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National Country Report on the UNCCD Implementation

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1.0 Introduction

This national report is in response to the call of the Convention for every member economy to provide an updated assessment of the Philippine's initiative to implement appropriate mitigation measures to combat drought and land degradation.

The biggest threat to the country's capacity to sustain growing population and needs for food and space for habitation and urbanization is active soil erosion, water pollution, soil quality deterioration, and industrial pollution. About forty five percent of the arable lands on the country have been moderately to severely eroded, a phenomenon that causes abandonment of farms and migrating into marginal lands. Approximately 5.2 million hectares are now seriously eroded and their productivity reduced by least 30-50 percent. The water retention capacity of these eroded soils is reduced significantly, making them very vulnerable to recurrent drought and prolonged dry spell attributed to El Nino. Approximately 74 percent of sloping uplands are actively used for subsistence farming and these phenomenon certainly aggravates land degradation and predisposed these lands to the processes of desertification.

The increasing population and subsequent increasing demand for human settlement and other non-agricultural uses have contributed to the great loss of prime lands for the production of food, fiber, and in supporting various forms of biodiversity. These losses result into opening of ecologically fragile lands and destruction of natural vegetation and loss of habitat for many endangered plants and animal species. At a replacement value of 1.3 – 4 hectares of replacement between alluvial lands and uplands, some 60,000 to 80,000 hectares of suitable uplands must be converted and used for agriculture to replace an annual loss of rate of 20,000 has of prime lands.

The formulation of this national report is guided by the following mandates from the UNCCCD:

- *Inform the Parties to the Convention of the situation of each country Party in regard to the measures taken for the implementation of the UNCCD;*
- *Assess the progress made towards achieving the objectives of the Convention and to enable the Convention of Parties (COP) to make*

appropriate recommendations to better pursue the objectives of the Convention;

- *Contribute in strengthening the institutional and human capacities of national focal points and national coordinating bodies;*
- *Improve the ability to coordinate the work and to motivate further actors and stakeholders to pursue the effective implementation of the UNCCD as an integral part of national efforts to promote sustainable development and global environmental protection.*
- *Address policy measures and institutional development for the Convention's implementation; and*
- *Focus on measures and significant development in the sub-regional and regional action programmes (SRAPs/RAPs).*

2.0 The Framework for Land Degradation and Drought: On cross-sectoral concerns with related Conventions

The interagency report formulation group recognized that drought and land degradation has a complex and inter-related Cross-sectoral Issues and concerns with related UN Conventions that need to be adequately addressed and managed.

a. Need for a Synergy of Efforts of UNCCCD with Convention of Biodiversity and Convention on Climate Change.

This report fully appreciates to consider land degradation and drought as phenomenon that is influenced by the changing climate (concern of the Convention on Climate Change) and which impact on natural habitat of various bio-diversity (concerns of Convention on Biodiversity). The three topics of the UN Conventions are so inter-related that one event would lead into the other as a part of natural resource continuum.

b. Need for a Mutually Reinforcing Actions of a Multi-disciplinary Team

Land degradation and drought is cut-across discipline, which requires an integrated, multi-disciplinary team performing a common-mutually reinforcing action. The inter-agency is multi-faceted and which converged on a common decision framework in defining course of actions and in obtaining the desired outputs.

3.0 Stepwise Process for the National Report Formulation

In the generation of relevant data and information need for the formulation of the second national country report, a six step-consultation process in the form of group meetings and conference/workshops, actively

participated by various stakeholders in the government and private sectors, including farmers and civil societies, were followed:

Step 1 - Participatory Process

- An awareness program was conducted through a conference “National Awareness on Combating Land Degradation and Drought and Mitigating the Effects of Drought in Mindanao” held in Davao City, Mindanao on September 19 – 20, 2001. In the meeting, it was proposed that a pilot study on the impacts and mitigation measures against drought and land degradation will be conducted in one of the provinces in Mindanao. The current dry spell and the incoming El Niño is expected to hit Mindanao sometime in October to December 2002 and may possibly extend to June 2003.
- Needs Assessment Meeting (NAM) for Water Resources Management held at the Bureau of Soils and Water Management Auditorium on December 18, 2001. This phase of the report formulation provided an overview on UNCCD activities to mitigate land degradation and drought, assess priority needs and potentials in water resources management and initiate information exchange and linkages for selected study themes for water resources.

Step 2 - Consultative Process

- Scoping Meetings were held in the preparation of the report as recommended in the Help Guide.
- Consultative Technical Workshop

The objective of this activity is to solicit comments and sectoral inputs to be incorporated in the national report for the UNCCD implementation.

- Round Table Discussion of three focal points: Conventions on Biodiversity, Climate Change and Land Degradation and panel of experts and resource persons on the creation of the National Coordinating Body (NCB) on April 22, 2002.

Step 3 - Institutional Arrangements

- Proposal to Create the National Coordination Body

After going through the data organization and information exchange, it was very clear that a national coordination body will create synergy and harmony for the effective/efficient participation of the country's

focal points in the various inter-related UN Conventions (Biodiversity, Climate Change and Land Degradation) have to be established. During the consultative conference attended by the focal points for the three related conventions, a proposal was made to form a national coordination body named as the Philippine Technical Experts Cooperation Body (PTECB) for UN Conventions. The Body is not limited to the three Conventions but will also include all other related UN Conventions.

The general mandate of the proposed PTECB is to oversee and harmonize the participation of the country in the three related UN Conventions. Its specific functions include the following:

- Coordination and supervision in the implementation of agreements in the UN Convention in biodiversity, climate change and land degradation;
- Unification of technology and development approaches on biodiversity, climate change, land degradation in the different sub-sectors of the environment and ecology;
- Promote the judicious use and conservation of natural resources for sustained productivity and rural development;
- Develop pool of experts in the fields of biodiversity, climate change and land degradation;
- Promote and enhance technological and scientific advancement to address drought and land degradation and resulting to poverty;
- Effective participation in the global exchange of information and expertise on biodiversity, climate change and land degradation;
- Formulation and review of the country submission to the Convention; and
- Establish and maintain a directory of experts in the fields of biodiversity, climate change and land degradation.

The PECTB shall be composed of the following responsibility centers:

1. Policy Board,
2. Executive Committee, and
3. Technical Working Clusters.
4. Secretariat (Bureau of Soils and Water Management, Department of Agriculture)

There shall be additional follow up discussions to draft the final terms of references for each focal point and scope of responsibilities of the various responsibility centers of the PECTB.

- Consultative Meeting with Senior Legislators in the Senate and House and Cabinet/Administrative Officials – Series of small consultative

meetings within the next two months still have to be finalized with the Officers concerned.

Round Table Consultation Series with the Panel of Senior Officials in various institutions, Senate and House of Representatives on agriculture, environment and related interests will be set up to review/endorse the appropriate legal/administrative issuance in the creation of the NCB. It will either be in the form of Executive Order or a Legislation for approval of the both houses of Congress.

4.0 The Country's Action Programs and Plans on Land Degradation and Drought

Over-all Strategy

The country has the over all - umbrella program, generally, referred to as the Medium Term Development Plan for 2001 to 2004 (MTDP).

The support spatial plans are embodied in the National Physical Framework for Physical Planning for 2001 to 2003. There are quite a number of political initiatives, such as drafting of new and proposed Bills. The government initiatives are likewise discussed briefly by selected International collaborations.

The country's Medium Term Development Plan for 2001 –2004 formulated by the National Economic and Development Authority, advocated four basic operational principles and framework to operationalize the strategy for sustainable agriculture and national resource development:

- a. *Promoting Environmental Sustainability*
 - Integrate environmental concerns in planning and decision making at all levels of the bureaucracy
 - Adopt and promote the use of environment-friendly and sustainable lowland and upland farming and fishing practices
 - Adopt an integrated ecosystem and watershed management approach
- b. *Promoting broader participation of stakeholders in natural resource management.*
 - Promote broader participation of LGUs, civil society, communities, other concerned national government agencies and the private sector in the protection, sustainable management and development of the environment
 - Encourage involvement of local communities and the indigenous people and promote the use of indigenous knowledge system in biological diversity conservation

- Support community-based natural resource management programs
- c. *Ensuring equitable access to productive resources and services.*
- Strengthen resource information management to improve environment and natural resource management planning and decision-making
- d. *Encourage value-added and technology-based forestry and natural resources production.*
- Strengthen technology generation, promotion, commercialization programs especially the linkage among the technology users, private sectors, LGUs, SUCs, DOST and DENR.

Emerging Priorities

The Fiscal Years 2002 and 2003 are threatened by the joint effects of the prolonged dry spell following the wet years brought by 2001 La Nina episodes.

The El Nino phenomenon in the country is well remembered by its harsh impacts on food and water supply, decline of production of the country's major export crops especially coconut, which need two good years to recover and return to its original production levels.

Measures Taken

Creation of the Presidential Task Force on El Nino and La Nina

As early as last year, the President of the Philippines through an Administrative Order formed a Presidential Task Force on El Nino and La Nina an interagency organization composed of pool of experts on climate, hydrology and agriculture with the ultimate purpose of formulating practical and workable mitigation measures. The Secretary of Agriculture chairs the Task Force, with members from various agencies of government and private sector representatives. A technical working group is likewise formed chaired by the Undersecretary for Operations and co-chaired by the Director of the Bureau of Soils and Water Management.

The year 2002, starting in the first quarter was characterized by highly variable climate patterns and which ultimately resulted in early and extended dry spell in many parts of the country creating problems of crop establishment and replanting.

The Task Force is essentially divided into four (4) working groups:

- Early Warning System and Information Campaign, chaired by the Philippine Information Agency
- Agriculture, Natural Resources and Water Management, Chaired by the Department of Agriculture
 - Food
 - Water
- Energy and Power, Public Works, Transportation and Communications, chaired by Department of Public Works
- Consumer Protection, Social Services, and Rescue and Relief, chaired by the Department of Trade and Industry

The operations of the Task Force are basically dependent on the regular updates circulated by the Philippine Meteorological Agency who provides the Task Force regularly an El Nino Advisory.

A special war room located at the Secretary's Office is established to house all daily updates and information on activities related to mitigation measures, maps of vulnerable areas, location map of threatened irrigated areas, such as shallow tube well supported areas, areas served by communal irrigation systems.

A national Conference was held at the Philippine Trade and Training Center on April 14, 2002. The meeting was basically divided into two parts:

- Technical meeting in the morning (8:30 am to 3:30 pm), which finalized the budget and key mitigation activities of the Task Force.
- Joint Plenary meeting with the all Governors in the country (3:30 to 5:30 pm). This was presided by the Secretary of Agriculture and the Senate Chairman on Agriculture.

The meeting agreed on the important dates and timelines:

- July to September – El Nino Building up in the Central Pacific Ocean
- October to December – El Nino will hit Mindanao ((During the meeting, it was formally announced that El Nino will hit the Philippines starting with Mindanao Island in the Southern portion of the Philippines).

- January – June 2003 – Possible extension of El Nino, which could result in expanding the dry events in Luzon and Visayas Island.

The added advisory mentioned on the possibility of early termination of rain in September 2002. The implications of the advisory are:

- All Dams in Central Luzon will not be able to fill the dam to ensure that the crops in the last part of the first quarter 2003 may not served with water.
- Groundwater is threatened because there many users tapping the ground water.
- The last month where crops maybe planted is November and December.
- Any reduction in rainfall during the months covered by El Nino will mean that many crops may fail and will need to replant.

The following important timelines and mitigation measures was agreed upon by the participants during the conference:

- Aggressive media campaign
- Positioning of shallow tube wells sometime in August, 2003
- Repair and rehabilitation of existing irrigation and dam systems.
- A Regional Task will be established.

3.1 Strategies and priorities established within the framework of sustainable development plans and/or policies

The national report consisted of the analysis of the strategies and policies following the Medium Term Development Plan of 2001-2003, which provides basic rules and regulations about sustainable development. The MTDP is supported by the National Framework for Physical Planning 2001-2003, which provided basic guidelines for the identification, formulation of national land uses appropriate to location, economic development status, and quality and status of natural resources and environment.

As a continuing effort to sustain the momentum of strategic gains derived from the mitigation measures, the legislative actions are likewise presented.

4.1.1 Important Legislative Initiatives

Legislative and policy issuances are reviewed and made an important part of this national to address land degradation in the Philippines. Among the relevant legislations discussed below include the AFMA, Balanced Fertilizer Recommendations, Philippine Environmental Code, Environmental Impact Assessment System, and a number of other important bills being negotiated by various legislators in both houses of Congress.

1. *The Agriculture and Fisheries Modernization Act (AFMA) in 1997, Republic Act 8435*

The Agriculture and Fisheries Modernization Act 1997 (responsibility of the Department of Agriculture [DA]), is the primary law that provide advocacy for the giving of high priority for investment and development from selected strategic zones or areas of agriculture and fisheries. The Law prescribed the principle of the judicious use and investment of scarce capital in limited, well-selected and strategic areas where the return on investment is high and where agriculture production and cost-efficient processing of commodities and products desired by the local and international market. The advocacy for a modernized agriculture takes into the consideration the full protection of the environment.

The act was introduced to ensure prime agricultural land is retained for food security and agricultural crop production, and to improve rural area incomes (Congress of the Philippines, 1997).

The main objective of the Agricultural Modernization Plan, prepared under the act, is to ensure that adequate funds are allocated for irrigation infrastructure development, and development of post-harvest and farm-to-market facilities. Effort is made to improve the livelihood of the rural population, and to enhance their capacity to access adequate amounts of good quality food. Some of the urgent related measures to modernize agriculture, as specified in this act are:

- (a) Mapping of Areas of Network of Protected Areas for Agriculture and Agro-Industrial Development (NPAAAD) for all municipalities and cities at an appropriate scale
- (b) Delineation of the Strategic Agriculture and Fisheries Development Zone (SAFDZ)

The SAFDZ considers production, processing, investment, marketing, human resources, and environmental protection. These

activities are undertaken through participatory planning by the Department of Agriculture in consultation with various government agencies, local government, farmers and fishing organizations, the private sector and communities. Some SAFDZ lands are considered non-negotiable for conversion---irrigated lands, irrigable lands already covered by irrigation projects with firm funding commitments, and lands with existing or a potential for growing high value crops.

The identification of the SAFDZ are based on the prescription of the AFMA Law:

- Suitable to agro-ecology
- Location of areas
- Location of areas
- Dominant presence of agrarian reform communities

The final mapping and identification of all lands suitable for SAFDZs have been completed and is now an important document that now provides not only technical basis but also, likewise a legal character for all lands assigned for agriculture and fishery development.

A Regional Handbook on SAFDZ was issued for each administrative region in the country, containing municipal and provincial level compilation of information on:

- Area of SAFDZ, including names of barangays (village) in each zone;
- Area of existing land use (crops, livestock and fisheries);
- Area of potential alternative commodities

The SAFDZ has been considered as one information that provides convergence of decision for various land-use regulating agencies involved in land reclassification and land use conversion. An Executive Order Number 45 “Prescribing Time Periods for Issuance of Housing - Related Certifications, Clearances and Permits, and Imposing Sanctions for Failure to observe the same.” was issued by the President with the following statement of objectives by the President:

“to reduce red tapes in the national government, within 123 months, all government agencies will implement measures to cut in half the number of signatures required for their services. Housing needs only 45 approvals, instead of 188.”

3. Delineation and strategy for the protection of watershed areas

All watershed areas that are sources of for existing and potential irrigable areas, and recharge areas of major aquifers identified by the DA and Department of Environment and Natural Resources (DENR), shall be preserved. BSWM ensures that these lands are delineated in the SAFDZ maps. The DA collaborates with the DENR to implement watershed protection and conservation projects.

2. The Balanced Fertilization Strategy (BFS), Presidential Proclamation 1071

This places equal emphasis on management of crop residues, farm waste recycling and a balanced combination of organic and inorganic fertilizers. This strategy was established by the BSWM because the widespread misuse of urea fertilizers has degraded the alluvial lands under irrigated rice production.

3. The Local Government Code of 1991, RA 7160

This provides that the local government units, shall in conformity with existing laws, continue to prepare their respective comprehensive land use plans and enacted through zoning ordinances which shall be the primary and dominant bases for the future use of land resources.

There are a number of relevant issuances reflecting the various perspectives related to the environment, tenurial system, energy, and other components required to sustain rural and urban development throughout the country. The relevant laws are enumerated as follows:

- Philippine Environmental Code, PD 1152
- Establishing an Environmental Impact Assessment System Including other Environmental Management Related Measures and For other Purposes, PD 1586
- An Act providing for the establishment and management of National Integrated Protected Areas System, defining its scope and coverage and for other purposes, RA 7586
- Comprehensive Agrarian Reform Law of 1998, RA 6657
- Indigenous People Rights Act of 1997, RA 8371
- Revised Forestry Code of the Philippines, PD 705

- Department of Energy Act of 1992, RA 7638
- Special Economic Zone Act of 1995, RA 7916
- Urban Development and Housing Act of 1992, RA 7279

4.1.2 Draft Bills

In addition to the existing thematic laws, new laws are now undergoing review and will soon be released for implementation, to wit:

1. The draft national land use legislations

The debate for a national land use policy began in 1993, finally leading to the draft National Land Use Bill 1999. The long legislative process reflected the growing concern of the impact of irrational land use that was characteristic of rapid urban expansion (shopping malls, golf courses, industrial sites, and residential subdivisions). These developments occurred on prime agricultural land traditionally used for rice, corn, coconut, and sugarcane production. A number of bills coming from both chambers of the Philippine Congress and Senate were consolidated in the National Land Use Act, as follows:

- Six House Bills were consolidated into (unnumbered) House Bill, (consolidated version) An act instituting a National Land Use Policy, providing the implementing mechanisms thereof and for other purposes.
- Seven Senate Bills were consolidated into Senate House Bill No. 1944, an act instituting a National Land Use Policy providing the implementing mechanism thereof and for other purposes.

The draft National Land Use Bill prescribes that the state shall pursue policies to guide the allocation, use and management, and development of land and water resources. Primarily, the legislation promotes the adoption of land use that ensures:

- Food security;
- Rational population distribution and development of settlements;
- Equitable and sustainable economic growth and balanced, dispersed, industrial and tourism development consistent with the principles of sound agricultural development;
- Natural resources development and agrarian reform;

- Sustainable use of natural resources; maintenance and preservation of environmental integrity and stability; conservation and soil and water resources;
- Reduction of vulnerability to natural and man-made disasters;
- People empowerment; and protection of the rights of Indigenous Cultural Communities to their ancestral lands.

The drafted Bills also features a National Land Use and Planning Framework, which defines land use and allocation priorities. A general land use classification and planning categorization is proposed, covering protection of land use, production land use, urban settlement development, and infrastructure development. The most relevant land use category to the land degradation issue is a balanced approach to identify suitable locations and activities for the production and protection of land use. The production land use sets aside land that can be optimally used for food production and maximization of livelihood opportunities. Land set aside for protection will be subject to minimal disturbance and the natural biodiversity will be restored.

2. The draft bills on the promotion of sustainable farming technology

House Bill No. 9820 establishes the Sloping Agriculture Land Technology (SALT) farming programme. This covers public and private land, including ancestral land devoted to agriculture, with a slope of 5 or greater regardless of the existing or potential agriculture use. The bill seeks coordination among the DA and DAR, local government, and other non-government organizations, to implement the SALT farming method in a three-year period. Support services are provided in the form of irrigation facilities, infrastructure development and public works projects, preparation of physical development plans of such lands and other facilities, government subsidies for the use of irrigation facilities, and price support and guarantee for all agricultural produce.

House Bills Nos. 135, 766, 831, 2777 and 2792 provide for the promotion of bioorganic farming. Under this legislation, the term bioorganic farming means an agricultural production system, which primarily relies on biological means of conditioning and enriching the soil, and controlling pests. It is not limited to the use of plant and animal wastes through composting, crop rotation, intercropping, multiple cropping, and adoption of integrated pest management or pesticide free management and which minimizes the use of chemical or inorganic farm inputs, pesticides, weedicides, and feed additives. It also covers soil fertility management, varietal breeding and selection, and other cultural practices with the potential to enhance productivity without destroying the soil and harming farmers, consumers, and the environment. The Bio-organic Farming Commission, comprising

members from government agencies will implement policy from these bills.

4.1.3 International Collaboration

The government of the Philippines recognizes the necessity to worldwide coordination of activities to control and prevent land degradation, and through the BSWM it cooperates with various international organizations to develop land use policy and land management guidelines that can be applied in the Philippines.

- Management of Phosphorus for Sustainable Food Crop Protection on Acid Upland Soils in Australia, Philippines, and Vietnam (January 1996 to December 1999). This is a cooperative project with the Australia Center for International Agricultural Research (ACIAR), to identify and develop economic and sustainable farm technologies to improve the production of groundnut, maize, and soybean on upland acid soils by more efficient use of applied phosphorus.
- Management and Rehabilitation of Degraded Hilly Lands in the Philippines (January 1998 to December 2001). This project aims to extend and sustain conservation farming technologies through farmer adoption. The project, co-sponsored by the International Board for Soil Research and Management (IBSRAM), has three components:
 - Development/evaluation of technology promotion approaches
 - Technology assessment/adjustment/modification
 - Government support, institutional linkages, and policy advocacy
- Integrated Management of Salt-Affected Coastal Soils in the Philippines (December 1997-December 1999). The FAO funds this project. It dominates integrated management techniques for the improvement of salt-affected coastal lands in support of the food security programmes in the Philippines.
- Asia Soil Conservation Network for Humid Tropics (ASOCON). The Network was established in 1993 with funding assistance from the UNDP. It introduces effective approaches for soil conservation in Indonesia, Thailand, Malaysia, China, Papua New Guinea, Vietnam and the Philippines.
- Environment and Productivity Management of Marginal Soils in the Philippines Project, Soilsearch Center Project Phases I and II (**JICA**)
With the establishment of the Soilsearch Center through a Grant Aid

from the Government of Japan, the BSWM has improved its capability to implement soil, land, and water resource utilization measures. Phase II of the project terminated in December 1999. To ensure its effectiveness, the Environment and Productivity Management of Marginal Soils in the Philippines Project, has been proposed and now on its third year of implementation. Its activities concentrate on soil and water management techniques that may be applied in the marginal agricultural uplands, hilly lands and highlands.

- Conservation Farming in the Tropical Uplands. The programme improves the long-term viability of tropical upland farming communities and their environments through the development and promotion and sustainable agricultural and conservation practices, and facilitates collaborative working relationships among rural people, government agencies, NGOs, and international organizations.
- Sustainable Agriculture and Related Environmental Issues. This is one of seven areas of cooperation in the Asia-Pacific Economic Cooperation (APEC) Agricultural Technical Cooperation (ATC) Experts Group. It focuses on the policy-making process of member economies, sustainable agriculture, related environmental issues and rural development, formally agreed on Sustainable Agriculture as a new era of cooperation in the APEC-ATC. The Philippines will coordinate the work.
- International Union of Soil Sciences (IUSS). The IUSS consists of division, commissions, standing committees, and working groups. The BSWM director chairs the Working Group on Paddy Soil Fertility (PSF) that organizes events and forums to promote understanding and cooperation among soil and rice scientists on environment and rice soils management issues.
- Integrated Watershed Management for Sustainable Soil and Water Resources Management: Inabanga Watershed, Bohol Island, Philippines. BSWM.
- Integrated Soil and Water Resources Management

3.2 Measures Taken/Planned within the Framework of National Action Program (NAP)

3.2.1 Conservation of Soil and Water and Related Natural Resources and Promotion of Sustainable Use

Promotion of Soil and Water Conservation Measures

The promotion of soil and water conservation measures has been a traditional component of the national program in agriculture. Over the years, the conservation measures extended to farmers have undergone changes, refinements and improvements in response to feedback, clamor of farmers, costs analysis and recent results from trials and experiments through the cooperation of local research centers and the academe.

Current conservation measures recommended are the planting of crops best suited to the soil and land conditions of the farm, soil fertility enhancement practices, monitoring of soil loss due to erosion and adoption of sloping agricultural land technologies in sloping areas.

The planting of the best-suited crop or crops contributes to the sustainability of the production system. Soil fertility enhancement practices help maintain productivity. These practices include farm waste recycling, green manuring, balance fertilization through the use of organic and inorganic fertilizers in recommended amounts and organic-based farming. The monitoring of soil loss due to erosion is necessary in upland farms located in sloping areas. If erosion is observed to be moderate to severe, then a suitable sloping agricultural land technology must be employed to minimize erosion and eventually stabilize the soil.

Currently, the promotion activities are limited to demonstrations and trials, field days and farmers meetings in experiment stations and occasional farmers trainings. There is need to expand and intensify these promotion activities using innovative approaches.

Continuing Programs

- (National Soil and Water Resources Research and Development/Extension Network)
Networking is an approach taken also to maximize resource mobilization and coordination. The National Soil and Water Resources Research and Development/Extension Network (NSWRRD/E) addresses the implementation and complementation of R&D programs and projects relating to soil and water resources. Through the network linkages, the network RD/E agenda are reviewed, formulated and prioritized; coordination, implementation and monitoring are harmonized and unified;

R&D development and quality management is effected. The NSWRRD/E Network is currently administered by BSWM under the direction of DA-Bureau of Agricultural Research (BAR). The Network Organization consists of experts, member-institutions and focal persons, national state colleges and universities, regional member agencies, regional member state colleges and universities. The Farmer and Industry Advisory Committee (FIAC) for soil and water resources provide the technical and related advises to the Network.

- Identification and Delineation of NPAAAD and SAFDZ

The identification of these areas is the first major step in the natural resources conservation and Protection. On the national scope, the identification of the SAFDZs required in the implementation of the AFMA of 1997 has been completed for all the regions in the country. Along with these activities, the identification of the NPAAADs has also been completed in the entire country. Other areas requiring protection and management development planning have also been identified such as the NIPAS. Some upland, generally marginal areas claimed as ancestral domain by indigenous people have now been legally recognized under the IPRA. It is expected that more upland and highland areas will be declared as ancestral domains in the future.

- Identification of Conservation and Protection Areas

- Lahar areas in central Luzon
- Sand Dunes in Ilocos Norte
- Mined Areas or highly disturbed lands
- Mt. Matutum, South Cotabato
- Areas under Type I and Type III Climate

It is also important that the above areas are identified and appropriate conservation measures be applied.

- Intensification of Soil and Water Conservation Measures

The promotion of soil and water conservation measures has been a traditional component of the national action program in agriculture. Over the years, the conservation measures extended to the farmers have undergone changes, refinements, and improvements in response to comments, clamor of farmers, cost analysis and recent results from various trials and experiments. Current measures include the following:

- Crop suitability
- Soil fertility measures- farm waste recycling, green manuring, BFS
- Monitoring of soil and productivity loss due to erosion

- Adoption of conservation farming techniques

Currently, the promotion activities are limited to the demonstration trials, field days, farmer meetings and occasional farmers training. However, there is a need to expand and intensify these promotion activities using innovative approaches.

- Drought Mitigation Measures

Crops affected by drought. A brief presentation of crops easily affected by drought is in order. Toward this end, the following crops are recognized: a) dryland annual crops, wetland rice crops, the perennials and the ruminants.

The traditional production of dryland annual crops in the Philippines follows the natural rhythm of the season. Thus, there are two crops, the main crop planted at the onset of the wet season and the second crop planted at the tail end or transition period from the wet to the dry season. By and large, dryland annual crops are dependent on rainfall for moisture. In the event of a drought, the second crop is lost.

For wetland rice, there are generally five crops recognized based on the source of flooding water, as follows: a) irrigated wet season crop, b) rainfed wet season crop, c) irrigated dry season crop, d) rainfed dry season crop in bottom lands of river basins, intermontane valleys and smaller similar landforms and e) others. The latter refers to localized variant practices of the rainfed production culture. It should be noted that with the use of non-photoperiodic rice varieties under condition of expanded and improved irrigation systems, the planting of irrigated wetland rice is now spread over a period of two months or more during the dry or wet season. However, the planting of rainfed rice crops follows the rhythm of the season, like the annual crops. Drought bring about a reduction of in area and production of the dry season irrigated rice and loss of the rainfed dry season rice crop.

The perennials consist of wide variety of crops, including the annually fruiting perennials, the continuously fruiting perennials and the pasture grasses in dryland areas. In most perennials, flowering is triggered by the onset of soil moisture availability or rainfall following a moisture-stress period. The fruits ripen three months or so later. In the case of continuously fruiting perennials, like the coconut, the dry-season yield however is lower than the rainy season yield. In the event of a drought, flowering, fruit set or fruit development is aborted due to moisture stress.

Of the livestock, the ruminants are the most vulnerable to drought as these are traditionally just allowed to graze in open pastures. During extended seasonal aridity, the pasture grasses gradually die and the animals are left with nothing to

forage on. Moreover, unlike in plant crops, the animals affected are not a total loss.

Now, let us look at the drought mitigation measures in practice in agriculture.

Artificial rain stimulation

Rain stimulation has its inherent advantages and disadvantages. The primary advantage centers on its ease of implementation. It is an awesome technology, getting rain practically on demand; that is, if there are clouds to be seeded. It could provide direct benefit to standing crops and the ecology as well.

The primary disadvantage is the low reliability as during extended dry spells or El Niño, the skies may be cloudless for several straight weeks and even months. By then, soil moisture must have gone down to wilting point or beyond. And also, assuming that there are clouds to be seeded, induced rains may fall elsewhere other than the target land area. Thus, another disadvantage is the uncertainty in the amount of rain that could be induced in an area. Because the Philippines is an archipelago, the applicability of artificial rain stimulation is limited to inland areas of the bigger islands.

Engineering Measures

Irrigation systems are the most reliable mitigation measures against drought. And indeed it is fortunate that irrigation consciousness is part of the country's cultural heritage and history. First, there are the irrigated rice terraces in the Cordillera Autonomous Region, built long before the coming of the Spaniards and maintained on a kind of community self-help and cooperative scheme. Then, the communal irrigation systems followed during the Spanish time. The repair and maintenance of communal irrigation systems were also assumed by the communities within the service areas.

The period immediately following World War II was a time of relative economic prosperity for the country and it was also the start of marked increase in population growth rate. To catch up with the increasing population, to curtail rice importation and inspired by the hope to eventually export rice, the Philippines undertook and is still continuing to build big irrigation systems.

In places where there are no major rivers to be tapped for big irrigation systems, small irrigation systems were built. In foothills and hill areas when feasible, small water impounding structures were also constructed to help farmers in marginal upland areas. The impounding of water from intermittent creeks and runoff is a form of rainwater harvesting. In some places, rainwater harvesting from roofs of houses for domestic use is practiced.

In the eighties, exploitation of groundwater for irrigating rice employing motorized pumps on short tube wells came into use. In recent years, the so-called short tube well have now been popularized. Indeed in most Philippine lower basin areas out of service areas of communal and NIA irrigation systems, the short tube wells would be a priority option to irrigate a farm or a cluster of contiguous farms.

Balancing irrigation system and ecology. Two or three years ago, there was a bill proposed in Congress purposely to rehabilitate the world-famous rice terraces. The reported problems were weakened, crumbling riser walls of the terraces and inadequate irrigation water. It was not ascertained if the weakened, crumbling riser walls and the shortfall of irrigation water were related. Moreover, the reduced irrigation water supply could have been caused by climate change, reduction in area of the catchments, denudation of the catchments, singly or combination of any of two or all of the possible causes. If ever the bill proposed earlier is pursued, the approved version should include, among others, provisions to rehabilitate the catchments of the irrigation water of the rice terraces as well and to require all concerned agencies to get their acts together jointly.

Years back, there were interagency discussions here at DA why a big irrigation system in Luzon could not adequately service its command area, even during the rainy season. Among the problems that surfaced during the discussions were high siltation in the dam or reservoir, much reduced level of water during the dry season, high conveyance losses and difficult to manage users. It was found out later that there was need to rehabilitate parts of the denuded catchments of the irrigation system to control soil erosion and reduce siltation in the dam to increase the capacity of the reservoir and to lengthen the service life of the irrigation system. The rehabilitation and maintenance of watersheds serving as catchments of irrigation systems need to have provisions in planning irrigation systems.

Exploitation of groundwater for irrigation would require some appreciation of the geologic and hydrologic setting of the location. Pumping water out from the lenses of sand aquifer could lead to de-stabilization of the area in the long term. It could also precipitate intrusion of saline water into fresh groundwater in coastal areas.

Agronomic Measures

Technologies for on-farm soilwater conservation and drought mitigation measures are available and have been parts of the extension package in some areas, i.e. minimum tillage, crop diversification, use of drought-resistant crops in drought-prone areas, mulching to conserve soilwater in dryland environment and drip irrigation to improve water use efficiency in coarse-textured soils. What may be required is to intensify the efforts through innovative presentation to promote these technologies.

Planned measures

Two major cluster activities are planned. The first cluster calls for piloting of activities toward reversing land degradation in selected critical areas. The second cluster focuses on arresting land degradation and on mitigation measures of the effects and impact of extended seasonal aridity. What is unique or different about these two planned activities?

These planned activities will be implemented under the technical supervision and coordination of a National Coordinating Body yet to be established and still in the formulation stage. The field implementation of the planned projects will be the responsibility of project implementing unit(s) under a joint administrative and management control of the National Coordinating Body and the local provincial and municipal authorities. The joint administrative and management control shall be covered by clearly defined duties and responsibilities in memoranda of understanding/agreement. The project implementing unit(s) shall be staffed with tenured, career professionals.

The scope and other general concerns of the planned projects follow below.

1. Reversing Land Degradation in Selected Critical Areas (Long-Term Program)

There are three major project components, as follows:

- Piloting characterization, classification and rehabilitation/development of upper subwatersheds or catchments within selected SAFDZs and NPAAADs employing intensified reforestation, agroforestry and greening;
- Piloting intensified reforestation, agroforestry and greening in denuded upper catchments of critical watershed areas; and
- Monitoring and evaluation of the effects of intensified reforestation, agroforestry and greening in upper subwatersheds or catchments within selected SAFDZs and NPAAADs and in denuded catchments of critical watershed areas.

2. Arresting/Mitigating Impact of Drought and Combat Land Degradation (Short-to Medium-Term Programs)

The project activities are listed below:

- Intensifying ongoing drought mitigation and soil and water conservation measures
- Expansion of sites in pilot watershed for environmental and productivity management of marginal areas
- Comprehensive inventory of areas severely affected by seasonal aridity, characterization of land degradation including pollution of ground water in these areas and assessment of groundwater potentials for irrigation.

- Promotion of non-conventional energy source for agriculture and domestic uses.
- Determination and evaluation of erodibility indices and runoff coefficients and sediment loads of upland catchments under different land covers in sloping upland and highland areas of the country;
- Formulation environmentally sound land use management option through application of GIS technique for marginal and degraded upland and highland areas.

3.2.2 Increasing Awareness on Character and Impacts of Drought and Land Degradation

Enhancement of knowledge and dissemination of information on extended seasonal aridity and land degradation are service-oriented measures to promote awareness among the populace of the problems and to help them cope up with the problems with minimized losses. There are two activities under this heading discussed below, a) Taken or Continuing and b) Planned.

Taken/Continuing

Initially, activities in this subheading were not included based on the premise that these things have been done before for many years since the El Niño 1982, the most devastating El Niño to visit South East Asia. There is no reason in doing more of the same things for a long period of time. However, because of limited information except for occasional announcement from the print media, it was decided to allow these ongoing activities to continue.

- Advisory on drought and land degradation forecast and warnings

Advisory on drought and land degradation through forecasts and warnings are also used to reach out to as wide a group of individuals. Information, Education and Communication (IEC) Campaign on El Niño are extensive. Tri media are being used to disseminate information on drought and land degradation such as television, newspaper, magazines, etc.

This activity cluster is a continuation of the separate activities of the various agencies concerned with drought or El Niño and land degradation in past years. It will be allowed to continue for one year and until such time as the planned activities below are now established and functional to take over the responsibilities.

- Environmental education is included in the formal education curriculum at all levels and more specifically in soil and water conservation courses in colleges and universities. This is to foster a sense of

responsibility for the state of the environment and to teach them how to monitor, protect, and improve it. Involvement also of the students in movement for a better environment, such as nature clubs and special interest groups is important.

- An awareness program, National Awareness on Combating Land Degradation and Mitigating the Effects of Drought in Mindanao was conducted by the BSWM in September 19-20, 2001 in Davao City. This was participated in by a wider set of stakeholders, which include government institutions, academe, research communities, non-government organizations, local government units and media.
- A *Needs Assessment Workshop for Water Resources Management* was conducted by the BSWM on November 18, 2001 to provide an overview on UNCCD activities to mitigate drought and land degradation, identify the priority needs and potentials in water resources management, convene various stakeholders concerned with water resources management in agriculture and initiate necessary information and linkages for water resources management.

Planned

- Establishment of a comprehensive and detailed database on research and development on character, impact and control of seasonal aridity and land degradation

This support activity shall be hosted by one of the agencies collaborating in the implementation of the UN Conventions on climate change, biodiversity and drought (desertification) and land degradation or by a university. However, it will have its own staff and its staff will be administratively responsible to the National Coordinating Body. The determination of the host agency or institution shall consider, among others, the existence of conditions and facilities that would lead eventually to mutually re-enforcing benefits between the host and the project.

The database is a computerized database and will be sourced from local research centers and the academe and from neighboring countries similarly situated as the Philippines. It will support the dissemination of information on character, impact and control of seasonal aridity and land degradation.

- Dissemination of information on character, impact and control of seasonal aridity and land degradation through the use of tri-media

It is envisioned that this project activity cluster will serve as the official spokesman for all matters relating to information on character, impact and control of seasonal aridity and land degradation. Like the foregoing project, it may be based in one of the collaborating agencies or in the academe. It has to link with the research or experiment stations of all collaborating agencies, to pursue activities on techno demos and holding of farmers' field days. Administratively, the staff of this project activity cluster will be under the national coordinating body.

The duties and responsibilities of the project staff will include but not limited to the following in respect to information dissemination:

- Early warning on probable date/period of occurrence, duration, intensity and areas likely to be severely affected by El Niño, flash floods and other natural calamities;
 - Advisory on mitigation measures;
 - Advisory on saving crops and livestock;
 - Advisory on other matters, e.g. health, etc.;
 - Putting up techno demo on drought-resistant crops and varieties, soilwater conservation and crop management in strategic areas and holding of farmers' field days.
- Baseline Study on the Perception and attitude on Drought and Land Degradation
 - Formulation of Communication and Advocacy Plan on the Character, Impacts of Drought and Land Degradation based on the results of R&D/E activities.

3.2.3 Monitoring and Evaluation of Drought and Land Degradation and Their Effects

Monitoring and evaluation (M&E) is an important component activity in defining the scope and extent of iterating the interventions that are essential in combating any form of land degradation.

Continuing measures

In so far as drought and land degradation in the Philippines is concerned, there are measures being undertaken with regards to M&E of drought and land degradation and their effects. These are: a) collection, analysis, and monitoring of extent and intensity of drought and land degradation which will serve as inputs to the publication of early warning Information or bulletins; b) conduct of R & D program aimed at developing new tools or improving the current tools being used in the monitoring and forecasting; and c) collection and analysis of productivity indicators that assesses the

impacts of drought and land degradation to land quality in terms of productivity levels.

Planned measures

As to planned measures in the M&E of drought and land degradation, the focus would be on the application of information technology. These are: a) setting-up of a web-based system; b) development of a database (hardware and software); and c) application of GIS technique. The web-based system is planned to be established/installed in the focal agency to ensure sustainability of the activity. The use of computer technology in the M&E of drought and land degradation and their corresponding negative impacts was strongly considered because this will facilitate data retrieval and updating. The web-based system could provide information to many people in least time and in any place, provided there exists Internet system. The application of GIS technique was considered especially in the mapping of soil and land-based indicators.

Parallel to the measures stated above, whether they are continuing or planned, a very defined benchmark/indicators were established so as not to entail confusion in the evaluation procedure.

Monitoring and evaluation of the effects of drought and land degradation considered monitoring of:

- Areas with seasonal aridity
- Level of water in dams/reservoirs and lakes
- Discharge/streamflow of major trunk streams and primary tributaries
- Depth of watertable in major landforms
- Areas irrigated under NIA and communal systems
- Pollution of groundwater in coastal and urban areas, e.g. salinity, *E.coli*, etc.
- Saline water intrusion in major trunk streams and encroachment in coastal areas
- Suspended load of floodwaters of major trunk streams and primary tributaries

3.2.4 Improvement of Socio-Economic Environment

Continuing measures

- Intensive crop production through banner programs of the Department of Agriculture (DA)

The Ginintuang Masaganang Ani (GMA) Program is the country's banner commodity program for agricultural development. It is the blueprint for

food security and poverty alleviation to establish the foundation for Agriculture and Fishery Modernization Act (AFMA, RA 8435). The Program addresses food security, poverty alleviation, sustainability of natural resource base, social equity, and global competitiveness. The major strategies that the GMA program adopts are:

- **Participatory approach** - This entails participatory planning, implementation and monitoring and evaluation with stakeholders.
- **LGU-led program implementation** – The local government units (LGUs) are the lead players in the implementation of the GMA program. The DA and the Department of Interior and Local Government (DILG), along with other concerned agencies provide the necessary technical and financial support.
- **Area based approach** – The GMA program identify interventions based on the domain specificity of the program areas. A situation analysis is done and focused on the water, soil, climate, production, human resources, processing and marketing endowments of the area. The comparative advantage or competitive edge as well as the scale economies present in the area, among others is the central criteria in the selection of program areas/interventions.
- **Capacity building** – The GMA promote local capability –building in the areas of participatory planning – implementation, monitoring, evaluation, research and extension, processing, marketing and entrepreneurship, among others.
- **Focused targeting** – Programs are developed based on the situation of the people. Programs catering to the poor as well as the big farmers are developed. Similarly, programs are identified for “winners” or impact areas and also for marginal areas.
- **Productivity improvement** - The GMA program promote sustainable development not only in terms of environmentally sound interventions but also in terms of project viability.
- **Counterpart schemes** – The DA, DILG and other concerned agencies and LGUs enter into program financing arrangements, which entail counterpart funds from each partner, as stipulated in the memorandum of agreement. The counterpart amount is based on the partner’s capacity. Contributions in kind, such as personnel, facilities and services are included.

Seven programs specific to the commodities are currently implemented, namely: GMA Rice, GMA Corn, GMA Coconut, GMA Sugarcane, GMA High-value commercial crops, GMA Livestock and GMA Fisheries.

The **Ginintuang Masaganang Ani (GMA) Rice** intends to increase total rice production to 12.5M mt; raise the yield of rice in irrigated areas from 3.35 mt/ha to 3.85 mt/ha; improve net farm income from palay production to an average of PhP10,270/ha for wet season and PhP12,397/ha for dry

season; stabilize the prices of palay and rice at levels equitable to producers and consumers.

The components of GMA Rice are: production support services, research and development; irrigation and infrastructure component that include post-harvest/machinery farm to market roads, rural finance, marketing support services, information campaign and training and extension.

The **Ginintuang Masaganang Ani (GMA) Corn** seeks to increase average corn productivity from 3.21 mt/ha to 5.0 mt/ha; decrease current average production costs by at least 20%; increase farmer's adoption of the yellow corn hybrid technology; produce quality corn and decrease post-harvest losses by 5%; increase incomes of corn farmers by insuring at least 50% return on the investments; improve productivity of labor; stabilize prices at equitable levels; ensure corn-based farming systems technology development and transfer system; improve and institutionalize linkages between and among DA, LGUs, NGOs, POs, SCUs and private sectors.

The **Ginintuang Masaganang Ani (GMA) Coconut** intends to increase annual gross income from PhP10,000 to PhP100,000/ha; improve agricultural productivity initially in 500,000 ha of coconut producing areas for the next 6 years through an efficient coconut-based farming system; and encourage other coconut farmers to replicate the model coconut farm approach.

The **Ginintuang Masaganang Ani (GMA) Sugarcane** seeks to increase sugar production from 4.95 tons sugar/ ha to 6-7 tons sugar/ha (70-75 tons cane/ha).

The **Ginintuang Masaganang Ani (GMA) High Value Commercial Crops** adopts a major shift towards market-oriented production system by introducing the Commodity Producers Linkages with Users (Commodity-PLUS) to address gaps in commodity marketing systems. It is guided by principles such as no subsidies on non-public goods and services; adoption of environment-friendly value adding enterprises; market-led; private sector facilitative and non-competing with private enterprises.

The objectives of the Ginintuang Masaganang Ani (GMA) Livestock are to: increase growth rate in livestock and poultry population by 10% with a corresponding 5% improvements in genetic coefficient; provide 30% level of contribution of livestock and poultry to the farm income; increase the value of production of the local livestock industry by 4% annually.

On the other hand, the **Ginintuang Masaganang Ani (GMA) Fisheries** seeks to: improve aquaculture productivity within ecological limits; optimize utilization of off-shore fisheries and deep-sea resources; improve product quality and reduce post-harvest resources; conserve, protect and sustain management of country's fishery and aquatic resources; alleviate the poverty among municipal fisher folks and provide supplementary livelihood; provide a favorable policy environment conducive to increased and global competitiveness and people participation.

- Implementation of People-Oriented Forestry Program on the Man and the Environment

This primary development program component aims to rehabilitate the degraded forestlands and the environment along the efforts to improve forest productivity. It unfolds the Master Plan strategy to advance equitable access to opportunities in forest management as well as sharing of benefits from forest resources. Through this Program, the local communities and notably, the indigenous cultural communities, are given the chance to participate actively in managing, conserving and using the forests.

The people-oriented forestry programs include six sub-programs, namely: Integrated Social Forestry, Community-based Forest Management, Contract Reforestation with Forest Land Management Agreement (FLMA), Ancestral Land Management, Wood Production in Alienable or Disposable Lands and Non-Governmental Organizations (NGOs) in Forest Development.

- Community-based Forest Management (CBFM) Program

Overall, community-based forestry program intends to improve the socio-economic conditions of the communities through the promotion of social justice, equitable access and sustainable development of forestland resources. All people-oriented forestry programs and projects are integrated and unified under the Community-Based Forest Management (CBFM) Office. The CBFM serves as national strategy to ensure the sustainable development of the country's forestland resources as provided for in Executive Order 263. It encourages participation of communities in forest protection through a number of tenurial instruments as security mechanism, as indicated in the table below.

Community-based forest management projects (1999) covered 4,659 sites serving 5,113,791 hectares where a total area of 4,010,934 hectares was provided with tenurial instruments.

To facilitate access of poor communities to technologies, technical assistance and funding sources, the Community Livelihood Assistance Program is also implemented.

The development of CBFM Program of the DENR under CARP is also implemented nationwide in identified CBFM-CARP sites. Basically, five activities are undertaken for the development of CBFM-CARP sites, i. e. PO strengthening and capability building, livelihood and enterprise development, forest area development and management, infrastructure development, among others.

- Recognition of ancestral domain of indigenous communities

Implementation of RA 8371 or Indigenous Rights Act of 1997

- Providing access to the means of agricultural production

In the implementation of Comprehensive Agrarian Reform Law of 1988, the **Comprehensive Agrarian Reform Program (CARP)** was put in place to provide access to the means of production. The Department of Agrarian Reform (DAR) serves as lead implementer and is supported by CARP implementing Agencies (CIAs). CARP is anchored on equitable land distribution to promote social justice and equity, rural development and lasting peace in the countryside. CARP is guided by 5 major policy trust, as follows: fast track land acquisition and distribution; integrate, institutionalize and rationalize and rationalize the delivery of support services; build and strengthen partnerships; pursue swift and just delivery of agrarian justice and revitalize the CARP bureaucracy.

The components of CARP are as follows:

- Land tenure improvement - seeks to ensure completion of the distribution of remaining lands until year 2008. Implementation of various activities is through its facilitative interventions in the process of documentation, valuation, titling and distribution, among others.
- Delivery of Agrarian Justice - Task Force Katarungan was formed to effect swift and just delivery of agrarian justice to declog increasing number of cases pending before regular courts (judicial cases), DARAB (quasi-judicial) and cases which need mediation /conciliation by DAR lawyers.
- Program beneficiaries development - DAR launched Agrarian Reform Communities (ARCs) with various support services gives them i.e. irrigation systems, training programs, credit support delivered by the CIAs to the Agrarian Reform Beneficiaries (ARBs). Rational and integrated delivery of support services to ARBs is done through the Farmers' Bayanihan Center for Rural Development (FBCRD), a one-stop center that provide essential support service requirements on

social infrastructure and land capability building, agricultural production, processing and marketing and enterprise development to the farmers within and outside the ARCs in a province.

The ARCs showcase the intervention support given by the DAR and the other CARP Implementing Agencies. These include organizational building and strengthening activities being implemented by DAR, DENR, Department of Labor and Employment (DOLE), Department of Trade and Industry (DTI) and National Irrigation Administration (NIA); provision of infrastructure facilities by NIA and Department of Public Works and Highways (DPWH), and provision of credit and production inputs by the Land Bank of the Philippines, DTI and DAR.

Membership to a farmers' organization is being encouraged within the ARCs. These organizations are strengthened under various institutional development programs such as Cooperative Strategy Assistance program (CSAP), Self-Reliant Organizations for CARP project and the DAR Agraryong Pangkalusugan Program and the institutional development component of the various Foreign-Assisted Projects.

Also, the **GININTUANG MASAGANANG ANI (GMA) Countrywide Assistance for Rural Employment and Services (CARES)** of the DA and the Quedancor provides farmers and fisher folks access to the means of production through its credit and guarantee programs. The GMA CARES offers the following:

- *Agri-Fishery Mechanization Credit and Guarantee Program (AMCGP)* - provides credit and guarantee for the acquisition of appropriate machineries, equipment and implements by farmers, fisher folks, agri-fishery workers and agri-fishery enterprises including their organization like cooperative/ federation/peoples organization.
- *Seaweed and Fish Culture Program (SFCP)* - provides direct credit access to target clients who are engaged or will engage in seaweed and fish culture and in its production, processing, manufacturing and trading for working capital requirements and for the construction of facilities and acquisition of equipment including pump boats and other fishing paraphernalia. Agri-based livelihood projects of small fisher folk and other qualified entrepreneurs/ enterprises are also funded under this program
- *Small Retail Enterprises (SRE)* – provides flexible credit to entrepreneurs who are engaged in the business of retailing and/or retailing/ distributing/ repackaging raw, semi- processed or fully processed agricultural, aquatic, poultry, livestock, and other agri-related commodities and supplies.
- *Income Augmentation and Livelihood (IAL)* - provides financing for agri-fishery and other livelihood projects of government employees

thereby augmenting their income and creating employment for their families and relatives

- *Coconut Smallholders (COCONUT)* - provides a working capital and finance for the construction of warehouse and acquisition of post-harvest facilities, machineries and equipment of coconut farmer-cooperatives

Planned measures

Based on the current state of implementation and the focus of the Philippines in its effort to improve the socio-economic environment of the farmers and fisher folk in support of the AFMA, the following would be pursued as planned measures for integration in the preparation of national action plan.

- Intensifying implementation of DA Banner programs- DA
- Intensifying promotion of Community-based Forestry Management projects- DENR
- Continue with the implementation of the Indigenous Rights of 1997 and Comprehensive Agrarian Reform law of 1988- DAR
- Continue to provide access to the means of agricultural production- DA

5.0 Financial Allocations

Funding sources for the National Action Program to mitigate drought and combat land degradation are the Regular Budget of the Agencies involved with the National Action Program, the AFMA Budget of the Department of Agriculture, Overseas Development Assistance (ODA), Local Financing from Government Financing Institutions (GFIs).

Access of local stakeholders to funding sources is dependent on the National Action Program prepared and subsequently adopted by the Government as priority program.

Funding for the activities relevant to the National Program to mitigate drought and combat land degradation and is within the coverage of the mandate of the cooperating agencies and part of their regular program are already included as a line item in the General Appropriations Act.

Issuance of a Presidential Directive or enactment of a law by Congress would provide the legal basis for funding and inclusion of other activities identified in the NAP.

Funding sources for the National Action Program to mitigate drought and combat degradation are the Regular Budget of the Agencies involved with the National

Action Program, the AFMA Budget of the Department of Agriculture, Overseas Development Assistance (ODA), Local Financing from GFIs.

6.0 Review of benchmarks and indicators

In the paper provided by one of the experts, Dr. Candido Cabrido, invited during the consultative meeting, the following relevant statements were discussed:

The types of degradation can take many forms in terms of extent, location and status. It was prescribed that future documentation about the types land degradation must be described within the following context:

- Temporary or reversible
- Permanent or Irreversible
- Localized or small scale
- Widespread or large scale

The effects on land degradation must be measured in terms of quality, quantity, and productive capacity of the land resources, using the following broad indicators:

- a. Quality Indicators:
 - Land quality
 - Water quality
- b. Quantity indicators
 - Land uses
 - Water resources
- c. Productive capacity indicators
 - Yield
 - Net Income

The rest of the consultation with many experts as well as review of various papers and publications showed many indicators relevant to measures being implemented in the field. The list of the planned and continuing measures- specific indicators used by agency and experts are shown in Tables 6.1 to 6.4.

Table 6.1 List of measures and corresponding indicators on Conservation of Soil and Water and Related Natural Resources and Promotion of Sustainable Use

MEASURES	BENCHMARKS/ INDICATORS
Taken/Continuing:	
Identification and Delineation of NPAAAD and SAFDZ	Area coverage, Types of land (Topography), Productivity levels, infrastructure, Support services
Identification of Conservation and Protection Areas <ul style="list-style-type: none"> - Lahar areas in central luzon - Sand Dunes in Ilocos Norte - Mined Areas - Mt. Matutum ,South Cotabato - Areas under Type I and Type III Climate 	Area coverage, Types of land (topography, land form and vegetation), Types of ongoing land degradation (localized, widespread)
Intensification of Soil and Water Conservation Measures <ul style="list-style-type: none"> ▪ Crop suitability ▪ Soil fertility measures- farm waste recycling, green manuring, BFS ▪ Monitoring of soil and productivity loss due to erosion ▪ Adoption of conservation farming techniques 	No. of farmers who adopted the technology, Productivity (high, medium, low) Yield,
Drought Mitigation Measures <ul style="list-style-type: none"> ▪ Cloud Seeding ▪ Promotion of appropriate irrigation system measures - irrigation systems (CIS, NIS, SWIPs, STWs, SFRs, pressurized irrigation system, small basins) ▪ Agronomic measures - minimum tillage, crop diversification, use of drought-resistant crops, mulching 	Coverage area (seeded areas), Number of sorties, Amount of rainfall, No. of beneficiaries, area of crop saved No. of beneficiaries, No. of units installed, productivity No. of farmers trained, No. of farmers adopted the technology,
Planned:	
<i>Long-Term:</i>	
<ul style="list-style-type: none"> ➤ Reversing Land degradation in Critical Areas ▪ Piloting characterization, classification & rehab/devt of upper subwatersheds or catchments w/in selected SAFDZs and NPAAAD employing intensified reforestation, agroforestry and greening 	Area coverage, No. of plants planted, Survival rate,

<ul style="list-style-type: none"> ▪ Intensify reforestation, agroforestry and greening in denuded upper catchments of critical watershed ▪ Monitoring and eval'n of the effects of intensified reforestation, agroforestry & greening ▪ Improvement of hydrological characteristics 	<p>Area coverage, No. of plants planted,</p> <p>Water yield (quality, quantity) Quality</p>
<p><i>Short-Medium Term:</i></p> <p>Mitigating Impact of Drought and Combat Land Degradation</p> <ul style="list-style-type: none"> ▪ Intensifying ongoing drought mitigation and soil and water conservation measures ▪ Expansion of sites in pilot watershed for environmental and productivity mgt of marginal areas ▪ Comprehensive inventory of areas severely affected by seasonal aridity, char of land degradation incl pollution of ground water in theses areas and assessment of groundwater potentials for irrigation. ▪ Promotion of non-conventional energy source for agriculture and domestic uses . ▪ Determination and eval'n of erodibility indices and runoff coefficients and sediment loads of upland catchment under different land covers in sloping upland and highland areas of the country; ▪ Formulation environmentally sound land use management option through application of GIS technique for marginal and degraded upland and highland areas. 	<p>No. of farmers adopted the technology, Area coverage, Yield, Income,</p> <p>Area coverage, Productivity (high, medium, low) Yield, Income</p> <p>Area coverage, Types of degradation (localized, widespread) Qauntity and quality of water,</p> <p>No. of farmers adopted the technology,</p> <p>No. of studies, No. of produced matured technologies,</p>

Table 6.2 List of measures and corresponding indicators on Increasing Awareness on Character and Impacts of Drought and Land Degradation

MEASURES	BENCHMARKS/ INDICATORS
Continuing:	
IEC Campaign on El Nino	Number of information materials produced and disseminated Types of clientele served Effectiveness of campaign materials (Best source of information; Recall; Attractiveness; Comprehension)
Advisory on drought and land degradation forecasts and warnings	Number of advisory and forecasts issued Number of dissemination outlets
National Awareness on Combating Land Degradation and Mitigating the Effects of Drought in Mindanao (Workshop) Needs Assessment Workshop for Water Resources Management	Number of participants Drafted proposal to showcase soil and water conservation technologies in selected areas in Mindanao
Incorporation in Soil and Water Conservation Courses in SUCs	Number of modules containing the topics on soil and water Number of extension activities related to soil and water conservation participated in by students
Planned:	
Establishment of a comprehensive and detailed database on R&D on Character, Impact and Control of Seasonal aridity and Land Degradation	
Baseline Study on the Perception and Attitude on Drought and Land Degradation (policy-makers; local officials; grassroots-at different ecosystems)	Level of knowledge/ understanding Adoption of the technology recommended Respondents interviewed Recommendations formulated
Formulation of Communication and advocacy plan on the Character and impacts of Drought and Land Degradation based on the results of R&D/E activities (Trainers' training)	Objectives formulated Audience analyzed Communication strategies identified M&E indicators for information campaign identified Implementation mechanism identified (trainers' trained)

Table 6.3 Monitoring and Evaluation of Drought and Their Effects: Financial Allocations and Benchmark Indicators

MEASURES	BENCHMARKS/ INDICATORS
Continuing:	
Collection/analyses/ monitoring of drought & LD	Early warning information or bulletins
Conduct of R&D program for monitoring drought and LD and their effects (e.g. refinement of tools for monitoring and forecasting drought/LD)	New/refined tools for monitoring and forecasting drought and LD
Collection and analysis of productivity indicators	Productivity levels, land quality
Planned:	
Setting-up of a web-based system in monitoring drought and LD	Institutionalization of web-based system
Development of database (Hardware and software) Initial investment Annual Maintenance Cost	Creation/maintenance of database (BSWM)

Table 6.4 Improvement of Socio-economic environment: Financial Allocations and Benchmark Indicators

MEASURES	BENCHMARKS/ INDICATORS
Continuing:	
Implementation of DA Programs: GMA Rice GMA Corn GMA HVCC (including coconut & sugarcane) GMA Livestock GMA Fisheries GMA CARES	Area coverage Yield Income No. Of beneficiaries
Implementation of People-Oriented Forestry Program	Area coverage Yield Income No. of beneficiaries
Recognition of Ancestral Domain of Indigenous Communities	Hectares of land under Ancestral Domain
Providing Access to the means of agricultural production (Implementation of CARP)	No. of certificates awarded

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Annex

Directory of participants

Programs and invitations

News Clippings

Plates/Photos

El Nino National Action Plan

Memorandum of Agreement on the Adoption of El Nino National Action Plan