IUCN
The World Conservation Union

IUCN Pakistan Intersessional Programme (2009 - 2012)

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Acronyms and Abbreviations

AEDB	Alternative Energy Development Board
ARO	IUCN Asia Regional Office
BAP	Biodiversity Action Plan
CDM	Clean Development Mechanism
CG2	IUCN Asia Country Group 2
ESD	Education for Sustainable Development
GCISC	Global Change Impact Study Centre
GLOF	Glacial Lake Outburst Floods
GoP	Government of Pakistan
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
ICZM	Integrated Coastal Zone Management
IDDV	Integrated District Development Vision
IP	Intersessional Programme
IRBM	Integrated River Basin Management
IUCN	The World Conservation Union
IWRM	Integrated Water Resource Management
LGO 2001	Local Government Ordinance 2001
MoE	Ministry of Environment
NCCW	National Council for Conservation of Wildlife
NEAP	National Environmental Action Plan
PA	Protected Area
NCS	National Conservation Strategy
UNFCCC	United Nations Framework Convention on Climate Change
WANI	Water and Nature Initiative
WEC	Wildlife Enquiry Committee
WWF	World Wide Fund for Nature

1. Introduction

IUCN pursues its overarching global vision of a just world that values and conserves nature through its mission of influencing, encouraging and assisting societies throughout the world to conserve the integrity and diversity of nature and ensure that any use of natural resources is equitable and ecologically sustainable.

IUCN produces a global Intersessional Programme (IP) for the period between two consecutive World Conservation congresses. Articulating goals and focus areas for the next four years, the IP represents a solid commitment to deliver what has been projected in the programme.

The new IUCN Programme framework for the period between the 4th and 5th World Conservation congresses will begin in 2009 and last until 2012. Its implementation will be facilitated by various IUCN global and regional programmes. As a country programme under Country Group 2, IUCN Pakistan (IUCNP) will be contributing towards the larger IUCN Asia Regional IP.

The development of IUCNP's Intersessional Programme started with a situation analysis of the current development and environment scenario in Pakistan, followed by a series of workshops and consultations with members, partners and donors. The draft Programme has also been shared with members and donors. After approval by the Regional Conservation Forum and later by the World Conservation Congress in 2008, IUCNP's IP will become the strategic framework for IUCN's work in Pakistan.

1.1. Pakistan: Diversity in Abundance

Pakistan is located in South Asia and is bordered by India in the south-east, China in the east, Afghanistan in the north and Iran in the west. The country is divided into four provinces — Sindh, Punjab, Balochistan and the North West Frontier Province (NWFP) — and the Northern and Federally Administered Tribal Areas. While Punjab and Sindh border India, NWFP shares a border with Afghanistan as does Balochistan with Afghanistan and Iran and the federally administered Northern Areas (NA) with China. The country shares the Arabian Sea coast with India in the south and Iran in the west (see geo-political map on left).

Boasting a rich cultural and historical heritage shared with neighbouring countries, an ethnically diverse population with roots in Central Asia, Iran, Afghanistan and India and linguistic affinities with Iran, Turkey, Afghanistan, India and the Arabian states, strains of which came together to form Urdu, its national language, Pakistan is truly cosmopolitan.

The country lies on the western margin of the monsoon region of the subcontinent and has an arid sub-tropical climate. There is annual fluctuation in the amount and frequency of precipitation which peaks in July and August. Although the effectiveness of the precipitation for vegetative growth is reduced as it takes place in late summer when much moisture is lost to evaporation. Only the southern slopes of the Himalayas and the sub-montane plateau regularly receive 700 to 1,000 mm of annual precipitation.

Much like its history and culture, Pakistan spans a remarkable variety of ecological zones (see Annex I), ranging from mangrove forests fringing the Arabian Sea to spectacular mountain peaks that mark the confluence of the Western Himalayan, Hindu Kush, and Karakorum ranges. The fact that Pakistan is located close to the interface of three major terrestrial ecoregions – the Ethopian or African Realm, the Palaearctic Realm and the Indo-Malayan Realm – and also that it has the uniqueness of a wide range of elevation change within 14 degrees of latitude, makes it home to wide array of biological diversity. The presence of diverse ecological zones coupled with a hugely varied topography and terrain have resulted in the development of an exceptional range of ecosystems within the country, supporting a wide variety of species. These include plants, mammals, birds, reptiles, amphibians, fish and invertebrates.

The harsh mountainous areas of Pakistan host a number of unique, hardy species that have evolved the capacity to survive in the extreme environment together with the local human population. Within these mountains, medicinal plants renowned as antidotes for acute human and animal diseases are abundant, covering high altitude meadows and pastures with flowers and lush herbaceous vegetation during the brief summer period. In addition, the northern landscapes are home to some of the world's most majestic birds of prey, including vultures, eagles, hawks and falcons.

In contrast, southern Pakistan is characterised by coastal ecosystems and arid/desert habitats that are populated by a wide variety of species. These habitats function as sanctuaries for migrant wildlife. For its part, Central Pakistan boast vast swathes of arid habitats dissected by lush riverine forests that depend on annual flooding for their existence, mainly in Sindh and parts of Punjab.

2. Situation Analysis: Environment and Development Trends in Pakistan

With a population estimated at 165 million in mid-2006, Pakistan ranks as the sixth most populous country in the world. The country's rich natural resource base and a largely young population offer enormous potential for sustainable development. However, several factors stand in the way, not least of which is the lack of attention and priority to environmental security and sustainable use of natural resources. The situation is exacerbated by a lack of capacity and tools at all tiers of government. Even so, serious, focused attempts are being made in specific areas to address these factors.

The following sections aim to highlight the various thematic areas and sectors within the environment-development realm as they occur in Pakistan at present.

2.1. Governance

Since Independence, good governance in Pakistan has remained elusive due to weak institutions, lack of political will, non-implementation of laws and policies and unchecked development at the expense of environmental sustainability. This has led to rapid environmental degradation and biodiversity loss. Although several commendable efforts have been made to reverse the trend, they have unfortunately met with marginal success.

The National Conservation Strategy (NCS), developed by the Government of Pakistan in tandem with the World Conservation Union (IUCN), was the first policy-level effort to safeguard environment and to ensure sustainable use of Pakistan's natural resources. Following the approval of the NCS by the cabinet on March 1, 1992, the Pakistan Environment Programme (PEP) was launched with financial assistance from the Canadian International Development Agency (CIDA). Following NCS, the National Environment Policy, National Environmental Action Plan (NEAP), Biodiversity Action Plan (BAP), and the provincial and sub-national conservation and sustainable development strategies have also provided policy impetus for improving the ecological health.

Despite the success of these efforts, a huge distance remains to be traversed. For instance, while steps have been taken to ensure compliance with multilateral environmental agreements and protocols, environmental imperatives continue to be short-changed on the domestic front for more popular agendas such as industrialisation, energy generation and urbanisation.

Local governance, the third tier of government, has been empowered in recent years through the setting up of district governments. Given the transboundary nature of natural resources such as water basins, local level environmental governance is a challenging task. Moreover, while environment as a subject has been devolved to the district level under the Local Government Ordinance 2001, many of its elements such as forests, wildlife and water remain within the provincial domain. The complex nature of environmental issues, especially upstream-downstream pollution, seasonal migration of wildlife and the inter-district spread of rangelands and forests, require much inter-district coordination and provincial monitoring. On the other hand, many micro-level environmental issues, including land use planning and zoning, solid waste and sewage management, green public spaces, building codes and pollution control can be more effectively addressed at the local level.

2.2. Species Conservation and Management

Pakistan's biodiversity faces serious threat warranting sound conservation measures. Some of these threats include:

- Habitat destruction, degradation and fragmentation: Habitat loss is the main culprit behind the alarming rate of biodiversity loss. Habitat fragmentation, in particular, results in isolating small populations rendering them

unable to enlarge the gene pool. This, in turn, leads to inbreeding and loss of biological fitness, population decline and eventually extinction.

- Deforestation: The main cause of deforestation is due to over-consumption of timber and, to a lesser extent, fuel wood.
- Grazing and fodder collection: An increase in domestic livestock populations impacts negatively on rangelands and grazing pastures, especially in fragile ecosystems such as high altitude pastures and persistently over-grazed areas.
- Soil erosion: Reduction of vegetation cover due to deforestation, poor agricultural practices and over-grazing has resulted in many areas being severely affected by water and wind erosion. Soil loss endangers soil organisms, botanical diversity and associated fauna alike.
- Water diversion and drainage: Unsustainable demands placed on water for irrigation is one of the major factors responsible for wetland degradation in Pakistan. In addition, discharge of saline water into wetlands and falling groundwater levels are causing irreparable damage to fragile and valuable ecosystems.
- Over-exploitation and trade: Much of the population decline among certain species is attributed to illegal hunting for sport, meat, and trade. A list of animals, populations of which are believed to have been reduced to alarming levels because of extensive human exploitation is given in Table 2.1.
- Hunting: There is a strong tradition of hunting in Pakistan and its impact on animal populations has shown a dramatic upswing with the availability of modern weapons and enhanced mobility. In fact, almost all large mammals have declined in numbers due to unchecked, often illegal, hunting.
- Direct persecution: Certain animal species are persecuted as they prey on livestock and destroy agricultural crops.
- Fishing: Available data shows that marine stocks are on the decline. Add to this the incidental take of turtles due to the use of mechanised nets used by commercial shrimp trawlers and the tendency to over-fish with the introduction of larger, more sophisticated fishing vessels that is seriously threatening native species.
- Over-harvesting of medicinal plants: The consistent increase in demand for plant-based drugs in recent years together with a poorly enforced legal framework has led to large-scale exploitation of medicinal plants and habitat degradation in many areas of Pakistan.

Table 2.1 Human Exploitation of Wildlife in Pakistan

Human exploitation	Affected species
Illegal hunting	Most ungulates, game birds, waterfowl
Persecution (in response to livestock/crop losses)	All predators, including brown and black bear, grey wolf, snow leopard, common leopard, leopard cat and rhesus macaque
Falconry	Saker, lagger and peregrine falcons
Domestication	Cranes, rhesus macaque, parrot and bear (dancing and baiting)
Medicinal purposes	Rhesus macaque, bear, musk deer, dolphin, pelican and lizard
Decoration (ornamental use)	Most felids and mustelids (fur), ungulates (trophies), crocodiles and snakes (skins), turtles (shells and oil), and monal pheasant (feathers)
Over-fishing	Mostly among marine species. Data for freshwater fishing is lacking

Adapted from: GoP et al. (2000).

- Pollution and contaminants: This problem is particularly prevalent in the urban areas and water courses of Pakistan with a rapid increase in discharge of sewage and industrial effluent into both freshwater and marine

ecosystems. The resultant increase in organic load, dangerous microbes, heavy metals and toxic chemicals has adversely impacted marine and freshwater biodiversity as well as the communities' dependant on these ecosystems for food, water and income generation.

These factors and many others such as agricultural intensification, prevalence of invasive species, climate change and increasing demand for natural resources continue to contribute to biodiversity depletion.

2.3. Protected Areas and Transboundary Conservation

The history of protected areas (PAs) in Pakistan can be traced back to the recommendations of the Wildlife Enquiry Committee established in 1968 that highlighted the need for specially designated areas for conserving representative ecosystems along with their associated flora and fauna. This led to the designation of 5 national parks, 18 wildlife sanctuaries and 52 game reserves. Since then, the number of PAs has increased to 289, an ostensibly impressive figure covering 12 per cent of the country's total area. However, removing a number of the un-classified sites established without basis of legislation as well as those with little focus on conservation of habitats for biodiversity, the percentage further drops to only 6.5 per cent, leaving the country far behind other Asian states such as Nepal, Sri Lanka and Bhutan.

Ecologically, many of the PAs were also created haphazardly without comprehensive ecological criteria where boundaries, areas and shapes are not in accordance with effective PA management requirements. As a result, ecosystems, migration patterns, corridors, spawning beds and water recharge systems are poorly represented. Meanwhile, most PAs lack essential baseline data on resources, threats and other factors required for effective monitoring and therefore have no management plans.

In addition, many PAs are under pressure for oil and natural gas exploration which is further exacerbated by unclear communal rights, absence of integrated management mechanisms and technical expertise as well as encroachment. Given that PAs in Pakistan are culturally sensitive and communal dependency on available resources is well recognised, any approach that circumvents traditional community rights is simply unfeasible in the long run.

Legislatively, the restricted range of only three PA categories is currently too limiting to realise the full potential of PAs in biodiversity conservation and sustainable development land use designation. A standardised, integrated and enabling policy is required to broaden the scope of PAs as true conservation and sustainable use tools. The lack of a comprehensive national-level policy for PAs results in rendering them under the low priority list at the federal level.

The split responsibilities for Pas between the federal and provincial governments, lack of financial and human resources, equipment and infrastructure, effective long-term monitoring mechanisms and poor enforcement impairs effective management, undermining the strong realisation of the objectives for which PAs were created in the first place.

2.4. Forests and Rangelands

Eleven different forest ecological zones ranging from mangrove forests to high alpine pastures are represented in Pakistan. The total designated forest area is 4.2 million hectares or 4.8 per cent of the total land area, with rangelands managed as a sub-sector of forestry. Acknowledging the statistical problems and using legally notified areas for indicating forest cover, there is no denying that Pakistan has a very low forest endowment that is confronted by a wide variety of threats and pressures. The deforestation rate is currently estimated at 0.2 to 0.5 per cent per annum, the second highest in the world. In fact, some studies go as far as to suggest that deforestation stands at 4 to 5 per cent per annum, a figure that would place Pakistan as the worst hit country in the world. While the direct causes of deforestation include excessive exploitation, encroachment and fires, indirect causes include lack of equity in benefit sharing, an inadequate marketing system, insecure land tenure,

increasing poverty, absence or lack of enabling policies, laws and institutional arrangements and implementation as well as improper valuation of goods and services.

2.5. Freshwater and Wetland Biodiversity

Pakistan is endowed with rich wetlands and freshwater resources. The Indus Basin Irrigation System and the large demands placed on freshwater compound to make water management in Pakistan a challenging task. From the catchments in the Northern Areas to the plateaus, irrigated lands, deltaic and coastal zones, salinity, over-abstraction, pollution and dysfunctional infrastructure have resulted in massive loss of habitats, arable land and freshwater reservoirs.

2.6. Marine and Coastal Ecosystems

The total length of Pakistan's coast is 1,046 km and the Exclusive Economic Zone (EEZ) is about 240,000 $km^{2.}$ Such dimensions amply justify designating Pakistan as a maritime nation. However, the country's involvement in marine affairs is limited at best. On average, the Government of Pakistan is earning 8.8 billion rupees per annum from shrimp and fish exports. Still, these areas remain on the lowest priority in the government's development agenda.

Rendering multiple ecological services and functions such as the production of woody plants, food, spawning grounds, habitat for marine and torrential animals and protection of the shoreline, mangrove stands are a prominent feature of our coastline. Despite its many benefits, the mangrove ecosystem is being degraded at an alarming rate due to natural and anthropogenic stresses. So far, little work has been done by scientists, managers, planners and policy makers for their development. IUCNP initiated a mangrove rehabilitation programme in 1987. Since then, over 6,000 hectares have been replanted in collaboration with the help of government, non-governmental organizations and coastal communities. This has not only increased coastal and marine biodiversity but has also improved the commercial aspect of mangroves forestry in Pakistan.

The communities who depend on coastal ecosystems are increasingly vulnerable to direct shocks from extreme climatic variations such as droughts, cyclones, flash floods and tsunamis. The frequency and intensity of such events are expected to increase due to global warming and climate change. This, combined with the continued degradation of the natural resource base and lack of freshwater, will increase pressure on people, especially the poor, living in the coastal areas. Coastal degradation is also linked to more localised conditions including the use of unsustainable fishing techniques, unplanned settlements and their associated stresses, a lack of access to sanitation and solid waste disposal services, limited opportunities for education and localised political patronage systems. The integrated nature of coastal ecosystem necessitates a holistic approach to address ecological and livelihood issues.

2.7. Social Policy and Environmental Economics

Social issues have tended to be sidelined in Pakistan due to the lack of appropriate social policy. No serious debate has been initiated on the need for instituting a planned process of change that attempts to usher structural adjustments in order to bring together different people living in the country. Economic divisions in Pakistani society continue to deepen as demonstrated by the vast majority of people living below the poverty line and wealth concentrating in the hands of the few. Added to this is the intra-religious strife that manifests itself in frequent clashes between different sects. Ethnically, too, Pakistan stands divided between Pashtuns, Balochs, Sindhis, Mohajirs and Punjabis with the nationalist movements staging a comeback, especially in Balochistan and the NWFP. As a result, we have a society that remains polarized along religious, ethnic and economic lines. The widening of these fissiparous tendencies can pose a threat to national security.

At the moment, the country lacks an appropriate social policy and the institutional arrangements wherein ideas, strategies and tactics for enhancing social harmony and accord and building moderate social institutions can be discussed and debated. Although the government is frequently bears the brunt of these divisions it has not taken any concrete steps to deal with them. The resultant social divisions and conflicts have a direct bearing on the natural environment and development in the country.

Positive social change can be brought about by devising and implementing an effective social policy in support of social justice, religious tolerance, ethnic harmony, economic equity, democratic participation and the conservation of natural resources.

It is at juncture that environmental economics and the potential of its tools for conserving our natural environment and thereby securing the livelihoods of marginalized communities becomes relevant. Past economic and development experts in Pakistan have focussed on economic growth without giving due consideration to equity, justice and environmental imperatives in the country.

Against this backdrop, economic principles can be used not only to understand human behavioural sources of environmental degradation but also to make use of its concepts and tools to come up with innovative solutions for tackling environmental and livelihoods problems in the country. An understanding is being developed that environmental problems in the country have their roots in economic issues and need to be dealt with making use of economic instruments. Pakistan's environmental policy recognizes this fact and attempts to combine regulatory and economic measures in a more coherent and complementary way.

The environment and poverty nexus is widely recognized. That said much effort is still needed to steer the country on the path of sustainable development by finding and applying environmentally benign ways and means of saving millions of people from the vicious cycle of poverty and environmental degradation.

2.8. Environmental Security and Climate Change

Although Pakistan's contribution to global greenhouse gas emissions is less than one per cent, the impact of climate change on the country's population and economy is expected to be significant. The adverse impacts of climate change are already apparent in the form of increased glacial melt, prolonged droughts, unusual temperature fluctuations and precipitation variability. The effects of these phenomena on food production, water supply, biodiversity, natural ecosystems and human health not only threaten the integrity of the country's primarily natural resource-based economy but also jeopardise the livelihoods of the those who depend on the natural environment and the valuable goods and services that they provide.

The vulnerability and impact assessment studies of key sectors undertaken for the Pakistan Initial National Communication on Climate Change in November 2003 indicate water resources and agriculture as high priority sectors for extensive climate change impacts with implications on the livelihoods of the population and the national economy. Other sectors expected to be significantly affected are biodiversity, forestry and the coastal zone. Climate change may also increase the incidence of extreme events to which the poor are more vulnerable. These disasters may include increased incidence of flooding, droughts, cyclones, glacial lake outburst floods (GLOF) in the short term. In the long term, they could have potentially serious effects on available water resources and current cropping patterns.

The Government of Pakistan signed and ratified the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol while the Instrument of Accession to the Kyoto Protocol was deposited in January 2005. Pakistan's Initial National Communication on Climate Change was submitted to the UNFCCC Secretariat at the close of 2004 and the National Communication #2 is under preparation.

At the institutional level, the Prime Minister's Committee on Climate Change has been established in the Prime Minister's Secretariat. In addition to this, the Global Change Impacts Study Centre (GCISC), an autonomous

research body, has been instituted under the Ministry of Environment (MoE) to undertake research on climate change- related issues and their impact in addition to serving as the Secretariat for the prime minister's committee. The national Clean Development Mechanism (CDM) Strategy has been developed and approved and a CDM cell established in the MoE. Some measures taken by the government to respond to the current national energy crisis such as a shift towards developing renewable energy generation capacities also contribute to furthering the climate change response agenda in the country. The Alternative Energy Development Board (AEDB) has also been established in the Prime Minister's Secretariat and departments of environment and alternative energy have been formed at the provincial level.

2.9. Communication and Education

Increasing awareness of the environment and its indelible links to the quality of life goes back to the early 1980s with the publication of *Our Common Future – The World Commission on Environment and Development* at the global level and the start of the global print media's reporting on environmental issues. In Pakistan, media, particularly the English press, was at the forefront of environmental reporting culled mainly from global wire services or on traditional themes such as deforestation, water logging and salinity and urban pollution. The momentum increased as the process of developing the NCS was launched in the late 1980s with a focus on communicating on the environment in a more holistic manner for NCS stakeholders and the general public.

From the early 1990s, attempts were made to involve the Urdu press with its larger readership through the publication of IUCNP's *NCS Jareeda*, an Urdu quarterly magazine that continues to be published by till today, and partly through translated material. Television was also involved. In 1989, a 16 half-hour current affairs fortnightly series tilted *Gird-o-Paish* was aired. In 1991, a weekly serial, *Jaal* and a number of nature programmes were aired. Radio, the medium with the greatest 'reach' in Pakistan was slower to follow suit. However, by 1992, Radio Pakistan Karachi, Quetta and Islamabad were all airing talk programmes on the environment. The performing arts were not far behind either and street theatre groups performed short skits on the environment in Karachi and Lahore.

With the establishment of the NCS Unit in the Ministry of Environment, poster competitions, Earth Day celebrations and advertisements in the press and television began to appear. Organizations such as IUCNP, World Wide Fund for Nature, Pakistan (WWF-P) and the Teachers' Resource Centre (TRC) played a key role in encouraging environmental awareness among children through school events.

By the early 2000s, the situation has changed drastically. With the advent of satellite television, a fairly large section of the public, especially in urban areas, was exposed to several hours of National Geographic and Discovery channel programming, some of which has now been dubbed in Hindi/Urdu by the channels themselves, making the programmes more accessible to a larger audience. The new FM radio channels have short messages on the environment but it is reporting in the press in English, Urdu and Sindhi that has increased exponentially. According to the NCS Mid Term Review, awareness-raising about the environment was probably the single most important achievement of the NCS.

However, the quality of this coverage, especially in the print media, is questionable, based as it is mostly on news releases and statements from representatives of the government and other organizations working in the field of environment. Good investigative stories and sound analyses are still largely absent. Again, while there has been greater awareness about the need for conservation, its link with development in general and poverty alleviation in particular, are not articulated cogently enough. One of the major reasons for this state of affairs, which has given rise to some cynicism about environmental concerns, is the lack of reliable data on environmental parameters as well as the social and economic fallout of environmental damage. In the absence of reliable surveys and statistics, one could question whether the message has percolated to the communities, especially in the rural areas. One possible reason for this failure is the still inadequate coverage of local environmental issues by the electronic media. Radio, and increasingly, television, are the true mass media in

Pakistan, not only because of their high levels of coverage but also because of low literacy rates and related cultural factors such as a predominantly oral tradition that inhibit the effectiveness of text-based communication.

2.9.1. Environmental Education

The need for awareness raising and educating the masses on environment-related issues was felt from the beginning of robust environmental movements initiated in the last century. The 1972 Stockholm Conference on Environment highlighted the importance of an interdisciplinary programme in environmental education in school and out of school, encompassing all levels of education and directed toward the general public. The Conference on Environmental Education (EE) in 1977 further embellished this concept by defining its scope, goals, aims and objectives. It also enabled the participating countries to integrate EE at all levels of studies with an interdisciplinary approach.

In Pakistan, the formal EE movement was launched by WWF-P in the late 1970s. However, its recognition at the government level was only made possible after the promulgation of the Pakistan Environmental Protection Ordinance in 1983. The ordinance called for the need to provide information and guidance to the public on environmental issues, recommend environmental courses and books for incorporation in the curricula and syllabi of educational institutions, and promote public education and awareness of environmental issues through mass media and other means, including seminars and workshops.

For its part, the NCS laid underscored the importance of EE as the key to changing attitudes so that people learn to accept responsibility for their own actions in relation to the environment. It brought several approaches for bringing EE into the mainstream, including its integration into the provincial and district sustainable development strategies in the form of a separate chapter. This paved the way for bringing EE into the limelight through the formal education sector. In 2003, the Ministry of Education in collaboration with the MoE initiated a project titled Promotion of Environmental Education in Schools and Colleges for integrating EE into the curriculum of class I to XII that was funded by the Swiss Agency for Development and Cooperation.

Apart from the government, civil society too has played a vital role in building capacity of teachers, teacher educators, community organisers, trainers, curriculum developers and textbook writers in environment and sustainable development. These include IUCNP and WWF-P who have an active education programme. Besides, organisations such as the TRC and the Institute for Educational Development are actively integrating EE in their training programmes.

2.9.2. From Environmental Education to Education for Sustainable Development

The changing focus of the environmental movement from conservation to sustainable development following the Rio Conference has also moved the goalposts for EE which has now been reoriented as Education for Sustainable Development (ESD) to include socio-economic perspectives. ESD aims for inclusive education that focuses on equity, justice, democracy, respect and peace to empower people for making sound decisions for a sustainable future The United Nations has declared 2005 – 2014 as the Decade for ESD (DESD) and nominated UNESCO to work as the lead agency for implementing the commitments for the decade. The IUCN Council endorsed the Decade of ESD as "an initiative that supports IUCN's mission and raises the profile of its work." (Statement on ESD, drafted by Daniella Tilbury and Wendy Goldstein, 2003)

2.10. Population Dynamics – Growth and Movement

With a population of around 165 million people[1] and a growth rate of 2.1 per cent, Pakistan is the world's sixth most populous country – potentially becoming fifth by 2050 – and is facing a host of population-related issues,

[1] https://www.cia.gov/cia/publications/factbook/geos/pk.html (July 2006).

including low literacy rates, increasing unemployment and poverty, high crime rates, inadequate civic amenities, unabated pollution and unplanned urban growth. In addition, demographic pressures are exacting a heavy price from the rapidly depleting natural resource base. Population pressure increased significantly following the Soviet Invasion of Afghanistan in December 1979 that resulted in a huge influx of Afghan refugees into Balochistan and the NWFP, not only wreaking havoc on the already-strained natural resource base but increasing fundamentalism, crime and the so-called Kalashnikov culture, echoes of which still reverberate across the country. The increasing need for food crops and human settlements has resulted in rampant clearing of land and replacement of natural vegetation. An ever-increasing urban population (approximately 34 per cent) has worsened these problems significantly. Furthermore, a vast rural-urban divide has enhanced the sense of deprivation, resulting in ever-increasing migration towards urban centres.

The uneven population distribution — Punjab has an average of 432 people/km^2 while Balochistan has only 23 people/km^2 — is even more skewed towards urban centres and takes away the comparative advantage of using the workforce more productively. The bell shaped population pyramid of Pakistan indicates a high dependency ratio (86.3 per cent), implying a relatively low percentage of economically active population. Even within this small segment, most are engaged in labour intensive and primary or secondary modes of work.

The government's response, through slow in the past, has picked up pace to cope with the population crisis and its associated issues, especially poverty. The Pakistan Poverty Reduction Strategy Paper, Ten Year Prospective Plan (2001-2011), Population Policy 2002 and Medium Term Development Framework (2005-2010) have all suggested measures to control the high growth rate.

2.11. Poverty, Gender and Social Equity

Gender is one of the most important determinants of holistic and effective development as the fundamental objectives of any development programme simply cannot be successfully achieved in the absence of gender equity and harmonious gender relations.

Pakistan continues to struggle with issues of livelihoods, environmental management, governance, poverty and gender. Inequity stems from the debilitating roles socially demarcated for women at the cost of equal opportunity. Compared to countries with similar levels of development, Pakistan ranks low in gender-related human development indicators. Women are discriminated under Pakistani law as well as by the socio-cultural traditions and practices. The situation of women is especially difficult as a result of gender inequality. Generally, women have fewer rights and opportunities than men. They lack access to basic goods and services such as education, health and justice and have little say, if any, in matters outside home.

Poverty reduction is also a major gender issue in Pakistan. Women have fewer opportunities to move out of poverty through gaining access to economic resources. Practically, what this means is lack of assets, technology, skills, and low productivity along with greater vulnerability and insecurity.

Gender also impacts environment issues in many ways. Among rural communities, women have been prudent environmental managers and generally possess knowledge about environmental processes. Aside from the lack of engagement in decision-making, women also suffer directly from environmental degradation through increased subsistence labour.

2.12. Economic Policies and Market Impacts: Urban-Rural Divide

The Government of Pakistan's economic policies, in common with many other developing countries in the world, are formulated and revised under pressure from a number of interest groups, including global financial institutions such as the World Bank and International Monetary Fund, business and political elite, trading partners and a number of other stakeholder groups with an interest and stake in Pakistan's economy. The pressure that a

certain group can wield on the country's economic planners depends on the leverage that a group enjoys and the ingenuity with which it exerts pressure.

A comparison of regional real Gross Domestic Product (GDP) growth in some of the South Asian Countries and world average GDP growth shows that compared to India (8.0 per cent), Pakistan GDP growth at 6.6 per cent in fiscal 2005 - 2006 has been lower. Economic growth is also less than the growth target set for the year which was 7.0 per cent. This is partly because of increases in oil prices and the October 8, 2005 earthquake. A major part of GDP growth has been coming from the service and industry sectors and a new cycle of investment supported by credit growth. The service sector grew at 8.8 per cent. Growth in large-scale manufacturing was weaker than expected by 9 per cent as against 15.6 per cent last year and the 14.5 per cent target for the year. This has been attributed to moderation on account of higher capacity utilization on the one hand and a strong base effect on the other.

Country	Financial Year		
	2003-04	2004-05	2005-06
Pakistan	7.5	8.6	6.6
India	7.2	8.1	8.0
Bangladesh	5.8	5.9	5.8
Sri Lanka	6.0	5.4	5.9
World Average	4.1	5.3	4.8

To gauge the effectiveness of economic policies, there is need to gain deeper understanding of the economy so as to assess whether economic policies are up to the challenge and address the needs that Pakistani people have for poverty reduction, higher incomes and standards of living, stemming unemployment, lower inflation, better education and health facilities in both urban and rural areas for both genders, economic justice in terms of lesser economic inequities and shared prosperity and a healthy and robust natural environment.

Poverty in Pakistan remains high at 24 per cent[2] of the population still living below the poverty line. Incomes of the vast majority of people, particularly wage earners, salaried people and pensioners who continue to reel due to rising prices, especially of essential food commodities such as vegetables and fruits, pulses, edible oils and sugar, have failed to show an upward movement. Unemployment and underemployment are on the rise, affecting particularly the urban poor and rural sections of the population. Since most economic growth is coming in the low paid service sectors which tend to be concentrated in urban centres, jobs opportunities in rural areas are negligible, forcing rural youth and the labour class to migrate to urban areas, further over-burdening the already over-stretched facilities in urban areas.

Health and education facilities are lagging far behind the requirements, particularly in rural areas. Female literacy rate and access to health facilities remain low. Due to chronic poverty, people continue to exploit natural resources and biodiversity at unsustainable rates, thereby causing irreversible loss to the natural environment.

Since economic decisions have environmental and social consequences and environmental and social policies in turn have economic consequences, it is crucial for economic planners to properly weave, build, expand and strengthen connections between economic, environmental and social policies through innovative measures such as environmental fiscal reforms that aim to reduce poverty as well as conserve natural resources.

2.13. Health, Pollution and Waste Management

According to the World Bank's Pakistan Strategic Country Environmental Assessment Report released in August 2006, conservative estimates suggest that environmental degradation is costing Pakistan at least 6 per cent of its GDP growth annually or about 365 billion rupees per year. The report further points out that the most significant impacts of environmental damage are:

[2] http://www.finance.gov.pk/survey/sur_chap_05-06/04-Poverty.PDF.

- Illness and premature mortality caused by air pollution
- Diarrhoeal diseases and typhoid due to contaminated water supply, lack of sanitation and hygiene.

Air pollution is a major source of concern in Pakistan. It is estimated that air pollution (mainly PM10 and PM2.5) is responsible for the premature death of over 22,000 adults and 700 children every year (World Bank, 2006). The main sources of air pollution are motorized vehicles and industrial and power generation facilities.

Waste management in Pakistan is also extremely weak. Except for Islamabad and Karachi, no other Pakistani city has any wastewater treatment facilities. In Karachi, approximately 325 million gallons per day (MGD) of wastewater is generated, the majority of which ends up in the Indus Delta through the Lyari and Malir rivers. The city has a wastewater treatment capacity for only 237 MGD of which less than 150 MGD is operational. Most of the untreated domestic effluent and industrial waste ends up in the Indus Delta. To address pollution from liquid effluents and air emissions from domestic and industrial facilities, the National Environmental Quality Standards (NEQS) were promulgated in 1993, and revised in 1999. However, despite several attempts they have not been implemented as yet.

Solid waste management is in much the same condition. Most of the waste does not get collected because of inadequate collection mechanisms. Furthermore, there is no sanitary landfill in Pakistan. Only recently a proper landfill at Mahmoodbooti in Lahore has been constructed. Domestic waste is generally dumped in open areas, creating numerous problems such as drain blockages and fatal consumption by domestic animals. Hazardous waste from industrial facilities, hospitals and laboratories is not treated any differently. In most cases, hazardous waste is dumped at open sites, often leading to fatalities, especially of children. Only a few medical facilities in Pakistan have incinerators or other specialized waste management systems to handle infectious waste. Similarly, Pakistan does not have any facilities to handle and treat industrial hazardous waste which is usually dumped at unknown that are discovered following fatalities.

Although the current situation is alarming, measures are being taken by the government, private sector and civil society to address this problem. The establishment of a Combined Effluent Treatment Plant in Korangi Industrial Area to treat waste from tanneries is a good example of government, private sector and civil society collaboration. Similarly, efforts are underway in Lahore, Karachi, Islamabad and Peshawar to address air quality problems. Through its Pakistan Clean Air Network, IUCNP is working with the federal, provincial and city district governments to promote air quality management.

2.14. Agriculture and Livestock

Agriculture, livestock and fisheries play an important role in Pakistan's economy. Agriculture and livestock contribute 24 per cent of GDP, employs 48 per cent of the country's work force and provides livelihoods to 68 per cent of the country's rural population. Agriculture forms the base of major industries in the country besides being a major source of foreign exchange. The agricultural sector has grown at an average growth rate of about 4 per cent per annum in the last two decades, contributing significantly to overall economic growth, food supplies and exports. The average growth rate of livestock and fisheries has been between 4 and 5 per cent and 3.5 per cent respectively during the last decade. However, the growth rate of livestock and fisheries has decreased to 2.8 per cent and 1.2 per cent respectively during 2000-2005. The low growth rate can be attributed to shortage of water, water pollution, scarcity of feed and poverty. There is great scope for improving the production of agriculture, livestock, dairy, poultry and fisheries.

2.15. Energy

Like other South Asian countries, Pakistan uses a variety of energy sources, both commercial and non-commercial. Fuel wood, animal waste and agricultural residue constitute the traditional or 'non-commercial'

sources of energy that serve to meet the bulk of the rural energy demand. Commercial sources of energy include oil and petroleum products, natural gas, coal, hydropower and nuclear power.

Energy can be termed as one of the most significant inputs required for economic growth and human development. Pakistan's economy is growing at the rate of 7 to 8 per cent per annum and the increase in the annual energy demand is estimated at about 10 per cent. Presently, most of Pakistan's energy needs for power generation, industry, commercial and household use are met through its natural gas reserves. The primary energy supply mix in 2004 – 2005 comprised 50.3 per cent natural gas, 29.8 per cent oil, 11 per cent hydropower, 7.6 per cent coal and 1.2 per cent nuclear (HDIP 2005).

However, over 85 per cent of the oil used in Pakistan is imported. Although the country's conventional recoverable oil resource potential is estimated at 3,622 MTOE[3], the remaining recoverable proven reserves are only 41 MTOE. The case of natural gas is better with resource potential estimated at 6,850 MTOE and recoverable proven reserves of 612 MTOE. The government's Energy Security Plan proposes a nine-fold increase in cumulative oil and gas exploratory efforts by 2030. Additionally, the planned import of natural gas through pipelines from Iran and Central Asia is also aimed at bridging the demand-supply gap.

Pakistan's estimated coal resources stand at 185 billion tonnes (82,700 MTOE), of which 95 per cent are found in the Thar coal field of Sindh. However, only 2.2 billion tonnes are considered as recoverable coal reserves. The country imports 50 per cent of the coal it needs. In order to increase local energy generation capacity, the government is hoping to exploit coal resources for large-scale use in power generation and production of coal bed methane.

Hydropower potential in Pakistan is 46,000 MW as identified according to the government's Mid-term Development Framework 2005 – 2010, of which only 14 per cent has been exploited. The main hydropower stations are Tarbela, Mangla, Warsak and Chashma with installed capacities of 3,046 MW, 1,000 MW, 240 MW and 184 MW respectively. The government is planning large-scale hydropower development through storage (Bhasha-Diamer, Kalabagh, Kurram Tangi, Munda and Akhori) and run-of-the-river projects but achieving political consensus for such projects is proving too difficult.

In view of the deepening energy crisis in the country, the government is actively pursuing the development of alternate sources of energy. The Alternative Energy Development Board was established in 2003 to facilitate and promote the development of renewable energy and the national policy for Development of Renewable Energy for Power Generation was adopted in 2006. Currently, the generation and use of alternate energy in Pakistan is almost negligible but the government aims to bring its share to at least 5 per cent in the total energy mix by 2030. Off-grid electrification plans using wind and solar sources are also on the cards. At present, several wind energy projects in the coastal areas are in various stages of implementation but the unavailability of reliable meteorological data is proving to be a major stumbling block to success. Improved site studies, better project planning and research and development activities are required to bring down costs of production to acceptable levels and ensure large-scale promotion. The solar energy potential of Pakistan, though substantial, has not been exploited much either. The main factor has been emphasis on solar electricity generation which is an expensive proposition. However, it is expected that technological improvements and economies of mass production of photovoltaic will reduce generation costs and make solar energy production viable in Pakistan.

2.16. Disaster Management and Mitigation

Disaster management and preparedness in Pakistan has been extremely poor. For the last seven years, the south western part of Pakistan, particularly Balochistan and Sindh, have been facing persistent drought.

[3] MTOE: Million Tons of Oil Equivalent

Moreover, with the heavy monsoons every year causing floods in low-lying areas of the country, particularly in Punjab, the disaster management situation has only worsened. Heavy snowfall and land sliding is common in the mountainous areas.

On October 8, 2005, parts of Northern Pakistan were struck by the most devastating earthquake in the history of the region. Measuring 7.6 on the Richter scale with its epicentre in district Muzaffarabad, Azad Jammu and Kashmir (AJK), devastated many parts of Northern Pakistan. The districts of Mansehra, Abbottabad and Battagram in the NWFP and Muzaffarabad and Bagh in AJK were the worst hit. The colossal damage caused by the earthquake was exacerbated by aftershocks and heavy landslides that carried parts roads and dwellings built on slopes.

To make matters worse, lack of preparedness and mismanagement of available resources further aggravated the situation. Environmental hazards such as landslides and flash floods added to the problems.

This frequency and incidence of natural disasters calls for enhanced capacity building to undertake and effectively conduct Rapid Environmental Impact Assessment (REA) as part of the response to such disasters on the one hand and support disaster assessment operations on the other.

In situations of unimaginable misery and human suffering caused by natural disasters, it is crucial to focus on sustainable recovery and prevent environmental hazards that may leave survivors all the more vulnerable.

2.17. Local and International Non-governmental Organizations

The growth of non-governmental organizations (NGOs) in Pakistan is a result of a number of factors, including economic variables, institutional and legal changes and evolving political paradigms. The void left due to the absence of government-sponsored socio-economic development has led to the phenomenal growth of the NGO sector in the country.

The rapid evolution and growth of this sector in Pakistan during the 1990s and thereafter can be ascribed to these factors. NGOs range from community-based organizations to intermediaries and support/international NGOs. The activities of NGOs are highly dependent on donor financing. Even international NGOs rely heavily on donor support. Therefore, the chances of sustainability of programmes and projects initiated by these organizations remain restricted.

Even so, NGOs are playing an important role in achieving social targets. Gras roots organizations and intermediary NGOs are making numerous contributions to the sustainable development agenda by mobilizing local people and resources to support projects with a motive to enable people, especially the poor, to improve the quality of life.

As the range and diversity of NGOs functioning in Pakistan has grown both service users and donors have raised their expectations about the form and quality of deliverables. Many of the problems encountered by NGOs in Pakistan reflect underlying organizational and managerial shortcomings. The overall impact of the NGOs' initiatives can be gauged from the fact that the sector is being accepted as a major partner in the country's social and economic development.

Several successful NGO-led initiatives have suffered because of over-dependence on donor support. The NGO community in particular and the development sector in general has not been able to tap into the vast financial and voluntary resources available locally. This is especially true of Pakistan where recent studies by the Aga Khan Development Network show that during 1997- 1998 Pakistanis gave 30 billion rupees in money alone for philanthropic purposes. This is five times more than Pakistan received in outright grants from foreign aid.

There are number of instances where environment as a sector has remained the focus of local and international NGOs. This ranges from policy-level work, advocacy and demonstration projects. That said environmental NGOs

are still in a minority in the country. Many national NGOs consider environment as a cross-cutting theme while working towards poverty reduction, human rights and good governance. National and mid-level NGOs are constantly challenged to sustain their activities in the environment sector as donors keep changing their sectoral and geographical focus.

2.18. Current Funding and Donor Dynamics

Donor policies and funding priorities in Pakistan primarily follow changes in the agendas of their respective governments. Recently, Pakistan has slipped from the priority list of many donors. However, donor countries, including Netherlands, Norway, Canada, Switzerland, United Kingdom and Italy, have been more or less consistent in support to the environment. According to the *European Union Donor Atlas 2006*, Pakistan is a low priority country for the European Union (EU) despite the fact that Pakistan was among the few countries that received over 50 million dollars from the EU in 2004 as environmentally-focused assistance.

Although donor funding was mainly re-directed to the earthquake zone in AJK and the NWFP following the October 8, 2005 earthquake, much of this has concentrated on purely humanitarian assistance. Compounding this 2-year shift in donor focus is the fact that many large donors such as the United Nations Development Programme, CIDA and Department for International Development (DFID) are starting to implement their own projects. On the plus side, it appears that donors traditionally focussing on the environmental have tended to remain within this realm even as they demand substantially improved quantitative and qualitative interventions and effective monitoring and evaluation .This is not to say that the NGO sector should become purely reactive or donor-driven. Rather, project implementation needs to be made more rigorous, accountable, transparent and innovative.

2.19. Environmental Problems: Shared Perceptions

Responding to a recent survey conducted by IUCNP against the backdrop of its draft Intersessional Programme (2009 – 2012), a cross-section of public sector professionals, donors, civil society organizations, academia and media identified water scarcity and water pollution as the most critical environmental issues facing Pakistan. They also expressed serious concern over increasing air pollution levels, soil erosion, wetland degradation, industrial and domestic waste, water logging and salinity and deforestation which was not only identified as a crucial issue in itself but was also considered as the main reason behind rising pollution levels, rapid ecosystem degradation and biodiversity loss. Climate change was considered as the most important challenge in the coming times.

Listing the root causes of environmental problems, this cross-section identified lack of political will, poor governance and weak law enforcement as the most important ones. Others included over-focus on economic growth, inconsistent and ineffective policies, lack of adequate infrastructure, poor planning and implementation, weak institutional capacities, dearth of reliable data, lack of stakeholder participation, politicisation of technical issues such as ethnic and provincial differences with regard to dams and water distribution, non-existent research and development facilities in environment sector, lack of environmental fiscal instruments, unchecked industrial emissions, over population and urbanisation, unabated logging and deforestation, unsustainable farming practices and illegal hunting and poaching.

It was suggested that in order to cope with environmental challenges, all stakeholders in the environment sector should play an active role in policy formulation and implementation at national, provincial and district levels. It was also suggested that apex political institutions should be appraised of the need for adopting the sustainable development paradigm. Legal framework needs to be strengthened and capacities of environmental protection and other public sector implementing agencies need to be enhanced for effective implementation of and adherence to environmental laws and regulations, especially environmental assessment for development initiatives.

Environmental education needs to be introduced in school curricula and environmental research needs to be encouraged at the university level. Nationwide awareness campaigns should be initiated to inform the general public about environmental issues with the media playing an active role in the process.

The use of fiscal tools such as environmental taxation, valuation and incentives can help inculcate conservation practices among people. The need for developing an updated environmental database was highlighted and stress was laid on introducing an effective implementation and monitoring mechanism for managing the NEQS. Relevant data on biodiversity and PAs needs to be documented to keep track of disappearing and endangered species. Since high population growth rate and urbanisation are responsible for most environmental problems, proper urban planning, waste treatment and management, mass transit systems and use of alternate energy sources needs to be encouraged in the country. Since the rural population is heavily dependent on agriculture, farmers need to be educated about environmentally sustainable farming practices. Integrated pest management techniques and organic fertilisers need to be introduced and water logging and salinity controlled by refurbishing the irrigation system. There is also dire need to curb indiscriminate logging and encourage afforestation efforts.

3. IUCN in Pakistan

Following the formulation of the World Conservation Strategy in 1980, the Government of Pakistan requested the World Conservation Union (IUCN) to help develop a National Conservation Strategy (NCS). In 1982, an exploratory mission from IUCN Headquarters laid the foundation for the IUCN country programme in Pakistan, culminating in the establishment of IUCNP country office in Karachi. Since then, IUCNP has grown into the largest country programme with five programme offices as well as a number of field offices. After an extensive consultative process, the NCS was completed and approved by the Government of Pakistan in 1992. IUCN Pakistan also contributed to the Pakistan Environmental Protection Act (PEPA) 1997, facilitated and participated in the development of all key environmental policies including the NEQS. IUCNP has also co-designed and facilitated most of the post-NCS environmental projects, helped develop the Biodiversity Action Plan for Pakistan and successfully advocated more space for civil society in public policy and decision making. IUCNP's work on district and local strategies offers insights into the debates and possibilities that need to be explored to address the issue of good governance. Following the NCS, geographically specific and contextually-relevant strategies have been developed for the NWFP, Balochistan, Northern Areas, Sindh and the districts of Abbottabad, Chitral, Dera Ismail Khan, Gwadar, Qila Saifullah and Badin

3.1. Integrating IUCN's Mission, Vision and Goals in the Pakistani Context

Created in 1948, the World Conservation Union (IUCN) is the world's largest and most credible conservation network working towards "a just world that values and conserves nature". The Union brings together 84 States, 108 government agencies, over 800 NGOs and some 10,000 scientists and experts from 181 countries in a unique worldwide partnership[4].

IUCN has recently explained its niche as "a Union of governments, NGOs, scientific expert networks and a decentralized Secretariat derived from the unique nature of its membership and the framework it offers for coherent international action dedicated to produce and use knowledge about the environment to benefit people and nature."[5]

The IUCN Programme is described in terms of the three 'pillars' of sustainable development – economic, social and environmental – and explicitly seeks to improve the attention of decision makers on the role of a healthy environment in sustainability. The programme recognises that sustainable development ultimately depends on the condition of the natural environment and challenges whether current approaches to sustainable development are effective.

IUCN Pakistan shares the vision, niche and mission of global IUCN. To this end, it has also adopted the goals and long-term changes that it is aiming towards of the larger Asia region. Similarly, the mission of the IUCN Programme in Pakistan is "to influence, encourage and assist the Pakistani society throughout the world to conserve the integrity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable."

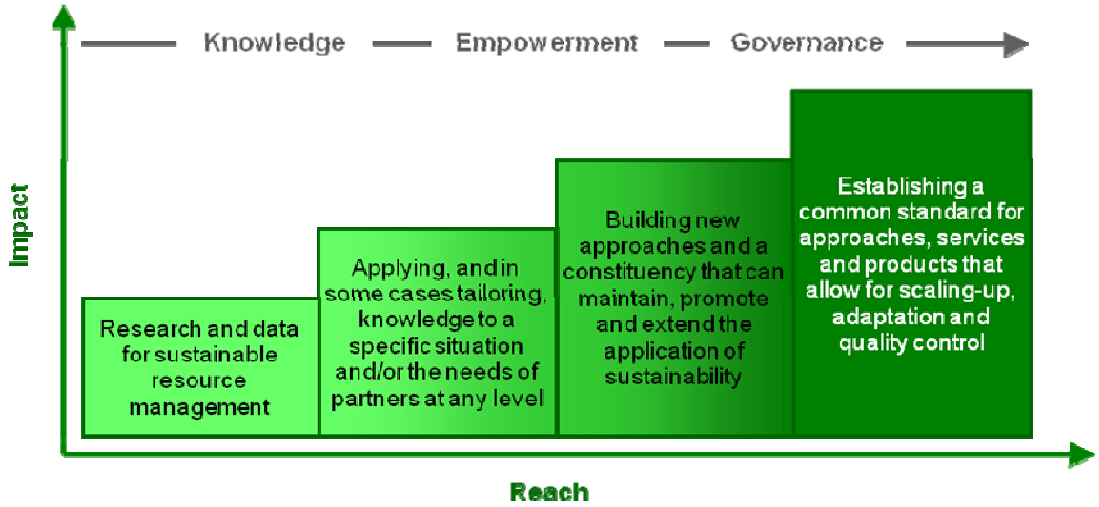
3.2. IUCN's Approach and Focus Areas

IUCN's strategy of tackling sustainable development issues is defined by three key words, i.e., knowledge, empowerment and governance. This proposes that "IUCN will integrate, manage and disseminate conservation-related knowledge, build the capacity of people and institutions to plan, manage, conserve and use natural

[4] as of 10 May 2007.

[5] IUCN, 2007. Strengthening IUCN: Decisions and Recommendations on Organizational Change. Gland: IUCN DGO.

resources in a sustainable and equitable manner (empowerment) and promote effective environmental governance at global, regional, national and local levels".[6] Explaining it further to form a value chain, the Union strives to remain at the cutting edge of knowledge, alliances and approaches to set common standards for broad based ecological sustainability, hence increasing its reach and impact. In this context, IUCN Pakistan has developed a series of interlinked programmes and initiatives to direct its work for the Intersessional Programme (2009–2012).



With this perspective, IUCNP is aiming to be a knowledge-based organisation that facilitates decision-making, ensures effective links between knowledge, practice and policy, and enables its constituency to make informed decisions. IUCN Pakistan's key thrust in the coming years would be on:

- Environmental governance – institutional mechanisms and strengthening, policy advocacy, legal frameworks and tools, multilateral environmental agreements and integration of environmental imperatives into development planning.
- Landscape restoration, rehabilitation and management – community-based integrated natural resource management, forests and protected areas system management and sustainable agricultural systems and practices.
- Environment, peace and security – conservation for peace, conflict resolution and environmental security, gender and social policy, communication and education for sustainable development, multi stakeholder networks and alliances and rights-based resource governance.
- Development, economic growth and environment – payment for environmental services, environmental fiscal reforms and valuation, strategic and environmental impact assessment, corporate social and environmental responsibility, poverty reduction strategies and furthering Millennium Development Goals (MDGs).
- Climate change, energy and ecosystems – impact assessments, adaptation and mitigation strategies, policies, and plans, sustainable energy and clean air.

[6] IUCN, 2004. The IUCN Programme 2005-2008 – Many Voices, One Earth. Bangkok: IUCN.

3.3. IUCN's Niche in Pakistan

IUCN Pakistan's niche is determined by its history, experience and expectations of its constituency. As expressed in a recent survey, its partners in Pakistan want IUCN to continue generating knowledge and ensuring that it is used in practical ways by bringing together scientists, policy makers, business leaders and NGOs. They characterised IUCN Pakistan programme as a mix of policy and fieldwork at the federal, provincial and local levels bringing together government, civil society and private sector institutions. Briefly, IUCN Pakistan was seen as:

- Mainstreaming environment into policy-making as a leader in conservation and sustainable development in Pakistan.
- Building partnerships and encouraging dialogue with stakeholder communities.
- Encouraging donor agencies to provide flexible but focused grants for the development of the environment sector in Pakistan.
- Facilitating government in conducting periodic reviews and updating existing policies.
- Encouraging and supporting environmental impact assessments of all new development projects and policies.
- Raising awareness in collaboration with media organizations to apprise people about the current environmental situation.
- Enhancing capacity of its member organizations and government institutions in sustainable development.
- Demonstrating/piloting in remote areas to provide replicable models for communities and member organizations.

Within Pakistan and relating to the core strengths of IUCN both globally and within the region, IUCNP will continue playing the following key roles:

- Linking global and regional knowledge to the Pakistani context, IUCN draws on its wide global network of members, scientists and affiliates to extend current natural resource management and sustainable development knowledge in Pakistan. Pakistan needs to be drawn into global discussions on ecosystems in order to benefit from wider thinking to avoid following outdated approaches of natural resource management with a view to promote regional cooperation through sharing and collaboration on development and environment issues.
- Also, IUCN needs to enhance its own understanding of managing degraded ecosystems and landscapes as well as economic and social development.
- Advocating and testing cross-cutting ideas and approaches in conservation from across the globe, especially Asia, in Pakistan. IUCN has tested various new approaches, including sustainable use of natural resources, integrated water resource management and community-managed forest resources through participatory development planning. With financial support from the Swiss Agency for Development and Cooperation (SDC), IUCN intends piloting approaches for environmental fiscal reforms, payment for environmental services, collaborative forest management and livelihood security in the state-owned juniper forests of Balochistan.
- To facilitate and promote good governance, IUCN has encouraged the public, including NGOs and the private sector, in engaging with government departments and institutions through consultative mechanisms

such as thematic roundtables in the NWFP and valley conservation committees in the NAs. These mechanisms create space for constructive dialogue and exchange of views and opinions amongst a diverse range of stakeholders. As it shifts its work towards understanding poverty and promoting sustainable livelihoods, IUCN will continue to make conscious efforts for increasing participation of marginalised segments in decision-making processes.

- As an international organization with a mix of state, government agencies and NGO members, IUCN is able to bring together a wide range of stakeholders on issues of mutual interest on neutral ground. In this capacity, IUCN will continue promoting dialogue on natural resource issues between people from various fields, sectors and government tiers.

- Advocating for the environment, particularly when attention and interest of governments and development agencies shifts to other sectors, IUCN will continue to highlight environmental issues in Pakistan despite more immediate and pressing concerns such as security, water and sanitation, education and health.

3.4. IUCN Members, Partners and Key Stakeholders in Pakistan

IUCN's core strength is a united membership of governments, NGOs, experts and other stakeholders since it believes that partnership is pivotal to achieve greater impact and "deep change". In keeping with this mindset, IUCN will continue to explore and forge effective relationships by building on the strengths of development partners.

IUCN Pakistan's membership has grown from eight in 1990 to 24. This includes the Government of Pakistan as a state member, 3 government organisations and 20 NGOs (a complete list of IUCN members in Pakistan is given at Annex II). Over 80 volunteers from Pakistan work on the six IUCN Commissions. The collaboration entails participation in program planning, joint projects, correlating initiatives, collaborative advocacy for key issues and support in fund raising. Relations with members have evolved following the formation of Pakistan National Committee of IUCN Members. In addition to members, IUCN works with a variety of other partners. These include research and teaching institutions, government departments, chambers of commerce and industry, law networks, media and NGOs.

Crucial to the success of the programme is the development of synergies with key stakeholders. IUCN will continue to implement activities in close collaboration with the following key stakeholder groups through various partnership approaches.

3.4.1. Government Agencies

Government agencies are key players in delivering the change that is needed to address challenges of poverty and environment. IUCN will develop and implement new and innovative ways to address these challenges in close collaboration with different government agencies from the national to the local level. Through a joint learning approach, IUCN will spearhead knowledge generation, skills development and capacity enhancement.

3.4.2. Civil Society Organisations

Civil society organizations also play a crucial role in furthering the sustainable development agenda. Through their advocacy and interventions, these organizations often reorient the development-oriented vision of implementing agencies in favour of the environment. Through working with members, particularly those belonging to civil society, checks and balances are put in place to ensure a broad and well-balanced programme.

3.4.3. International NGOs and Agreements

International NGOs, many of whom are part of the IUCN family, have an important role of assisting IUCN with advocacy work and provision of networks, knowledge and technical capacity.

3.4.4. Media

A free, accountable and independent media is an increasingly important element in environmental governance. Availability of information is a prerequisite for the creation of informed stakeholders, empowered to participate meaningfully in negotiations and serve as watch dogs. IUCN will work with the media in strengthening their role in addressing emerging environmental challenges, their repercussions on core sectors and possible solutions.

3.4.5. Academic and Research Institutions

Managing global challenges requires investment in scientific research, learning processes and adaptive management. Governments need access to international expertise and relevant networks to adopt and use new knowledge and skills to address environmental issues. IUCNP will collaborate with universities, research institutes and researchers to develop innovative solutions through research grants, scholarship programmes and other partnership mechanisms.

3.4.6. Private Sector

With the increasing realisation of corporate social and environmental responsibility, the private sector would be another key partner in this endeavour. This partnership would not only compliment the effort but would also help advance environmental assessment processes in Pakistan.

3.4.7. Donors

IUCN being a not for profit organization relies upon membership contribution and donor support. From IUCN's perspective, some of the significant bilateral donors include the Royal Netherlands Embassy, the Canadian International Development Agency (CIDA), the Swiss Agency for Development Cooperation (SDC), the Department for International Development (DFID), the Royal Norwegian Embassy, the Italian Ministry of Foreign Affairs (DGCS), GTZ, the French Development Agency (AFD), the Government of Finland, and the US Agency for International Development (USAID). The key multilateral donors include the Global Environment Facility (GEF), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the World Bank, the Asian Development Bank, the European Union, the International Fund for Agricultural Development (IFAD), and the Food and Agriculture Organization of the UN (FAO).

4. IUCN Pakistan's Intersessional Programme (2009 – 2012)

As part of the global union, IUCNP's Intersessional Programme (2009-2012) is aligned with the global IUCN Intersessional Programme while being hinged on ground realities in Pakistan. As such, IUCNP's programme adapts the Union's global programme for 2009 – 2012 together with thematic priority areas (TPAs) and subsequent results for the four-year period[7]. It targets issues that need to be addressed to tackle conservation challenges identified in the situation analysis for 2009-12 (Section 1) and reflects lessons learnt in the implementation of earlier programmes.

The Union's global TPAs and Pakistan-specific results and outputs contributing to them are described below:

4.1. Thematic Priority Area 1 – Conserving the diversity of life

Ensuring sustainable and equitable management of biodiversity from local to global levels

As discussed earlier, habitat change and degradation, invasive species, overexploitation of natural resources, pollution of land and sea and climate change are all direct threats to environmental health and human well-being. In addition, a set of socio-economic factors such as population demographics, global economy, politics, institutions and cultural values indirectly impact on the environment in Pakistan. To be effective, IUCN needs to address both direct and indirect causes of unsustainable development in the country.

IUCN needs to develop effective and strategic interventions to address key issues on the global agenda for sustainable development while strengthening its core work of conserving biodiversity. Likewise, IUCN's Intersessional Programme seeks to tackle insufficient progress toward sustainability and the ever-growing threat to environmental health and human well-being.

IUCN creates knowledge and understanding of the complex relationship between biodiversity and the key processes driving biodiversity loss by providing key indicators on biodiversity status and trends and developing effective tools and methods for sustainable management based on its huge repository of information. Subsequently, IUCN seeks to empower people to use this knowledge in order to influence governance mechanisms that address the challenges of sustainable development.

This thematic priority is the foundation of IUCN's work and entails the delivery of knowledge on the status of biodiversity, ecosystem goods and services and sustainable management of landscapes. This, in turn, means converting knowledge into pragmatic solutions to achieve results in the other four TPAs.

Practically, it means the delivery of basic repositories of knowledge, standards and tools for biodiversity conservation and effective management of common global and regional natural resources. Part of this knowledge can also be applied directly to one or more of the other TPAs.

4.1.1. Result 1.1 – Biodiversity-related policies and governance systems in Pakistan enable action towards biodiversity conservation

Pakistan is signatory to the Convention on Biological Diversity (CBD) that obliges the Government of Pakistan to devise policies and plans to protect biodiversity. IUCNP has been a key player in applying the full range of its knowledge in developing, providing advice to government and implementing CBD and the Biodiversity Action Plan at the national and provincial levels. Of growing concern is governance for natural resources, especially at the local level which require concerted and collective action for effective management. In addition, the challenge

[7] The description of the global TPAs and subsequent results, as given in IUCN (2007) Investing in our natural assets: The IUCN Programme 2009-2012. Gland: IUCN has freely been adapted for IUCN Pakistan Programme.

of managing resources and sites that span political boundaries including river basins and trans-national PAs will also be addressed.

IUCN Pakistan will continue to influence a broad range of national, provincial and local processes and institutions to support more efficient, effective and equitable biodiversity conservation and sustainable development practices in Pakistan.

Output 1.1.1 Environmental governance processes and mechanisms are strengthened from the local to national level

Output 1.1.2 Strategic environmental assessment is introduced into the development planning process

Output 1.1.3 The Government of Pakistan is supported in implementing the CBD

Output 1.1.4 Transboundary protected areas management involving neighbouring countries is facilitated

4.1.2. Result 1.2 – IUCN standards, tools and knowledge for sustainable natural resource management available and used for biodiversity conservation

The ability to make and implement sound decisions and choices is largely dependent on the knowledge and tools available and the capacity to use and apply them. Despite reasonable progress made by Pakistan, gaps still remain in the way of generating and sharing knowledge for biodiversity conservation and sustainable development. IUCNP will facilitate a comprehensive and integrated biodiversity information resource system, providing better understanding of the complexity of natural systems and improved means of disseminating relevant knowledge. Social needs and economic realities also need to be taken into account while conserving and using natural systems according to ecosystem management principles, including the particular needs of diverse groups and the importance of human rights frameworks to empower disadvantaged groups in the quest for equity in natural resource use. Use of all these systems and processes requires capacity at the government as well as community level, which IUCN can build. Also, the contribution of environmental indicators towards MDGs needs to be acknowledged and institutionalised.

Output 1.2.1 Federal and provincial governments assisted in implementing an updated PAs management system

Output 1.2.2 Capacity of relevant stakeholders enhanced to implement biodiversity and livelihood approaches

Output 1.2.3 Sustainable use approach successfully demonstrated in the Ziarat juniper forest

Output 1.2.4 Government of Balochistan assisted in designation of Ziarat juniper forest as a world heritage site

Output 1.2.5 Independent reporting system on MDG-7 is institutionalised at national and sub-national levels

4.2. Thematic Priority Area 2 – Changing the climate forecast

Integrating biodiversity considerations and opportunities into climate change policy and practice

Global climate change is the most pressing concern of the 21st century. Increasing temperature, changing precipitation patterns, increased frequency and severity of extreme weather events and rise in sea levels are already being observed and have serious implications for society and the environment. Improving the capacity of

the country's ecosystems and communities to adapt to inevitable climate change impacts is one of the key challenges of IUCNP's work.

IUCNP is concerned with the impact of climate change on biodiversity and livelihood of people as well as that of actual or proposed mitigation and adaptation measures. Poor and vulnerable communities and others, including women, without access to information and decision-making will not only be most affected but also least able to cope with climate change. Their vulnerability is exacerbated by the fact that swift environmental changes often aggravate existing discrimination and further limit access to resources. Mitigation and adaptation are two sets of strategies currently available to face the impact of climate change. Through its scientific knowledge and expertise, IUCN has a major role to play in influencing policies, developing scenarios and making sure that best information and capacity is available for people and nature.

4.2.1. Result 2.1 – Climate change mitigation policies and practice include biodiversity concerns from local to national level

Being a country that is not required to maintain greenhouse gas emissions within certain limits as yet, Pakistan would have to be cognizant of rapidly increasing industrialisation and urbanisation. Also, effective and efficient sustainable development in Pakistan would in the long run depend on climate change mitigation becoming a part of natural resource policy and practice.

Against this backdrop, IUCNP can contribute greatly to post-Kyoto negotiations by monitoring the impact of climate change on biodiversity, influencing policies and laws and building capacity for effective commitments and negotiations to reduce atmospheric concentration of greenhouse gases.

Output 2.1.1 Government of Pakistan assisted in preparing for post-2012 negotiations

Output 2.1.2 National capacity for assessing impact of climate change on biodiversity enhanced

4.2.2. Result 2.2 – Natural resources management strategies to adapt to the impact of climate change are adopted and implemented

While more aggressive reductions in greenhouse gas emissions are undoubtedly needed, the challenge facing the nature conservation community is less about dealing with specific projected impacts and more about managing the uncertainties created by climate change. A precautionary approach that reduces current risk, plans for movement of species and keeps future management options open is the need of the day. This means opting for a more dynamic approach that tests assumptions, monitors results, develops scenarios and adapts management actions accordingly.

Output 2.2.1 Climate change considerations are integrated in sectoral policies that support adaptation activities

Output 2.2.2 A process of multi-stakeholder dialogue and policy advice on climate change impacts on nature and society is initiated

Output 2.2.3 Institutional mechanisms for forecast, forewarning and disaster management are put in place

Output 2.2.4 Vulnerability maps based on snowline movement and rise in sea-level are available

Output 2.2.5 Integrated sub-river basin water resource management as an adaptive strategy for climate change is demonstrated in arid Balochistan

4.3. Thematic Priority Area 3 – Naturally energizing the future

Implementing ecologically sustainable, equitable and efficient energy systems

Energy plays a vital role in everything we do but growing requirements for energy are resulting in significant impacts on biodiversity. Energy supply systems depend on and impact ecosystems. Ecosystems such as watersheds and forests are critical for the providing of energy services such as water flows for hydro-electricity and biomass for bio-energy. However, current energy production can also cause species and habitat loss along the entire energy cycle from exploration to production and distribution to final use.

It is increasingly clear that energy choices are also impacting the country's ability to respond to and mitigate climate change. The options to meet energy demand are expanding to include renewable sources such as wind and solar energy while recognising that traditional sources such as coal, gas and oil cannot completely be eliminated in the near future. No one energy source is biodiversity-neutral and energy choices need to be made with full understanding of the trade-offs involved in any specific situation.

IUCNP will support processes that accelerate the transition to energy systems that are ecologically sustainable, socially equitable and economically efficient while making full use of the best available technologies and governance arrangements.

4.3.1. Result 3.1 – Energy policies and strategies mitigate the impact of the growing energy demand on biodiversity

Pakistan is slowly shifting towards alternative sources of energy to decrease its dependence on fossil fuels. However, whether with the actual energy system relying heavily on exploration, production and distribution technologies and progressive conversion to alternative energy schemes, any energy model will unavoidably have some impact on biodiversity. Energy policies and strategies need to appreciate these impacts in order to avoid further degradation of ecosystem services and subsequent repercussions on human well-being.

Output 3.1.1 Ecologically sustainable, equitable and efficient energy systems introduced in Pakistan

Output 3.1.2 Environmental concerns adequately addressed in energy policies of Pakistan

Output 3.1.3 Corporate social and environmental responsibility is accepted and practiced by private and public sector power production companies in Pakistan

4.3.2. Result 3.2 – Ecosystem services that underpin sustainable and equitable energy are incorporated in energy policies and strategies

Ecosystems provide the raw material for several types of energy production. Examples include biomass (wood, grasses, seeds for oils, plant material for sugar) and water flows for hydropower from the micro to the large scale. Additionally, ecosystems provide supporting services which underpin many energy options such as the creation of productive soils, nutrient cycling and photosynthesis which are critical for biomass production. Unfortunately, the services which ecosystems are providing to energy systems are rarely recognized by energy producers and consumers or owned, valued and integrated in energy decisions. Yet the positive role of biodiversity in supporting delivery of energy is dependent on responsible approaches to energy such as implementing biodiversity offsets or locating energy production in areas least harmful to ecosystems.

New and emerging technologies such as "clean coal" and alternative energy sources can all play a role in reducing the impact of conventional energy use, particularly by reducing greenhouse gas emissions. However, each may have its own impacts and implications with regard to biodiversity and equity. Developing and

implementing ecosystem-based sustainable energy strategies will require a more thorough understanding of these implications and impacts.

Output 3.2.1 Environmental impact assessment is strengthened as process as well as mechanism

Output 3.2.2 Biodiversity hotspots in Pakistan are declared outside the purview of extractive ventures

Output 3.2.3 Payment for environmental services approach is pilot tested in the energy generation sector

4.4. Thematic Priority Area 4 – Managing ecosystems for human well-being

Improving livelihoods, reducing poverty and vulnerability and enhancing environmental and human security through sustainable ecosystem management

Increasing desertification, loss of soil fertility, changing climatic conditions, depletion of fisheries, deforestation and other environmental changes in Pakistan will contribute to the declining capacity of ecosystems to meet human needs, resulting in increasing poverty and declining human security.

Poverty in Pakistan can be defined by low levels of income, poor health, inadequate medical and education facilities, lack of access to information, high vulnerability, limited influence on decision-making and lack of rights and opportunities to access resources, financing and other economic assets. Approaches to reduce poverty must provide the tools and means for people to enhance and secure their economic assets besides considering the special needs of indigenous people and other marginalized groups. These approaches should also incorporate gender equity standards and ensure that women and children are direct beneficiaries of poverty reduction measures. This involves increasing their capacity and participation in decision-making and equitable access to and control over natural assets.

Basic security and livelihood security are critical to long-term human well-being and sustainable conservation outcomes. Increasing demands on natural resources are likely to spawn human conflicts at the local, national, and international levels. Climate change is also expected to expose human populations in vulnerable locations to an increase in extreme weather conditions.

Conservation practices that take into account equity, equality, rights and vulnerability issues and promote stakeholder dialogue and conflict management can contribute to cooperation and conflict prevention. In post-conflict situations, restoration of ecosystems and livelihoods and landscape management planning become key priorities. Environmental and human insecurity and rural poverty are intimately linked and unless tackled together to reduce poverty and conserve biodiversity will fail in the long run.

Despite the fact that IUCN has been playing a leading role in integrating environmental concerns into development strategies, significant gaps still remain. For instance, the link between conservation and human well-being is not yet fully accepted by decision makers. The concept of ecosystem goods and services provides a new perspective to express and implement IUCN's commitment to both conservation and development, including post-disaster rehabilitation and interventions in the event of environmental emergencies.

4.4.1. Result 4.1 – Development policies and strategies support vulnerable and poor stakeholders, especially women, to sustainably manage ecosystems for improved livelihoods

Enhanced livelihood security will be achieved through innovative approaches that facilitate effective management of ecosystems and create new opportunities, increasing the availability and quality of productive assets for women and men in rural communities and urban contexts. However, this requires an approach that combines

tools needed to address the four dimensions of poverty — assets and opportunities, power and voice, security, and capabilities — that includes considerations of gender equity and cultural pertinence.

Natural resource governance systems need to enhance effectiveness and equity in order to deal with the range of issues involved in the links between ecosystems, human well-being and environmental security. Greater effectiveness and equity are achievable through rights-based approaches and democratic decision-making on the use of and access to ecosystem goods and services, market technology and capital critical for sustainable livelihoods. Environmental decision-making needs to maximize the contributions of ecosystem services towards poverty reduction while minimizing adverse impacts of conservation on livelihoods.

IUCNP has supported district governments, the lowest governance unit in the country, in integrating environmental concerns into development planning, ensuring sustainable use of ecological resources through development of integrated district development visions.

Output 4.1.1 Poverty reduction strategies in Pakistan integrate sustainable ecosystem management approaches

Output 4.1.2 Devolved governance systems integrate environment into development planning to improve livelihood of communities

Output 4.1.3 Information communication technologies are mobilised for highlighting ecosystem and livelihood nexus

4.4.2. Result 4.2 – Sustainable environmental management reduces vulnerability to natural hazard and conflicts

Building more secure and sustainable livelihoods depends on multiple elements such as integrating approaches and tools for risk management and reduction for people and nature, increasing resilience of ecosystems and human communities to unexpected change, including considerations of gender equity and cultural pertinence and enhancing capacity to face threatening events.

IUCN is expanding its capacity to respond to natural hazards, starting with a better understanding of resultant challenges, the need for ecological and livelihood rehabilitation and potential contributions it can make in this area. In Pakistan, IUCN has long been engaged in rehabilitation of mangrove ecosystems which has proven to be an effective shield against natural disasters in addition to its contribution towards local and national economies. In Northern Pakistan, IUCNP has promoted sustainable use of natural resources as a source of livelihood as well as a conflict-resolution mechanism. IUCNP's post-earthquake environmental assessment has provided the basis of many environmental interventions in earthquake-affected areas. IUCNP will continue to expand partnerships to better integrate environmental aspects in relief and mitigation operations as well as preventive and post-conflict strategies.

Output 4.2.1 Access-benefit-sharing approach is demonstrated to reduce vulnerability to conflicts

Output 4.2.2 Integrated coastal zone management plan developed and adopted by governments of Sindh and Balochistan

Output 4.2.3 Integrated water resource management approach demonstrated to combat drought-like situation in Balochistan

Output 4.2.4 Environmental and human security concerns addressed through sustainable ecosystem management in Pakistan

4.5. Thematic Priority Area 5 – Greening the Economy

Integrating ecosystem conservation values in economic policy, finance and markets

So far, Pakistan's economy has failed to support sustainable management of ecosystems primarily because the full value of biodiversity is not taken into account. There is a lot to be done to widen and deepen the integration of environmental values and related livelihood concerns in economic policy, markets and finance, particularly with respect to biodiversity, intangible ecosystem services and poverty alleviation. A related priority in Pakistan is to develop new sources of finance for biodiversity conservation together with improved allocation mechanisms to ensure more cost-effective and equitable conservation.

The challenge of creating awareness and persuading the public and policy-makers need to be reformed to support ecosystem conservation is not conceptual or technical but political. The starting point is to build capacity within government agencies and private business to assess and reduce adverse environmental impacts. Further steps may involve efforts to internalize environmental costs and values in economic policy and markets through the use of economic incentives.

4.5.1. Result 5.1 – Economic, trade and investment policies better integrate biodiversity values

The rapid growth in economic output driven largely by the economic growth paradigm is putting increasing pressure on Pakistan's natural resource base and atrophying the already limited capacity of local and national governments and multinational corporations to monitor and regulate markets in light of public interest. IUCNP will help by providing information and analytical tools for assessing the impacts of trade and investment flows on natural resource use, establishing economic value of biodiversity conservation and offering alternative policy proposals which can help ensure that trade and finance support rather than undermine biodiversity conservation and sustainable use.

Output 5.1.1 Economic value of biodiversity conservation established through research and advocacy

4.5.2. Result 5.2 – Companies, industry associations and consumer groups incorporate ecosystem values into planning and action

A rapid and, at times unplanned, expansion in Pakistan's industrial sector has resulted in environmental degradation. However, the export-oriented industry has recently adopted environmental standards. Also, many ventures have been contributing, albeit informally, to corporate social responsibility initiatives. While elaborating linkages of environmental services with profitability, IUCNP would advocate the private sectors' contribution towards environmental rehabilitation. One such effort would be advocating adoption of Principle 7, 8 and 9 of the UN Global Compact[8] by the corporate sector in Pakistan. The programme would also demonstrate how the corporate sector can contribute effectively towards healthy ecosystems, taking a step further towards corporate social and environmental responsibility. IUCNP will also work to support full integration of biodiversity concerns and opportunities into business planning at all levels.

Output 5.2.1 Corporate social responsibility is directed towards ecosystem rehabilitation programmes

Output 5.2.2 Corporate sector demonstrates adequate capacity to integrate biodiversity conservation into business planning and operations

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[8] UN Global Compact Principles:

7. Business should support a precautionary approach to environmental challenges.
8. Undertake initiatives to promote greater environmental responsibility.
9. Encourage the development and diffusion of environmentally friendly technologies.

Annex I:
Ecological Zones of Pakistan

Permanent snow-fields and cold desert	Mainly above 4,000m, these are the highest parts of the Himalaya, Karakoram and Hindu Kush ranges. Found in northern Hunza, Chitral and Baltistan
Alpine zone (a) Alpine Meadows (b) Sub-alpine scrub and birch trees	Areas above the tree line in the northern mountains in Hazara, Gilgit, Chitral and Swat Kohistan. Alpine Meadows which occur below glaciers and in areas where snowmelt provides more mesic conditions and sub-alpine scrub and birch forest which consist of narrow belts along stream beds and ravines.
Himalayan temperate forests	Mainly on slopes having high monsoon precipitation such as the Galiat, lower Kaghan Valley and Neelum Valley.
Sub-tropical Pine forests	A fairly narrow zone between 900m and 2,000m along the Himalayas.
Tropical deciduous forests	A very narrow band in the Jhelum Valley, Rawalpindi foothills and Margala Hills in Islamabad. Late summer rain averages 1,000 mm per year.
Alpine dry scrub	Scrub forest in northern latitudes is found in the valleys of lower Chitral, parts of Gilgit, Kohistan and Dir. Scrub forest in intermediate latitudes is found in Kakkar range, Takht-e-Sulaiman, Fort Sandeman, western borders of Waziristan and parts of Safed Koh, Malakand and Swat. Scrub forest in southern latitudes is found in the higher mountain ranges of northern Kalat, Chiltan and the high Sulaiman Hills.
Arid Sub-tropical habitat (a) Monsoon-influenced (b) Less-pronounced monsoon influenced (c) Balochistan desert scrub	Rocky and hilly areas at around 900m above sea level. The monsoon-influenced habitat has humid summers and mild, dry winters, such as in Karachi, Lakhi hills, Sind Kohistan, Kirthar and Lasbela. Less pronounced monsoon-influenced areas have regular winter frost and dry, hot summers, as in the Salt Range, Kaala Chitta hills and eastern hills of Waziristan. Balochistan desert scrub has very cold winters and no monsoon influence, such as in northern Kalat, lower Sulaiman hills and most of Balochistan valleys, Kurram valleys, and most of Waziristan.
Tropical thorn forests	Consists of the Indus plains and sand dunes which occur in the Thar, Cholistan, Sibi and Chagai deserts.
Riverine plain or Indus Basin	Consisting of swamps, 'jheels' which are subject to summer flooding, the riverine tract in the immediate vicinity of the rivers and the mangrove forests mainly found in the Indus Delta.
Coastal / mangrove forests	One of the largest arid mangrove systems in the world, found in Sindh (about 129,000 ha in the Indus Delta) and Balochistan (3,000 ha in the Miani Hor, Kalmat Hor and Gawatar Bay areas).

Source: http://www.edu.iucnp.org/pbezone.htm and *Pakistan: Mangroves* (WWF-Pakistan report edited by Dr. Pamela Stedman-Edwards) URL: http://www.panda.org/downloads/policy/rcpakistan.doc

Annex II:
IUCN Members in Pakistan

State Member

1. National Council for Conservation of Wildlife, Ministry of Environment, Government of Pakistan.

Government Agencies

2. National Institute of Oceanography
3. Planning, Environment and Development Department, Government of NWFP
4. Sindh Wildlife Department

Non-Government Organizations

5. Aga Khan Rural Support Programme
6. Baanhn Beli - A Friend Forever
7. Belour Advisory & Social Development Organization
8. H.E.J. Research Institute of Chemistry
9. HAASHAR Association
10. Indus Earth Trust
11. Khush-Hali Associates
12. Khwendo Kor
13. LEAD-Pakistan
14. Pakistan Environmental Protection Foundation
15. Pakistan Institute of Labour Education & Research
16. Sarhad Rural Support Program
17. Shehri - Citizens for a Better Environment
18. Shirkat Gah-Women's Resource Centre
19. South Asia Partnership Pakistan
20. Strengthening Participatory Organization
21. Sungi Development Foundation
22. Sustainable Development Policy Institute
23. Scientific & Cultural Society of Pakistan
24. World Wide Fund for Nature-Pakistan

Annex III:
IUCN Pakistan's Intersessional Programme (2009–2012)
Results, Outputs and Targets

Result		Output		Target
TPA 1:	Conserving Biodiversity for Life Ensuring sustainable and equitable management of biodiversity from local to global levels			
1.1	Biodiversity-related policies and governance systems in Pakistan enable action towards biodiversity conservation	1.1.1	Environmental governance processes and mechanisms are strengthened from the local to national level	▪ At least one sub-national unit is assisted in developing its sustainable development strategy ▪ The process of integrated sustainable development visions and implementation is standardised and documented ▪ SEA is adopted into administrative processes of the Planning Commission of Pakistan ▪ At least one transboundary protected area is under management regime
		1.1.2	Strategic environmental assessment is introduced into the development planning process	
		1.1.3	The Government of Pakistan is supported in implementing the CBD	
		1.1.4	Transboundary protected areas management involving neighbouring countries is facilitated	
1.2	IUCN standards, tools and knowledge for sustainable natural resource management available and used for biodiversity conservation	1.2.1	Federal and provincial governments assisted in implementing an updated PAs management system	▪ The revised protected areas categories are adopted by Government of Pakistan ▪ The juniper ecosystem conservation is demonstrated in at least 6 valleys ▪ Ziarat juniper forest is declared a the World Heritage Site ▪ Citizens' MDG Report is institutionalised
		1.2.2	Capacity of relevant stakeholders enhanced to implement biodiversity and livelihood approaches	
		1.2.3	Sustainable use approach successfully demonstrated in the Ziarat juniper forest	
		1.2.4	Government of Balochistan assisted in designation of Ziarat juniper forest as a world heritage site	
		1.2.5	Independent reporting system on MDG-7 is institutionalised at national and sub-national levels	
TPA 2:	Changing the Climate Forecast Integrating biodiversity considerations and opportunities into climate change policy and practice			

Result		Output		Target
2.1	Climate change mitigation policies and practice include biodiversity concerns from local to national level	2.1.1	Government of Pakistan assisted in preparing for post-2012 negotiations	▪ A cohort of professionals is equipped with biodiversity impact assessment techniques
		2.1.2	National capacity for assessing impact of climate change on biodiversity enhanced	
2.2	Natural resources management strategies to adapt to the impact of climate change are adopted and implemented	2.2.1	Climate change considerations are integrated in sectoral policies that support adaptation activities	▪ The current and new policies are reviewed from climate change perspective ▪ A Technical Advisory Panel on Climate Change is operationalised ▪ IRBM is demonstrated in at least three areas ▪ Specific water resource management tools, including water rights trading, and WANI publications, are developed
		2.2.2	A process of multi-stakeholder dialogue and policy advice on climate change impacts on nature and society is initiated	
		2.2.3	Institutional mechanisms for forecast, forewarning and disaster management are put in place	
		2.2.4	Vulnerability maps based on snowline movement and rise in sea-level are available	
		2.2.5	Integrated sub-river basin water resource management as an adaptive strategy for climate change is demonstrated in arid Balochistan	
TPA 3:	Naturally Energizing the Future Implementing ecologically sustainable, equitable and efficient energy systems			
3.1	Energy policies and strategies mitigate the impact of the growing energy demand on biodiversity	3.1.1	Ecologically sustainable, equitable and efficient energy systems introduced in Pakistan	▪ The Energy Policy of Pakistan is reviewed from sustainable development perspective ▪ At least one sustainable energy pilot is demonstrated
		3.1.2	Environmental concerns adequately addressed in energy policies of Pakistan	

Result		Output		Target
		3.1.3	Corporate social and environmental responsibility is accepted and practiced by private and public sector power production companies in Pakistan	
3.2	Ecosystem services that underpin sustainable and equitable energy are incorporated in energy policies and strategies	3.2.1	Environmental impact assessment is strengthened as process as well as mechanism	▪ Pakistan's EIA legislation, rules and procedures are updated ▪ A list of biodiversity hotspots is notified
		3.2.2	Biodiversity hotspots in Pakistan are declared outside the purview of extractive ventures	
		3.2.3	Payment for environmental services approach is pilot tested in the energy generation sector	
TPA 4:	Improving Life in Healthy Ecosystems Improving livelihoods, reducing poverty and vulnerability, and enhancing environmental and human security through sustainable ecosystem management			
4.1	Development policies and strategies support vulnerable and poor stakeholders, especially women, to sustainably manage ecosystems for improved livelihoods	4.1.1	Poverty reduction strategies in Pakistan integrate sustainable ecosystem management approaches	▪ At least four districts are supported to develop Integrated District Development Vision (IDDV) ▪ Capacity of relevant stakeholders is enhanced to implement and monitor the IDDVs ▪ Decision support systems are established in at least four select districts ▪ At least one FM radio and one TV channel dedicates airtime to cover environmental issues
		4.1.2	Devolved governance systems integrate environment into development planning to improve livelihood of communities	
		4.1.3	Information communication technologies are mobilised for highlighting ecosystem and livelihood nexus	
4.2	Sustainable environmental management reduces vulnerability to natural hazard and conflicts	4.2.1	Access-benefit-sharing approach is demonstrated to reduce vulnerability to conflicts	▪ Pakistan's ICZM Plan is developed and adopted ▪ Government of Balochistan

Result		Output		Target
		4.2.2	Integrated coastal zone management plan developed and adopted by governments of Sindh and Balochistan	adopts IWRM approach
		4.2.3	Integrated water resource management approach demonstrated to combat drought-like situation in Balochistan	
		4.2.4	Environmental and human security concerns addressed through sustainable ecosystem management in Pakistan	
TPA 5:	Greening the Economy Integrating ecosystem conservation values in economic policy, finance and markets			
5.1	Economic, trade and investment policies better integrate biodiversity values	5.1.1	Economic value of biodiversity conservation established through research and advocacy	▪ At least five case studies are developed on economic benefits of biodiversity conservation
5.2	Companies, industry associations and consumer groups incorporate ecosystem values into planning and action	5.2.1	Corporate social responsibility is directed towards ecosystem rehabilitation programmes	▪ At least two ecosystem rehabilitation initiatives are supported by the corporate sector in Pakistan
		5.2.2	Corporate sector demonstrates adequate capacity to integrate biodiversity conservation into business planning and operations	

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