirror.com.ph, mb.com.ph, inquirer.net*

ANNEX II: PARTIAL LIST OF ONGOING AND RECENTLY APPROVED CLIMATE CHANGE-RELATED PROJECTS IN THE PHILIPPINES FUNDED BY MULTILATERAL & BILATERAL INSTITUTIONS

Project	Description	Funder	Cost
Alliance for Mindanao Off-Grid Renewable Energy Project	installation of renewable energy systems such as solar and micro hydro systems in the ARMM	USAID	
Sustainable Energy Development Program	assists the Philippine government in developing and expanding the use of clean and indigenous fuels for transport and power including natural gas, biofuels, and RE (wind, solar, hydro, and geothermal)	USAID	
Clean Cities Program	information, education, and communication campaign to promote biofuels through free cinema ads in pilot cities Makati, Marikina, Baguio, Davao, and Metro-Iloilo Guimaras	USAID	
USAID–Environmental Governance (EcoGov) Project	assists to improve the capacities of LGUs and communities to plan and implement their approved resource management plans	USAID	
klima Climate Change Project	dissemination of basic information on global warming and its impacts on the Philippines and Asia to all stakeholders including policy makers	USAID	
Mainstreaming Disaster Risk Management	in partnership with NEDA, establishment of guidelines on the preparation of disaster risk management components of regional/local physical framework and land use plans, etc	UN-GEF	
Philippine Climate Change Adaptation Programme Phase 1	in partnership with DENR, to improve coordination of adaptation policy in the Philippines through clarity in the institutional structure	World Bank	$ 5 million
Enabling Activity for the Preparation of the Second National Communication to the UNFCCC	in partnership with DENR, evaluation of national circumstances, updating the inventory of GHGs for the year 2000, etc to be submitted to the UNFCCC	UN-GEF	
Strengthening the Philippines' Institutional Capacity to Adapt to Climate Change	in partnership with NEDA and DENR, intends to mainstream climate risk reduction into key national and selected local plans and processes, etc	UNDP	
Integrated Natural Resources and Environmental Management Sector Development Program	to mainstream natural resource management regimes thru enhancing livelihood opportunities in upland communities	ADB	$850,000 (TA); $100 M (loan)
Pasuquin East Wind Farm Development Project	TA for Energy Logics Philippines, Inc. to complete the feasibility study of the Pasuquin East site and help develop a private sector investment in a 120 MW wind farm in Ilocos Norte	ADB	$200,000
Philippine Energy Efficiency Project	Reduction of energy costs thru the use of efficient lighting systems, reduce GHGs and create carbon credits under CDM	ADB	$1.5 M (grant); $31.1 M (loan)
Renewable Energy and Livelihood Development Project for the Poor in Negros Occidental	achieve poverty reduction thru the provision and efficient use of sustainable renewable energy in support of promoting livelihood systems for poor local communities in off-grid areas	ADB	$1.5 M (grant)

Adaptation to Climate Change and Conservation of the Biodiversity in the Philippines	to come up with strategies to compensate with the loss of biodiversity in selected areas; to strengthen the IACC	GTZ	$3.4 M (grant)
Support Program for Solid Waste Management for LGUs Phase II	to assist selected LGUs in the implementation of RA 9003 or the Ecological Solid Waste Management Act	GTZ	$2.8 M (grant)
Integrating Disaster Risk Reduction and Climate Change Adaptation in Local Development Planning and Decision-Making Processes in the Philippines	to help integrate disaster risk reduction and climate change adaptation in local development planning; to enhance the National Action Plan on Climate Change that will focus on disaster risk reduction	AusAid	P87.5 M
Strengthening Natural Hazard Risk Assessment Capacity in the Philippines	to introduce climate change vulnerability modeling and enhancing the Rapid Earthquake Damage Assessment System (REDAS) tool developed by the Philippine Institute of Volcanology and Seismology	AusAid	P0.5 M (TA)
Improving Disaster Risk Reduction Knowledge Management Systems in the Philippines	to be implemented by Oxfam-Philippines, an international non-government agency that works on livelihoods, education, work in disasters, and ensuring poor communities have access to and control of their assets	AusAid	P19 M
Participatory Irrigation Development Project-	To re-design irrigation systems to make them more climate-resilient. The project is under implementation.	World Bank	$70 million
Flood Master Plan for Metro Manila-	Part of the Global Fund for Disaster Recovery and Reconstruction (GFDRR)	World Bank	

Sources: *USAID Philippines. "Global climate change", May 2008; NEDA 2008; ADB sample list of projects by country/region (*http://www.adb.org/Climate-Change/projects-country.asp*); BusinessWorld (June 27, 2009), "Germany funds climate change-mitigating program"; The Philippine Star (August 22, 2009), "Australia gives RP P123 million for climate change mitigation projects" , World Bank website*

ENDNOTES

[1] Poffenberger, Mark. (2006) "People in the forest: community forestry experiences from Southeast Asia." Int. J. Environment and Sustainable Development, Vol. 5, No. 1.

[2] Bureau of Fisheries and Aquatic Resources (BFAR) 2002 Census for Agriculture and Fisheries.

[3] Bureau of Agricultural Statistics (2007)

[4] National Economic Development Authority (NEDA). (2011) Philippine Development Plan.

[5] Department of Agriculture. ACPC Monitor. June 2, 2003. accessed March 24, 2011

[6] Department of Environment and Natural Resources. Accessed November 2011. <http://www.denr.gov.ph/index.php/component/content/article/16.html>

[7] Manila Bulletin.com.ph. (24 February 2010). "Philex Mining hikes stake in Sampaguita gas field" <http://www.mb.com.ph/articles/244995/philex-mining-hikes-stake-sampaguita-gas-field>

[8] World Bank. (2003). Philippine Environment Monitor. p.2.

[9] The Philippine Star. (27 June 2009). "DENR ordered to expand reforestation projects".

[10] Carandang, Antonio P. (July 2005). Forest Resources Assessment. National Forest Assessment: Forestry Policy Analysis, Philippines

[11] Nophea Sasaki & Francis E. Putz (2009) Wiley Periodicals. "Critical need for new definitions of "forest" and "forest degradation" in global climate change agreements"

[12] NEDA (2011) Philippine Development Plan 2011-2016, p. 307.

[13] State of the World's Forests 2005, as cited by Lonely Planet Philippines (2006) Rowthorne, C. et. al. p.55

[14] Department of Environment and Natural Resources (2008). Compendium of Basic Environment and Natural Resources (ENR) Statistics for Operations and Management (Second Edition)

[15] Philippine Clearing House Mechanism (2009). "Forest and Mountain Biodiversity: Trends". Retrieved 9 November 2010 <http://www.chm.ph/index.php?option=com_content&view=article&id=69%3Aforest-and-mountain-biodiversity-trends&catid=36%3Abiodiversity-in-the-philippines&Itemid=126>

[16] Haribon Foundation (2008) Position on the Sustainable Forest Management Bill" (as of July 1, 2008)

[17] http://www.mgb.gov.ph/Files/Statistics/MineralIndustryStatistics.pdf

[18] Department of Environment and Natural Resources. Accessed November 2011. <http://www.denr.gov.ph/index.php/component/content/article/16.html>

[19] NewsBreak Magazine. (July-September 2008). Carmela Fonbuena. On Shaky Grounds.

[20] No2mininginpalawan.com. (22 April 2011). "Hiding Behind Local Miner Permits, The Chinese Begin To Loot The Philippines For Minerals And Metals" <http://no2mininginpalawan.com/2011/04/22/hiding-behind-local-miner-permits-the-chinese-begin-to-loot-the-philippines-for-minerals-and-metals/>

[21] Mines and Geosciences Bureau. Mining Tenements as of March 2011 <mgb.gov.ph> accessed June 2011

[22] Aldaw Network. (21 January 2010) The Bulanjao Geotagged Report. <http://participatorygis.blogspot.com/2010/01/bulanjao-geotagged-report.html> accessed September 2011

[23] Philippine Star. (25 August 2005) Scientific studies on effect of Abra river pollution shown"

[24] Kalipunan ng Katutubong Mamamayan ng Pilipinas. (2011) ALARM Updates. June-July issue. "Indigenous Peoples raise alarm over large scale mining"

[25] Kaduami. (2008) Large-scale mining threatens Nueva Vizcaya IPs' food security <http://www.pnfsp.org/mediarelease/nueva-viz-mining-june-08> accessed March 2011

[26] Bulatlat.com. (25 July 2011)MARY LOU MARIGZA N. Vizcaya determined vs three mining giants <http://bulatlat.com/main/2011/07/25/n-vizcaya-determined-vs-three-mining-giants/>

[27] Boquiren, Arturo. Validating Benefit-Cost Analysis of Mining through Comparative Analysis and Test of Hypotheses. Unpublished

[28] Ibon Foundation, et. Al. (June 2011). Power Failure: 10 Years after EPIRA.

[29] Department of Energy. Key Energy Statistics 2009. Energy and Environment. <http://www.doe.gov.ph/statistics/energy&environment.htm>

[30] Bureau of Agricultural Statistics. (2011) <http://countrystat.bas.gov.ph/?cont=Recents>

[31] Briones, Nicomedes D., Environmental Sustainability Issues in Philippine Agriculture. Retrieved January 2011 <http://www.searca.org/web/e_library/asian%20journal%20of%20agriculture%20and%20development%20%28vol%202%20nos%201%20and%202%29/briones.pdf>

[32] NEDA. (2011) Philippine Develoment Plan

[33] Bulatlat.com. (16 February 2011). "Progressive Lawmakers to Congress: Tackle Land, Wage Issues to Time with Oslo Talks on Socio-Economic Reforms". <http://bulatlat.com/main/2011/02/16/left-to-congress-tackle-land-wage-issues-to-time-with-oslo-talks-on-socio-economic-reforms/>

[34] Philippine Network on Food Security Programmes (June 2, 2010). "The Feudal State of Farming in the Philippines" Retrieved 2 April 2011. <http://pnfsp.org/?q=databank/feudal/farming/10>

[35] SENTRA (2008) cited in AGHAM. State of Philippine Agriculture. Draft Paper.

[36] Ibon Features. (21 October 2009) Landlessness And Peasant Woes: A Lingering Calamity

[37] Ibon website. (20 January 2010). "Amid Threat to Food Security, Philippine Government Opens More Farm Land for Foreign Agribusiness Firms" <http://edm.iboninternational.org/2009/september-october-2009/259-amid-threat-to-food-security-philippine-government-opens-more-farm-land-for-foreign-agribusiness-firms>

[38] Philstar.com (23 February 2009). Donabelle Gatdula. "Eastern Petroleum unit seeks partner for ethanol project"

[39] Mariano (1999) cited in Greenpeace. 2008. Agrochemical use in the Philippines and its consequences to the environment.

[40] Ibid

[41] Mendoza (2004) cited in Greenpeace. 2008. Agrochemical use in the Philippines and its consequences to the environment.

[42] MASIPAG website. (14 June 2008). "Filipino farmers "convict" Monsanto Corporation" <http://www.grain.org/h/?id=105>,

[43] FAO website & BFAR 2009 report

[44] Bureau of Agricultural Statistics. (2011) <http://countrystat.bas.gov.ph> accessed December 2011

[45] Virola, Dr. Romulo A. (13 June 2006) "Our Children are at Risk," <http://www.nscb.gov.ph/headlines/StatsSpeak/061306_rav_children.asp>

[46] Philippine Daily Inquirer. (26 February 2011). Alave, Kristine L. "Coral reefs in Philippines among world's most endangered" <http://newsinfo.inquirer.net/inquirerheadlines/nation/view/20110226-322293/Coral-reefs-in-Philippines-among-worlds-most-endangered>

[47] Posa, Mary Rose et al (2008). Hope for Threatened Tropical Biodiversity: Lessons from the Philippines. Vol. 58 No. 3, BioScience

[48] Philippine Daily Inquirer (25 August 2006) Labiate, Ma. Diosa. "Guimaras sea grass is dying". <http://

newsinfo.inquirer.net/inquirerheadlines/nation/view/20060825-17157/Guimaras_sea_grass_is_dying>

[49] World Bank (2003). Philippines Environment Monitor.

[50] Philippine Daily Inquirer. (29 May 2011). Floods feared from reclamation project in Las Piñas-Parañaque lagoon <http://newsinfo.inquirer.net/10306/floods-feared-from-reclamation-project-in-las-pinas-paranaque-lagoon>

[51] Philipine Daily Inquirer. (23 May 2011) Stop Panglao reclamation. <opinion.inquirer.net/5336/stop-panglao-reclamation>

[52] Center for Environmental Concerns, Philippines (2005) Saving Our Future.

[53] Philippine WaterSupply Sector Roadmap (2008), p.8

[54] World Bank (2003) Philippines Environment Monitor

[55] *Manila Bulletin,(12 June 2010)*. Rafael Guerrero, *Conserving our water resources,* , <http://www.mb.com.ph/articles/261776/conserving-our-water-resources>

[56] Philippine WaterSupply Sector Roadmap (2008)

[57] Philippine WaterSupply Sector Roadmap (2008) p. 7

[58] Focus on the Global South Philippines Programme. (25 July 2011) Treading Troubled Waters <http://www.focusweb.org/philippines/fop-articles/articles/542-treading-troubled-waters>

[59] Gmanews.tv. (12 October 2009). Suits mulled vs San Roque dam operators over floods <http://www.gmanetwork.com/news/story/174438/news/nation/suits-mulled-vs-san-roque-dam-operators-over-floods>

[60] Bulatlat.com. (3 October 2011). Groups call for state control over dams to lessen damage of typhoons <http://bulatlat.com/main/2011/10/03/groups-call-for-state-control-over-dams-to-lessen-damage-of-typhoons/>

[61] Philippine Daily Inquirer. (6 October 2011). Legazpi water declared not potable

[62] World Bank. (n.d.) *Issues and Dynamics: Urban Systems in Developing East Asia*

[63] *J.V. Mangahas.(2006) Urbanization and Sustainability in Asia, The Philippines*

[64] Manasan, R.G. (2004) as cited in Linking Poverty and the Environment: Evidence from Slums in Philippine Cities http://www3.pids.gov.ph/ris/dps/pidsdps1033.pdf

[65] Inquirer.net. 19 October 2009. Metro squatter relocation to cost P32B. Norman Bordadora, Alcuin Papa. <http://newsinfo.inquirer.net/inquirerheadlines/nation/view/20091019-230820/Metro-squatter-relocation-to-cost-P32Been >

[66] DENR. (15 Aug 2011) Press Release. "DENR vows to strengthen public compliance to solid waste management law"

http://www.gov.ph/2011/08/15/denr-vows-to-strengthen-public-compliance-to-solid-waste-management-law/

[67] Environment and Management Bureau. Managing our Solid Waste: An Overview of the Ecological Solid Waste Management Act <http://www.emb.gov.ph/eeid/ESWM.htm>

[68] Philippine Daily Inquirer (2009) 'Metro air quality below standards'–DENR". <http://newsinfo.inquirer.net/inquirerheadlines/metro/view/20090625-212464/Metro-air-quality-below-standardsDENR>

[69] Synovate Research reinvented (2005) 'Air pollution adversely affecting 98% of residents'. Retrieved 7 July 2010

<http://www.cleanairnet.org/caiasia/1412/articles-59870_survey.pdf>

[70] The Manila Times (2008) 'Economic cost of pollution is P1.5 billion, 2 percent of GDP'. Retrieved 9 July 2010<http://www.manilatimes.net/national/2008/oct/05/yehey/top_stories/20081005top4.html>

[71] 350.org. <http://www.350.org/about/science> accessed 26 July 2011

[72] PAGASA (January 2011). Climate Change Scenario for the Philippines. Presentation by Rosalina de Guzman.

[73] *Manila Observatory (March 2010).* Technical Primer on Climate Change in the Philippines *for the Congressional Commission on Science & Technology and Engineering (COMSTE)*

[74] PAGASA (January 2011). Climate Change Scenario for the Philippines. Presentation by Rosalina de Guzman.

[75] www.irinnews.org. (4 Nov 2010). PHILIPPINES: Landslide risk increasing

[76] DENR-MGB, January 19, 2010. Released in PDI

[77] Manila Bulletin. (6 Aug 2010). RP world's most disaster-prone–study. <http://www.mb.com.ph/node/271081/rp-world- > accessed 7, March 2011

[78] Manila Standard Today. (11 February 2011) Karl Allan Barlaan, Christian Cardiente. Pushing the Green Agenda

[79] World Bank. (June 2008). Maria Fernanda Garcia Rincón, Felizardo K. Virtucio, Jr. Climate Change in the Philippines: A Contribution to the Country Environmental Analysis

[80] Manila Bulletin. (11 March 2010) ELLALYN B. DE VERA < http://www.mb.com.ph/node/247238/coral-reef>

[81] Bulatlat.com. As Disasters Mount, Groups Call on Aquino to Address Urgent Need to Prepare The Country. (21 March 2011). <http://bulatlat.com/main/2011/03/21/as-disasters-mount-groups-call-on-aquino-to-address-urgent-need-to-prepare-the-country/2/>

[82] The ManilaTimes.net (10 November 2011) Marjorie Pamintuan "Remembering our environmental heroes" <http://www.manilatimes.net/index.php/opinion/columnist1/11011-remembering-our-environmental-heroes>

[83] Justice for Leonard Co Movement. (11 December 2010). Groups release results of the Citizens' Fact-finding Mission on the killing of Leonard Co and companions <https://sites.google.com/a/agham.org/justice-for-leonard-co/home/justice-for-leonard-co-movement-updates>

[84] TargetEJK.net. (1 September 2010) Bong Sarmiento. "A Suspect, But No Case Filed: A Failure of Justice For Eliezer Billanes" <http://www.targetejk.net/index.php?option=com_content&view=article&id=46:a-suspect-but-no-case-filed-a-failure-of-justice-for-eliezer-billanes&catid=7:extra-judicial-killings&Itemid=14>

[85] From "SLAPP us not! Engaging harassment suits against Philippine environmental defenders published by the Center for Environmental Concerns –Philippines in 2009.

[86] Sibuyans Against Mining (28 November 2007). Press release. "Sibuyan Anti-mining Advocates SLAPPed". <http://www.minesandcommunities.org/article.php?a=8348>

[87] Frontline Mindanao. (14 June 2008) "Bishop denies he shifted advocacy" by Wendell Talibong. <http://frontlinemindanao.blogspot.com/2008_06_08_archive.html>

[88] Sunstar. (8 December 2011). Davao exec sees conflict with daughter over coal power plant. <http://www.sunstar.com.ph/davao/local-news/2011/12/08/davao-exec-sees-conflict-daughter-over-coal-power-plant-194804>

[89] Businessmirror. (7 December 2011) Bohol scraps Panglao reclamation project <http://businessmirror.com.ph/home/regions/20346-bohol-scraps-panglao-reclamation-project>

The Philippines can be considered a paradise of sorts in terms of ecological resources. A marvel of biodiversity, the whole archipelago has mountains of minerals, varied sources of energy, and an abundance of fertile land and freshwater. Yet this paradise has been mired in poverty, tragedy and strife for generations. The state of crisis facing the Philippine environment is reaching critical levels, as seen in recent disasters and signs of maldevelopment. It is high time that more Filipinos unite to save our natural wealth and ecosystems before it is too late.

Center for Environmental Concerns Philippines

www.cecphils.org