



FINAL REPORT

Reducing the Impacts of Environmental Emergencies: The Case of the 1997-1998 El Niño Southern Oscillation

THE PHILIPPINE STUDY

Fidel V. Ramos's notes on a newspaper article about El Niño-related droughts coming to the Philippines.

National Center for Atmospheric Research (NCAR) and United Nations Environment Programme (UNEP)

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Executive Summary

The main purpose of the project was to enhance the understanding of El Niño issues through a review of current early warning and preparedness systems in national, regional and global contexts; and through an assessment of the vulnerability of various socio-economic sectors and the information needs of decision makers in these sectors. Based on the assessment and the review, the project yielded preliminary guidelines for regional and national preparedness for El Niño events and their impacts. It also served to spark interest in initiating programs for capacity building for the international, academic, scientific communities and the media.

Socio-Economic Setting

The Philippines, located in Southeast Asia, is an archipelago of 7,107 islands. It is home to 76 million people and is one of the most populous countries in Asia and the world.¹ While most of the population still reside in the rural areas, urban migration has increased steadily. In 1996, the total urban population constituted 55% of the total national population. Metro Manila, with its continued influx of rural migrants, has become a very densely populated place, more crowded than Metro Tokyo or Metro Paris according to various studies. About 13% of the country's population resides within Manila's limited land area, representing a mere 0.2% of the country's total land area.

From 1991 to 1996, economic indicators reflected national growth. Since 1991, the Gross National Product (GNP) and Gross Domestic Product (GDP) have been on upward trends. In 1996, GNP grew to 6.9% and GDP to 5.7%. Despite the financial crisis of 1997, GNP registered 5.8% and GDP 5.1%.

In 1998, according to a report by the National Economic Development Authority (NEDA)² GNP grew by 0.1 percent. Meanwhile, GDP declined by 0.5 percent. The strong growth (12.9% of net factor incomes from abroad, which accounted for the difference between GNP and GDP) enabled overall output to achieve positive growth. The GDP contraction in 1998 was caused by the 6.6% drop in agricultural production, and the decline in construction and construction-related manufacturing by 9.5 percent. El Niño caused negative impacts on agricultural outputs in the first three-quarters of 1998. Palay, as well as other cash crops like coconut and sugarcane posted double-digit declines in the fourth quarter.

¹ The Philippines' Initial National Communication on Climate Change, Department of Environment and Natural Resources, 1999.

² UNDP Facts and Figures, sourced from the Internet, www.undp.com.

The country's Human Development Index (HDI) ranked 98th (out of 174 countries), according to the UNDP's World Development Report 1998, ranking lower than China, Thailand, Malaysia, and Singapore. Poverty remains to be the country's biggest problem with more than one-third of its people living below the poverty line. A disparity in the country's human development has also been noted in the different regions' HDI ratings: Metro Manila ranks the highest and the southernmost regions, the lowest. The figures indicate unequal growth from improvements in the economy over the last ten years. Per capita income figures also show disparity in wealth and in development distribution in the Philippines, with Metro Manila residents earning so much more than residents of other areas.³

Life expectancy in the Philippines increased from 66.5 to 68 years during the period 1992 to 1997. Basic health indicators have also improved. Communicable diseases such as acute respiratory infections showed a downward trend, as did the incidence of diseases associated with unsafe water supply and poor sanitation. Leprosy and malaria have ceased to be major public health problems.

The Philippines is vulnerable to many natural hazards. It is affected by tropical cyclones, volcanic eruptions, El Niño and La Niña episodes, earthquakes, tsunamis, droughts and floods. The worst of these disasters have caused the loss of human lives, homes and livelihoods, and resulted in economic disruptions in billions of Philippine pesos. In the last decade alone, the world witnessed the impacts on lives and property of a large number of Filipino communities because of the Mt. Pinatubo eruption in 1991, the earthquake in 1990, and the Leyte-Ormoc flash flooding in 1991.

The government responds to these climate-related impacts through at least eight (8) major mechanisms. One such mechanism is the national disaster and coordinating council (NDCC) of the Department of National Defense. This acts as the lead coordinating agency tasked to prepare for and respond to disaster situations. It partners with the department of science and technology through the Philippine Institute of Vulcanology and Seismology (PHIVOLCS) and the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) in delivering timely information to other government agencies, particularly the local governments, for their quick response.

The 1997-98 El Niño Event

In anticipation of the 1997-98 El Niño, Filipino scientists and officials monitored the occurrence of known climatic indicators of ENSO such as the following: the delayed onset of the rainy season, weak monsoon activity, weak tropical cyclone activity, and less than average number of tropical cyclones entering the Philippine area of responsibility. Areas of vulnerability were identified and classified according to low, moderate and high.

³ Alegre, AI (ed). Trends and Traditions, Challenges and Choices, Ateneo Center for Social Policy and Public Affairs, Quezon City, 1996. p. 225.

Tracing and assessing the flow of information on the 1997-98 El Niño. PAGASA provided early warning about El Niño as of 1995;⁴ the first drought advisory in May 1997; and from May onwards, provided a monthly weather outlook to the inter-agency committee for crisis water management, and to the Presidential Task Force El Niño. A presidential directive sent out to government agency heads in June 1997, enforced the monitoring of the development of El Niño closely. This resulted in concrete plans by key agencies to respond to the event.

The country also cooperated with international initiatives and sent a delegation to “The Asian Regional Meeting on El Niño-Related Crises” to discuss a regional climate outlook and opportunities for international cooperation in managing and reducing the effects of El Niño.

The print and broadcast media gave wide coverage of El Niño. This coverage could be classified in three stages: first, projecting impacts and identifying vulnerable areas, giving information and advice to the public about how to cope with the effects; second, reporting the actual impacts as they happened, and monitoring the responses of the disaster coordinating councils and local governments; third, in retrospect, providing analysis and assessment on the effectiveness of government interventions. Media itself received a brief assessment of their own role in reporting El Niño, specifically media’s uncritical reporting of conflicting figures on damages.

Teleconnections (i.e., expected effects of El Niño)

Scientists have observed El Niño’s teleconnections in the country to be strong. While more studies on El Niño are needed, existing research indicates that changes in rainfall pattern associated with El Niño, temperature fluctuations and wind fluctuations have impacted on the country’s water resources, coastal resources, forests and people’s health.

The 1997-98 climate-related physical and social impacts of the 1997-98 El Niño in the country. The 1997-1998 El Niño struck as the country was enjoying a continuous four-year growth. The effects and impacts of the 1997-98 El Niño episode were significant in the areas of physical environment (including water supply and forest/bush fires), health, and on economic aspects (reduced productivity and revenue for agriculture, reduced hydroelectric power).

a. On the Environment

Weather. El Niño caused a dry spell between June and October 1997 and this lingered until June 1998. Drought affected 68 percent of the country, compared to only 28 percent in 1972 and 16 percent in 1982. El Niño dissipated in July-August 1998. Its effects, however, continued to be felt through mid-September (i.e., delayed tropical cyclone activity, recorded rainfall fell into the less-than-10-percentile rank).

Water supply. Both urban and rural households in many parts of the country experienced a dwindling water supply. The lack of rain affected water reservoirs dependent on surface water sources. The multipurpose Angat Dam, servicing Metro

⁴ Jose Aida, 1999: Retrospective of the 1997-98 El Niño Event in the Philippines. PAGASA.

Manila and environs, reached critically low levels so that the government's Metropolitan Manila Water Supply and Sanitation (MWSS) enforced drastic conservation measures such as the following: reduction of water supply by approximately 10 percent; shortened water service by four hours daily; repaired leaks and sanctioned water users with illegal connections. Water for irrigation of some 27,000 hectares of rice and corn paddies in one province was cut off, affecting 15,000 farmer households that lost an estimated 100,000 metric tons of rice.

Forest/Bush Fires. A total of 9,400 hectares of second growth and/or logged over forest burned in 1997-98, including 70 pockets of forest fires in Palawan province, home to some endangered species. Estimated cost of damage was P 150 million pesos. No virgin forests were reported to have been affected.

b. On Social/Health Aspects

With the lack of drinking water and the prevalence of unsanitary hygiene conditions, communities were prone to communicable diseases. The extreme heat added to the deterioration of people's health. Outbreaks of malaria, dengue or H-fever, diarrhea and cholera were reported by early 1998. Acute malnutrition was prevalent among indigenous peoples.⁵ There were 72 reported deaths; 42 people had died of food poisoning from eating root crops not well-prepared for human consumption.⁶

c. On Economic Aspects

In the second quarter of 1998, the Philippine economy registered a GDP growth rate of only 1.2 percent as compared to a GDP growth rate of 5.6 percent over the same period in the previous year, reported NEDA. It was the economy's worst performance since 1992. However, the El Niño event was not solely to blame as the Asian financial crisis contributed to its negative effects.

Reduced productivity and revenues. The country's aggregate agricultural output dropped. In the first half of 1998, production shrunk by 7.15 percent of the target, considered the lowest in 20 years. Rice and corn production, respectively, declined by 43.6 percent and 26.6 percent of average production during the period.⁷ Coconut production was cut by 10 percent.⁸ The Philippine Crop Insurance Corporation⁹ reported a 21% dip in rice insurance enrollment from P 1.4 billion in 1996 to P 1.1 billion in 1997 but reported increase in insurance enrollment by corn farmers and farmers of drought resistant crops. PCIC believes that this was attributed to El Niño.

⁵ Ibid. p. 8.

⁶ Tabang Mindanaw Relief Campaign Reports. Tabang Mindanaw Secretariat. 1998.

⁷ Jose, Aida. *Retrospective of the 1997-98 El Niño Event in the Philippines*, PAGASA, 1999. p 8.

⁸ Food and Agribusiness Monitor 1998, Center for Food and Agribusiness, University of Asia and the Pacific.

⁹ Philippine Crop Insurance Corporation, Annual Report 1997.

Fisheries incurred P 7.24 billion in losses as of November 1998. El Niño led to dried ponds, constricted production cycles, stunted growth and high mortality rates caused by stress, disease and poor water conditions.¹⁰

Reduced hydroelectric power. The small hydropower plants were the hardest hit by El Niño. The Department of Energy reported that from a high of almost 19 percent of total power generation from hydropower plants in 1992, its share went down to only 1 percent of total in 1998.¹¹ A corresponding increase in thermal plant operation was estimated at an additional consumption of 313,145 to 439,363 barrels of fuel oil.¹²

Responses

The government responded by creating Task Force El Niño. This inter-agency body sought a better planning and implementation approach to be effective. With a comprehensive action plan drawn up, the Task Force sought an initial budget of P 80 million to support a full-blown tri-media campaign. Within different agencies, other budgets were allocated for El Niño-related projects.

The work program of the Task Force focused on interventions in agriculture, domestic water supply, environment and other sectors (health, energy), and on the information/education/communication campaign.

a. Agriculture

The government worked on the rehabilitation of communal/national irrigation systems; construction of small farm reservoirs; purchase/installation of shallow tube wells; small water-impounding dams; providing direct assistance to farmers; cloud-seeding operations; and research and development projects.

b. Domestic water supply

The government identified and closely monitored 26 vulnerable areas and six major dams; prioritized projects worth P 7 million for critical local water districts and for acquisition of water tankers to service locations dependent on surface water sources;¹³ The National Disaster Coordinating Council provided P 200 million from the Calamity Fund for the projects of the Action Plan (drilling of 20 new wells, rehabilitation of 53 existing wells, acquisition of 72 stationary tankers and 9 mobile tankers; purchase of chlorinators, etc.).

¹⁰ Ibid. p. 5.

¹¹ Department of Energy. Annual Report 1997-1998. p.51.

¹² Ibid.

¹³ These were located in Tagkawayan, Quezon; Malaybalay, Bukidnon; Surigao in Surigao City; Guinyangan in Quezon.

c. Environment

The Department of Environment and Natural Resources (DENR) launched a massive tri-media campaign against slash-and-burn farming (kaingin) and the prevention of grassland and forest fires in conjunction with the Philippine Information Agency. The DENR employed a 3,326-strong team of forest fighters to protect over 15.9 million hectares of forest land.

d. Health Sector

The Department of Health implemented an intensive health education campaign on personal hygiene, proper storage of water, among other activities.

e. Information/Education/Communication (IEC) Campaign

The communication strategy involved all government agencies in the IEC campaign. For example, the Department of Interior and Local Government conducted community education sessions through Water Sanitation task forces. The Philippine Council for Agriculture Forestry and Natural Resources Research and Development (PCARRD), the research arm of the Task Force El Niño, conducted trainings/seminars, and policy advocacy meetings. The Philippine Information Agency (PIA) provided news bulletins and carried out its own full-blown campaign in both rural and urban centers.

Outside of the government response, the private sector provided aid to at least 985,000 families through the Tabang Mindanaw campaign. As an informal collaboration of Catholic Church dioceses, non-government organizations, corporate foundations, media and the Mindanao Presidential Action Group, the group quickly used its existing network in affected local areas to provide relief assistance to tribal communities. It effectively mobilized more than 8,000 volunteers to assist in rice distribution and medical missions, and solicited cash resources amounting to P 92 million for the benefit of 255,000 tribal families.¹⁴

Forecasting by Analogy

Timing of Information Dissemination. PAGASA's early advisories on El Niño received full government attention following a memo of then President Ramos to the Cabinet Secretaries of Environment and Agriculture and following the conduct of the National Caucus on the El Niño Phenomenon. The dissemination of information on El Niño increased significantly with the creation of the Task Force El Niño, aided by an allocation of funds for an intensive information education and communication (IEC) campaign. Because of a very dynamic local media industry that also covered international news extensively (e.g., CNN, BBC), information about El Niño was abundant.

¹⁴ *Tabang Mindanaw* brochure. *Tabang Mindanaw* Secretariat c/o Assisi Development Foundation, Mandaluyong City, 1999.

Quality of Information. While the flow of information was abundant, the quality of information being disseminated needed improvement, to wit:

1. Messages needed to be corrected such as those linking El Niño with global warming, giving conflicting information on the beginning and end of the drought, relating global impacts of drought in the Philippine context, and notifying high-risk planting dates as low-risk planting dates.
2. Two public surveys¹⁵ reflected the people's increasing knowledge about El Niño and what they could do as it affected them. However, people rated as low the government's actions to inform and prepare vulnerable sectors.

The National Disaster Coordinating Council assessed the government's difficulties related to information flow as:¹⁶

- The lack of a monitoring system and information dissemination by local disaster coordinating councils
- Non-compliance of local government units with the proper channel of reporting, so that feedback to higher-level Disaster Coordinating Councils was not sustained, irregular and delayed
- Non-synchronization of disaster assessment reports
- Lack of communication and transportation facilities

The above difficulties contributed to the government's weak response to vulnerable areas in the southern Philippines, areas that had not originally been identified as prone to the effects of El Niño.

The development and implementation of an effective set of actions to minimize the impacts of El Niño may have been unintentionally prohibited by the following factors: perception, policy, and vulnerability assessment and decision-making.

Perception. To most Filipinos, a severe drought scenario seemed improbable. Thus, actions were taken only when clear and obvious manifestations of drought already prevailed. But these actions were limited by the availability of economic resources that are constantly stretched to the limit by the occurrence of frequent disasters. Coupled with competing budget priorities, advocates for increased resources for disaster prevention, mitigation and preparedness have found it a big challenge to convince policy makers to increase investments in order to minimize the likely impacts of El Niño.

¹⁵ Both by independent groups: the Philippine Information Agency and the Social Weather Station.

¹⁶ Executive Summary re Comprehensive Assessment Report on El Niño Phenomenon in Mindanao Area, National Disaster Coordinating Council, Department of National Defense, Quezon City, 1998.

Many Filipinos also perceive that the national government has to provide the solutions and resources to disasters, although local and community-based solutions are also effective in minimizing the impacts of El Niño.

Policy. Prior to the El Niño 1997-98 episode, the general public and most government administrators had fully accepted that pre-disasters actions (prevention, mitigation, preparedness, or PMP) are better than post-disaster actions (relief and rehabilitation). However, the national calamity and disaster preparedness plans and policy still prohibit the implementation of effective PMP programs. For instance, funds for disaster-related programs can only be allocated upon a declaration of a state of calamity by the national and/or local government.

The current policy also needs to be supported by a Contingency Plan specific to a particular type of hazard such as the El Niño. Although it has wide coverage in terms of scope (perhaps the most extensive disaster-related policy in Southeast Asia), hazard-specific responses require further elaboration in the document.

Vulnerability Assessment and Decision Making. The basis for deciding responses had been the climate map at the onset of El Niño. The climate map, however, provided static information of climate, distinguishing wet and dry season months in a very broad sense. Vulnerability on the other hand is a multi-dimensional issue encompassing several factors like the quantum of rainfall; distribution of rainfall over space and time; status of irrigation; socio-economic features and others. An improved vulnerability map that includes the information above will greatly enhance better decision-making and action.

Lessons Learned

The three most important lessons (among other lessons) learned in the Philippines case study on the 1997-98 El Niño are as follows:

Political will and policy articulation is important. The involvement of the Philippine President in articulating clearly what needed to be done by two of the country's important sectors -- agriculture and environment -- ensured the accomplishments of various sectors in minimizing the adverse impacts of El Niño.

The constitution of a Task Force (a multi-sectoral and coordinative body involving the highest officials of agencies) is a strategic response. The Task Force El Niño yielded a comprehensive plan that included forewarning, education, and strategic solutions such as the adoption of an integrated approach to water resource management through a decentralized, participatory and community-based approach. However, the Task Force must be supported by a national forum of sectoral experts that may provide ongoing guidance to it. This will enhance technical input to major decision-making.

Extensive information dissemination about El Niño to a wider stakeholders' body and public involvement in El Niño responses are needed. In the Philippine experience, it is remarkable that the IEC (International Electrotechnical Commission) campaign had changed the people's

perceptions toward El Niño and its association to drought conditions. However, information dissemination must cover all vulnerable sectors. In the Philippines, this should have covered upland dwellers, fisheries and indigenous Filipinos, and not just urban dwellers and a few selected sectors (agriculture, environment, and health); sector-specific information must be improved in order to communicate effectively.

Other lessons include the following:

In providing an early warning of El Niño's onset or impacts, the value of long-lead forecasts in alleviating social and economic costs must be emphasized. This must be supported by an agro-climatic, map-based vulnerability mapping. This process must improve the usability of seasonal forecasts in agriculture (by providing the type climate information needed and used in various stages of agriculture operations).

Local contingency plans for agriculture should include a "conflict resolution mechanism" to ensure equity in the distribution of irrigation water, intervening in water markets to minimize exploitation, and aggressively promoting campaigns for taking advantage of the moisture availability in order to cultivate short-duration crops.

Agricultural projects should be consulted and planned with the farmers to ensure that they will be appropriate and useful interventions. The financial allocation for such projects should come in a timely manner. Otherwise, delays in making funding available could derail the project.

Resources tend to flow to disaster preparedness faster when the president or the prime minister takes an interest in and sets up an interagency task force.

The simultaneous occurrence of other hazards can confound the ability of scientists to make reliable attributions about disaster impacts to El Niño events (e.g., Mt. Pinatubo eruption in 1991) of various societal impacts.

The Internet serves as a useful vehicle for keeping tabs on El Niño's development and impacts and for complementing national El Niño forecast efforts.

There is a need to target at-risk populations in advance of the impacts. Asian countries' ability or interest to respond to an El Niño forecast in 1997-98 was adversely affected by the economic meltdown in Asia.

Even with good forecasts and with appropriate response strategies, an El Niño event will still cause some level of impacts. Impacts cannot be reduced to 'zero'.

A high level of transparency with regard to warnings and discussion of El Niño and its possible impacts on the Philippines generated a high level of awareness of what people should expect El Niño's impacts to be.

There is a need for more accurate forecasts of El Niño and of its impacts as well in order to improve societal responses.

Funds should flow more quickly than in the past to areas that are expected to be or are already affected. The mechanisms for the delivery of such emergency funds should be re-evaluated in light of the 1997-98 El Niño event.

There is a need for an improved communication and monitoring system and for the effective dissemination of warnings.

El Niño exacerbates other known disasters in the country, but the different disasters are viewed as having varying levels of importance (e.g., droughts are considered worse than floods).

Local communities cannot depend on the national government for assistance during an El Niño. They must also rely on their own efforts.

In the Philippine case, a disaster had to be declared before emergency assistance could be rendered. However, this precluded agency preparations for the impacts of an El Niño.

El Niño must be considered in medium- and long-term development planning processes and not just for short-term disaster planning.

Presidential involvement in an El Niño forecast or warning is an important asset when it comes to pro-acting in the face of an El Niño forecast.

I. SETTING & BACKGROUND

A. *Philippine Socio-Economic Profile*

The Philippines, located in southeast Asia, is an archipelago of 7,107 islands. It is home to 76 million people and is one of the most populous countries in Asia and the world.¹⁷ While most of the population still reside in the rural areas, urban migration has increased steadily. In 1996, total urban population constituted 55% of the total national population. Metro Manila with its continued influx of rural migrants makes it a very densely populated place, more crowded than Metro Tokyo or Metro Paris according to studies. About 13% of the country's population resides in Manila's limited land area, representing a mere 0.2% of the country's total land area. The country is divided geopolitically into 16 regions, Regions I-XIII, the National Capital Region (NCR), the Cordillera Administrative Region (CAR) and the Autonomous Region of Muslim Mindanao (ARMM).

From 1991 to 1996, economic indicators reflected national growth. GNP and GDP since 1991 have been on an upward trend. In 1996, GNP grew to 6.9% and GDP to 5.7%. Despite the financial crisis of 1997, GNP registered 5.8% and GDP 5.1%.

In 1998, according to a report by the National Economic Development Authority (NEDA)¹⁸ GNP grew by 0.1 percent. Meanwhile, gross domestic product (GDP) declined by 0.5 percent. The strong growth (12.9% of net factor incomes from abroad, which accounted for the difference between GNP and GDP) enabled overall output to achieve positive growth. The GDP contraction in 1998 was caused by the 6.6% drop in agricultural production, and the decline of construction and construction-related manufacturing by 9.5 percent. The El Niño caused negative agriculture outputs in the first three quarters. Palay, as well as other cash crops like coconut and sugarcane all posted double-digit declines in the fourth quarter.

The country's human development index (HDI) ranked 98th (out of 174 countries) according to UNDP's World Development Report 1998, ranking lower than China, Thailand, Malaysia and Singapore. Poverty remains to be the country's biggest problem with more than one-third of its people living below the poverty line. A disparity in the country's human development has also been noted in the different regions' HDI ratings, where Metro Manila ranks highest and the southernmost regions, the lowest. The figures indicate unequal growth from improvements in the economy over the last ten years. Per capita income figures also show disparity in wealth and in development distribution in the Philippines, with Metro Manila residents earning so much more than residents of other areas.¹⁹

¹⁷ The Philippines' Initial National Communication on Climate Change, Department of Environment and Natural Resources, 1999.

¹⁸ UNDP Facts and Figures, sourced from the Internet, www.undp.com.

¹⁹ Alegre, AI (ed). Trends and Traditions, Challenges and Choices, Ateneo Center for Social Policy and Public Affairs, Quezon City, 1996. p. 225.

Life expectancy increased from 66.5 to 68 years during the period 1992 to 1997. Basic health indicators have also improved. Communicable diseases such as acute respiratory infections showed a downward trend, similarly with the incidence of sanitation-related diseases associated with unsafe water supply and poor sanitation. Leprosy and malaria have ceased to be major public health problems.

B. Administration

The Philippines has a democratic system of government. Three independent branches exercise equal powers– the *executive*, *legislative* and *judiciary*. From the executive branch, the president exercises the top leadership over the country. He is elected by the people every six years (without re-election) and is supported by a cabinet that he appoints. A bicameral congress consisting of 24 senators and 200 members of the House of Representatives composes the legislative branch. The power of the *judiciary* is vested in one Supreme Court, headed by a Chief Justice, and lower courts.

C. Government Mechanisms dealing with Climate-Related Impacts²⁰

1. The Inter-Agency Committee on Climate Change (IACCC) was created on May 8, 1991. Its main purpose is to coordinate various climate change-related activities, propose climate change policies and prepare Philippine positions to the UNFCCC negotiations. It is composed of 15 government agencies and NGO representatives, namely:

- Department of Environment and Natural Resources (DENR Secretary as Chair)
- Department of Science and Technology (DOST Secretary as Co-Chair)
- Philippine Atmospheric, Geophysical and Astronomical Services Administration
- Department of Foreign Affairs
- Environment Committees of the two houses of the Philippine Congress
- Department of Energy
- Department of Transportation and Communication
- Department of Agriculture
- National Economic and Development Authority
- Philippine Network on Climate Change (NGOs)

Acting Secretariat to the Committee is the Environmental Management Bureau of the DENR. The IACCC has carried out the following activities:

- a. the first comprehensive study made on climate change in the Philippines (ADB-sponsored)
- b. Country Study Program on Climate Change (US Government-sponsored)

²⁰ This section and the following section on natural hazards rely heavily on data provided by the Philippine Environmental Quality Report, 1990-1995. Environmental Management Bureau, Department of Environment and Natural Resources, Quezon City, Philippines.

- c. Asia Least-Cost Greenhouse Gas Abatement Strategy (ALGAS) (UNDP-sponsored)

These initiatives have paved the way for various government agencies to conduct GHG emissions inventory by sources and sinks, developed GHG mitigation strategies, undertook climate change vulnerability and adaptation studies and drafted related policies. These were integrated in the National Action Plan on Climate Change.

2. The National Disaster and Coordinating Council (NDCC) is the main coordinating agency tasked to prepare for and respond to disaster situations. NDCC emanates from the Office of Civil Defense of the Department of National Defense. NDCC regularly coordinates with seven government agencies and the body of local government units all over the country. The seven agencies are the:

- Department of Science and Technology through the Philippine Institute of Volcanology and Seismology (PHIVOLCS) and the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)
- Department of Social Welfare and Development (DSWD)
- Philippine Information Agency (PIA)
- Department of Environment and Natural Resources (DENR)
- Department of Agriculture (DA)
- Department of Public Works and Highways (DPWH)

In disaster-prone areas especially, NDCC has carried out disaster preparedness activities which include updating of contingency plans, conduct of public information and education drives, drills and exercises, organization of disaster coordinating councils and disaster coordinating groups, the training of NDCC members and volunteers, and reactivation of communication and warning back-up systems.

The Disaster Coordinating Councils (DCCs) are activated by the municipal and city governments at the occurrence of a natural calamity. The DCCs are tri-sectoral in nature and are tasked to prepare disaster mitigation plans and oversee their implementation. Industrial calamities are handled by the government through the DENR. Its program, the Awareness and Preparedness for Emergencies at the Local Level (APELL), supports the formation of partnerships among government, communities and industry to be able to prepare for and respond to industrial accidents.

In the conduct of its duties, the NDCC is guided by a Calamities and Disaster Preparedness Plan of the Philippines (see discussion in later section).

3. The Inter-Agency Committee for Water Crisis Management was created in 1986 to address the need for a judicious and effective management of water resources all over the country. All water-related agencies of the government contribute and assist to the work of the Committee.

4. The Technical Working Group on Cereals and Food Grains, composed of representatives from various government agencies, coordinates closely with the National Disaster and Coordinating Council in times of disaster. Based on information and other inputs from NDCC, the Group makes its recommendation on the need for rice and corn importation, including its timing of procurement and shipment.
5. The Task Force on the El Niño was created by then President Fidel V. Ramos on September 1997. As an inter-agency body composed of 11 key government agencies, the Task Force was expected to (1) provide policy directions, (2) coordinate the planning and implementation of programs to mitigate the negative effects, including an information/education/communication campaign about El Niño. The involved government agencies were also those responsible for acting in times of disaster, but including the Department of Health, Department of Transportation and Communications, Department of Interior and Local Government, National Irrigation Administration, and the Philippine Crop Insurance Corporation. The Secretary of the Department of Environment and Natural Resources acted chairman of the Task Force, with the Secretary of the Department of Agriculture as co-chair.

At the local level, the inter-agency coordinative mechanism of the Task Force was replicated under the chairmanship of governors and mayors. The “crisis action groups” held regular meetings to discuss issues and to agree on action points. The Task Force implemented mitigating measures on three sectors expected to be heavily impacted by the El Niño: 1) agriculture, 2) domestic water supply, and 3) the environment.

6. The Presidential Task Force on Water Resources Development and Management (PTFWRDM) was created in 1997 as an apex body to oversee and coordinate government policies and programs designed to respond to the pressing needs of the water sector. Its mandate was to plan, coordinate, prioritize and monitor implementation of all water-related programs and projects.

As an inter-agency body of 20 members, it was composed by many of the same officials and members of the Task Force on the El Niño but with additional government agencies responsible for water services and management, for example, the Metropolitan Waterworks and Sewerage System, Local Water Utilities Administration, and the Laguna Lake Development Authority. Unlike the Task Force on El Niño, this body also had private sector representatives as permanent members. These were the Philippine Association of Water Districts, Pollution Control Association of the Philippines, and the International Training Network. The DENR Secretary acted as Task Force Chair with the National Water Resources Board Chair and Task Force Vice-Chair.

In 1998, the Task Force on Water Resources Development and Management produced the integrated water resources database, one of the most complete GIS-based database in terms of water-related attributes as well as spatial data and information. Data at national and provincial levels were made available.

The Task Force has also introduced a draft bill proposing the creation of a Water Resources Authority of the Philippines (WRAP) as a central authority for the water bureaucracy and fill in the gaps where government has no regulatory or monitoring agencies. It will ensure, among others: increased effectiveness and efficiency of water resources management, sustainable development and use of the resource, and expanded private sector and civil society participation. It will take over the functions of the National Water Resources Board (NWRB) which will be abolished.

7. The Department of Health as lead agency works with various other agencies to undertake environmental health programs. Examples of these are the environmental sanitation program and the primary health care program. In the latter, water supply sanitation, excreta disposal and food sanitation are the areas of concern attended to by improved planning, programming, training and intensified health education throughout the country. The Primary Health Care program is a community-based approach to health development which engages people's participation to ensure accessible, affordable and sustainable essential health care. It also undertakes provision of safe water supply, clearance and maintenance of water canals, compost-making, construction and use of water-sealed tiles, backyard gardening, herbal gardening and establishment of income generating projects.
8. The Department of Social Welfare & Development, the Department of Agriculture through the National Food Authority, the National Nutrition Council and the Department of Interior and Local Government are responsible for coordinating and undertaking food subsidy programs (mainly rice) as needed. In such instances, the aim of the program is to provide a safety net to cushion the negative impact on communities.

D. The Climate-Related and other Natural Hazards affecting the Country

The Philippine archipelago is affected by tropical cyclones, volcanic eruptions, El Niño and La Niña episodes, earthquakes, tsunamis/tsunamigenic earthquakes, droughts and floods.

About 20 tropical cyclones visit the country's area of responsibility every year. These are low atmospheric pressure areas of tropical origin characterized by strong winds and rains. There are four types, distinguished by windspeed: tropical depression (34 knots maximum), tropical storm (47 knts maximum), severe tropical storm (64 knts), typhoon (over 64 knts). In 1993, the country experienced an unusual occurrence of 32 tropical cyclones, 14 of which affected 7.47 million people and caused a total of P 19 billion in damages to agriculture and infrastructure.

There are 21 active volcanoes in the Philippines, out of more than 200 quaternary volcanoes. There are four major volcanic belts traversing the different regions of the country. Pinatubo was, for over 400 years, a dormant volcano. In June 1991, it erupted several times, spewing ash as in an explosion type earthquake, and as high as 20 kilometers above the vent. Its 30,000 meter cauliflower-like column caused darkness in some areas. Pinatubo ash was observed as far as Hong Kong, Cambodia and Bangkok; its dust and gas emissions reached

Europe in July. Pyroclastic flows and mud/lahar flows caused considerable damage in the Philippines. As of August, 1991, property loss was estimated at P9.8 billion; over 1 million people were directly affected.

Earthquakes resulting from the interactions of the Pacific and Eurasian plates and the movements along other faults frequently occur in the Philippines. Since 1960 to 1995, there have been 9,763 recorded earthquakes. The July 1990 earthquake was one of the strongest. It had two main shocks, affecting a combined area of 15,000 square kilometers. These affected 23 provinces and 13 cities. More than 1.5 million people were affected, more than 1,000 people died. Damages to infrastructure and agriculture were estimated at P 12.23 billion.

Tsunamigenic earthquakes have struck coastal areas of the country causing much damage. A major event happened in November, 1994 in Oriental Mindoro. The earthquake reached Intensity VII and was followed by a tsunami hitting approximately 40 kilometers of the northern and eastern shoreline of Mindoro island. Smaller nearby islands were hit by at least 6 meters of vertical run-up and more than 200 meters of horizontal run-up. Eighty three (83) people perished and 430 more were injured. Estimated cost of damage to property was PHP 0.5 million.

Droughts have caused significant damage to agriculture and forests, water resources, and human health. The most severe droughts have been associated with El Niño episodes. Thus, El Niño is considered a disastrous event for the country. The 1982 El Niño-related drought was one of the most severe, followed by the October 1989-March 1990 episode and the October 1993-May 1994. Agricultural losses for these two latter episodes amounted to billions of pesos, and affected more than 1.19 million people.

Floods occur frequently in the country because of the monsoons and the tropical storms, especially when the two occur simultaneously. Floods can develop after 12 to 24 hours (or longer) of heavy rains, although "flash floods" have become more and more of a problem especially in the cities. Flash floods can develop after only a few hours of rains. An estimated 49 floodings, occurring from 1990 to 1994, have caused grave damage to infrastructure, properties and agriculture. One of the most severe was the 1991 flooding that caused the Ormoc-Leyte tragedy where many villagers died as the waters swept their homes. And the other was the Mindanao flooding in 1993, affecting Regions 10 and 11 and over 7 million people who lost their houses and livelihood.

E. The Level of Scientific Research in the Country relating to El Niño

Over the years, scientists had accumulated knowledge and data about ENSO phenomenon as it impacted on the country. Climatic indicators of ENSO were known such as: the delayed onset of the rainy season, weak monsoon activity, and isolated heavy downpours with short duration, weak tropical cyclone activity, and less number of tropical cyclones enter the Philippine Area of Responsibility. Rainfall and temperature fluctuations were recorded and studied, and could be projected. Areas of vulnerability were identified and classified

according to low, moderate and high. In some of these areas, drought-resistant crops and appropriate farming technologies were developed and tested. Scientists could track the beginning and development of ENSO conditions in the country and forecast its probable end.

F. Documentation of the Historical Interest in the Country (popular, political, media, etc.) in El Niño before the onset of the forecast and/or impact of the 1997-98 event

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) had a summary report on ten (10) drought events associated with El Niño from 1968 to 1995, including areas affected and degree of vulnerability. The media provided regular coverage of these drought events as well as floodings through various newspaper articles.

II. THE 1997-1998 EL NIÑO EVENT

A. Tracing the Flow of Information on the 1997-98 El Niño within the Country

PAGASA released its first advisory about El Niño as early as the last quarter of 1995²¹. The various government agencies as well as the media received this alert. More public attention was gained with the first drought advisory, issued by PAGASA in May 1997. The public was told to expect it to be a strong event, stronger than the 1983 episode which until then had caused the most damage of all the past El Niño episodes. From May onwards, PAGASA provided a monthly weather outlook given to member agencies of the Inter-Agency Committee for Crisis Water Management, and to the Presidential Task Force El Niño when it was created in September.

In early June 1997, the Office of the President circulated then President Ramos's handwritten instructions on a news article about El Niño for the National Economic and Development Authority (NEDA) and other agencies to monitor the development of El Niño closely and determine how the country's progress and growth targets might be affected. On June 19, a newspaper article ran, "Gov't Ready for El Niño, says Habito." Habito was then Secretary General of NEDA, the highest policy-making body and the agency in-charge of approving and monitoring development projects. Reflecting Habito's words, the Department of Agriculture's preparations for El Niño were reported in a newspaper article, "DA Officials Draft New Plan to Cushion El Niño Weather Disturbance" (BusinessWorld, July 25, 1997).

Through the months, PAGASA undertook intensive monitoring of local rainfall and general circulation patterns affecting the country. Updates about El Niño were sourced by PAGASA from the Internet and various climate centers such as the National Oceanographic and Atmospheric Administration.

The Philippine Government had received a copy of UN General Assembly Resolution 52/200 dated December 18, 1997 on "International Cooperation to reduce the impact of El Niño Phenomenon" acknowledging the global effects and calling for concerted action to reduce

²¹ Jose Aida. Retrospective of 1997-98 El Niño Event in the Philippines. PAGASA. 1999

impacts both nationally and internationally. Then in February 1998, a delegation from the Philippines attended “The Asian Regional Meeting on El Niño Related Crises” to discuss a regional climate outlook and opportunities for international cooperation in managing and reducing the effects of El Niño.

On May 12, 1998, PAGASA prepared an “Assessment Update of the Current 1997-1998 El Niño, Its Impact on the Philippine Local Climate, and Seasonal Climate Outlook for 1998: Climate Outlook for 1998.” It was a comprehensive retrospective assessment of the effects and impacts in 1997 with comparison to the 1982-1983 and 1972-73 events. This climate outlook was properly disseminated to the Task Force El Niño and subsequently disseminated to the general public.

B. How the Media First Reported the Developing El Niño and How it covered the Event over time

Among the first reports of the developing El Niño was Business World’s “PAGASA Warns of El Niño’s Return,” on January 19, 1996. The article reflected PAGASA’s advisory. Over time, the media ran more stories of El Niño. This coverage as a whole could be classified in three stages: first, projecting impacts and identifying vulnerable areas, giving information and advice to the public how to cope with the effects; second, reporting the actual impacts as they happened, and monitoring the responses of the disaster coordinating councils and local governments; third, in retrospect, providing analysis and assessment on the effectiveness of government interventions. Media itself received a brief assessment of its own role in reporting El Niño, courtesy of the Center for Media Freedom and Responsibility. Cited specifically was media’s uncritical reporting of conflicting figures on damages.

As El Niño effects were felt by the public beginning November, the media coverage also increased. The 1997-1998 El Niño episode was compared with the previous episodes since 1969, but highlighting the strong 1983 episode. A sample of newspaper articles illustrates the three stages of media coverage:

Stage 1: Preparing for El Niño

1. “Water districts asked to Take Measures on El Niño’s effect” (Business World, July 21, 1997)
2. “El Niño Fund Released” (Business World, October 13, 1997)
3. “APEC Members to Discuss El Niño in November Meet” (Business World, October 28, 1997)
4. “Century’s worst, El Niño: Drought here; wet on other Side of the Pacific” “How to Weather the El Niño Onslaught”, “Expect Severe Water Shortage” (Phil. Daily Inquirer, Three Part Series, November 1997)
5. “El Niño to Pose Health Risks” (BusinessWorld, November 10, 1997)
6. “NAPOCOR sees P 800 million additional costs due to El Niño” (BusinessWorld, November 14, 1997)
7. “Even before El Niño, Water Supply was already a Murky Problem” (BusinessWorld, December 12, 1997)

8. “DENR Chief’s Warning: El Niño is Bad, but La Niña Worse” (Philippine Daily Inquirer, December, 1997)

Stage 2: Reporting Effects of El Niño

9. “The Year the Was...and is to Come—The Top 10 Events of 1997” (BusinessWorld, January 6, 1998)
10. “El Niño Hits 22,000 hectares of Ricelands in Bicol Region” (Philippine Daily Inquirer, February 12, 1998)
11. “Apayao Farmlands hit by El Niño” (BusinessWorld, March 12, 1998)
12. “3 More Areas Ravaged by Drought” (The Manila Times, April 18, 1998)
13. “FVR wants Debt Moratorium for Farmers affected by El Niño pattern” (BusinessWorld, May 6, 1998)
14. “Cordillera Authorities Assess Drought Damage as they await Advent of La Niña” (BusinessWorld, May 8, 1998)
15. “El Niño Still Wreaking Havoc on RP” (Philippine Star, May 17, 1998)
16. “Coco Sector won’t Recover until Next Year,” (BusinessWorld, May 26, 1998)
17. “Schemes for El Niño Victims Set” (BusinessWorld, July 6, 1998)
18. “RP Fisheries Sector Records P 7.24 B Loss from El Niño” (BusinessWorld, November 4, 1998)

Stage 3: Assessing how the Country coped with El Niño

19. “Worst Ever Farm Output Record” (BusinessWorld, January 27, 1999)
20. “A Bravo Salute for Task Force El Niño” (The Manila Times, July 3, 1998)

Television and radio stations as well covered El Niño as major news. Reflecting newspaper coverage, radio and TV provided information over the 1997-1998 period. The major TV stations—GMA-7, ABS-CBN, RPN 9, and radio stations—DZRH, DZMM and DZBB ran the public advisory advertisements of Task Force El Niño, complete with a popular jingle sang by a well known artist. They also conducted interviews of public officials.

Media coverage became proactive involvement in a disaster relief program when, in April 1998, news of food scarcity affecting at least 985,000 families in Mindanao reached authorities in Manila. These were mostly indigenous peoples in upland communities who relied solely on forest resources. Church leaders and the private sector took the lead in this effort, recognizing the urgency of the situation and government’s limitations in providing funds immediately (because government had not identified these areas as vulnerable to El Niño and had not apportioned funds; also, at the eve of national and local elections, government agencies like the Department of Social Welfare and Development were banned from releasing money. DSWD eventually got an exception from the ban).

Media provided crucial public information and fundraising campaigns through television (GMA-7) and newspaper (Philippine Daily Inquirer), as part of their formal inclusion in the *Tabang Mindanaw* (“Help Mindanao”) multisectoral campaign. GMA-7 ran *Tabang Mindanaw* advertisements while the Inquirer put out whole page bulletins to call on

volunteers and to solicit funds to procure rice for the affected families for an estimated duration of six months, until the communities could harvest again from their farm plots. After one year of operations, the *Tabang Mindanaw* campaign had mobilized more than 8,000 volunteers to assist in the rice distribution and medical missions, and cash resources amounting to P 92 million (Philippine Daily Inquirer had solicited P 35 million of this amount). Over 255,000 tribal families availed of the rice and medical assistance.²²

C. The Previous Mention of El Niño in the Media, before the Mention of the 1997-98 El Niño

Before the mention of the 1997-98 El Niño, the newspapers reported on the 1994-95 episode as reflected in two articles: “RP Weather Experts Baffled by El Niño’s Early Return” (BusinessWorld, December 20, 1994) and “El Niño Waning; Normal Rainy Season Expected” (BusinessWorld, April, 1995).

III. TELECONNECTIONS (i.e., Expected Effects of El Niño)

A. The Scientific Views about the Existence and the Strength of El Niño Teleconnections to the Philippines²³

Scientists have observed El Niño’s teleconnections in the country area to be strong. While more studies on El Niño are needed, growing information about its expected effects are partially provided by various ongoing studies, some of which are the study of coastal sea level changes (by PAGASA’s Natural Disaster Reduction Branch and the Coast and Geodetic Survey Department of NAMRIA), and of climate change (by the Department of Environment and Natural Resources and the Manila Observatory). Changes in rainfall pattern associated with El Niño, temperature fluctuations and wind fluctuations have led to greater realizations of El Niño’s impacts--on the country’s water resources, coastal resources, forests and people’s health.

Water resources. Changes in rainfall pattern can affect the availability of water resources in the country, so that abundant rainfall over denuded watersheds tend to aggravate the problems on soil erosion; and heavy rains brought by tropical cyclones can burst existing reservoirs to cause flooding. A study made on the year-to-year variations of annual and seasonal inflows at major water reservoirs in the country showed decreasing inflows in all of the reservoirs. Minimal and maximal inflows were found to be associated with the activity of ENSO. This indicated possible adverse implications on the water resource management of the country. Two major reservoirs, Angat and Lake Lanao, were studied and analyzed for vulnerability. It confirmed that:

- periods of low rainfall resulted in low inflows and low water levels

²² *Tabang Mindanaw* brochure. *Tabang Mindanaw* Secretariat c/o Assisi Development Foundation, Mandaluyong City, 1999

²³ This section is lifted from the Potential Impacts of Climate Change, (briefer-presentation) Department of Environment and Natural Resources

- runoff was more sensitive to rainfall and precipitation variability compared to temperature changes
- impacts of temperature increase could be manifested in water demand
- great variability in rainfall with respect to time could likewise have significant implications on water availability (high rainfall—overflowing; low rainfall-water shortages)

As increased agricultural activity is expected to also increase water requirement, the country's water resources need to have sufficient capacity to meet demand. Prolonged drought brought about by increased temperature and the lack of rains causes crop failure and production shortfalls. A weaker NE monsoon over the country also contributes to drought.

Coastal resources. Changes in rainfall pattern can enhance predisposition to flooding of coastal places, especially in areas determined to have accelerated sea level rise. Sea level pressure anomalies in the Philippines were recorded for the period January 1997 to September 1998. (See Figure 4 in *Retrospective of the 1997-98 El Niño Event in the Philippines*)

Forest resources. Changes in rainfall pattern may increase the rate of conversion of forests to agricultural lands due to human migration from areas degraded by drought and erosion to more productive forestlands. Decrease in soil moisture in drier areas may accelerate forest loss. Increase in precipitation beyond evaporation demand could increase runoff resulting in soil erosion and flood occurrences. Local biodiversity will also decrease through extinction and inhibition of reimmigration from adjacent areas.

Changes in rainfall pattern and runoff will have severe impacts on mangroves. The best developed mangrove forests are associated with the areas of high rainfall and upstream runoff.

Peoples' Health. There is limited data on the impact of El Niño on health; indicative trends still need validation. The aspect of health must be put in context, to consider mainly that the peoples' health is aggravated by poverty and inequity, and by government's very low budget compounded by poor allocation of the limited resources. The Department of Health, putting together available data, reports a higher incidence of dengue or H-fever, diarrhea and malnutrition in areas affected by El Niño.

B. The Climate-Related Anomalies and Impacts in the Country of the 1982-1983 Event

The 1982-1983 episode, of the past El Niño events, affected the widest coverage at 469,910 hectares of rice, or 590,000 mt valued at P 770 million.²⁴ Drought conditions, extending over a period of more than nine months, impacted on 16 percent of the country. Worst hit were central (Visayas) provinces and northern Mindanao where crop failure (rice and corn)

²⁴ PCCARD Monitor, July-August 1997. Philippine Council for Agriculture, Forestry and Natural Resources Research and Development. Volume 25, No.4.

registered agroclimatic indices on the second percentile rank, the driest in 35 years.²⁵ Coconut and sugarcane production were also severely affected.

In many areas in Luzon including Metro Manila, monsoonal rains fell to less than 10th percentile rank, considered the driest for the period 1951 to 1985. Water reservoirs were almost depleted, affecting hydropower supply and irrigation water.²⁶ PAGASA noted that the failure of the southwest monsoon rainfall in Luzon was further aggravated since the succeeding months were climatically dry.

While there was drought in these areas, floodings caused by excessive monsoon rains and tropical cyclones occurred in Regions I, II, III, the Bicol provinces, Western Samar and Northern Leyte. These rains extended over six months, causing damage to rice and corn crops in these areas.

C. The 1997-98 Climate-Related Physical and Social Impacts of the 1997-98 El Niño in the Country

The 1997-1998 El Niño struck the country as it was enjoying a continuous four-year growth. The government had put the country's progress on fast track under a "Philippines 2000" campaign that highlighted the pursuit of the Social Reform Agenda, basically a poverty alleviation program. In agriculture, the government's *Gintong Ani* (Golden Harvest) program posted a 3.46 percent in Gross Value Added in 1996, the highest increase since 1990. The industry and service sectors were consistently gaining and contributing to a healthy economy.

The effects and impacts of the 1997-1998 El Niño episode were significant in the areas of physical environment (including water supply and forest/bush fires), health and migration, and on economic aspects (reduced productivity and revenue for agriculture, reduced hydroelectric power).

1. On the Environment

Weather. PAGASA had announced the start of El Niño in March 1997.²⁷ By June, several parts of the country were experiencing below normal amounts of rainfall with values of 15 percent Rainfall Extreme Index (REI). Comparatively, the two previous El Niño events of 1972-73 and 1982-83 had recorded negligible REIs in the same period. From July to September, occasional monsoon rains caused floodings and landslides in some parts of the country, including Metro Manila. By mid-September, the monsoon ended earlier than usual. Typhoon season, however, did not start that month, a record for the last 30 years. The dry spell peaked in October and continued until June 1998. The whole country experienced drastic drops in rainfall, less than 50 percent of normal values. A few areas like the Cagayan Valley, north of the archipelago, had some rainfall caused by Typhoon Narsing as it crossed

²⁵ Jose, Aida et al. Assessment of Climate Variability and its Impact on Philippine Agriculture During the Recent El Niño Events, Climatology and Agrometeorology Branch, PAGASA, 1987, p.92.

²⁶ Ibid.

²⁷ This section relies heavily on Jose's paper, Retrospective of the 1997-98 El Niño Event in the Philippines.

the country. Narsing was one of only two tropical cyclones to hit land, where before there would be six to seven tropical cyclones during this period. (The Philippines is usually visited by an average of 20 typhoons each year). Drought had impacted on 68 percent of the country, compared to only 28 percent in 1972 and 16 percent in 1982. In central and southern Philippines, the drought had severe impacts. In May 1998, the rains started but many areas still received below normal rainfall. PAGASA cited the influence of the North Pacific high-pressure area in the region that was controlling cloud formation. Extreme temperatures continued to affect the country. Metro Manila, for example, experienced sweltering heat of 38 degrees C, equal to the highest temperature on record. El Niño dissipated in July-August 1998. Its effects, however, continued to be felt through mid-September. Tropical cyclone activity was delayed, starting only in July, a record for the last 50 years. Furthermore, while seven typhoons occurred during this period, rainfall recorded belonged to the less than 10 percentile rank.

Water Supply. Both urban and rural households in many parts of the country experienced dwindling water supply. The lack of rain affected water reservoirs dependent on surface water sources. The multipurpose Angat Dam servicing Metro Manila and environs reached critical levels so that drastic measures had to be implemented. Metro Manila's 10 million residents consumed an average of 1600 million litres of potable water a day, 97% of this demand was supplied by Angat Dam.

To assure Metro Manila of water supply, the government's Metropolitan Manila Water Supply and Sanitation (MWSS) reduced its supply by approximately 10 percent and shortened water service by four hours daily. Other conservation measures were put in place such as repairing leaks and going after water users with illegal connections. Local officials were tasked to take action by then Secretary Robert Barbers of the Department of Interior and Local Government (DILG) in a circular dated December 11, 1997, to "support MWSS concessionaires by allowing the use of local government-owned water tanks and similar facilities for water distribution; identify and monitor leakages on the water supply and distribution system—mobilize for this purpose the local Philippine National Police units, and immediately report said leakages to MWSS."

With Angat Dam at below minimum operating level for the next months, the government eventually cut off water for irrigation of some 27,000 hectares rice and corn paddies in nearby Bulacan province. This was done to continue to provide domestic water supply. For the first time in the history of Angat Dam, it failed to meet the agricultural needs of some 15,000 to 20,000 farmer households from November 1997 to June 1998 (dry season crop). About 100,000 tons rice were lost. While the government provided a small allowance for the farmers to work on maintaining the dry irrigation canals, this supported only some of the farmers. Others turned to raising pigs and chickens, but the extreme heat also affected the success of this project. Many more farmers resorted to borrowing money from informal sources to be able to feed their families. But their land (average landholding of 3-4 hectares per farmer) was leased and the rent to be paid, 2.3 tons of rice for that season, had to be negotiated as time-payment arrangement over the next few years.²⁸

²⁸ The Rewards of Rice Research. Annual Report 1999-2000. International Rice Research Institute.2000

Outside Bulacan province, irrigation needs were also affected. In the country's rice bowl, Central Luzon, irrigation recorded a low of 10 percent of programmed area served in the first half of 1998. For the whole country, an average of 38 percent of the programmed area for irrigation was served in the same period. Across the country, in areas that experienced reduced rainfall, local water districts also had shortages of supply.²⁹

Forest/Bush Fires. A total of 9,400 hectares of second growth and/or logged over forest burned in 1997-98, including 70 pockets of forest fires in Palawan province, home to some endangered species. Estimated cost of damage was P 150 million. No virgin forests were reported to have been affected.

Most of the incidents started with the uncontrolled burning of *kaingin* (slash and burn farming) areas. The fires were contained after at least one week of disaster operations conducted by the Provincial Disaster Coordinating Council. A heavy downpour eventually doused the fires. The rains was attributed to cloud seeding operations and the flight of government helicopter with water bombing capacity.³⁰ The quick response by local governments was in direct compliance with the presidential order dated April 14, 1998 declaring "all provinces, cities and towns suffering from forest fires covering an area of 25 hectares or more as calamity areas. All local governments are to utilize local government funds and personnel/equipment as well as volunteers to put out/control/reduce such fires in collaboration/support of existing efforts...".

2. On Social/Health Aspects

Health. With the lack of drinking water and the prevalence of unsanitary hygiene conditions, communities were prone to communicable diseases. People in the cities were vulnerable as 30 percent of the population had no access to a water network while 90 percent did not benefit from a sewerage system.³¹ The extreme heat added to the deterioration of peoples' health. Outbreaks of malaria, dengue or H-fever, diarrhea and cholera were reported by early 1998.

In Montalban, Rizal, a suburb of Metro Manila, communities experienced a high transmission rate of malaria. From January to June 1998, about 1,186 individuals registered as smear-positive in one of the communities.³² Dengue fever reached epidemic proportions, affecting mostly children. Hospitals converted multipurpose rooms and chapels to accommodate the influx of patients who stayed an average of four to seven days depending on the severity of their condition. Studying blood samples from infected patients led doctors to conclude that three out of four known strains of the virus were active, thus the high incidence of the disease.

²⁹ Jose, Aida. Retrospective of the 1997-1998 El Niño Event in the Philippines. PAGASA, 1999. p.7.

³⁰ Department of Environment and Natural Resources. Annual Report on Task Force El Niño: A United Initiative, Quezon City, 1998. p.18.

³¹ *Ibid.*, p.19.

³² Jose, Aida A Retrospective of the 1997-98 El Niño Event in the Philippines. PAGASA. 1999.p.8.

In Southern Philippines, diarrhea affected communities in coastal North Upi, Sultan Seberangis and Sitio Greenhills while cholera was reported in Zamboanga City and Maguindanao province. Acute malnutrition was prevalent in Pres. Roxas, North Cotabato, and in the upland domains of indigenous peoples in that area.³³ There were 72 reported deaths, 42 people had died of food poisoning from eating root crops not well-prepared for human consumption.³⁴

3. On Economic Aspects

In the second quarter of 1998, the Philippine economy registered GDP growth rate of only 1.2 percent as compared to a GDP growth rate of 5.6 percent over the same period last year, reported NEDA. It was the economy's worst performance since 1992. The El Niño event was not solely to blame as the Asian financial crisis contributed to its negative effects.

Reduced Productivity and Revenues. The country's aggregate agricultural output dropped as prolonged effects of El Niño were felt. In the first half of 1998, production shrunk by 7.15 percent of target, considered the lowest in 20 years. Rice and corn production declined by 43.62 percent and 26.57 percent of average production during the period respectively.³⁵ Coconut production was cut by 10 percent due to the drought impact in Mindanao, the region that accounts for 55 percent of coconut production.³⁶

Decreased production of rice also reduced rice stocks held in farm households and in government and commercial warehouses. Food shortages in some parts of the country results from the insufficient harvests, loss in revenues from agricultural production and unemployment.

Fisheries incurred P 7.24 billion in losses as of November 1998. The biggest losses amounted to P 3.55 billion incurred in fishponds and brackish waters in Central Luzon and Western Visayas regions. Seaweed and oyster mariculture incurred losses of P 1.57 billion. Freshwater ponds incurred losses of P 913 million. El Niño led to dried ponds, constricted production cycles, stunted growth and high mortality rates caused by stress, disease and poor water conditions, this according to the Philippine Council for Aquatic and Marine Research and Development Council (PCARMRD) and the Philippine Council for Agriculture, Forestry and Natural Resources (PCARRD).³⁷

³³ Ibid. p. 8.

³⁴ Tabang Mindanaw Relief Campaign Reports. Tabang Mindanaw Secretariat. 1998.

³⁵ Jose, Aida. Retrospective of the 1997-98 El Niño Event in the Philippines, PAGASA, 1999. p 8.

³⁶ Food and Agribusiness Monitor 1998, Center for Food and Agribusiness, University of Asia and the Pacific.

³⁷ Ibid. p. 5.

The Philippine Crop Insurance Corporation³⁸ reported a 21% dip in rice insurance enrolment from P 1.4 billion in 1996 to P 1.1 billion in 1997 but reported increase in insurance enrolment by corn farmers and farmers of drought resistant crops. PCIC believes that this was attributed to El Niño. Consequently, the bulk of insurance claims was due to drought conditions although in absolute value, claims were lower due to the decrease in enrolment compared to previous year.

Reduced Hydroelectric Power. Hydropower generation is widely used in the country. In 1996, it provided 2,333 MW or 22.1 percent of total installed capacity. In 1997, despite the onset of El Niño, hydropower accounted for almost 15 percent of total power generated that year.³⁹ With the full effects of El Niño in 1998, its share went down to 9 percent. Six of the country's hydroelectric plants located in the island of Luzon suffered considerable deficits due to decrease in water supply. Total deficit in hydropower output for six plants was 8992.73 Gwh from second quarter of 1997 to third quarter of 1998. Only one dam (Magat) registered a surplus of 189.84 Gwh in the second and third quarters of 1997. Angat Dam, as mentioned earlier, was the hardest hit with a total deficit of 333.38 Gwh in hydropower generation from second quarter of 1997 to third quarter of 1998.⁴⁰ This was a 46 percent cut in Angat Dam's production.⁴¹

The small hydropower plants were the hardest hit by El Niño. The Department of Energy reported that from a high of almost 19 percent of total power generation from hydropower plants in 1992, its share went down to only 1 percent of total in 1998.⁴²

The country increased the use of geothermal and oil thermal power to compensate for the loss of hydroelectric power. A corresponding increase in thermal plant operation was estimated at an additional consumption of 313,145 to 439,363 barrels of fuel oil.⁴³

The power sector also budgeted for cloud seeding operations over affected watershed areas to the tune of P 24 million.

D. On the Reliability of those Attributions

The reliability is very high in most sectors mentioned above. However, the reliability of El Niño's impacts on health is still weak for lack of validation and other studies. There may be other factors that need to be considered, such as the effects of the Asian financial crisis.

³⁸ Philippine Crop Insurance Corporation, Annual Report 1997.

³⁹ Department of Energy Annual Report 1997-98. Makati City. P. 50.

⁴⁰ Ibid. p.9.

⁴¹ Department of Environment and Natural Resources, Annual Report on Task Force El Niño: A United Initiative, Quezon City, 1998, p.21.

⁴² Department of Energy. Annual Report 1997-1998. p.51.

⁴³ Ibid.

IV. RESPONSES

A. Government Reports or Statements issued before the Impacts of the 1997-98 El Niño Appeared

The government through its various agencies issued several reports and statements before the impacts of the 1997-98 El Niño episode. PAGASA had alerted the public to a developing El Niño as early as the last quarter of 1995, as previously mentioned. The first drought advisory was issued in May 1997, still two months before the impacts of El Niño appeared. The Department of Agriculture and the Bureau of Soils and Water Management had identified the areas and crops likely to be affected and came up with a government plan in July 1997 on how to cope with El Niño. “A Field Information Manual” was released to field officers and technicians of the Department of Agriculture (D.A.) all over the country. Then Secretary Salvador Escudero III of the D.A. introduced it as containing “plans for local governments, agricultural technicians, farmers and fisherfolk as well as the general public to minimize the adverse effects of the forthcoming El Niño on the country’s food supplies to guide the agricultural sector through the coming state of calamity.” In October, a month after the Presidential Task Force on El Niño was created, the information/education/communication campaign of the Philippine Information Agency was launched. Among its key messages was to conserve water (“tipid tubig tips”) and not to be beaten by El Niño (“huwag magpatalo sa El Niño”).

B. Reports Issued after the Impacts Appeared

After the impacts of El Niño appeared, PAGASA continued to provide a monthly weather outlook made possible through its Drought Early Warning and Monitoring System. The National Disaster Coordinating Council issued reports and press releases on the areas declared under a state of calamity, number and status of people affected, assistance provided. Each member-government agency of the Task Force El Niño provided updates during the regular Task Force meetings.

At post-El Niño stage, at least three reports were issued by the government. One was disseminated to the public, the 1997-98 Annual Report on the Task Force El Niño: A United Initiative, published by the Department of Environment and Natural Resources. A second report, A Retrospective on the 1997-98 El Niño Event in the Philippines was written by Dr. Aida Jose, PAGASA chief. While this was not published, it was shared with interested parties. The third report was shared within government and with researchers about El Niño, but also not published. This was the Survey on Effectiveness of the IEC Campaign of the Philippine Information Agency, undertaken by PIA’s research department.

C. The Major Responses to the Event (from the public and private sectors)

Two major responses to be cited are the government’s response and the private sector’s response.

The government response reflected a new strategy. This was the creation of the inter-agency ***Task Force on the El Niño*** in September 1997. The creation of the Task Force acknowledged that previous responses had been fragmented, uncoordinated and somewhat ineffective. The inter-agency body sought a better planning and implementation approach to be effective. (See description of the Task Force on p.____) With a comprehensive action plan drawn up, the Task Force sought an initial budget of P 80 million to support a full-blown tri-media campaign. Within different agencies, other budgets were allocated for projects (e.g., construction of shallow tube wells in the farms).

The work program of the Task Force focused on interventions in agriculture, domestic water supply, environment and other sectors (health, energy), and on the information/education/communication campaign.

1. Agriculture

A six-point program to mitigate the negative impacts of El Niño on the agricultural sector resulted in:

- rehabilitation of communal/national irrigation systems: 224,000 hectares
- construction of small farm reservoirs: 7,817 units
- purchase/installation of shallow tube wells: 12,169 units
- small water impounding dams: 108 units
- direct assistance to farmers: 50,000 hectares of land cultivated thru provision of loans for seeds, fertilizers and chemicals
- cloud seeding operations: 900,000 hectares of agricultural crops saved thru 1,500 hours of cloud seeding operations at the cost of P 24 million
- research and development

By the first quarter of 1998, 17 provinces had been declared under a state of calamity by their respective local governments. Regions XI and XII in Mindanao were severely impacted. These were among the poorest areas in southern Philippines. Government redirected relief efforts to Mindanao with difficulty as these areas had not been originally targeted as vulnerable and were less prepared to cope with the situation.

The Department of Social Welfare and Development, aided by NGOs and private sector donations provided rice/relief assistance to almost 100% of the total population. However, because of the prolonged nature of the drought, rice allocation could not cover for the total food requirements of the affected population during the period. As of June, 1998, total relief assistance provided amounted to P 281 million, majority of which was used for purchase of rice and distribution. The main sources of funds were government-P 219 million while the rest were from external donations.

The Philippine Crop Insurance Corporation, in its Annual Report noted that “for the first time in its history, PCIC organized and launched an El Niño Agricultural Advisory Program to help farmers minimize their losses. Advises included crop substitution and planting

schedules. A visible effect was in the substantial increase in corn production and decrease in rice coverages.”

2. Domestic water supply

- Identification and close monitoring of vulnerable areas with respect to domestic water supply: 26 areas and six major dams identified
- Prioritization of the projects for financial assistance/calamity funds. More than P7 million channeled to four projects for local water districts considered most critical and for acquisition of water tankers to service places dependent on surface water sources.⁴⁴
- Development and instillation by the Department of Interior and Local Government of a viable framework to provide local government units access to local and foreign financing institutions for water source and water supply development in areas without existing water utilities: The Poverty Alleviation Fund to Water and Sanitation program prioritized the 20 poorest provinces; funds from Japan International Cooperation Agency (JICA), United Nations Development Program (UNDP), and Asian Development Bank mobilized projects on water supply, sewerage and sanitation needs.
- Assessment of the Angat Dam situation and capacity to service Metro Manila/environs. This included careful calibration of level of water releases so as not to dry up the reservoir before the rains came. An overall decrease of 32 percent in water releases to consumers was done.
- Development by MWSS of a Comprehensive Action Plan for the Angat Reservoir which included rehabilitation of the Reservoir Low Level Outlet jointly implemented by the MWSS and the National Power Corporation. The National Disaster Coordinating Council provided P 200 million from the Calamity Fund for the projects of the Action Plan (drilling of 20 new wells, rehabilitation of 53 existing wells, acquisition of 72 stationary tankers and 9 mobile tankers; purchase of chlorinators, etc)

3. Environment

- Massive tri-media campaign against slash-and-burn farming (*kaingin*) and the prevention of grass land and forest fires by the Department of Environment and Natural Resources (DENR) in conjunction with the Philippine Information Agency
- Immediate assistance to provinces affected by fires
- Creation of task forces in Palawan province (e.g., Fire Prevention, Fire Suppression)
- The DENR employed a 3,326-strong team of forest fighters to protect over 15.9 million hectares of forestland. The fire fighters kept a 24 hour surveillance watch. Over 50 incidences of forest fires across the country were put under control. Total damages came up to 9,400 hectares of forest cover burned (20 percent only of what the country lost in the 1992 El Niño event).
- Acquisition of additional fire fighting equipment

⁴⁴ These were located in Tagkawayan, Quezon; Malaybalay, Bukidnon; Surigao in Surigao City; Guinyangan in Quezon.

4. Health and Energy Sectors

Health:

- Intensive health education campaigns by the Department of Health on personal hygiene, proper storage of water, etc.
- Constant monitoring of water quality
- Bacteriological quality point was increased from 200 per month to 500: weekly residual chlorine measurement was conducted on 500 sampling points
- Conduct of safety measures on health by the DOH and local authorities
- Provision of early warning on diseases (cholera, diarrhea, dengue, heat syndromes and urinary tract infection)

Energy:

- Measures to minimize adverse impacts of El Niño such as conservation measures were put in place.

5. Information/Education/Communication (IEC) Campaign

- The communication strategy involved all government agencies in the IEC campaign.
- PAGASA conducted lectures in various public and private offices and conducted press briefings
- The Department of Interior and Local Government conducted community education sessions at local levels through Water Sanitation task forces.
- Manila Water Services released informative flyers and news items, including the popular “Water Conservation Tips”
- Phil. Council for Agriculture Forestry and natural Resources Research and Development (PCARRD), the research arm of the Task Force, conducted trainings/seminars, policy advocacy, meetings to give out information and to suggest technological intervention measures. Radio interviews and television outings at “Dighay Bayan” and “Ugnayan sa Rembrandt” were facilitated.
- Local Water Utilities Administration carried out seminars and disseminated “Tipid Tubig” tips

In support of their efforts, the Philippine Information Agency (PIA) provided news bulletins and carried out its own full-blown campaign which included film and television plugs, an MTV jingle, radio plugs, brochures and primers (for farmers, fisherfolk and households in general), informative posters on alternative crops, El Niño stickers, various leaflets (health advisory). And comics featuring stories of farmers affected by water shortage. Media was used to disseminate “tipid tubig” (save water) tips and other information materials.

Outside government response, the private sector provided a strong response to aid Mindanao affected families through the *Tabang Mindanaw* campaign. In addition to the earlier description of this effort, Tabang Mindanaw was an informal collaboration of 7 Catholic Church dioceses, 7 non-government organizations/corporate foundations/media and the Mindanao Presidential Action Group. Business leaders working through the boards of

corporate foundations actively supported the fundraising. The goal was to provide immediate relief assistance to tribal communities in south central Mindanao who were already starving and getting sick from shortage of food and potable water in their areas.

The achievements of the campaign have been mentioned. In addition, the campaign successfully shifted to a rehabilitation phase of assistance in September 1998. This was to introduce sustainable and appropriate agriculture through learning/demonstration farms, taking into consideration indigenous practices. A functional literacy program was also a key component of the rehabilitation.

D. On the Extent of National Research (in the last 20 years) in the Country on El Niño and on Climate-Related Hazards

The most prominent national research on El Niño was prepared by PAGASA's Climatology and Agrometeorology Branch in 1987⁴⁵. In this paper, assessment of local scale climatic vulnerability and its impact on Philippine agriculture during the 1968-69, 1972-73, 1976-77 and 1982-83 was done. All other associated researches such as the seasonal rainfall prediction were done as part of the development of the Drought Early Warning and Monitoring System (DEWMS) in the Philippines by PAGASA. DEWMS has historical data covering a period of more than 50 year records of monthly rainfall totals. The DEWMS document cited the following researches as references:

1. Jose, A.M. "Proposed Agroclimatic Assessment Models for Policy Decision Making, Economic Planning and Rural Development in the Philippines," December (1982)
2. Jose, A.M.; Prediction of Seasonal Rainfall in the Philippine", Doctoral Thesis (1989)
3. Kintanar, R. L. And Jose, A.M. "A Preliminary Assessment of the El Niño Related Drought of 1986-87 in the Philippines"(1987)

In 1993, the Bureau of Emergency Assistance of the Department of Social Welfare and Development conducted a "Study of Drought in Davao Del Sur". It covered a situationer of families affected and their adjustments in coping with the situation.

In 1997, A quick assessment mission was commissioned by the Philippine Corporate Network for Disaster Response (CNDR) which produced a "Report on Quick Assessment of El Niño Southern Oscillation (ENSO) phenomenon in the Philippines."⁴⁶

E. On a National Plan to Respond to Disasters

The Calamities and Disaster Preparedness Plan of the Philippines, created by Presidential Decree 1566 dated June 1978, entasks the National Disaster and Coordinating Council (NDCC) and other government agencies to advise the President on the status of disaster preparedness programs and disaster operations; establishes policy guidelines involving

⁴⁵ Aida Jose, Flaviano Hilario, Gilda Cerdena ,Assessment of Climate Vulnerability and its Impact on Philippine Agriculture During the Recent El Niño Events, PAGASA, 1987.

⁴⁶ by A.R. Subbiah, ADPC/AIT, December 1997.

rescue, relief and rehabilitation; establishes priorities on the allocation of funds, services, disaster equipment, etc.

F. If El Niño is Explicitly Considered to be a Disaster in the Country

Yes, El Niño is considered a disaster in the Philippines because of its demonstrated impacts on this predominantly agricultural country. Studies have shown that 80% of the 20 most disastrous tropical cyclones during the past 38 year period occurred during the El Niño years and the year after. Consequently, crop failures have been the most severe, according to qualitative impact assessment of the climatic variability crops during the El Niño years under study.⁴⁷

G. On International Research about the Impacts of El Niño Events on the Country

International researches on the El Niño as a global phenomenon includes mention of impacts on the Philippines, as in Michael Glantz's *Currents of Change: El Niño's Impact on Climate and Society, 1996* and in the WMO's "*The 1997-98 El Niño Event, A Scientific and Technical Retrospective*". The latter, however, is based on PAGASA's research.

V. FORECASTING BY ANALOGY

A. On What could have been done differently, (a) about information flow; (b) about preparing for the forecast impacts

1. Timing

PAGASA, the official warning agency, had done an excellent, pro-active job in providing an "early advisory" of the onset of El Niño in the Philippines starting in May 1997. Records show, however, that the importance of this warning came into the consciousness of official authorities in July 1997 following a written memo of the then President Ramos to the Cabinet Secretaries of Environment and Agriculture and the conduct of the National Caucus on the El Niño Phenomenon. It was also the same time that the media reported the onset of El Niño more regularly. The dissemination of information on El Niño increased significantly with the creation of the Task Force El Niño in September 1997 aided by an allocation of funds for an intensive information-education and communication (IEC) campaign. Because of a very dynamic local media industry which also covered international news extensively (CNN, BBC etc), information about El Niño was abundant.

⁴⁷ Jose, Aida, et al. Assessment of Climate Variability and its Impact on Philippine Agriculture during the Recent El Niño Events, Philippine Council for Agriculture, Forestry and Natural Resources, Los Banos, Philippines, 1987.

2. Quality

“Information flow” was obviously abundant, but the quality of information being disseminated required improvement. These were:

1. An independent study commissioned by the Corporate Network For Disaster Response stated that IEC messages needed to be corrected. ***“The inappropriate communication messages...like linking El Niño with global warming, giving conflicting information on the beginning and end of the drought, relating global impact of drought in the Philippine context, and notifying high risk planting dates as low risk planting dates, led to wrong impressions about the El Niño phenomenon.”***
2. Two public surveys on what people learned about El Niño and how they perceived government’s interventions on El Niño’s effects give indication of what could have been done differently—about information flow and about preparing for the forecast impacts. These public surveys were done independently of each other by (1) the Philippine Information Agency (PIA) and (2) the non-government organization, the Social Weather Station (SWS).

The first survey, conducted by the Philippine Information Agency, involved 2,200 respondents. The highlights were:⁴⁸

- Majority of respondents were aware of El Niño, defining it as extreme heat and drought, resulting in inadequate water supply, decreased food production and health deterioration among the elderly and children.
- Majority of fisherfolk respondents were not aware of El Niño effects on their sector; while one-third of farmer respondents had no knowledge of El Niño effects on their farming activities. To the farmers who knew of the event, what they said they could do were: planting of drought-resistant crops, use of other water sources such as brooks and streams, water conservation measures.
- Majority of respondents were not aware of government projects aimed at helping people to cope with El Niño effects. One-fourth of respondents believed that government was helping people through information campaigns; a smaller number cited the provision of water pumps as another form of assistance. However, even among those who were aware, there were more who could not specify the nature of government interventions. About one-fifth of respondents believed that government had done nothing to help people to cope with the effects of El Niño.
- Majority of respondents who were aware of government programs on El Niño obtained their information either from the television, radio or newspapers. Perceived messages were “Save water” and “Huwag magpatalo sa El Niño” (Don’t be defeated by El Niño).
- Majority of respondents wanted government assistance in the form of: water pumps, livelihood projects, food and medicines and water rationing.

⁴⁸ Survey on Effectiveness of El Niño IEC Campaign, Philippine Information Agency. 1998.

The second survey, conducted by the Social Weather Station, involved 1,200 respondents. It tried to determine the difference in responses between two periods, in December 1997 and in March-April 1998, when applicable. The highlights were:⁴⁹

- Majority of the respondents had heard or read about the El Niño (77 percent in December 1997 and 88 percent in March-April 1998)
- Majority of the respondents said they volunteered to conserve water rather than were forced to do so.
- More than one-half of the respondents described their knowledge of effects of El Niño on the environment and quality of life as “little knowledge”, while more than one-fourth of respondents said “adequate knowledge.”
- Almost one-half of respondents replied that government was “somewhat prepared” to cope with the negative effects of El Niño; 31 percent said government was “hardly prepared” and 20 percent said “very prepared.”

Both surveys reflected the people’s increasing knowledge about El Niño and what they could do as it affected them. However, government actions to inform and prepare vulnerable sectors rated low, this considering government had given El Niño priority attention and support through – (1) the creation of an inter-agency presidential task force, (2) an intensive information/education/communication campaign that brought government officials to local levels to map out IEC plans specific to the areas.

The devastating impacts to the country – the losses to agriculture and fisheries, loss of livelihood for people (with second generation effects, or effects lasting for half a year after El Niño because of the loss of working or productive capital), starvation and sickness in several parts of the country, these contributed to peoples’ assessment of government’s lack of interventions. People also got their information from radio, newspapers and television; not all of the reports were accurate as to extent of damage, or fair in giving government’s side. Media reported the delay in fund releases by government so that affected families grew hungry, having only watered-down corn or rice porridge, “lugaw”, or forest yams which were poisonous if improperly prepared (for example, reports of starvation in Bongdo, Cebu and in the upland areas in Mindanao). And the reasons for the delays in fund releases, according to media, was either government bureaucracy or a preoccupation with the national and local elections of May 1998.

Aside from media, people also got their information from direct knowledge, from their own experience or from people they knew were seriously affected. This included the 20,000 farmers in Bulacan who lost a second cropping because their irrigation was cut off, and farming communities who did not get the training assistance of field technicians of the Department of Agriculture because of lack of operating expense (for transportation, meals, etc).⁵⁰

⁴⁹ *The El Niño*, Social Weather Station, Quezon City, 1998.

⁵⁰ Interview with official from the National Economic Development Authority, February 2000.

Understanding government's many difficulties, those related to information flow were:⁵¹

- The lack of monitoring system and information dissemination by local disaster coordinating councils
- Non-compliance of local government units on the proper channel of reporting, so that feedback to higher-level Disaster Coordinating Councils was unsustainable, irregular and delayed
- Non-synchronization of disaster assessment report
- Lack of communication and transportation facilities

In Regions IX, X, XI, XII XIII and ARMM which were seriously affected, the government's serious constraint was they had not been able to inform and prepare local officials and communities in these areas because these had not been identified as vulnerable areas back in July 1997.

B. On the Realistic Obstacles that might have prevented these Theoretical Actions being taken

The combination of the following may have unintentionally prohibited the development and implementation of an effective set of actions to minimize impacts of El Niño: perception, policy and vulnerability assessment and decision-making.

1. Perception

The country normally enjoys adequate rainfall averaging 2000 mm every year in "non-El Niño years." Because of this, "more than enough water" is normal and annually, floods dominate the topography of the country. To most Filipinos, a drought scenario was remote and improbable and if its possibility was considered, severity was not assumed to be high. Due to these, most actions were taken when clear and obvious manifestations of drought already prevailed during the last quarter of 1997.

This was further exacerbated by the fact that the Philippines has the unfortunate distinction of being affected by large disasters which include major earthquakes, volcanic eruptions, severe and strong tropical cyclones. These combinations result to economic resources being continuously stretched to the limit. Coupled with competing budget priorities, advocates for increased resources for disaster prevention, mitigation and preparedness have found it a big challenge to convince policy makers to increase investments to minimizing the impacts of El Niño.

Many citizens of the Philippines also perceive that if disasters occur, solutions and resources have to be tapped from the national government. This, despite the fact that local and community-based solutions are also effective in minimizing the impacts of El Niño.

⁵¹ Executive Summary re Comprehensive Assessment Report on El Niño Phenomenon in Mindanao Area, National Disaster Coordinating Council, Department of National Defense, Quezon City, 1998.

2. Policy

Prior to the El Niño 1997-1998 episode, the general public and most government administrators had fully accepted that pre-disasters actions (PMP or prevention, mitigation, preparedness) are better than post-disaster ones (relief and rehabilitation). However, the national calamity and disaster preparedness plan/policy is still under revision for proper legislative reform. Due to this, existing policy still prohibits the implementation of effective PMP programs. For instance, funds for disaster related programs can only be allocated upon declaration of state of calamity by the national and/or local government.

The current policy also needs to be supported by a *Contingency Plan* specific to a particular type of hazard such as the El Niño. Though it has wide coverage in terms of scope (perhaps the most extensive disaster related policy in Southeast Asia), hazard-specific responses require further elaboration in the document.

3. Vulnerability Assessment and Decision Making

The basis for deciding responses had been the climate map at the onset of El Niño. The climate map however, provided static information of climate, distinguishing wet and dry season months in a very broad sense. The vulnerability on the other hand is a multi-dimensional issue encompassing

- The quantum of rainfall;
- Distribution of rainfall over space and time;
- Status of irrigation;
- Soil type;
- Cropping pattern;
- Socio-economic features.

An improved vulnerability map that includes the information above will greatly enhance better decision making and action.

C. On El Niño Considerations to be added explicitly to National Disaster Plans

Yes, but more than this, El Niño considerations need to be included too in national and local medium term development plans.

D. On the Strengths and Weaknesses in the way the Country's Government System Responds to El Niño-Related Climate Anomalies

Major Strengths:

1. Political will and policy articulation: The involvement of President of the Philippines in articulating very clearly what needed to be done by two important sectors--agriculture and environment was the most important factor in the accomplishments of various sectors in minimizing the impacts of El Niño. In addition, the President had ordered the

involvement of the Presidential Committee on Flagship Programs that put the El Niño responses in a very high level of priority.

2. Constitution of the Task Force for El Niño Phenomenon: The Task Force was multi-sectoral, and was given the mandate to prepare a comprehensive plan to include forewarning, education, and strategic solutions such as the a) adoption of an integrated approach to water resource management through a decentralized, participatory and community based approach.
3. Information dissemination: Extensive information campaign resulted to a wider stakeholders and public involvement in El Niño responses. It is remarkable that the IEC campaign had changed the peoples' perceptions toward El Niño and its association to drought conditions.

Areas for Improvement

The following list should complement all other sections included under *Forecasting by Analogy* as stated above.

1. Information dissemination: While the IEC had effective emphasis on urban dwellers and selected sectors (agriculture, environment, and health) other sector-specific information must be improved to target others such as upland dwellers, fisheries and indigenous Filipinos.
2. In providing warning of El Niño, the value of long lead forecasts in alleviating social and economic costs must be emphasized and must be supported by an agroclimatic map based vulnerability mapping. This process must improve usability of seasonal forecast in agriculture (climate information needed and used-stages of agriculture operations-major stages of coping decisions)
3. The Task Force must be supported by a national forum of sectoral experts that may provide ongoing guidance to the committee. This will enhance technical input to major decision-making.
4. Local contingency plans for agriculture should include "conflict resolution mechanism" to ensure equity in irrigation water distribution, intervening in water markets to minimize exploitation and aggressively promoting campaign for taking advantage of the moisture availability to cultivate short duration crops.
5. The allocation of P 1.3 billion mostly for small scale harvesting structures to a large extent had not served the purpose for which the amount was earmarked due to delay in delivery of such facilities. It was too late to save crops. The farmers also expressed apprehension about the utilization of benefits out of this program. Farmers in the assured irrigation areas also informed that they would not need such small-scale irrigation during the non-El Niño years. Note, however, that the Task Force in a memo dated January 28, 1998 tried to correct this problem--"The program of P 1.3 billion may be restructured to

provide assistance only to needy farmers enabling them to save standing crops, raise alternative short duration crops and meet expenses relating to raising next season crops.”

F. On the Influence of the 1997-98 El Niño on the Country's Response to the Forecast in early 1998 of an Expected La Niña Event

Yes, among the improvements made were as follows:

- the development and effective dissemination of a La Niña contingency plan which appeared to be comprehensive and enjoined wider stakeholders involvement in “combating” La Niña.
- All the rest had been done using the same institutional mechanisms as in the El Niño event.

ANNEX
EL NIÑO STUDY - PERSONS INTERVIEWED and DOCUMENTS RECEIVED

ORGANIZATION/CONTACT PERSON	DOCUMENTS RECEIVED
<p>1. TASK FORCE EL NIÑO ATTY. MAI FLOR EXECUTIVE DIRECTOR MR. GODOFREDO CARPIO TEL. 9288655 Department of Environment and Natural Resources, 2nd Floor OGST Building, Visayas Avenue, Quezon City</p>	<ol style="list-style-type: none"> 1. Task Force El Niño 1997-1998 Annual Report 2. Summary: PIA Survey Report 3. Report on Quick Assessment of ENSO Phenomenon in the Philippines. 4. Country Paper-Philippines, presented in Thailand 1998 5. 1997-1998 Accomplishment Report Presidential Task Force on Water Resources Development and Management
<p>2. PAGASA Dr. Aida Jose, Head, Climatology and Agrometeorology Branch Dr. Rosa Perez, Head, Natural Disaster Reduction Branch Tel 922 1992 ASIATRUST Bldg, Quezon Avenue</p>	<ol style="list-style-type: none"> 1. Assessment Update of the Current 1997-1998 El Niño, its Impact on the Philippine Local Climate and Seasonal Outlook for 1998. 2. Assessment of Climate Variability and its Impact on Philippine Agriculture During the Recent El Niño Events. 3. Rainfall Predictions for the Philippines (January to December 2000) 4. Drought Early Warning and Monitoring System in the Philippines 5. “ Retrospective on El Niño in the Philippines submitted to WMO” 6. Documentation of Frequently Asked Questions during series of seminars and workshops on El Niño by PAGASA.
<p>3. DEPARTMENT OF SOCIAL WELFARE AND DEVELOPMENT Mrs. Vilma Cabrera, Director DSWD Batasan Pambansa Complex, Constitution Hills, Quezon City 9318144/9517124 9318101 to 05 local 115</p>	<ol style="list-style-type: none"> 1. Update on Food Assistance Program for El Niño Victims in Region XI and XII as of July 15,1998. 2. Food Aid Program for El Niño Victims, Executive Summary. 3. A Study of Drought in Davao Del Sur: Situationer of Families Affected, its Impact and their adjustment in coping with the situation 4. Evaluation of the Rice Subsidy Program during El Niño..

<p>4. DEPARTMENT OF HEALTH Dr. Christina Galang, Environmental Health Services San Lazaro Compound, Sta. Cruz, Manila Tel. 7431781 DR. CARMENCITA BANATIN STOP DEATH Program Manager</p>	<ol style="list-style-type: none"> 1. Impacts of El Niño to public health and other associated effects. 2. Plan of Action: OPLAN BANGON MINDANAO – Nutrition Intervention/ Sustansya Para sa Masa Program 3. Guideline on Utilization and Liquidation of GOP funds sub-allotted to Mindanao Regions for the Implementation of Sustansya Para sa Masa Program-Mindanao 4. Sustansya Para sa Masa, Strategic Plan 1999-2004 5. Guidelines on the Distribution/Handling of BP-5 Compact Food for Use During Calamity 6. Briefer on BP-5 Compact Food 7. Rapid Appraisal on the Effectiveness of BP-5 During Disasters
<p>5. DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS 8th Floor Columbia Towers, Ortigas Avenue, Quezon City Gen. Rogelio Estacio Mr. Ronnie Cervantez Tel. 725 0549, 72 6677</p>	<p>NONE</p>
<p>6. PHILIPPINE CROP INSURANCE CORPORATION Mr. Benito Estacio Jr., President Mr. Manuel Aranza, Vice President VAG Bldg, Ortigas Avenue, Greenhills, San Juan Tel. 7210830, 7215461/65 local 119</p>	<ol style="list-style-type: none"> 1. Annual Report 1997
<p>7. NATIONAL DISASTER COORDINATING COUNCIL, Mr. Emmanuel De Guzman, Deputy Administrator</p>	<ol style="list-style-type: none"> 1. Calamities and Disaster Preparedness Plan. 2. Executive Summary re: Comprehensive Assessment Report on El Niño Phenomenon in Mindanao Area. 3. Consolidated Report Re: Effects of El Niño Phenomenon as of July 1998. 4. Areas Declared Under State of Calamity by LGUs Due to El Niño Phenomenon as of June 30, 1998. 5. Summary of El Niño Phenomenon. 6. NDCC Caucus with Proponents/Authors of Disaster Management Bills, Office of

	Civil Defence.
8. DEPARTMENT OF INTERIOR AND LOCAL GOVERNMENT Director Teresita Mistal and Ms. Matilde Go	NONE
9. NATIONAL IRRIGATION ADMINISTRATION Mr. Edilberto Payawal, Manager, Systems Management and Mr. Rod Bazar, Corporate Planning Department.	1. Water Code of the Philippines
10. DEPARTMENT OF AGRICULTURE Dr. Rogelio Concepcion, Director, Bureau of Soils and Water Management	
11. PHILIPPINE INFORMATION AGENCY Emelyn Libunao Director, Program Development Division Thelma and Beth, Assistants	<ol style="list-style-type: none"> 1. Communication Plan 2. Accomplishment Report, Dec 1997 to June 1998 3. (One) Cassette Tape of El Niño Jingle- “Huwag Magpatalo sa El Niño” 4. (One) VHS Tape of TV Plugs 1,2, & 3 (30 seconds) and TV Documentary (10 minutes) 5. Full Survey of Effectiveness of PIA Campaign 6. Posters, komiks, brochures
12. NATIONAL ECONOMIC DEV'T AUTHORITY Mr. Joselito Bernardo Officer in Charge, Crop Division	<ol style="list-style-type: none"> 1. Various inter-office memos monitoring EL NIÑO, Sept 3-Nov 11 2. EL NIÑO Update, March 17 3. Dir-General's Instruction from News Article 4. Field Information Manual on El Niño (Dept. of Agriculture) 5. Brief Analysis of Impact of El Niño on Phil. Agriculture by Rolando Dy (Exec. Dir., Center for Food & Agri Business, Univ of Asia and the Pacific) 6. A Framework of Analysis on the EL NIÑO Episodes in the Phils. By Rogelio Concepcion (Bureau of Soils and Water Mgmt)
13. DEPARTMENT OF ENERGY Ms. Claire Cabacang/ Thelma Environmental Protection & Monitoring Division Engineer Ramon D. Cabazor Mini-Hydro Division	<ol style="list-style-type: none"> 1. Guide on Mini-Hydropower Dev't in the Philippines 2. Report on Effects of El Niño on Hydropower from 1998 Annual Report

<p>14. CENTER FOR MEDIA FREEDOM & RESPONSIBILITY Ms. Melinda Quintos de Jesus Executive Director</p>	<p>1. 4 issues of Philippine Journalism Review on media responsibility for reporting disasters</p>
<p>15. PRESIDENTIAL MANAGEMENT STAFF Mr. Sergio Andal, Assistant Secretary, Agri-Industrial & Infrastructure Policy Office Ms. Joanne Agbisit, Assistant</p>	<p>- NONE</p>
<p>16. TABANG MINDANAW SECRETARIAT/ ASSISI DEVELOPMENT FDN. Ms. Milet Mendoza, Coordinator</p>	<p>- brochures</p>
<p>17. METROPOLITAN WATERWORKS & SEWERAGE SYSTEM (MWSS) Ms. Evangeline Dacanay</p>	<p>- brief on MWSS operations; privatization</p>
<p>18. PHILIPPINE PRESS INSTITUTE</p>	<p>- Various news articles on El Niño</p>
<p>19. PHILIPPINE BUSINESS FOR SOCIAL PROGRESS</p>	<p>- Tabang Mindanaw II Primer - Brief Articles on Effects of El Niño (UNICEF; USAID monitoring visit) - INQUIRER newspaper one-page AD</p>
<p>SANNY JEGILLOS FILES</p>	<p>1. Thoughts on the Turner Proposal Methodology and ENSO Issues. 2. The 1997-98 El Niño Event in Brief. 3. Climate Change and Human Health. 4. IDNDR Report on Early Warning for Hydrometeorological Hazards including Drought. 5. Early Warning Program Action Plan for the Future. 6. Reducing the Impact of Environmental Emergencies Through Early Warning and Preparedness; First Meeting of Team Leaders. 7. An Experiment in the Application of Climate Forecasts: NOAA-OGP Activities Related to the 1997-98 El Niño Event.</p>

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