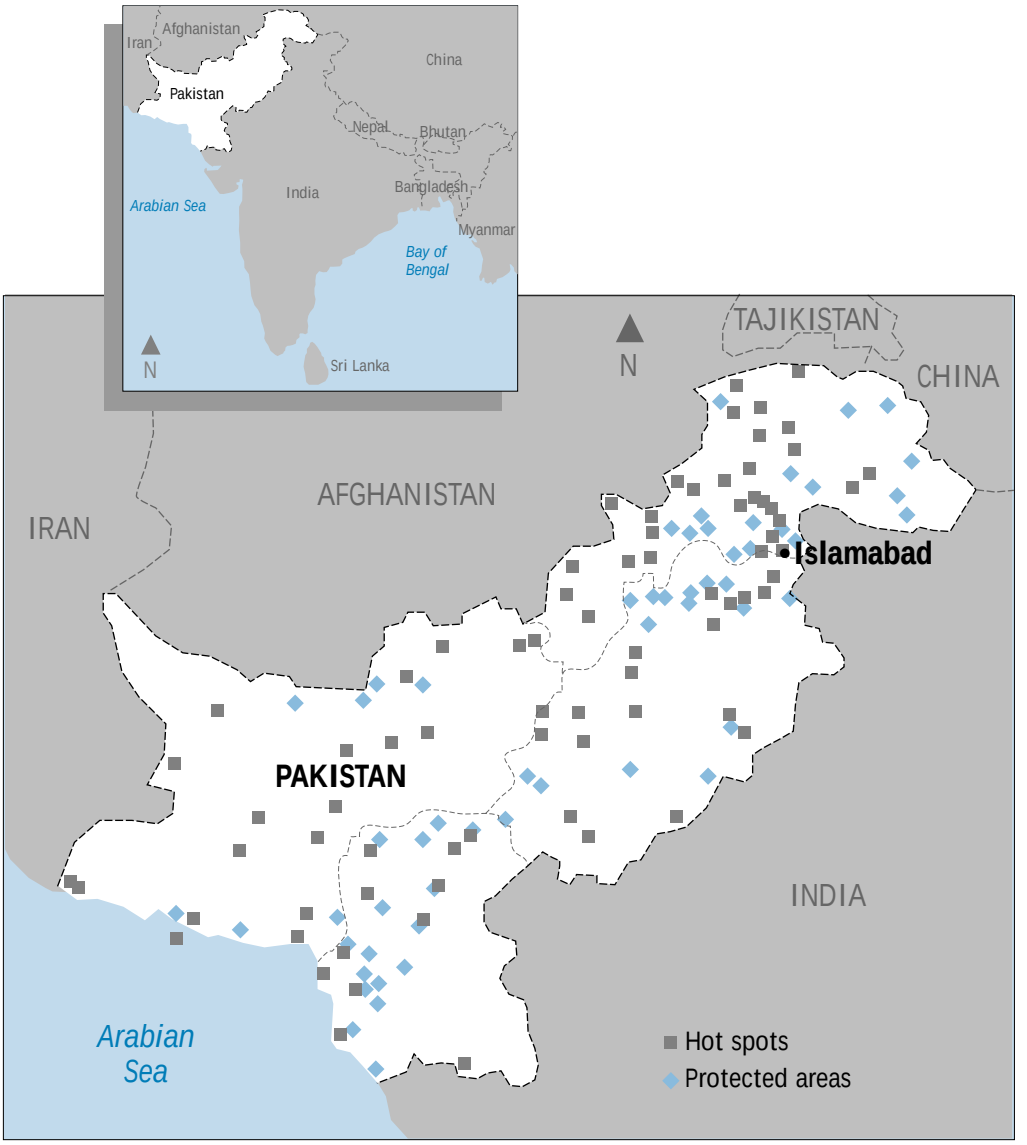
Chapter 16. Pakistan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CHAPTER 16

Pakistan

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SUMMARY

Pakistan spans a number of the world's ecological regions with its latitudinal spread and immense variations in altitude. These regions include the coastal mangrove forests of the Arabian Sea as well as some of the highest mountains of the world, where the western Himalayas, Hindu Kush and Karakoram ranges meet. This diversity encompasses a variety of habitats that support a rich biodiversity.

A number of animals and plants have become endangered due to over-exploitation and loss of natural habitat. Rapid human population growth puts increasing pressure on the country's natural resource base. Increased poverty has forced rural people to exploit biodiversity at unsustainable rates. Deforestation, overgrazing, soil erosion, salinity and waterlogging have become major threats to Pakistan's remaining biodiversity. The continuing loss of forest habitat, with its associated fauna and flora, will have serious implications for the nation's other natural and agricultural ecosystems.

Protected areas have been established for in-situ conservation of biodiversity. A wide range of laws also exists relating to conservation of various components of biodiversity. The key to protecting the biological diversity of Pakistan is involving local communities and obtaining support from relevant institutions in sustainable use initiatives.

The Government of Pakistan recognised the importance of these measures in the preparation of the National Conservation Strategy (1992) and in becoming a party to the Convention on Biological Diversity (CBD) in 1994. The Biodiversity Action Plan (BAP), endorsed by the Pakistan Environmental Protection Council (PEPC) in 1999, calls for government agencies, local communities and NGOs to work together as partners in biodiversity conservation. This chapter chronicles the process of developing the BAP, indicates future directions, and discusses some of the past and present challenges.

Key issues

These are the most critical issues for biodiversity conservation in Pakistan:

- the need for associated policy and institutional reforms and institutional strengthening;
- integration of biodiversity conservation measures into sectoral initiatives;
- better understanding of all aspects of biodiversity and effective means for ensuring their sustainable use;
- developing community-based biodiversity management systems;
- developing and institutionalising systems to monitor key elements of biodiversity; and
- better implementation of existing plans.

Introduction

Pakistan occupies 882,000 sq. km, lying between 24 and 37 degrees north and 61 and 75 degrees east. The country takes up almost the entire watershed of the River Indus. Pakistan extends some 1,700 km north from the Arabian Sea coast and the mouths of the Indus River to its headwaters among the mountains of the Himalaya, Hindu Kush and Karakorum ranges, where peaks exceed 8,000 metres. Pakistan has a coastline of about 1,046 km with 22,820 sq. km of territorial waters and an Exclusive Economic Zone of about 196,600 sq. km.

Pakistan straddles three of the world's eight biogeographic realms (Indo-Malayan, Palearctic, and AfricoTropical) with their distinct biotas, and spans four of Earth's ten biomes (desert, temperate grassland, tropical seasonal forest and mountain). Roughly two-thirds of the country is mountainous; abrupt changes in altitude generate many changes in species within short distances. Pakistan encompasses a wide array of terrestrial ecosystems within 12 major vegetative zones. They range from the permanent snowfields and cold deserts of the north to the mangrove forests of the Indus delta and Arabian Sea coast. In addition, a number of distinct agro-ecosystems have been created through the conversion of natural habitats to agricultural use.

Status of biodiversity

Pakistan is rich in biodiversity. It has relatively low national rates of endemism for some species (about 7 per cent for flowering plants and reptiles and 3 per cent for mammals) and higher rates for others (15 per cent for freshwater fish). The proportion of "restricted range" species is much higher, however; for many of them, Pakistan contains the majority of the global population.

Table 1 lists the number of endemic species and those considered as threatened with extinction (no consistent analysis has yet been done on threatened species in Pakistan).

Table 1. Species richness and endemics for major plant and animal groups

	Total reported in Pakistan	Endemic	Threatened
Mammals	174	6	20
Birds	668	n/a	25
Reptiles	177	13	6
Amphibians	22	9	1
Fish (freshwater)	198	29	1
Fish (marine)	788	—	5
Echinoderms	25	—	2
Molluscs (Marine)	769	—	8
Crustaceans (Marine)	287	—	6
Annelids (Marine)	101	—	1
Insects	> 5000	—	—
Angiosperms	5700	380	n/a
Gymnosperms	21	—	n/a
Pteridophytes	189	—	n/a
Algae	775	20	n/a
Fungi	> 4500	2	n/a

Pakistan is rich in indigenous crop diversity, with an estimated 3,000 taxa of cultivated plants. The principal crops are wheat, rice, maize, barley, pulses, oil seeds, cotton, sugar cane, tobacco, vegetables and fruits (both tropical and temperate). The Plant Genetic Resources Institute at Islamabad maintains over 16,899 accessions of more than 40 different crops.

Pakistan has two breeds of buffalo, eight of cattle, one of yak, 25 of goat, 28 of sheep, one of horse, four of camel, and three of indigenous poultry. Almost 80 per cent of Pakistan's domestic livestock breeds are derivatives of established breeds.

Major threats to biodiversity

Pakistan's biodiversity, although rich, faces severe threats. Over-grazing, over-harvesting, waterlogging and salinization, deforestation, land conversion, soil erosion, desertification, alien invasive species and chemical pollution all contribute to the degradation of biodiversity resources. Loss of habitat is the main cause of the present high rate of extinction, and is a critical problem in all biomes. Changes in habitat quality, while less extreme than habitat loss, also affect plant and animal populations. Habitat fragmentation, for example, increases the risk of extinction by isolating small pockets of previously connected populations.

Many bird and animal species are experiencing population declines because of illegal hunting for sport, meat, and trade. There is a strong tradition of hunting in Pakistan, and the impact of hunters has increased with the spread of modern weapons and greater mobility. Virtually all large mammals have declined in number and in distribution. Fishing in coastal waters has steadily increased and the shrimp fishery has begun to show signs of over-exploitation. Weak governance systems, low literacy (35 per cent), and poor infrastructure all contribute to a lack of effective control over biodiversity use and conservation measures. The root causes of Pakistan's biodiversity crisis are its rapid population growth (2.6 per cent per annum) and the poverty of its citizens, which limits the alternatives to unsustainable natural resource exploitation for meeting basic needs.

Pakistan recognizes the importance of maintaining its biodiversity. It adopted a Biodiversity Action Plan (BAP) in 1999 and is currently in the initial stages of implementing the prescribed actions.

Background

Government institutional arrangements

Pakistan has four provinces: Balochistan, North-West Frontier Province, Punjab and Sindh, in addition to Federally Administrated Tribal Areas (FATAs) and Northern Areas (federally administered territory). The federal capital, Islamabad, covers the district of Islamabad in northern Punjab.

The federal Ministry of Environment, Local Government, and Rural Development (MELGRD) is the focal point for national biodiversity concerns. Within MELGRD, the Director General (Environment), assisted by a Deputy Secretary and a Section Officer, deal with biodiversity issues. The provinces have de facto and de jure control over most aspects of biodiversity conservation; responsibility lies primarily with provincial wildlife departments.

The office of Inspector General of Forests (within MELGRD) oversees all policy coordination, research and education, as well as liaison matters related to forestry, rangelands, and wildlife management. The National Council for the Conservation of Wildlife (also within MELGRD) formulates and coordinates wildlife policy and plans at the federal level. Existing wildlife policies relate mainly to fauna, and not flora, and to game animals rather than non-game species. The Zoological Survey Department conducts wildlife surveys in the different ecoregions and maintains records of specimens, while the Pakistan Forest Institute is the key agency for forestry education and research. The provincial Forestry, Wildlife and Fisheries departments are responsible for the management of "wild lands" both within and outside protected areas (wild lands are defined as those not under cultivation and managed for natural resources).

The Pakistan Environmental Protection Agency (PEPA) is a department of MELGRD established under the *Pakistan Environmental Protection Act* of 1997. It is responsible for executing, enforcing and regulating protection of the environment. PEPA is also the focal point and approving authority for Initial Environmental Examinations (IEEs) and Environmental Impact Assessments (EIAs). The agency is supported by provincial EPAs.

The most prominent international NGOs are WWF and IUCN. There are also many local NGOs in various fields of environmental conservation. Most of them work in close collaboration with local community-based organisations in the conservation of biodiversity.

NGOs are particularly prominent in the mountainous areas of northern Pakistan, where the Aga Khan Rural Support Program (AKRSP) introduced community mobilization and organization. Basic social infrastructure to develop community-based conservation programs is provided through several conservation NGOs. The Mountain Areas Conservancy Project, a large-scale initiative funded by GEF/UNDP, builds explicitly on the work done by AKRSP.

Protected Areas

The national system of protected areas (Table 2) includes national parks, wildlife sanctuaries and game reserves, and covers an area of 9.17 million hectares (10.4 per cent of total land area). These protected areas were designated by wildlife expeditions in the late 1960s. Many are too small and isolated to be effective; further, most ecological zones, including many of the critically threatened ecosystems, are not adequately represented within the protected area system. Wildlife sanctuaries provide greater protection than national parks, while game reserves afford no protection to habitat but merely regulate hunting. The three categories of protected areas are inadequate for contemporary needs. Most of the remaining unprotected areas of biodiversity significance are currently used and managed by local communities in one way or another.

Table 2. Protected Areas in Pakistan

Region/ Province	National Parks	Wildlife Sanct.	Game Res.	Not classified	Total parks	Total area conserved (ha)	% of total land area
Azad Jammu Kashmir	1	—	8	—	9	51,998	3.91
Balochistan	2	15	7	7	31	1,837,704	5.29
Punjab	2	37	19	—	58	3,315,803	16.14
NWFP	3	6	38	5	52	470,675	6.30
Sindh	1	35	14	4	54	1,307,575	9.27
Federal Territory	1	1	1	—	3	94,186	100
Northern Areas	4	5	9	—	18	2,092,180	2.97
Totals	14	99	96	16	225	9,170,121	10.4

Legislation

Pakistan's provinces implement a wide range of laws which govern conservation of different components of biodiversity, including forest, fisheries and wildlife. Relevant legislation is divided between the federal and provincial governments. Wildlife, parks, forestry, and freshwater and near-shore fisheries are under provincial jurisdiction and are covered by various acts and ordinances. Provincial Wildlife Boards have been set up to provide policy for and supervision of wildlife conservation and management.

The first relevant federal legislation targeting environmental conservation as a whole was the Pakistan Environmental Protection Ordinance of 1983. This was replaced in 1997 by the *Pakistan Environmental Protection Act*. The *Act*'s

relevance to biodiversity conservation is primarily through its environmental assessment screening process for proposed projects. While IEE and EIA processes have been put into place and do address some biodiversity considerations, federal and provincial EPA staff do not have the expertise or resources to effectively undertake IEEs or EIAs.

Critically threatened ecosystems

Given the widespread historic conversion of natural ecosystems to agriculture, the advanced and rapidly accelerating depletion of habitats and the continuing depletion of species and populations, most remaining natural or modified ecosystems in Pakistan are now critically threatened. At least ten ecosystems of special value for their species-richness and/or unique communities of flora and fauna are threatened with habitat loss and degradation (Table 3).

Table 3. Critically threatened ecosystems in Pakistan

Ecosystem	Characteristics	Significance	Threats
Indus delta and coastal wetlands	Extensive mangroves and mudflats Inadequate protected area coverage	Rich avian and marine fauna Diverse mangrove habitat Marine turtle habitat	Reduced freshwater flow from diversions upstream Cutting mangroves for fuelwood Drainage of coastal wetlands
Indus River and wetlands	Extensive wetlands	Migratory flyway of global importance Habitat for Indus River dolphin	Water diversion/ drainage Agricultural intensification Toxic pollutants
Chagai desert	Desert of great antiquity	Many endemic and unique species	Proposed mining Hunting parties from the Gulf
Balochistan juniper forest	Huge and ancient junipers	World's largest extant juniper forest Unique flora and fauna	Fuelwood cutting and overgrazing Habitat fragmentation
Chilghoza forest (Suleiman Range)	Rock outcrops with shallow mountain soils	Important wildlife habitat for several species at risk	Fuelwood cutting and overgrazing Illegal hunting

Balochistan subtropical forests	Mid-altitude forests with sparse canopy, rich associated flora	Very few areas remain; important wildlife habitat	Fuelwood cutting and overgrazing
Balochistan rivers	Not connected with Indus River System	Unique aquatic fauna and flora with high levels of endemism	Water diversion/ drainage Overfishing
Tropical deciduous forests (Himalayan foothills)	Extend from the Margalla Hills NP east to Azad Kashmir	Perhaps the most floristically rich ecosystems of Pakistan	Fuelwood cutting and overgrazing
Moist and dry temperate Himalayan forests	Important forest tracts,increasingly fragmented	Global hot spot for avian diversity important wildlife habitat	Commercial logging Fuelwood cutting and overgrazing
Trans-Himalayan alps and plateaus	Spectacular mountain scenery	Unique flora and fauna; centre of endemism	Fuelwood cutting and overgrazing Illegal hunting Unregulated tourism Habitat fragmentation

Related strategies and plans

The National Conservation Strategy (NCS) was adopted by the government in 1992 and accepted by the World Bank as a National Environmental Action Plan. There are 14 core programs in the NCS, many of which touch upon biodiversity issues. As a whole, however, the document does not provide comprehensive actions specifically related to biodiversity loss.

The main planning instruments in Pakistan are the Perspective Plan, the Five-Year Plan, and Annual Development Plans. Although these instruments have traditionally paid scant attention to environmental concerns, the Eighth Five-Year Plan (1993–1997) identifies the need to develop provincial conservation strategies to carry through with NCS recommendations. The Sarhad Provincial Conservation Strategy has been completed and strategies for Balochistan and Northern Areas are in preparation. At least two district-level conservation strategies are also being initiated. These strategies deal with biodiversity much more explicitly than does the NCS.

While the Sarhad Provincial Conservation Strategy (SPCS) is more specific than the NCS about required actions, with a chapter devoted to biological diversity,

parks and protected areas, it also does not comprehensively address the requirements of the CBD. Indeed, the SPCS refers to the current national biodiversity action planning process and the need to develop an equivalent provincial Biodiversity Action Plan.

This approach to hierarchically nested conservation plans is also found at the local level with the preparation of district conservation strategies in Chitral and Abbotabad. These strategies postdate development of the BAP, and will explicitly address its recommendations relevant to the local context.

Box 1. Biodiversity considerations in sectoral policies

The existing sectoral policies and plans most pertinent to the conservation and sustainable use of biodiversity relate to wildlife, forestry, fisheries and agriculture. Pakistan's existing wildlife policies and plans are concerned almost exclusively with the establishment of protected areas, and tend to place a heavy emphasis on fauna, specifically game animals. They relate to taking and trade controls for listed species, and therefore do not address many of the more comprehensive requirements of the CBD.

A Forestry Sector Master Plan was developed in 1992 and formulates programs for soil conservation, watershed development, wood production, biodiversity conservation and institutional strengthening. A Forest Sector Policy for Pakistan has been prepared by MELGRD and is before Cabinet for approval. It takes a comprehensive approach to the forest sector and integrates forests, rangelands, watersheds and wildlife. A Draft Wildlife Policy was developed several years ago but appears to have been abandoned.

Pakistan's Agricultural Policy addresses a number of issues relevant to the CBD, including increasing primary production, reducing land degradation, improving irrigation and drainage, improving soil management, and expanding integrated pest management; it does not, however, adequately address the issue of agro-biodiversity per se. Fisheries policy focuses on aquaculture and makes no reference to conserving indigenous aquatic biodiversity.

Development of the BAP

Pakistan was one of the first nations to sign the Convention on Biological Diversity (CBD) in 1992. Cabinet subsequently ratified the CBD in 1994.

Initial discussions about a national response to the CBD were held between government and the World Bank in 1993; a proposal was developed by an ad

hoc Biodiversity Conservation Coordination Group formed under MELGRD. In July 1996, funds were provided by the Global Environmental Facility (GEF) through the World Bank (in the form of PDF Block B grant) to develop the BAP along with a proposal for a protected areas initiative. BAP preparation was therefore linked with planning for the Protected Areas Management Project (PAMP). After funding was secured, the Biodiversity Conservation Coordination Group was dissolved.

Institutional arrangements

The BAP and PAMP initiatives were jointly guided by a Project Management Team (PMT) comprised of representatives of the Ministry of Environment, IUCN-P and WWF-P. The PMT met once a month during the first few months of the project and thereafter only at significant stages of development.

For the BAP process, IUCN-Pakistan, in collaboration with WWF-Pakistan, was selected as the lead implementation agency. IUCN-P provided the BAP Coordinator from its Biodiversity Unit in Islamabad.

Soon after the launch of the BAP project, a Biodiversity Working Group (BWG) was formed, with 22 national-level experts from different fields to provide advice on various biodiversity initiatives. These experts included environmentalists, foresters and specialists in wildlife, livestock, agriculture, natural history, taxonomy, fisheries, tourism, marine sciences, zoology, biotechnology, protected areas management and development in general. The BWG was expected to provide advice on biodiversity as well as PAMP implementation. The terms of reference relevant to the BAP were as follows:

- review the status of the Convention on Biological Diversity and recommend action(s) for incorporation in the BAP to meet its obligations; and
- review and approve the BAP.

Preparation of the BAP

Initial workshop

A two-day national consultative workshop was organised to develop an outline of the BAP in a participatory fashion and to establish a contact database to facilitate stakeholder involvement in the project. The main objectives of the workshop were as follows:

- agree on the contents of the BAP and develop a framework;
- identify and rank issues of concerns within specific areas of interest;

- identify current and planned biodiversity conservation efforts in Pakistan; and
- identify sources of information and expertise within each area of interest.

Individuals from government organizations, NGOs, and the private sector were invited to attend the workshop. Group discussion areas were identified based on land-use practices and resource management and participants were divided into work groups. The groups addressed all key biodiversity areas, including agriculture and animal husbandry, coastal zones and marine fisheries, forests and economically important plants, invertebrates and vertebrates, microbiology, genetics and biosafety, wetlands, fresh water and inland fisheries, and wildlife and protected areas. The groups evaluated each of these areas and shared their findings in a plenary session. Group presentations were supplemented by individual observations, both oral and written.

Background papers

On the basis of the findings of the consultative workshop, a review of BAP-related activities elsewhere in the world, and information regarding the Pakistan situation gathered from other sources, 13 national experts were contracted to write background papers. These sectoral papers covered such topics as vertebrates and invertebrates, microbiology and genetics, marine biodiversity, legislation, public awareness and education and economic policy.

First draft and review

Information from the sectoral background papers and other sources, focusing on key issues and proposed actions, were compiled into a first draft of the BAP. In October 1997 the draft was distributed to over 230 individuals. Following distribution of the draft, regional workshops were held in the capitals of the four provinces and the federal capital. The time available for review of the 100-page draft varied from two to five weeks, depending on the date of the workshop. The workshops followed the same general agenda in each location, starting with an introduction to CBD and BAP followed by group discussions and presentations on the proposed actions identified in the draft. The intent of the workshops was to reach some level of national consensus on high-priority actions and strategies for the future.

Follow-up to regional workshops

A six-member BAP Preparation Team was formed by the BWG to follow up on the issues raised at the regional workshops. The team had a mandate to review and quickly revise portions of the draft BAP and fill some of the gaps

identified. The BWG was provided with regular briefings on BAP preparation and all BWG members were invited to the regional workshops. The preparation team prepared a second draft of the BAP, which was reviewed by the BWG and finalised in October 1998.

Approval of the BAP and implementation

In August 1999, three years after the process began, the BAP was endorsed by the Pakistan Environmental Protection Council, a senior policy-making body. The council is headed by the Prime Minister and involves provincial Chief Ministers, environment ministers and representatives of the private sector and NGOs. The council asked a temporary committee to develop implementation mechanisms that would integrate BAP recommendations into civil society and governments. This group has met on several occasions and is setting up provincial and federal biodiversity steering committees. It is through these committees that recommendations of the BAP will be integrated into government policy.

Participation

Broad participation in BAP development was achieved through the cross-sector nature of the PMT, the broad involvement of technical experts through the BWG, the six consultative workshops (attended by 172 persons), and the commissioning of working papers by leading experts.

BAP scope and objectives

The BAP integrated three processes called for by the CBD: country study, national strategy and action plan. The BAP provides a brief assessment of the status and trends of biodiversity, outlines strategic goals and objectives, and identifies a plan of action.

The objectives of the BAP are as follows:

- to create a policy framework that fosters the sustainable use of biological resources and the maintenance of biodiversity;
- to strengthen and promote national biodiversity conservation programs and develop international and regional cooperation;
- to create conditions and incentives for biodiversity conservation at the local community level;
- to strengthen and apply more broadly the tools and technologies for conserving biodiversity; and

- to increase people's knowledge of biodiversity and their willingness and capacity to conserve it.

The discussion of biodiversity status, trends and threats was quite general and comprised only 22 pages of text. Information on species richness and endemicity was synthesized from existing literature and through personal communications with diverse experts.

Pakistan does not have the resources to implement the BAP by itself. Objective 25 of the BAP provides five explicit actions related to securing bilateral and multilateral funding.

Box 2. Biodiversity hot spots

Biodiversity hot spots have been identified mainly by the provincial wildlife and fisheries departments based on available information. A map of biodiversity hot spots was produced as part of a protected area system planning exercise. The 114 specific proposals for action are itemized according to 20 separate objectives addressing articles of the CBD. The BAP outlines who will coordinate implementation of these actions and provides an implementation schedule.

BAP implementation

Biodiversity Steering Committee

MELGRD, which is also the national focal point for the CBD, will have overall responsibility for implementing the BAP. To oversee the implementation process, the BAP proposes a Biodiversity Steering Committee at the federal level, chaired by the Minister for Environment and including representatives from relevant federal ministries and departments, provinces and NGOs.

Provincial Steering Committees

Since most implementation measures will take place at the provincial level, the BAP also allows for Provincial Steering Committees. The respective provincial ministers for forest, fisheries and wildlife will chair these committees, which will include representatives of relevant departments, NGOs and community organisations.

Biodiversity Working Group

At the national level, a multi-disciplinary working group will be the technical body supporting the National and Provincial Steering Committees, providing technical guidance for implementation, and reviewing progress at regular intervals. It is suggested in the BAP that the Biodiversity Working Group be revitalized and take on this function.

Biodiversity Secretariat

In addition, the BAP proposes that a Biodiversity Secretariat be established in MELGRD to coordinate implementation. The primary focus of the Biodiversity Secretariat is to facilitate timely implementation of the BAP by all concerned bodies. The secretariat will foster scientific and technical cooperation by promoting coordination among and within the different sectors affecting biodiversity. The secretariat will also be responsible for developing work plans to implement BAP priority actions.

A temporary committee has been set up to initiate the implementation measures detailed in the BAP. Chaired by the President of WWF-P, it consists of representatives from federal and provincial governments, NGOs, and key institutions. Federal and provincial steering committees are being formed and a Biodiversity Secretariat, housed within the MELGRD, is being discussed.

Institutional arrangements are not yet in place; consequently, the specific actions indicated in the BAP have not yet been initiated. However, initial attempts are being made to address some elements of the action plan (e.g., development of national Red Book lists, and preparation of a protected areas system plan).

The primary obstacles to implementing the BAP are expected to be lack of funding, deficiencies in capacity of government departments (lack of individual capacity and incentives for performance), lack of awareness of environmental issues on the part of decision-makers and civil society, and weak governance (slow decision-making processes, inability to conceptualize policy, and lack of distinction between public and private interests). The federal and provincial steering committees will be expected to advise on mechanisms for overcoming these difficulties.

Monitoring and evaluation

No explicit procedures have been determined to monitor progress in implementing the BAP, although the government, through LEAD-Pakistan (an international NGO, based in Germany), did develop a national report on CBD

implementation. This report was widely circulated in draft and was followed by a national workshop leading to improvements in the final draft BAP, which was submitted to the United Nations Environment Program (UNEP) in 1999.

A mid-term review was undertaken for the NCS in spring 2000 but the report is not yet available. Although Pakistan has a State of the Environment reporting system a report has never been produced. Periodic reviews and updates are listed in the BAP, although no time frame is indicated.

Lessons learned

Three years of BAP preparation experience have provided many lessons which can help guide future biodiversity policy development and action planning.

Innovative methods are needed to engage all interests from the earliest stage. National consultation needs to begin at the early stages of BAP development to ensure its acceptance by experts and stakeholders. In retrospect, the composition of the group steering the BAP development process was probably incomplete. Women's groups, for example, were not included and some NGOs were not represented. As well, lack of funding made it impossible for some people to take part, particularly those from remote parts of the country.

Compiling a "who's who" of biodiversity assists communications. When setting out on the BAP process no information was available about departments, institutions, and persons involved in biodiversity research and conservation. Nobody was certain who the primary stakeholders were. There was also little in the way of a communication network through which biodiversity information could be shared. In response, a Biodiversity Registry was developed to provide a comprehensive listing of all persons and institutions in the country with expertise in biodiversity matters.

Workshops early in the process help identify issues and interests. An initial consultation workshop provided an opportunity to bring together stakeholders in biodiversity and better understand the different components of biodiversity. It also established the basis for developing the Biodiversity Registry, with participants providing information on relevant institutions and experts.

Adequate funding and time is needed for in-depth information gathering and analysis. Information on biodiversity in Pakistan is sketchy, and some of the sectoral background papers had inadequate content; consequently, the plan concentrated only on topics that could be adequately addressed. It also became clear that the BAP team could not rely on voluntary written contribu-

tions from individuals and institutions — compensation was required. Individual experts need to be hired full time so that they can concentrate on their assignments; otherwise timing and quality becomes unpredictable.

Important initiatives can evolve from the BAP process. Preparation of the document led to a number of spin-off activities, such as the first compilation of species richness and endemism for Pakistan and the consolidated listing of the country's biodiversity expertise.

Recommendations

Ensure that **all stakeholders have an opportunity to become involved**. Many complaints were received from individuals who felt that their input had been ignored.

Before initiating the process, **considerable effort needs to be invested in gathering data** on available expertise, stakeholder identity and interest, and information available. Development of the Biodiversity Registry indicated an unexpected depth of available expertise.

Workshops should be undertaken early in the process to **ensure awareness of the initiative** and a high level of understanding. Biodiversity is not widely understood and efforts must be made to ensure that all participants have the same level of awareness.

Experts should not be expected to volunteer their time to BSAP preparation. Relying on volunteer input creates many problems, such as inability to enforce deadlines and hurt feelings when author's contributions are not incorporated to the extent expected. Adequate funding must be available to contract the relevant expertise on a professional basis.

Adequate time must be allotted to BSAP preparation. The BAP took far longer to complete than anticipated because of unexpected delays in many areas, departures of key staff, inter-departmental rivalries, and scientific debates.

Chronology (BAP development)

July 1996	Project Start-up (PDF Block B Funding): IUCN-Pakistan lead agency in collaboration with WWF-Pakistan; simultaneous work in PAMP (Protected Areas management Project)
Sept. 1996	First Consultative Workshop: 87 people attended two-day workshop; sectoral working groups identifies issues and made recommendations for BAP drafting
Dec. 1996	Based on workshop feedback, background papers prepared by national experts
Apr.-June 1997	BAP Draft Preparation: compilation of background papers; preparation of initial draft; revision of draft
Oct. 1997	BAP first draft distributed
Nov. 1997	Regional Review Workshops: five locations with more than 175 participants; spirited debates; verbal and written feedback
Dec. 1997	filling additional gaps preparation of consultation report
1998	review, revise and prepare second draft of the BAP review by BWG; revision and final draft of the BAP
August 1999	Endorsement by Government of Pakistan

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