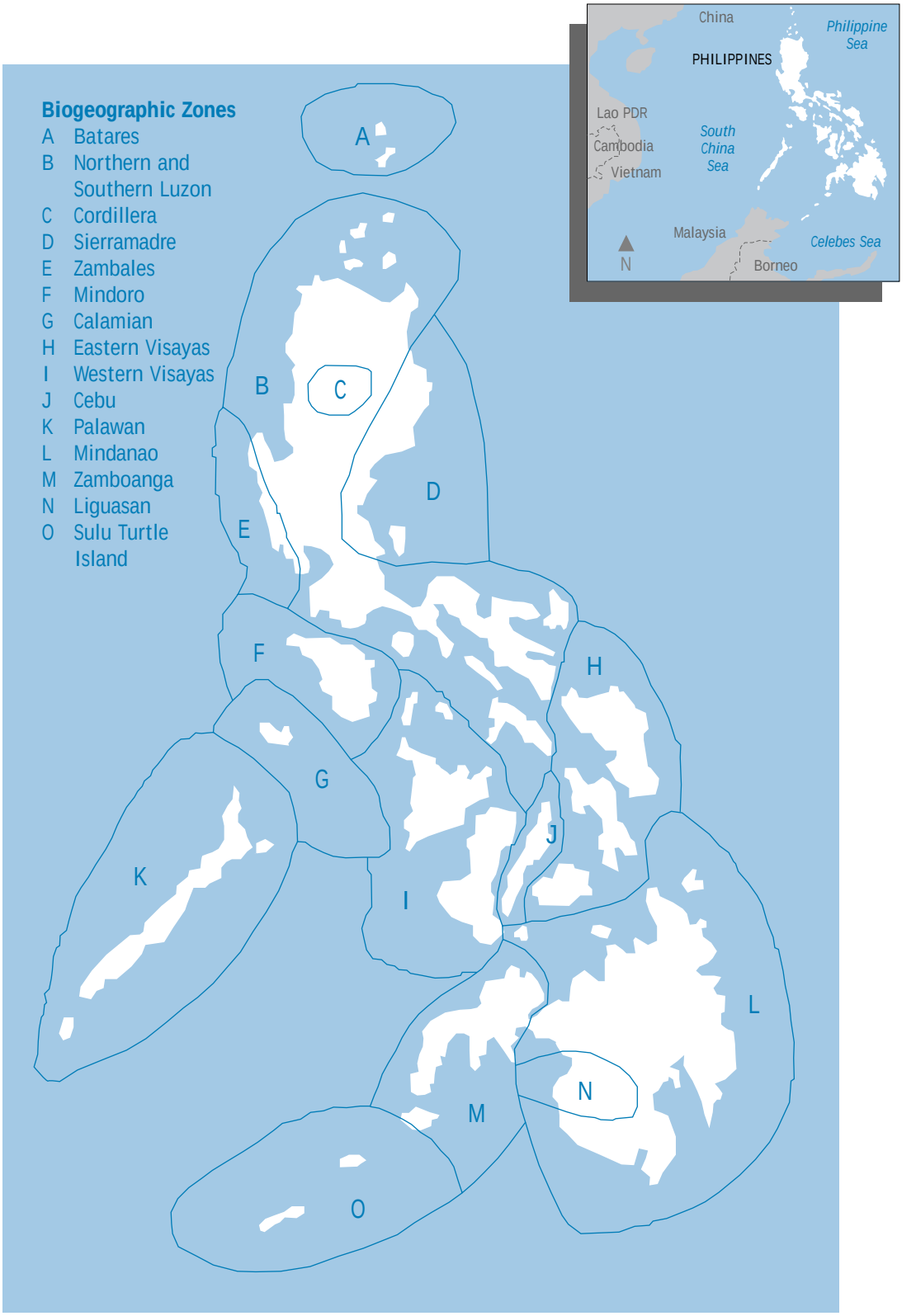
Chapter 8. The Philippines


Biogeographic Zones
A Batares
B Northern and Southern Luzon
C Cordillera
D Sierramadre
E Zambales
F Mindoro
G Calamian
H Eastern Visayas
I Western Visayas
J Cebu
K Palawan
L Mindanao
M Zamboanga
N Liguasan
O Sulu Turtle Island
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
China
Philippine Sea
PHILIPPINES
Lao PDR
Cambodia
Vietnam
South China Sea
Malaysia
Celebes Sea
Borneo
N

CHAPTER 8

The Philippines

Angelita P. Meniado, Jannette L. Garcia and Eldrid J. Madamba

SUMMARY

Widespread destruction of the Philippine environment and rapid loss of its biodiversity spurred a growing conservation effort in the country, particularly in the 1990s. Initiatives included the formation of the multi-sector Philippine Council for Sustainable Development (1992), ratification of the Convention on Biological Diversity (1993), and preparation of the Philippine Biodiversity Assessment Report (PBAR) and the National Biodiversity Strategy and Action Plan (NBSAP) (1995–97). The NBSAP proposes a wide range of strategies and actions, including information generation, in-situ and ex-situ conservation, and legislative and policy development, institutional capability-building, information, education and communication (IEC), and strengthened international cooperation. The plan was approved by the President and enjoys support from a broad range of sectors.

The NBSAP has been integrated in broader plans, such as the Philippine Agenda 21 for Sustainable Development, the Medium-Term Development Plan for 1999–2004 and the proposed National Land-Use Policy. Other achievements include the development of a draft monitoring and evaluation system and proposed institutional framework for implementation of the NBSAP, the preparation of a biodiversity monitoring system (BMS) for protected areas, and a National Biodiversity Conservation and Priority Setting exercise which identified priority sites for species conservation.

Major lessons were learned in the preparation of the NBSAP:

- biodiversity assessment and plan preparation require adequate time and resources;
- this assessment should be based on comprehensive information on the status and dynamics of the environment;
- the NBSAP must be well integrated with other development plans;
- defining institutional and financial arrangements for plan implementation is critical;

- the NBSAP should be comprehensive and site-specific in its recommendations, and should be prepared in the tradition of participatory planning and consensus-building; and
- biodiversity planning should be iterative, cyclical and continuous to reflect changing conditions in the field.

Key issues

- A great portion of the Philippines' biological heritage has already been destroyed; this loss continues at an alarming rate. If the NBSAP is to be successfully implemented the remaining biodiversity must be protected immediately through united, informed and vigilant groups of stakeholders, including communities in or close to areas of high biodiversity.
- Site-based protection should be complemented by measures designed to limit or control the forces that threaten biodiversity, such as high population density, rapid population growth, poverty and a weak economy.
- Obtaining support from a broad range of sectors and disciplines is critical for NBSAP implementation.
- One of the main constraints to implementation is limited financial resources. Innovative financing schemes should be developed hand-in-hand with IEC and advocacy activities to win the support of people of authority and influence.
- The Philippines will have to develop a plan to address in a comprehensive way the emerging interrelated issues of biotechnology, biosafety, bioprospecting, and intellectual property rights.

Introduction

The Philippines is a tropical archipelago of 7,100 islands located off the southeast coast of mainland Asia. It has a land area of 299,400 square kilometres and territorial waters covering around 2,200,000 sq. km. A range in topography, exposure to winds and typhoons, distribution of rainfall, and exposure to the Kuro-Siwo or Japanese current creates a complex mix of terrestrial and aquatic ecosystem and habitat types. Together with Indonesia and Malaysia, the Philippines forms the "Coral Triangle", which is the centre of habitat diversity in the marine tropics. This diversity in natural systems supports more than 53,577 species. High species endemism is observed among algae, lycopsids, ferns, flowering plants, amphibians, reptiles, birds and mammals.

The Philippines is among the five most important biodiversity hot spots in the world, with high levels of biodiversity and endemism under grave threat. A 1981 survey found that only 24 per cent of the country's 44,000 sq. km of coral reef areas were in good condition. Mangrove forests in the country have been reduced to around 149,000 hectares (ha), less than a third of the 450,000 ha recorded in 1918. More than half of the country's wetlands of international importance, covering around 14,000 sq. km, are threatened. In terms of forest areas, only six million hectares remain of the 17 million hectares recorded in 1935; of this, only 800,00 hectares are old-growth, the rest being secondary growth, submarginal, pine and mossy forests.

The rapid and continuing depletion of the country's biodiversity has a variety of causes. The two most important are habitat destruction and unsustainable extraction of resources. Logging, coral mining, the encroachment of people in forests and other natural systems, forest fires and natural disasters, and the conversion of areas for agriculture and aquaculture, urban centres and other uses are taking their toll on habitats. Mangroves, fish and corals, as well as timber and wildlife, are all harvested beyond sustainable limits. Furthermore, the introduction of alien or exotic species have wide-ranging effects, from elimination of indigenous species due to predation, to drastic changes in the ecological character of ecosystems. In addition, pollutants in the air, water and land are reducing species diversity by contaminating the food chain.

These threats have underlying social, economic and institutional causes, which are the source of many of the country's problems. High population density (68.6 million/ 29,404,000 ha or 1 per 2.33 hectares in 1995) and rapid population growth (2.32 per cent), poverty, a weak economy and government development policies are driving the negative human impacts on biodiversity. The weakness of institutional and legal capacities can be traced to a basic lack of information on the country's biodiversity and thus, a lack of strategic management options.

In 1993, the Philippines became a contracting party to the Convention on Biological Diversity (CBD) and the following year secured a grant from the United Nations Environment Programme (UNEP) to conduct a biodiversity country study. The study enabled a comprehensive assessment of the current status of its biodiversity to be carried out, identifying the following factors:

- 15 biogeographic zones;
- biodiversity-rich ecosystems, such as dipterocarp, mangrove and mossy forests and coral reefs;
- 18 sites which were centres of plant diversity;

- major islands which were centres of animal diversity; and
- two marine diversity zones.

It also identified important sites for migratory waders as well as protected areas, sites for agriculture and research, sites of cultural importance, areas of high endemism, and threatened biodiversity-rich areas.

The NBSAP was formulated based on this assessment of Philippine biodiversity and the identification of threats, issues, and gaps. The NBSAP is the country's detailed action agenda for biodiversity conservation. A multi-disciplinary team of experts took the lead in preparing the biodiversity assessment and plan over three years with support and input from various sectors, disciplines and regions. The process involved formation of the project coordinating unit, data gathering, consultations, preparation of write-ups, plan formulation, review, approval by the President and the publication of the outputs in the form of the *Philippine Biodiversity Book*. In June 1997 a directive was issued requiring integration of the NBSAP into all plans, programs and projects throughout the country.

The NBSAP planning process is a huge undertaking which requires a great deal of time and resources as well as the involvement of people from a broad range of sectors and disciplines. To properly design and implement biodiversity country studies, realistic estimates are needed of the time, resources, and effort required. The nine months initially allotted to implement the Philippine Biodiversity Country Study was insufficient, and it became necessary to extend the process several times. The approval and publication of the PBAR and NBSAP alone took much longer than expected. Some things can not be rushed; to be comprehensive and responsive to the situation in the field, for example, the NBSAP required extensive data gathering on the different ecosystems and sectors relevant to biodiversity. The use of (Geographical Information System) GIS was important, as it helped generating information about the spatial relationships between the relevant components of the environment and pinpointed specific areas of action. Participation from various sectors, disciplines and regions was necessary to obtain as much input and support as possible from stakeholders.

Important features of the Philippine NBSAP include its contribution to addressing the goals of the CBD, its comprehensiveness and spatial specificity and its widespread support. The comprehensiveness of the plan enables it to address biodiversity conservation in different ecosystems and sectors. The spatial specificity of the findings of the PBAR and the recommendations of the NBSAP make it easier to prepare detailed projects that are responsive to the

actual situation in the field. Widespread support for the plan helps ensure that its proposals are given priority in planning exercises at the national and sub-national levels.

Although the plan is comprehensive, it does not elaborate the institutional arrangements for its implementation and funding, or the needs and roles of agencies that must be involved in the implementation of specific programs and projects. Neither does it include a scheme for generating funds for the proposals identified. The NBSAP is just the first iteration of the country's biodiversity conservation agenda, however, and is not expected to be complete or perfect. As more information is gathered and more progress is made in setting up institutional arrangements for inter-agency collaboration, it is expected that the plan will be updated, revised and expanded.

That is the rationale behind the efforts of the Protected Areas and Wildlife Bureau (PAWB) to facilitate the review and approval of the NBSAP's proposed institutional framework and Planning-Monitoring and Evaluation System. This initiative was initially developed through IUCN's Regional Program on Biodiversity Conservation for Asia. It also drew from the National Biodiversity Conservation and Priority Setting Workshop, organized in 2000 by PAWB, in collaboration with University of the Philippines (U.P.), Conservation International (CI), ASEAN Regional Centre for Biodiversity Conservation and other major stakeholders. It identified important sites for conservation based on major species groupings (birds, mammals, reptiles, amphibians, plants and marine organisms). The results of these two activities can be regarded as further elaborations of the PBAR and the NBSAP.

NBSAP Origin and background

The events that led to the preparation of the NBSAP include various conservation initiatives from the late 1980s. One important step, in 1987, was the reorganization of the Department of Environment and Natural Resources (DENR) through Presidential Executive Order No. 192 (which also created PAWB). Through the efforts of DENR, the Philippine Strategy for Sustainable Development (PSSD) was drafted and subsequently approved by the President in 1988. The PSSD was the country's response to the global call for ecologically sound economic development, wherein present needs are satisfied without sacrificing options for the future. This process prepared the Philippines for the Earth Summit in Rio de Janeiro in June 1992, where the Convention on Biological Diversity was tabled. The Philippines signed the Convention at the Summit and ratified it the following year.

In September 1992, in response to the country's commitments to the Earth Summit, the President created the Philippine Council for Sustainable Development (PCSD), a multi-agency body with representation from government, NGOs, business and industry, and other sectors. PCSD was asked to formulate the Philippine Agenda 21 for Sustainable Development and recommend policies and country positions on matters pertaining to sustainable development. The council is supported by various bodies, including the Sub-Committee on Biodiversity, part of the Committee on the Conservation and Management of Resources for Development (CCMRD).

In 1994, the Sub-Committee on Biodiversity began to formulate the Philippine Strategy for Biological Diversity Conservation (PSBDC). The strategy set out 18 broad objectives to address various aspects of biodiversity conservation:

- biodiversity policy;
- sustainable use;
- sustainable agriculture;
- biotechnology;
- property rights;
- community-based management;
- stakeholder participation;
- in-situ and ex-situ conservation;
- inventory and research;
- ancestral domains;
- education;
- traditional knowledge; and
- carrying capacity.

To support the strategy, the President issued Memorandum Order No. 289 in July 1995. This directed that the strategy be integrated in sectoral plans, programs and projects of all government agencies.

In 1995–1997, with the PSBDC in place, the Philippines implemented the UNEP-funded Philippine Biodiversity Country Study Project. This produced two major outputs: the PBAR (a comprehensive assessment of the current status of Philippine Biodiversity), and the NBSAP (a refinement of the PSBDC, providing a comprehensive action agenda for Philippine biodiversity conservation).

The formulation and adoption of the Philippine Agenda (PA) 21 for Sustainable Development in September 1996 was closely related to the NBSAP proc-

ess. It was accompanied by Memorandum Order No. 399 from the President "Directing the Operationalization of the Philippine Agenda 21 and Monitoring of its Implementation". PA 21 is a milestone in the country's effort to implement Agenda 21 which was adopted at the 1992 Earth Summit. Like the NBSAP, PA 21 was crafted by stakeholders in government, business and civil society through an intensive process of coordination, cooperation and consensus-building.

NBSAP Development

Preparation of the PBAR and formulation of the NBSAP involved people from many sectors and disciplines. A team of consultants took the lead in drafting the Report and Action Plan, which included various aspects of biodiversity, such as botany, zoology, socio-economics, forestry, agriculture, wetlands, marine ecosystems, protected areas, land use, anthropology, demography and environment and natural resource valuation. The team was assisted by a project secretariat based in PAWB, which organized a series of consultative forums at the national and sub-national level to obtain inputs from different sectors and regions. Participants included government agencies, NGOs, academic and research institutions, local government units and international and people's organizations. UNEP's ten guiding principles, prescribing an adaptive, cyclical and participatory approach, were considered in the planning process.

The formulation of a biodiversity strategy and action plan is an immense effort that requires considerable resources as well as participation by people from a broad range of groups and disciplines. In the Philippines, the main constraints were limited time and funding. Most participants in the workshops and consultation meetings were based in the country's National Capital region or nearby areas. Although representatives from other areas did participate in the major workshops, most of them were regional DENR officials. In spite of this, the results were substantial. In just two and a half years the Philippines was able to produce a comprehensive assessment of its biological resources and formulate a linked strategy and action plan that was supported by a broad range of sectors and approved by the President.

Relationship to development plannning

Consistent with the multi-sector and multi-disciplinary nature of biodiversity conservation, the NBSAP proposes a broad range of actions involving various ecosystems and sectors such as forestry, agriculture, wetlands, marine ecosystems, protected areas, land use, fisheries, indigenous peoples, demography,

environment and natural resource economics and tourism. The NBSAP has been integrated in the country's major plans, including the Philippine Medium-Term Development Plan (MTDP) for 1999–2004, the Philippine Agenda 21 for Sustainable Development, and the draft National Land-Use Policy.

The NBSAP is also consistent with preexisting sectoral plans, such as the Master Plan for Forestry Development (1990) and the National Wetlands Action Plan (1996). Current plans are being formulated so as to be consistent with the NBSAP, because of its wide acceptance and to comply with the Presidential directive about integrating it into their programs and projects.

While UNEP provided the funds to prepare the initial version of the NBSAP, the plan will be integrated into national and local planning exercises, including annual budgets. Revisions may be supported by the government or donor agencies as part of the government's cyclical policy review process. Implementation of specific biodiversity programs and projects will be the responsibility of government agencies and other stakeholders, depending on their individual mandates and their budgets.

To avoid duplication of effort and make the best use of scarce conservation resources, an institutional mechanism is being developed to coordinate activities at all levels. An assessment is also being undertaken to determine which specific actions in the NBSAP are being implemented by relevant agencies. A comprehensive plan still has to be developed to ensure that sufficient funds are in place to implement proposed programs and projects. Individual agencies do, however, incorporate NBSAP-related activities and their budgets into the annual programming and reprogramming exercise. This is consistent with the *Annual General Appropriations Act*, which requires all agencies to spell out the funding implications of implementing government directives.

NBSAP scope and objectives

Various biodiversity conservation projects were implemented prior to the Philippine Biodiversity Country Study. Among the important initiatives were actions under the *National Integrated Protected Areas System Act,* (NIPAS) which calls for the establishment and management of a system of protected areas in the Philippines, information education and communication activities in support of biodiversity conservation and various projects on the protection of threatened species (mostly vertebrates), as well as research, policy formulation and community organizing.

Although large in scope, these efforts were fragmented and uncoordinated due to the narrow sectoral approach to biodiversity conservation which prevailed

at the time. A study conducted in 1996 found that about 90 percent of conservation funds were being channelled to forest and agricultural ecosystems, while only about five percent went to protected areas, and the remainder to wetlands and marine ecosystems. Activities, especially in research, were being duplicated, and conservation projects were not evenly distributed among the country's biogeographic zones.

In the early 1990s, the approach to biodiversity conservation began to shift, becoming based on inter-sectoral and multi-disciplinary collaboration and coordination with increased recognition of its multi-disciplinary and inter-sectoral nature. Based on the results of the biodiversity assessment, the NBSAP proposed programs and projects that covered a range of ecosystems and sectors. Proposals were put forward to address the gaps in conservation initiatives. The NBSAP covers all initiatives that were being undertaken at the time of the Philippine Biodiversity Country Study, as well as those that were proposed as programs, projects and activities under the various strategies.

The NBSAP is the Philippines' comprehensive action agenda for the conservation, sustainable use and equitable sharing of benefits derived from its biological resources. Its objectives indicate the approaches needed to attain its broad goals, including:

- generation and application of improved conservation strategies and management approaches that ensure collaboration among key stakeholders in the country;
- formulation and enforcement of comprehensive policies and procedures for biodiversity conservation, sustainable use and equitable sharing of its components;
- proper integration of biodiversity conservation strategies (especially those that can be derived from indigenous knowledge) in development planning and management at all levels and by all sectors;
- putting into practice a conservation culture or environmental ethics for biodiversity and bioresources;
- active participation of all sectors and stakeholder in biodiversity conservation, bounded by common aspirations for sustained availability of resources and equitable sharing of benefits from their use; and
- fulfilment of the country's commitments and obligations to the Convention on Biological Diversity (CBD) as well as other regional and international agreements, while taking an active role in advancing the interests of the Philippines and the whole of humanity.

Box 1. NBSAP objectives

There are six objectives under the NBSAP, with modular programs and projects and corresponding resource requirements.

1. Gaining more information about the extent, characteristics, uses and values of biological diversity. The focus is generating information for biodiversity conservation, with three aspects: biodiversity inventory, ecosystem mapping and data validation and socio-economic studies.

2. Enhancing and integrating existing and planned biodiversity conservation efforts with emphasis on in-situ activities. The two programs to implement this relate to in-situ and ex-situ conservation aimed mainly at rehabilitating and restoring degraded habitats and ecosystems, and setting up of a network of conservation centres, including botanic gardens, wildlife rescue centres and gene banks. There will be greater emphasis on the conservation of protected areas, marine ecosystems and wetlands, since most of the funds for conservation initiatives are used in forest and agricultural ecosystems.

3. Formulation of an integrated policy and legislative framework for the conservation, sustainable use and equitable sharing of the benefits of biodiversity. The intent is to review and codify existing policies and formulate new ones that are more responsive to current conservation goals. Specific priorities will be codification of biodiversity laws, proper resource valuation and the delineation of ancestral domains.

4. Strengthening capacities for integrating biodiversity conservation and management. This encompasses the integration of biodiversity conservation in all levels of government and non-government planning, and the strengthening of human resources to that end. Specific actions include the establishment of the Philippine Biodiversity Centre and training for key officials and sectors.

5. Mobilization of an Integrated Information Education and Communication (IEC) System. This would include improving conservation awareness and biodiversity research by local communities, as well as developing alternative livelihoods for communities dependent on biodiversity resources.

6. Advocating stronger international cooperation on biodiversity conservation and management. The country's commitments to international agreements will be facilitated and its NGO links with international counterparts will be strengthened. The establishment within the country of the ASEAN Regional Centre for Biodiversity Conservation is the major project proposed.

Although the NBSAP does not include a detailed implementation and financing plan, it does identify priorities for action. Moreover, the detailed programs and projects it proposes have a time frame for implementation, an estimated budget, and a listing of institutions that will be involved in implementation. Some of the projects are area-specific (the Biodiversity Country Study process was able to identify the biodiversity-rich areas as well as those that are threatened). The National Biodiversity Conservation and Priority Setting Workshop further expanded the NBSAP by identifying priority areas for conservation based on species groupings.

Implementation of the NBSAP

The institutions involved in implementing the NBSAP include government and non-government agencies, as well as academic and research institutions, local government units and community organizations. The lead agency in the implementation of the NBSAP is the DENR's PAWB, which chairs the Sub-Committee on Biodiversity of the Committee on the Conservation and Management of Resources for Development (CCMRD) under the Philippine Council for Sustainable Development (PCSD).

In June 1996, prior to its approval, the draft version of the NBSAP was presented to the donor community, including representatives from the World Bank (WB), United Nations Development Program (UNDP), Food and Agricultural Organization (FAO), United Nations Educational, Scientific and Cultural Organization (UNESCO), Asian Development Bank (ADB), Japan International Cooperation Agency (JICA), United States Agency for International Development (USAID), World Wide Fund for Nature (WWF), Australian Aid for International Development (AUSAID), Deutsche Gesellchaft Fur Technische Zusammeravbeit (GTZ), World Resources Institute (WRI) and the Foundation for the Philippine Environment (FPE).

As a result of this meeting, selected programs and projects are being considered for funding. Some projects have been submitted through UNDP to the Global Environment Facility (GEF) for consideration; a major GEF project on the conservation of Samar Islands has been approved and is being implemented. Other donors have also provided funds. WRI is supporting an initiative on bioprospecting. An exchange program with the Government of Costa Rica is proposed to share expertise, training and information on biodiversity conservation, particularly in the fields of bioprospecting and protected area planning and management. Objective 6 of the NBSAP is now being implemented with the cooperation of the ASEAN Regional Centre for Biodiversity Conservation (ARCBC) which is based in the Philippines.

The valuation of biodiversity resources is on the agenda of the government's Environment and Natural Resources Accounting Project (ENRAP). Under this initiative, pilot-testing of fee system guidelines for protected areas is being undertaken with the end of developing a manual for determining appropriate user and access fees to protect areas and their resources,

The delineation of ancestral domains will be facilitated by the enactment of the *Indigenous Peoples Rights Act* (IPRA), which recognizes the rights of indigenous peoples to their traditional areas. This law provides the basis for identifying, delineating and managing ancestral domains, and creates an institution to carry out this mandate.

Since the approval of the NBSAP by the President, the PAWB and its partners have been conducting Information Education and Communication (IEC) activities to promote integration of the plan in development planning at the national and local levels. Workshops on the CBD, PBAR and NBSAP, involving various stakeholders in different regions of the country, have been facilitated through the National Biodiversity Centre Project and funded under IUCN's Regional Biodiversity Program for Asia. Those trained in these activities are now training others, further disseminating information on the NBSAP at the provincial, municipal, and community levels. A web site on Philippine Biodiversity (http://www.psdn.org.ph) has been developed to provides information on biodiversity status and NBSAP implementation.

Some of the other notable achievements stemming from the NBSAP include:

- *the Philippine Biodiversity Book*;
- a Draft Philippine Biodiversity Research Agenda;
- a mechanism to disseminate biodiversity information;
- data bases on Philippine biodiversity; and
- the EU-funded ASEAN Regional Centre for Biodiversity Conservation (ARCBC) that coordinates biodiversity conservation initiatives in the ASEAN Region and facilitates cooperation among ASEAN Member Countries.

Another initiative is an inventory of ongoing biodiversity conservation programs and projects being undertaken by various agencies. A preliminary analysis of data gathered reveals that only a few of the proposed NBSAP projects are being implemented. Most have yet to be developed and funded.

The development of data bases on Philippine biodiversity is done with the aim of strengthening NBSAP implementation. Many organizations are now preparing to develop information systems to convert their respective biodiversity

data holdings into digital format. In conjunction with this, a Philippine Biodiversity Information Sharing Network is being developed to facilitate information exchange and access among the key stakeholders and the general public. At a workshop in February 2001 among selected stakeholders it was agreed that such a network be established with the DENR-PAWB as the lead and coordinating agency. Electronic and satellite based communication technology (e.g. web-pages and meta data bases) will be the primary means of information exchange.

Monitoring and follow-up

The DENR is responsible for monitoring the NBSAP. PAWB has developed a draft institutional framework and a Planning-Monitoring and Evaluation System (PMES). The framework and PMES were developed through the IUCN National Biodiversity Centre (NBC) Project. The project proposes an institutional scheme for collaboration which outlines the functions and roles of various organizations involved in biodiversity conservation, activities to be undertaken, information requirements, and the structure for decision-making and coordination in planning, monitoring and evaluation. The proposed framework calls for the strengthening of PAWB as the lead and coordinating agency in biodiversity conservation, and emphasizes the need for inter-organizational and coordination links to facilitate planning, monitoring and evaluation at the local level.

Although the DENR, through PAWB and its regional offices, is taking the lead role in coordination at the national and sub-national levels, it does not have the legal authority to direct other agencies or enforce compliance with plan priorities. This issue will have to be addressed in the review of the proposed Framework and PMES by the Philippine Council for Sustainable Development.

There needs to be more systematic monitoring of the status of biodiversity resources. Some monitoring takes place as part of ad hoc surveys and inventory studies, some as part of broader research programs. A PAWB project, funded by the World Bank and Nordic Agency for Development and Ecology (NORDECO), is developing a standard biodiversity monitoring system (BMS) for all protected areas. It is hoped that the BMS will serve as the country's system for monitoring biodiversity in protected areas, and in other biodiversity-rich areas and priority species conservation sites.

In 1998, the Philippines submitted its First National Report to the Conference of Parties (COP) at the Convention on Biological Diversity in Bratislava. The report documents accomplishments in meeting CBD objectives, and includes

the PBAR, NBSAP, conservation measures, access to biological resources and benefit sharing, institutional capacity and financial support.

Lessons learned

The biodiversity assessment and NBSAP process must be conducted with adequate time and resources; it is a huge undertaking which requires a great deal of time, resources and involvement from a broad range of sectors and disciplines. The original nine months allotted for carrying out the Philippine Biodiversity Country Study was too short, since the process involved not only data gathering and writing of the assessment report and the action plan, but also review by a broad range of sectors, a long approval process, and publication. Biodiversity country studies should take into consideration all the components of the process and their requirements.

Comprehensive information on the status and dynamics of environmental systems is required: The NBSAP must be comprehensive, and responsive to practical field conditions. This demands extensive data on the condition of different ecosystems and sectors affecting biodiversity. The use of GIS is important as it helps in generating information on the spatial inter-relationships of relevance to the maintenance of biodiversity and in pinpointing specific areas for action.

The NBSAP must be well integrated with development plans: The strength of the NBSAP in relation to the development planning process derives from the fact that it was formulated by a broad range of stakeholders with as much involvement as possible from various disciplines and groups. The plan was approved by the President and supported by a directive requiring that it be integrated into government initiatives. This allowed the NBSAP to be incorporated into broader plans such as PA 21, MTDP for 1999–2004 and the proposed National Land Use Policy, and ensured that it receives substantial support from the conservation sector.

Defining institutional and financial arrangements is critical to the implementation of the plan. The weakness of the NBSAP is that it did not articulate the institutional and financial schemes for its implementation. These issues need to be addressed to avoid confusion concerning the roles and responsibilities of different stakeholders, and to provide specific information as to where to obtain funds for the specific programs and projects.

The successful features of the NBSAP are its comprehensiveness, widespread support and spatial specificity. The comprehensiveness of the plan enables it to address the needs of different ecosystems and sectors, including the many

issues relevant to biodiversity conservation. Widespread support of the NBSAP was generated in part through the involvement of many stakeholders from various sectors, disciplines and regions of the country, and in part because of the directive issued by the President requiring government agencies to integrate it in their respective plans, programs and projects. This helps ensure that the actions identified in the plan will be given priority in development planning at the national and sub-national levels. Finally, the spatial specificity of the findings of the PBAR, and of the recommendations of the NBSAP, make the preparation of detailed projects easier and more responsive to the actual conditions in the field.

The NBSAP is an iterative, cyclical and continuous process. Planners should not expect to come up with a "perfect" plan: as more information is gathered, as the plan itself is implemented, and as conditions in the field change, the plan will be updated, revised and expanded. Future iterations of the plan may be conducted after an assessment of its implementation and impacts.

Recommendations

Biodiversity in the Philippines is being lost at an alarming rate, and immediate and sustained action by all stakeholders is needed. Every minute wasted due to inaction or improperly focused action means loss of habitat and even extinction of species. Actions must be comprehensive and coordinated to achieve results. There are six urgent requirements for the successful implementation of the NBSAP:

- actions to address the direct threats to biodiversity;
- strategies to tackle the underlying forces that drive these threats;
- obtaining stakeholder support for the plan's integration and implementation;
- diversifying funding sources;
- strengthening the institutional capacity for biodiversity conservation; and
- addressing related issues, such as biotechnology, biosafety, bioprospecting, and intellectual property rights (future directions in the NBSAP planning and implementation process should focus on these areas).

Direct threats to biodiversity

The high-priority sites for conservation must be protected immediately from all forms of destructive human activities such as logging, illegal fishing and land conversion. A great portion of the Philippines' biological heritage has been destroyed, and biodiversity loss continues at a rapid rate. The most

important step must be the immediate protection of remaining biodiversity by a united and vigilant group of stakeholders, including those in or near to areas of rich biodiversity. This would address the continuous threat posed by families who are forced to harvest resources beyond sustainable limits, and by insatiable profit-driven vested interest groups, such as loggers and miners, who continue to enjoy support from selected politicians. Local level or site-based intervention is critical. Government and NGOs, in partnership with the private sector and local government units, should make the protection of important conservation sites in their respective areas of jurisdiction one of their top priorities.

Control of underlying forces

Although site-based protection is most important, it should be complemented by measures to limit or control the forces that drive the threats to biodiversity. These include high population density, rapid population growth, poverty and a weak economy. The importance of controlling population growth cannot be overstated. It is critical to reducing the increasing demand for biodiversity resources which causes the destruction and over-harvesting of natural systems. Providing alternative livelihoods would augment the income of local communities and discourage unsustainable practices; strengthening the economy would provide other options for investment and discourage activities such as unsustainable commercial logging.

Stakeholder support

It is critically important to the successful implementation of the NBSAP to obtain support from a broad range of sectors and disciplines. The more people involved in plan formulation, the more support it will have in implementation. More support is needed from key stakeholder groups, especially at local levels. IEC activities on the NBSAP have been conducted at the national and regional level, but they need to be expanded to disseminate information down to the municipal, community and site levels.

Comprehensive financing

A financing plan for the NBSAP must be formulated; one of the major constraints to the implementation of identified programs and projects is limited financial resources. Innovative financing schemes will have to be devised. This may require advocacy since government decision-makers are not making the country's biodiversity conservation needs a high priority in budgets. An example of this is the minimal appropriation given to the implementation of NIPAS by the legislative branch of government. Stakeholder groups should

pressure Congress to allocate the necessary budget for NIPAS and other biodiversity conservation priorities.

Environmental and natural resources values will have to be incorporated in the natural resources accounting system of government to impute greater values to biodiversity and justify increased budgets for conservation. Law-makers, politicians, decision-makers and other persons who wield authority and influence are key groups who should be informed of the seriousness of the problem of biodiversity loss, and made to appreciate the full range of values of the country's biological wealth.

Biodiversity conservation institutions

Strengthening biodiversity conservation institutions involves a wide range of activities, including integration of the NBSAP in development planning at all levels; formulation of detailed institutional arrangements for the implementation of the plan; creation of a body to monitor and coordinate biodiversity conservation efforts; development of a monitoring and evaluation system for the NBSAP; and formation of a Philippine Biodiversity Information Network.

The integration of the NBSAP has already been initiated at the national and regional levels. Biodiversity conservation strategies and actions will also have to be identified at the provincial, municipal, community and site levels. While most of the projects proposed in the NBSAP indicate the institutions to be involved in implementation, the specific roles of different agencies are not detailed. An operational plan is needed to define detailed institutional arrangements, taking into account the resources and capabilities of all agencies.

The proposed institutional framework and PMES for the NBSAP must be adopted, while the Biodiversity Monitoring System for protected areas should be further developed. Effective involvement of stakeholders in implementing the NBSAP will require mechanisms that ensure the plan's proper integration into programs and targets of various organizations. While PAWB could serve as the secretariat for monitoring and coordination, it does not have the legal authority to direct other agencies to conform to the plan. Also, as an ad hoc body, the PCSD does not have the power to compel member agencies to align their projects with the NBSAP.

Effective collaboration among key stakeholders will also require that information be shared among data generators and users. A Philippine Biodiversity Information Network should be established, along with a protocol for information sharing and a system to protect against intellectual piracy and ensure equitable information exchange.

Related issues

It is important to address in a comprehensive way the interrelated issues of biotechnology, biosafety, bioprospecting, and intellectual property rights. These emergent issues may not seem pressing at the moment, but it would be to the country's advantage to prepare for them. The Philippines must have a vision for its future role in biotechnology and should start work early on realising that vision. Filipinos would like to avoid a repeat of the past where the country was viewed as a source of cheap biological raw materials and a buyer of high-value added products of foreign biotechnology corporations. The country should study its options, and apply a mix of measures such as local biotechnology development, joint ventures with foreign companies, patents of local indigenous knowledge systems and technologies and control of information on species uses, values and their locations to minimize biopiracy. These and other related issues would have to be worked out in the tradition of participatory planning and consensus building.

Chronology

Time	Event
1987 June	Re-organization of the Department of Environment and Natural Resources and the creation of the Protected Areas and Wildlife Bureau through Presidential Executive Order No. 192
1989	Drafting and approval of the Philippine Strategy for Sustainable Development (PSSD)
1992 June	Participation in the United Nations Conference on Environment and Development (UNCED) or Earth Summit
1992 September	Creation of the Philippine Council for Sustainable Development (PCSD) through Executive Order No. 15
1993 October	Ratification by the Philippines of the Convention on Biological Diversity
1994 April	Formulation of the Philippine Strategy for Biological Diversity Conservation (PSBDC)
1995 September	Issuance by the President of Executive Order No. 289 directing the integration of the PSBDC into the sectoral plans of government
1995 to 1997	Preparation of the Philippine Biodiversity Assessment Report (PBAR) and National Biodiversity Strategy and Action Plan (NBSAP)

1997 June	Approval of the NBSAP by the President and issuance of a directive requiring its integration into the plans of concerned government agencies
1996 September	Formulation of the Philippine Agenda 21 and issuance of Memorandum Order No. 399 from the President, putting PA 21 into effect and monitoring its implementation
1997 December	Publication of the *Philippine Biodiversity Book*
1998 May	Preparation of the Philippines' First National Report to the Convention on Biological Diversity
1998 to 1999	Conduct of IEC on the NBSAP in various regions of the country Inventory of ongoing and existing plans and projects on biodiversity conservation Identification of programs and projects on biodiversity for adoption in the various regions Development of a draft monitoring and evaluation system for the implementation of the NBSAP Formulation of a draft institutional mechanism to implement the NBSAP
2000	Conduct of National Biodiversity Conservation and Priority Setting Workshop (NBCPSW)
2001	Conduct of Planning Workshop on the Development of a Philippine Biodiversity Information Network Development of Databases, Web-pages, Metadatabases, Information Sharing Protocol on Biodiversity by various agencies Development and adoption of Biodiversity Monitoring System (BMS) for protected areas and priority sites for conservation Review and approval of the proposed Institutional Framework for the implementation of the NBSAP which also includes the NBSAP-Planning, Monitoring and Evaluation System (PMES) IEC on the NBSAP and integration in the planning exercise at the national and local levels.

References

Philippines Department of Environment and Natural Resources. 1997. *Philippine Biodiversity: An Assessment and Plan of Action.* Makati City: Bookmark.

Philippines Department of Environment and Natural Resources. 1998. *The First National Report to the Convention on Biological Diversity.*

UNEP-Philippines, Department of Environment and Natural Resources. 1996. *Philippine Biodiversity Country Study Project.* Report of the Program Development Consultant. United Nations Environment Programme.

Philippines National Statistical Coordination Board. 1998. *Philippine Statistical Yearbook.* Manila: NSCB.