India's Third National Report

to

Convention on Biological Diversity

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GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS

India's Third National Report to the Convention on Biological Diversity

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भारत सरकार
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MINISTER
ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA
NEW DELHI - 110003

FOREWORD

I have pleasure in presenting India's Third National Report to the Convention on Biological Diversity. This Report has been prepared in terms of the requirements of Article 26 of the Convention on Biological Diversity, to which India is a Party, and in accordance with the relevant decisions and format adopted by the Conference of the Parties to this Convention.

Biodiversity is a multi-disciplinary subject involving diverse sectoral linkages and large number of stakeholders. Therefore, any national document on biodiversity cannot be prepared without involving the concerned experts, organizations, Ministries and other stakeholders. I am happy to note that this Third National Report has been prepared adopting a consultative process, including through organization of a National Workshop.

The Report focuses on the status and trends of biodiversity and its components; impact of national actions on achievements of objectives of the Convention, goals and objectives of the Strategic Plan of the Convention and the 2010 biodiversity target, and constraints or impediments encountered in implementation of the Convention.

I congratulate all those who have been involved in this challenging task. I am confident that sharing of experiences with other Parties through National Reports will help in realizing the benefits of the Convention for the perpetuation of evolutionary processes and maintenance of life support systems on Earth.

(A. RAJA)

Dated : May 29, 2006

Place : New Delhi

भारत सरकार
पर्यावरण एवं वन मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS

प्रोदीप्त धोष, पी.एच.डी.
सचिव
PRODIPTO GHOSH, Ph.D.
Secretary

PREFACE

Preparation of National Reports is an important commitment of all Contracting Parties to the Convention on Biological Diversity. India had earlier submitted its First and Second National Reports in 1998 and 2001, respectively. National reporting is a continuing requirement under the Convention, and these reports are called for on a four yearly basis.

The Third National Report is in a questionnaire format that focuses on priority setting, targets and obstacles; Articles of the Convention (5-20), and thematic areas; and operations of the Convention. Preparation of National Reports helps us to monitor and review the status of implementation of the commitment as a Party, along with identifying gaps in our capacity, constraints, and impediments encountered in implementation of the Convention. This information provided by Parties, however, is not to be used either to rank performance or to otherwise compare implementation between individual Parties.

The Third National Report has been prepared in consultation with various stakeholders. I wish to place on record my appreciation for the diligent efforts put in by Mr. Desh Deepak Verma, Joint Secretary and Dr. Sujata Arora, Additional Director, in the preparation of this document.

(Prodipto Ghosh)

Dated : 26th May, 2006

Place : New Delhi

जहाँ है हरियाली।
वहाँ है खुशहाली।।

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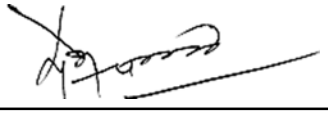
Signature of officer responsible for submitting national report	
Date of submission	November 24, 2005

Information on the preparation of the report

Box I.

Please provide information on the preparation of this report, including information on stakeholders involved and material used as a basis for the report.

The Third National Report has been prepared by the Ministry of Environment & Forests (MoEF) through a consultative process involving various stakeholders in the government and non-government sectors. These *inter alia* include: concerned Central sectoral Government Ministries/Departments; experts; academicians; and Non-Governmental Organisations (NGOs).

The relevant portions of the format of the National Report were sent to more than 50 experts/organizations, and also to the members of the MoEF's Consultative Group on biodiversity issues, for providing inputs on the portion of the format relevant to their area of work and expertise. Through this interactive process, a zero draft of the Report was prepared on the basis of inputs received from these stakeholders and relevant information extracted from written and published documents and policy papers, which *inter alia* include:

(i) Implementation of Article 6 of the Convention on Biological Diversity (CBD) in India – First National Report, 1998

(ii) India's Second National Report to the CBD

(iii) National Policy and Macrolevel Action Strategy on Biodiversity, 1999

(iv) Annual Report of the Ministry of Environment & Forests, 2004-2005

(v) National Forestry Action Programme – India, 1999

(vi) The Biological Diversity Act, 2002

(vii) Biological Diversity Rules, 2004

(viii) National Environment Policy, 2006

(ix) National Wildlife Action Plan, 2004

(x) Final Technical Report of the United Nations Development Programme/Global Environment Facility (UNDP/GEF) sponsored National Biodiversity Strategy and Action Plan

(xi) Annual Reports of the concerned Central government Ministries/Departments/ agencies, e.g., Department of Biotechnology, Department of Science & Technology, Department of Ocean Development/G.B. Pant Institute of Himalayan Environment & Development, etc.

Thereafter, the MoEF organized a national workshop for the preparation of India's Third National Report to CBD, in association with Biotech Consortium India Limited, on May 20-21, 2005, for which the zero draft was circulated to the invitees. In this workshop, over 60 participants representing concerned Government Ministries/Departments, research institutions, universities and experts participated. The zero draft was extensively

deliberated upon in the workshop. Based on the inputs/comments received from the participants in the workshop, the zero draft was further worked upon and a first draft of the report was prepared. The first draft was subjected to another round of consultations with the experts, concerned Ministries/Departments and organizations. Based on further inputs received, and after consultating other relevant documents, a second draft of the report was prepared. This draft was deliberated at length in a meeting of the Consultative Group on biodiversity issues held on 16 September 2005, and thereafter finalized. India's Third National Report was submitted to the CBD Secretariat on 24 November 2005, after obtaining necessary approvals from the Government.

B. PRIORITY SETTING, TARGETS AND OBSTACLES

Box II.

Please provide an overview of the status and trends of various components of biological diversity in your country based on the information and data available.

India is one of the 17 megadiverse countries. With only 2.4% of the land area, India accounts for 7-8% of the recorded species of the world. India is equally rich in associated traditional and indigenous knowledge.

Systematic surveys of flora and fauna of the country covering all the ecosystems started with the establishment of the Botanical Survey of India (BSI) in 1890 and the Zoological Survey of India (ZSI) in 1916. Almost 70% of the country's land area has been surveyed and around 45,000 species of plants and 89,000 species of animals have been described till date. It has been estimated that another 400,000 species may exist in India which need to be recorded and described.

Recorded plant species

Taxonomic group	No. of species		% in India
	India	World	
Angiosperms	17500	250000	7.00
Gymnosperms	48	650	7.40
Pteridophytes	1200	10000	12.00
Bryophytes	2850	14500	19.70
Lichens	2075	13500	15.00
Fungi	14500	70000	20.70
Algae	6500	40000	16.30
Virus/Bacteria	850	8050	10.60
Total	**45523**	**406700**	**11.80**

Recorded animal species

Taxonomic group	No. of species		% in India
	India	World	
PROTISTA (Protozoa)	2577	31250	8.24
ANIMALIA			
Mesozoa	10	71	14.08
Porifera	486	4562	10.65
Cnidaria	842	9916	8.49

Taxonomic group	No. of species		% in India
	India	World	
Ctenophora	12	100	12.00
Platyhelminthes	1622	17500	9.22
Nemertinea	-	600	-
Rotifera	330	2500	13.20
Gastrotricha	100	3000	3.33
Kinorhyncha	10	100	10.00
Nematoda	2850	30000	9.50
Nematomorpha	-	250	-
Acanthocephala	229	800	28.62
Sipuncula	35	145	24.14
Mollusca	5070	66535	7.62
Echiura	43	127	33.86
Annelida	840	12700	6.61
Onychophora	1	100	1.00
Arthropoda	68389	987949	6.90
Crustacea	2934	35534	8.26
Insecta	59353	867391	6.83
Arachnida	5818	73440	7.90
Pycnogonida	16	600	2.67
Pauropoda	-	360	-
Chilopoda	100	3000	3.33
Diplopoda	162	7500	2.16
Symphyla	4	120	3.33
Merostomata	2	4	50.00
Phoronida	3	11	27.27
Bryozoa (Ectoprocta)	200	4000	5.00
Entoprocta	10	60	16.66
Brachiopoda	3	300	1.00
Pogonophora	-	80	-
Priapulida	-	8	-
Pentastomida	-	70	-
Chaetognatha	30	111	27.02

Taxonomic group	No. of species		% in India
	India	World	
Tardigrada	30	514	5.83
Echinodermata	765	6223	12.29
Hemichordata	12	120	10.00
Chordata	4994	48451	10.40
Protochordata	119	2106	5.65
Pisces	2546	21723	11.72
Amphibia	240	5150	4.66
Reptillia	460	5817	7.91
Aves	1232	9026	13.66
Mammalia	397	4629	8.58
Total (Animalia)	86905	1196903	7.25
Grand Total (Protista +Animalia)	**89492**	**1228153**	**7.28**

India's strategies for conservation and sustainable utilization of biodiversity in the past have comprised providing special status and protection to biodiversity rich areas by declaring them as national parks, wildlife sanctuaries, biosphere reserves, and ecologically fragile and sensitive areas; diverting pressure on reserve forests by providing alternative measures for meeting fuelwood and fodder needs of people; afforestation of degraded areas and wastelands; creation of ex-situ conservation facilities such as gene banks, etc.

Special efforts are continuously being made for protecting endangered, endemic and economically important species of plants and animals. The functional base of the two major agencies, i.e. BSI and ZSI, involved in exploration, inventorization and documentation of biodiversity in general has been further expanded to include new areas such as inventorization of endemic, rare and threatened species, evolving conservation strategies and studies on fragile ecosystems and protected areas, etc.

Efforts have also been initiated towards inventorization of microbial diversity by strengthening the institutional capabilities and setting up of depositories.

An All India Coordinated Project for Capacity Building in Taxonomy (AICOPTAX) that envisages establishment of Centres for Research for identifying priority gap areas (e.g. virus, bacteria, micro lepidoptera etc.) in the field of taxonomy, education and training, and strengthening of BSI and ZSI as coordinating units, has been launched since 1999. The project has organized specialized groups drawn from universities, BSI and ZSI to take up taxonomic work on animal viruses, bacteria and archaea, algae, fungi, lichens, bryophytes, pteridophytes, gymnosperms, palms, grasses, bamboos, orchids, helminthes and nematodes, micro lepidoptera and mollusca. The project is operational in 82 units as of now.

Priority setting

1. Please indicate, by marking an "**X**" in the appropriate column below, the level of priority your country accords to the implementation of various articles, provisions and relevant programmes of the work of the Convention.

Article/Provision/Programme of Work	Level of Priority		
	High	Medium	Low
a) Article 5 – Cooperation	X		
b) Article 6 – General measures for conservation and sustainable use	X		
c) Article 7 – Identification and monitoring	X		
d) Article 8 – *In-situ* conservation	X		
e) Article 8(h) – Alien species	X		
f) Article 8(j) – Traditional knowledge and related provisions	X		
g) Article 9 – *Ex-situ* conservation	X		
h) Article 10 – Sustainable use of components of biological diversity	X		
i) Article 11 – Incentive measures	X		
j) Article 12 – Research and training	X		
k) Article 13 – Public education and awareness	X		
l) Article 14 – Impact assessment and minimizing adverse impacts	X		
m) Article 15 – Access to genetic resources	X		
n) Article 16 – Access to and transfer of technology	X		
o) Article 17 – Exchange of information	X		
p) Article 18 – Scientific and technical cooperation	X		
q) Article 19 – Handling of biotechnology and distribution of its benefits	X		
r) Article 20 – Financial resources	X		
s) Article 21 – Financial mechanism	X		
t) Agricultural biodiversity	X		
u) Forest biodiversity	X		
v) Inland water biodiversity	X		
w) Marine and coastal biodiversity	X		
x) Dryland and subhumid land biodiversity	X		
y) Mountain biodiversity	X		

Challenges and obstacles to implementation

2. Please use the scale indicated below to reflect the level of challenges faced by your country in implementing the provisions of the Articles of the Convention (5, 6,7, 8, 8h, 8j, 9, 10, 11,12, 13, 14, 15,16, 17, 18, 19 and 20)

3 = High Challenge 2 = Medium Challenge 1 = Low Challenge

0 = Challenge has been successfully overcome N/A = Not applicable

Challenges	Articles																	
	5	6	7	8	8h	8j	9	10	11	12	13	14	15	16	17	18	19	20
a) Lack of political will and support	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	2	1
b) Limited public participation and stakeholder involvement	2	2	1	2	1	1	1	1	2	1	2	1	2	1	1	2	1	1
c) Lack of mainstreaming and integration of biodiversity issues into other sectors	2	3	2	2	1	2	1	2	3	2	3	2	3	3	2	3	2	3
d) Lack of precautionary and proactive measures	1	1	1	2	3	2	2	1	2	2	2	2	1	1	2	2	2	2
e) Inadequate capacity to act, caused by institutional weakness	1	1	2	1	3	2	1	2	2	1	1	2	1	2	1	1	2	2
f) Lack of transfer of technology and expertise	2	2	2	2	2	2	1	2	1	1	1	1	2	2	2	2	3	2
g) Loss of traditional knowledge	3	2	3	2	3	3	1	2	3	2	2	3	2	3	3	2	2	3
h) Lack of adequate scientific research capacities to support all the objectives	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	2	1

Challenges	Articles																	
	5	6	7	8	8h	8j	9	10	11	12	13	14	15	16	17	18	19	20
i) Lack of accessible knowledge and information	1	2	2	1	2	2	2	2	2	1	1	2	2	2	1	1	2	1
j) Lack of public education and awareness at all levels	NA	1	1	3	2	2	2	2	1	1	2	1	2	1	1	1	2	1
k) Existing scientific and traditional knowledge not fully utilized	NA	2	1	2	2	1	2	2	1	1	2	2	2	2	2	2	2	2
l) Loss of biodiversity and the corresponding goods and services it provides not properly understood and documented	3	2	3	2	3	2	2	2	3	2	1	3	1	2	2	1	2	2
m) Lack of financial, human, technical resources	2	2	1	1	2	3	1	1	1	2	1	2	2	1	2	2	1	2
n) Lack of economic incentive measures	2	1	1	2	2	2	1	1	2	2	2	2	2	3	3	2	2	2
o) Lack of benefit-sharing	3	2	2	2	3	3	2	3	3	2	3	3	3	1	2	3	3	3
p) Lack of synergies at national and international levels	2	3	2	2	2	3	1	3	3	2	2	3	2	1	3	3	3	3
q) Lack of horizontal cooperation among stakeholders	2	3	2	2	3	3	3	3	2	2	2	3	3	2	2	2	2	3

Challenges	Articles																	
	5	6	7	8	8h	8j	9	10	11	12	13	14	15	16	17	18	19	20
r) Lack of effective partnerships	2	3	2	3	2	2	3	3	3	2	2	3	2	3	3	3	3	2
s) Lack of engagement of scientific community	1	2	1	1	2	2	1	1	2	2	2	2	1	1	1	1	1	2
t) Lack of appropriate policies and laws	1	2	1	1	2	2	1	1	2	2	2	2	1	1	1	1	2	2
u) Poverty	2	3	2	2	2	2	NA	3	2	2	2	2	3	3	3	2	2	2
v) Population pressure	3	2	2	3	1	1	NA	3	2	1	1	1	1	1	2	2	3	3
w) Unsustainable consumption and production patterns	3	2	2	2	3	2	3	3	2	2	2	3	2	2	3	2	2	2
x) Lack of capacities for local communities	3	2	2	2	2	2	1	2	1	1	2	2	3	3	2	2	3	3
y) Lack of knowledge and practice of ecosystem-based approaches to management	2	3	2	2	1	1	2	2	2	3	2	2	2	3	2	3	2	3
z) Weak law enforcement capacity	3	2	1	2	1	1	1	2	1	1	1	1	2	2	2	2	2	2
aa) Natural disasters and environmental change	2	2	2	2	2	2	1	3	2	2	2	2	2	3	1	1	3	2

2010 Target

The Conference of the Parties, in decision VII/30, annex II, decided to establish a provisional framework for goals and targets in order to clarify the 2010 global target adopted by decision VI/26, help assess the progress towards the target, and promote coherence among the programmes of work of the Convention. Parties and Governments are invited to develop their own targets with this flexible framework. Please provide relevant information by responding to the questions and requests contained in the following tables.

Box III.

Goal 1	**Promote the conservation of the biological diversity of ecosystems, habitats and biomes.**
Target 1.1	**At least ten percent of each of the world's ecological regionseffectively conserved**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	

India's strategies for conservation of biological diversity of ecosystems, habitats and biomes comprise providing special status and protection to biodiversity rich areas. This includes declaring them as national parks, wildlife sanctuaries, biosphere reserves and ecologically fragile and sensitive areas such as wetlands.

The National Forest Policy, 1981 lays down that one third of the geographical area of the country should be under forest/tree cover. The mandate of the Tenth Five Year Plan is to increase the forest and tree cover in the country to 33% of the geographical area by 2012 as against the present coverage of 23%.

Approximately 4.74% area of the total geographical area is already under extensive *in situ* conservation of habitats and ecosystems. There are 94 national parks and 501 wildlife sanctuaries in the country covering an area of 15.67 million hectares. This process is being continued by setting up an additional 278 national parks and sanctuaries in 26 states.

Biosphere reserves, which are internationally recognized areas of terrestrial and coastal ecosystems, have been given special attention by launching schemes to facilitate conservation of representative landscapes and their immense biological diversity and cultural heritage. Fourteen biosphere reserves have been designated so far in the country, out of which four, namely Sunderbans, Gulf of Mannar, Nilgiri and Nanda Devi, have been included in the World Network of Biosphere Reserves. Efforts are on for getting the remaining biosphere reserves included in the World Network of Biosphere Reserves.

India is home to some of the best mangroves in the world. The mangrove conservation programme was launched in 1987 and so far 35 mangrove areas have been identified for intensive conservation and management in the country. New and additional mangrove conservation areas are being identified continuously in consultation with relevant state governments.

The National Committee on Mangroves and Coral Reefs has recommended intensive conservation and management of corals in four areas, namely Andaman and Nicobar Islands, Lakshadweep Islands, Gulf of Kachchh and Gulf of Mannar.

The National River Conservation Directorate of the MoEF is engaged in implementing the river action plan under the National River Conservation Plan (NRCP). At present, it covers 31 rivers in 18 states.

Under the National Lake Conservation Plan (NLCP), a programme for conservation and management of lakes and other similar water bodies, 28 lakes have been taken up so far.

National Wetland Conservation Programme (NWCP) has been initiated for identified wetlands, of which at present there are 66 wetlands covering 21 states.

All the above programmes are ongoing and more areas for conservation are continuously being included in the national lists.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		A citrus gene sanctuary has been established to conserve both wild and cultivated species/ varieties of *Citrus* and 14 possible gene sanctuaries have been identified for establishment. National Bureau of Plant Genetic Resources (NBPGR), National Bureau of Animal Genetic Resources (NBAGR), National Bureau of Fish Genetic Resources (NBFGR) and National Bureau of Agriculturally Important Microorganisms (NBAIM) have been established and search programmes launched on useful gene pools in various agro ecosystems of the country.
b) Inland water	X		The National River Conservation Directorate of the MoEF is engaged in implementing the river action plan under the NRCP. At present, it covers 31 rivers spread over 18 states. Under the National Lake Conservation Plan (NLCP) management of bodies, so far 28

Programme of work	Yes	No	Details
c) Marine and coastal	X		lakes have been taken up. NWCP has been initiated for identified wetlands of which there are at present 66 wetlands covering 21 states. All the above programmes are ongoing and more areas are continuously being included in the national lists. The mangrove conservation programme was launched in 1987 and so far 35 mangrove areas have been identified for intensive conservation and management in the country. New and additional mangrove conservation areas are being identified continuously in consultation with relevant state governments. Microorganisms from these ecosystems are being used in reestablishment of plant diversity in such ecosystems. The National Committee on Mangroves and Coral Reefs has recommended intensive conservation and management of corals in four areas namely Andaman and Nicobar Islands, Lakshadweep Islands, Gulf of Kachchh and Gulf of Mannar. This will help conserve the *in situ* microbial symbionts gene pool as well. India has set up 31 marine protected areas, 18 of which are fully under marine environment, whereas the other 13 are partly in sea and partly on land. A geographic information system (GIS) based system has been developed for 11 critical marine habitats (e.g., Gulf of Kachchh, Gulf of Khambat, Karwar Islands, Cochin Islands, Sunderbans, Kadmat Island, Gulf of Mannar, Pichavaram, Coringa and Gahirmatha) to assess the status of some of the critical coastal habitats such as mangroves, coral reefs, sea grass beds, estuaries, beaches, backwaters, etc. Suitable management plans for protection, conservation and restoration have been worked out by the Integrated and Coastal Marine Area Management (ICMAM), Chennai, an attached office of the Department of Ocean Development (DOD). A full-fledged training facility is also available for integrated marine area management.

Programme of work	Yes	No	Details
d) Dry and subhumid land	X		Afforestation and regeneration of dry and sub humid lands are being undertaken through resource management involving different institutions. The programmes include: National Watershed Development Project for Rainfed Areas, All India Coordinated Research Project for Dryland Agriculture, Integrated Afforestation and Ecodevelopment Project Scheme, Integrated Wasteland Development Programme, Desert Development Programme, Drought Prone Areas Programme (DPAP), etc. The National Action Programme (NAP) of United Nations Convention to Combat Desertification (UNCCD) has been prepared and is under implementation.
e) Forest	X		Extensive programmes for afforestation of degraded forest land, waste lands, etc., are in progress for increasing forest and tree cover from the present level of 23% of the country's land area to 33% by 2012. These programmes include integrated forest protection schemes, National Afforestation and Ecodevelopment Board (NAEB), Joint Forest Management (JFM), etc.
f) Mountain	X		On account of richness and uniqueness of biodiversity elements and wide-ranging indigenous knowledge systems regarding use of bioresources, coupled with increasing scale of degradation of bioresources, at least two mountain areas in the country (the Himalayas and the Western Ghats) have emerged as global conservation priorities. In response to this recognition, the Government of India's Protected Area (PA) programme has made a significant contribution. As such, the coverage under designated PAs is approximately 9.6% of geographical area in the Himalayas and 10.1% in the Western Ghats. This is higher than the national average (4.7%) and corresponds well with the acceptable global realistic target of 10% coverage under PAs.

III) Has the global or national target been incorporated into relevant plans, programmes and strategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

Targets for biological conservation of ecosystems have been defined in various ways directly or indirectly in most of the relevant national plans, programmes and strategies. Some of these are listed below:

- National Environment Policy, 2006
- National Policy and Macrolevel Action Strategy on Biodiversity, 1999
- National Biodiversity Strategy and Action Plan (NBSAP) (under finalization)
- National Forest Policy amended in 1988
- National Conservation Strategy and Policy Statement for Environment and Sustainable Development
- National Agricultural Policy
- National Land Use Policy
- National Fisheries Policy
- National Wildlife Action Plan
- Environmental Action Plan
- National Forestry Action Programme
- National Seeds Policy
- National Biotechnology Development Strategy (under finalization)
- 10th Five Year Plan

IV) Please provide information on current status and trends in relation to this target.

National Action Plans on various components of biodiversity such as forests, wildlife, agrobiodiversity, agricultural technologies, etc., have been framed and programmes initiated.

V) Please provide information on indicators used in relation to this target.

The indicators used in relation to this target have been mostly in terms of the land area and the number of protected areas. Examples are: present forested area; area under degraded lands; number of biosphere reserves; number of protected lands; number of wetlands, mangroves and coral reefs; number of rivers under conservation programmes; area under cultivation; urban parks, zoos; area under plantation trees outside forests; area recovered from encroachments; and reclamation of mined areas.

VI) Please provide information on challenges in implementation of this target.
Lack of economic incentive measures; lack of financial resources; lack of inter-sectoral integration; over use of resources; natural disasters; inappropriate conservation facilities and taxonomic workforce for microorganisms; lack of specific legislation in some areas; lack of *in situ* gene banks for specific breeds; and shortage of trained manpower.
VII) Please provide any other relevant information.
In addition to these planned programmes, participatory processes are being developed with local communities for ecosystem conservation and management. Rural communities in India have an ancient tradition of conservation of natural ecosystems and species, and many of these practices still survive. This includes sacred sites, i.e., providing protection to patches of forests (sacred groves), water bodies (sacred ponds, lakes etc.) and entire landscapes for cultural and religious reasons. Several diverse areas are also under community protection, commonly referred to as community conserved areas.

Box IV.

Target 1.2	**Areas of particular importance to biodiversity protection**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	
Ecologically Sensitive Areas have been identified under the Environment (Protection) Act, 1986, and restrictions have been imposed on those industries, operations, processes and other developmental activities that have a detrimental effect on the environment. Besides these restrictions, the Act provides for the restoration of denuded areas and the management of catchment areas and watersheds, in order to achieved well-planned development. So far, six such ecologically sensitive zones have been notified. India Eco-development Project, a World Bank assisted project, is being undertaken to improve the capacity of managers of PAs to conserve biodiversity and gain support of the local people for conservation by increasing opportunities for local participation in protected area management. Forest Conservation Act, 1980 has effective measures to address the issue of diversion of forest areas. Article 37 of the Biodiversity Act 2002 stipulates that areas of biodiversity importance be notified as biodiversity heritage sites.	

Manoj Dholakia

Wild Ass (*Equus heminous khur*) is one of the world's most endangered mammals. Its last habitat is the Rann of Kachchh, in western India.

Manoj Dholakia

Bengal Tiger, India's National Animal. Species oriented special conservation programmes, such as Project Tiger, have been in place in India for the past several decades.

Manoj Dholakia

Peacock, India's National Bird. The male of the peafowl species, peacocks are most notable for their beautiful iridescent blue-green plumage, which they display as part of courtship.

Manoj Dholakia

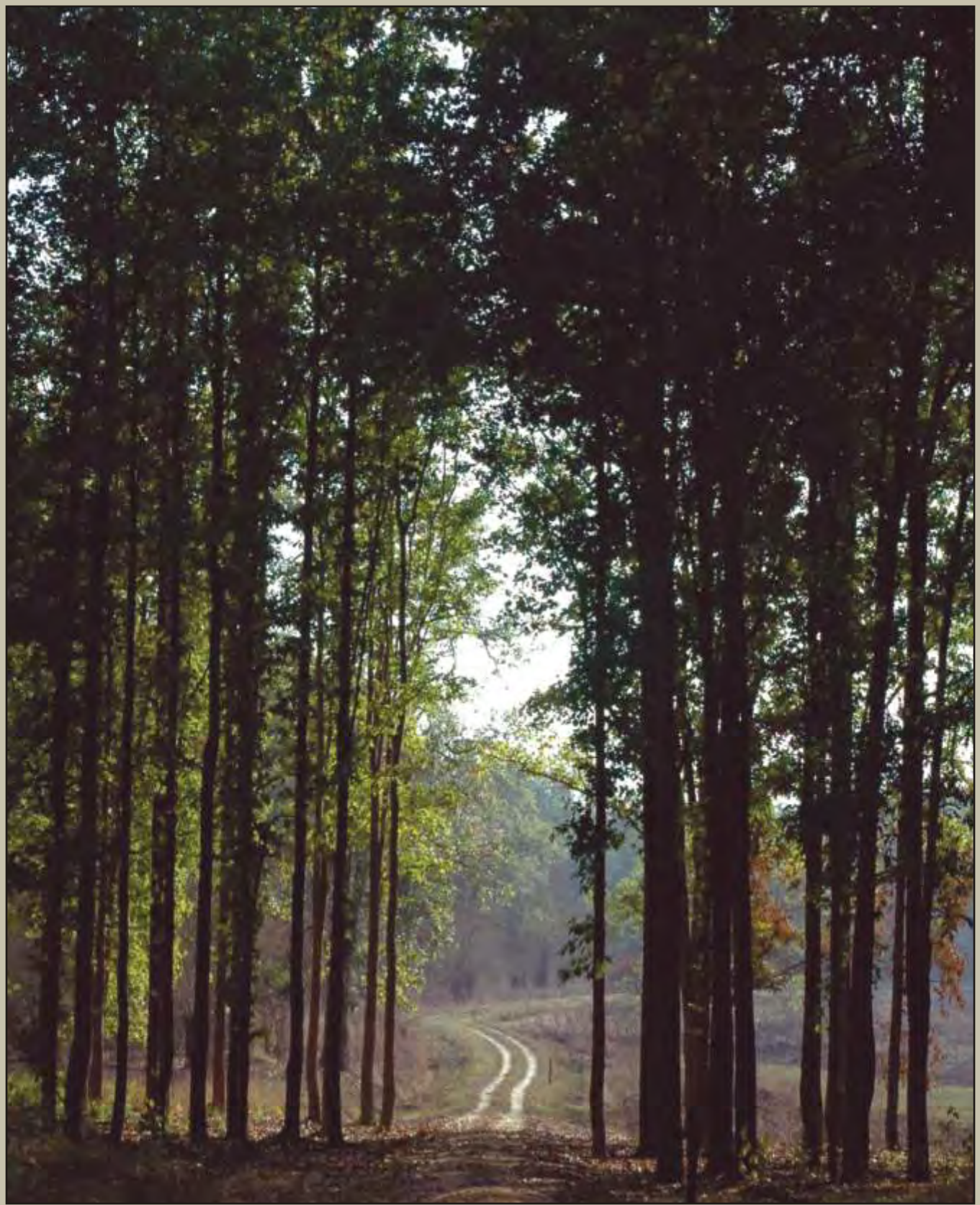
Mangroves in the Marine National Park, Jamnagar, Gujarat. India has set up 31 marine protected areas, 18 of which are fully under marine environment, and 13 are partly in sea and partly on land.

Manoj Dholakia

Demoiselle Cranes in the Rann of Kachchh. The Rann, a vast grassland and seasonal salt marsh, is spread across 27,900 sq. km. in western India. Originally an extension of the Arabian Sea, it has been closed off by centuries of silting. It harbours more than 200 bird species.

Manoj Dholakia

Asiatic Lion. Once ranging from Greece to central India, this "King of Beasts" is now restricted to the Gir Forest in Gujarat. Efforts to identify a suitable alternative home have been ongoing since 2002.



Manoj Dholakia

Kanha National Park. India's strategies for conservation of biological diversity of ecosystems, habitats and biomes comprise providing special status and protection to biodiversity rich areas. India has a Protected Area network of 94 national parks and 501 wildlife sanctuaries covering 4.74% of the total geographical area of the country.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		A *Citrus* gene sanctuary has been established to conserve both wild and cultivated species/ varieties of *Citrus* and 14 possible gene sanctuaries have been identified for establishment. National Bureaus of Plant Genetic Resources, Animal Genetic Resources, Fish Genetic Resources and Agriculturally Important Microorganisms have been established and search programmes launched on useful gene pools in various agro ecosystems of the country. Efforts have been made to document all varieties of crop plants including traditional/ farmer's varieties and land uses. Programmes have been launched for the conservation of livestock breeds and for characterization/conservation of all indigenous animal genetic resources by NBAGR by networking with State Animal Husbandry Departments, State Agricultural/ Veterinary Universities and NGOs.
b) Inland water	X		National Wetland Programme is in place.
c) Marine and coastal	X		The Coastal Regulation Zone (CRZ) includes coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action (on the landward side), upto 500 m from the high tide line including the inter-tidal zone. Restrictions have been imposed on the setting up and expansion of industries and operations or processes in the CRZ through a government notification. A national and 13 state-level Coastal Zone Management Authorities have been constituted and Coastal Zone Management Plans have been prepared demarcating ecologically sensitive areas. Integrated Coastal Zone Management Plans have also been prepared by scientific

Programme of work	Yes	No	Details
			institutions for Andaman and Nicobar, and Lakshadeep Islands.
d) Dry and subhumid land	X		Afforestation and regeneration of dry and sub humid lands are being undertaken through resource management involving different institutions. The programmes include: National Watershed Development Project for Rainfed Areas; All India Coordinated Research Project for Dryland Agriculture; Integrated Afforestation and Eco development Project Scheme; Integrated Wasteland and Development Programme; Desert Development Programme; DPAP, etc. The NAP of UNCCD has been prepared and is under implementation.
e) Forest	X		Provisions have been made in the Biological Diversity Act, 2002 for declaring important biodiversity areas, including forests, as Biodiversity Heritage Sites. New legal PA categories have been created in the Wildlife Protection Act, namely Conservation Reserves and Community Reserves, so as to include suitable adjacent habitats and corridors with Protected Areas.
f) Mountain	X		The Indian Himalayan Region (Trans, Northwest, West, Central and East Himalayan provinces) has 15 national parks and 59 wildlife sanctuaries. In addition, 6 biosphere reserves have also been designated (i.e. Nanda Devi in Uttaranchal, Kangchenjunga in Sikkim, Dehang Debang in Arunachal, Nokrek in Meghalaya, Manas and Dibru Saikhowa in Assam). Of these, the Nandadevi Biosphere Reserve has been included in the Global Network of Biosphere Reserves. The oldest PA of the region is Corbett National Park, which was established in 1936. The random distribution of PAs covering more than 5.5% area in each biogeographic province of the Indian Himalayan Region

Programme of work	Yes	No	Details
			[Trans – 7 PAs (9.2% of the area); Northwest – 29 (5.88%); West – 18 (13.06%); Central – 8 (7.82%); and East – 12 (11.44%)] takes care of representative habitats and biota along longitudinal east to west gradient. The mean size for the Himalayan PAs (512.07 sq. km., n=74) is larger than the country mean for size of PAs (270.3 sq km, n=566). The system of PAs in the Western Ghats includes the Nilgiri Biosphere Reserve, the first and largest biosphere reserve of India, 13 national parks and 45 wildlife sanctuaries. The largest national park is in Bandipur and the largest wildlife sanctuary is in the Anamalai hills. The Bandipur, Periyar and Kalakad-Mundanthurai are Project Tiger Reserves. Some other protected areas of the region are Project Elephant Reserves.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

Targets for various programms of work have been defined in various ways, directly or indirectly, in most of the relevant national plans, programmes and strategies.

IV) Please provide information on current status and trends in relation to this target.

National Environment Policy, 2006, Forest Policy, 1988, Draft Biotechnology Strategy, 2005 are some of the important policies under which targets for areas of immediate importance are planned and programmes initiated.

V) Please provide information on indicators used in relation to this target.

Number of national parks, sanctuaries and biosphere reserves, etc.

VI) Please provide information on challenges in implementation of this target.

Overuse of resources; poverty; population growth; financial constraints; unorganized marketing and pressure of market forces.

Box V.

Goal 2	**Promote the conservation of species diversity**
Target 2.1	**Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	

Protected areas consist of both national parks (habitat oriented) and wildlife sanctuaries (species oriented). The species oriented special conservation programmes, such as Project Tiger, Project Elephant, have been in place in India for the past several decades.

Project Tiger was launched in 1973 with a mandate to conserve tigers in a holistic manner. Initially, the project was launched in 9 tiger reserves, covering an area of 16,339 sq. km. which has now increased to 28 tiger reserves, encompassing 37,761 sq. km. of tiger habitats distributed in seven states.

Project Elephant was launched in 1992 to assist those states having free-ranging populations of wild elephants to ensure long term survival of identified viable elephant populations in their natural habitats. The project is being implemented in 13 states. Elephant Day is celebrated during the Wildlife Week in all the elephant reserves in the country.

A planned breeding programme has been initiated for the Red Panda at Padmaja Naidu Himalayan Geological Park, Darjeeling. Efforts to identify suitable alternative homes for single isolated populations of species such as Jerdon's Courser, Asiatic Lion, Manipur Deer, Wroughton's Free Tailed Bat and the like, and manage the same effectively as PAs have been ongoing since 2002. Identification of endangered species of wild animals is also undertaken for the purpose of captive breeding and assigning responsibility of *ex situ* conservation to the 165 recognized zoos.

Mitigation efforts, such as reintroduction of locally extinct species have also been undertaken, such as for rhino in Dudhawa National Park.

Sanctuaries for rosewood, medicinal plants, schemes for orchids, ferns, epiphytes, bamboo mission, research on propagation of species are some of the other relevant activities. Establishment of germplasm banks, preservation plots, and assisted natural regeneration and protection through community participation are some other initiatives.

BSI has come out with the following publications on threatened species –

1. Red Data Book of Indian Plants, Vol. I (1987), Vol. II (1988), Vol. III (1989)
2. Conservation Status of Endemic Plants in Peninsular India - An Evaluation (in press)
3. Threatened and Endemic Orchids of Sikkim and North-Eastern India (1984)
4. Materials for the Category of Threatened Plants of India (1983)

ZSI has come out with the following publications on threatened species –

1. The Red Data Book on Indian Animals Part-I Vertebrata, ZSI (Mammals, Aves, Reptilia and Amphibia)
2. Status Survey of Endangered Species, ZSI 1994

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Specific conservation programmes have been initiated for wild relatives of crop plants and some domesticated animals
b) Inland water	X		Establishment of Ramsar Sites
c) Marine and coastal	X		Establishment of Marine Protected Areas
d) Dry and subhumid land		X	Programmes for afforestation, regeneration and development of dry and subhumid lands
e) Forest	X		National parks, wildlife sanctuaries and biosphere reserves
f) Mountain	X		Hill area development schemes

III) Has the global or national target been incorporated into relevant plans, programmes and strategies?

a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

Targets for programmes of work have been defined in various ways, directly or indirectly, in most of the relevant national plans, programmes and strategies.

IV) Please provide information on current status and trends in relation to this target.
National action plans on components of biodiversity have been framed and programmes initiated.
V) Please provide information on indicators used in relation to this target.
Establishment of reserves, area covered, funds allocation, enabling policies and number of species covered.
VI) Please provide information on challenges in implementation of this target.
Habitat degradation, limited allocation of funds, poor manpower in protected areas and forest area management, poor infrastructure and technical skills, poor legal enforcement for punishments.
VII) Please provide any other relevant information.
Research on lesser known species and species' interactions needs to be promoted.

Box VI.

Target 2.2	**Status of threatened species improved**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	

Project Tiger was launched in 1973 with a mandate to conserve tigers in a holistic manner. Initially, the project was launched in 9 tiger reserves, covering an area of 16,339 sq. km. which has now increased to 28 tiger reserves, encompassing 37,761 sq. km. of tiger habitats distributed in seven states. Though the focus of the project is on the flagship species tiger, it strives to maintain the stability of ecosystem by fostering other trophic levels in the food chain. The population of tigers in the country has increased significantly to more than 3,600 from less than 2,000 at the time of launching of the project. Through this project, India has successfully conserved almost 60% of the global population of wild tigers in their natural habitats.

Project Elephant was launched in February 1992 to assist states having free-ranging populations of wild elephants to ensure long term survival of identified viable populations of elephants in their natural habitats. The project is being implemented in 13 states. Elephant Day is celebrated during the Wildlife Week in all elephant reserves of the country.

A planned breeding programme has been initiated for the Red Panda at Padmaja Naidu Himalayan Geological Park, Darjeeling.

Centre for Cellular and Molecular Biology (CCMB), Department of Biotechnology, (DBT), Government of India, Council of Scientific and Industrial Research (CSIR), and the State Government of Andhra Pradesh are establishing a facility called Laboratory for Conservation of Endangered Species (LaCONES).

Efforts to identify suitable alternative homes for single isolated populations of species such as Jerdon's Courser, Asiatic Lion, Manipur Deer, Wroughton's Free Tailed Bat and the like, and manage the same as protected areas effectively have been ongoing since 2002.

BSI has come out with following publications on threatened species –

1. Red Data Book of Indian Plants, Vol. I (1987), Vol. II (1988), Vol. III (1989)
2. Conservation Status of Endemic Plants in Peninsular India - An Evaluation (in press)
3. Threatened and Endemic Orchids of Sikkim and North-Eastern India (1984)
4. Materials for the Category of Threatened Plants of India (1983)

ZSI has come out with following publications on threatened species –

1. The Red Data Book on Indian Animals Part-I Vertebrata, ZSI (Mammals, Aves, Reptilia and Amphibia)
2. Status Survey of Endangered Species, ZSI 1994

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Special programmes have been launched by four National Bureaus, i.e., NBPGR, NBAGR, NBFGR and NBAIM, as well as some other national institutions.
b) Inland water	X		NWCP has been initiated as an ongoing process for wetlands (at present 66 wetlands covering 21 states).
c) Marine and coastal	X		New mangrove conservation areas are being identified continuously and added to the existing 35 sites in consultation with relevant state governments.
d) Dry and subhumid land	X		Programmes for afforestation, regeneration and development of dry and subhumid lands.
e) Forest	X		Project Tiger, Project Elephant, etc.

Programme of work	Yes	No	Details
f) Mountain	X		Special attention has been given in the identification and conservation of threatened species in mountain regions. For example, out of a total 583 threatened plants in India (Red Data Book species), 121 (20.8%) species are from the Himalayan region. Various organizations are implementing programmes for improving the status of these species. Nearly 29 mammalian species listed under Schedule 1 of the Indian Wildlife Protection Act are Himalayan.
III) Has the global or national target been incorporated into relevant plans, programmes and strategies?			
a) No			
b) Yes, into national biodiversity strategy and action plan			
c) Yes, into sectoral strategies, plans and programmes	X		
Please provide details below.			
Conservation programmes for species such as tiger and elephant, and species-specific sanctuaries for wild and domesticated biodiversity have been established so as to strengthen conservation efforts. Creation of zoos, botanical gardens, captive breeding centres, genetic mapping and gene banking research activities on *ex situ/in situ* conservation of flora and fauna in different ecosystem within forests (National Genome Project) are other initiatives. Biosphere reserves have been specifically designated to implement coordinated conservation strategies for wild and domesticated flora and fauna. So far, 14 biosphere reserves have been established.			
IV) Please provide information on current status and trends in relation to this target.			
Populations of a large number of threatened species, such as giant squirrel, rhino, etc., are being restored through various programmes.			
V) Please provide information on indicators used in relation to this target.			
Increase in numbers of species.			
VI) Please provide information on challenges in implementation of this target.			
Difficulties in coping with the new threats to biodiversity such as poaching of tigers for medicinal use outside India. Limited financial resources and provisions to compensate people affected due to newly faced situations such as expansion of habitat by elephants in human settlements with orchards, etc.			

Lack of educational awareness programmes for different target groups. Biotic pressure, fragmentation of habitats, environmental/abiotic factors such as climate change, lack of manpower and information, etc.

Box VII.

Goal 3	**Promote the conservation of genetic diversity**
Target 3.1	**Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	

NBPGR has been engaged in documenting the large number of varieties (about 2,300) of crop plants in the country. These have been documented and digitized. Efforts of local people and NGOs are also contributing to the conservation of local varieties of crops and animals, and the traditional knowledge (TK) associated with them.

Similarly, NBAGR and NBFGR are engaged in conservation of germ plasm. NBFGR is preparing a detailed database of fish genetic resources for their conservation. It has developed a National Facility for Gene Banking, Live Gene Banking and Tissue Accession. Documenting the species diversity of different regions is underway and work on fish-related traditional knowledge has been initiated at NBFGR.

Conservation programmes have been initiated by NBAGR and concerned departments of Central/State governments for those livestock breeds showing a decline in population. National Programme on Cattle and Buffalo Breeding (NPCBB) has been started for conservation, improvement and sustainable development of cattle and buffalo genetic resources and a national gene bank has been set up at NBAGR, Karnal. Conservation programmes are underway for breeds such as the Spiti horse, Beetal goats, Nilli-Ravi buffaloes, Sahiwal cattle, Kodi goats, Tharparkar cattle, Barbari goat, double humped camel, Jamnapuri goats, Bhadawari and Toda buffaloes, Krishna Valley cattle, Pandharpuri buffaloes, etc.

The CCMB has established a national facility for the conservation of endangered species of animals.

Several efforts have been made to maintain associated local knowledge. These include preparation of People's Biodiversity Registers (PBRs) and Traditional Knowledge Digital Library (TKDL).

The Microbial Type Culture Collection (MTCC), an internationally recognized culture collection as per Budapest Treaty, has been established at the Institute of Microbial Technology (IMTECH) in Chandigarh. NBAIM has been established at Mau and several specialized microbial culture collections exist at various academic institutions.

Development of high yielding clones of eucalyptus, poplar, tamarind, neem, teak and casuriana, and planting stock improvement programme of the Indian Council for Forestry Research and Education (ICFRE) have enhanced the productivity of these plants.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Promotion of crop diversity use by on-farm methods, participatory plant breeding and joint evaluation by all crop-based institutes of the Indian Council of Agricultural Research (ICAR) for evaluation and characterization of crop germplasm for increased utilization.
b) Inland water	X		Fish stock identification and species specific information for conservation.
c) Marine and coastal	X		Fish stock identification and species specific information for conservation. Plan for protection of mangrove genetic resources, establishment of gene banks, crocodile breeding centre, etc.
d) Dry and subhumid land		X	
e) Forest	X		Inventorization of valuable species undertaken in many areas.
f) Mountain	X		Inventorization of valuable species and their conservation being undertaken through various programmes.

III) Has the global or national target been incorporated into relevant plans, programmes and strategies?

a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.
Section 41 of the Biological Diversity Act, 2002 has provided for documentation of land races, folk varieties and cultivars and chronicling knowledge relating to biological diversity. The process has been initiated at a few places in the country. National Environment Policy, 2006 has put specific emphasis on enhancing *ex-situ* conservation of genetic resources in designated gene banks across the country. Genetic material of threatened species of flora and fauna is to be conserved on priority. This Policy also envisages that forests of high indigenous genetic diversity should be treated as entities with 'Incomparable Value'. Further, protection of areas of high endemism of genetic resources is to be strengthened, while providing alternative livelihoods and access to resources to local communities who may be affected thereby.
IV) Please provide information on current status and trends in relation to this target.
The number of threatened species is on the rise.
V) Please provide information on indicators used in relation to this target.
Identification of fragile ecosystems.
VI) Please provide information on challenges in implementation of this target.
Better coordination and more funds are required for implementing this target.

Box VIII.

Goal 4	**Promote sustainable use and consumption.**
Target 4.1	**Biodiversity-based products derived from sources that aresustainably managed, and production areas managed consistent with the conservation of biodiversity**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	
Programmes for sustainable utilization of biological diversity by involving local communities all over India have been undertaken through the NAEB. JFM has spread all over India covering more than 17 million hectares of forests where local communities are engaged in sustainable utilization of biological diversity needed for their daily requirements. Local norms of starting dates for the harvesting of	

Non-timber Forest Produces (NTFPs) have been formulated keeping in view of the sustainability of the species.

The National Environment Policy, 2006 calls for: universal adoption of community based practices, such as JFM, Van Panchayats (village forest councils) and their variants, in forest management, with assured participation of women, throughout the country; and public investments for enhancing the density of natural forests, mangrove conservation, and universalization of community based practices.

An institutional mechanism has been created under Biological Diversity Act, 2002 and Rules, 2004 by establishing National Biodiversity Authority (NBA), State Biodiversity Boards (SBBs) and Biodiversity Management Committees (BMCs) to take steps for building up database and to create information and documentation systems for biological resources and associated TK through biodiversity registers and electronic databases, to ensure effective management, promotion and sustainable use.

Efforts have been made by the National Innovation Foundation in developing products based on the local knowledge of biodiversity.

Technologies leading to sustainable harvest of forest products, such as tapping of gum karaya, non-violent honey production, etc., are being supported through programmes of science and technology departments.

A microbial wealth search programme is underway in the CSIR for bioprospecting of the gene pool of the country.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Through community initiatives, kitchen herbal gardens have been established in several states of India. A mission mode project on household food and nutritional security was initiated in 2000, and completed in 2005. The project focussed on tribal areas and local communities in 10 states of India. Its aim was sustainable use of biodiversity for local communities. There were six different programmes, one each on life support crops, horticulture and vegetable gardening, animal husbandry, fisheries, value addition, and impact assessment. An All India Coordinated Research Project on Underutilized and Underexploited Plants

Programme of work	Yes	No	Details
			was initiated in 1982, with the primary objective of generating improved technology and developing high yielding varieties in selected crops of future economic importance. Efforts under the project led to the assemblage of over 10,000 germplasm accessions of different underutilized crops. Presently, the project is functioning at 20 centres with new crops such as jatropha, adzuki bean and faba bean. The technical programme encompasses 19 plant species, comprising 12 food crops and 7 plant species of feed, fodder, industrial or soil reclamation value. Characterization of different livestock and poultry breeds through systematic surveys in their native tract is being undertaken.
b) Inland water	X		Establishment of ecotourism spots. Aquaculture/mariculture, lobster and mud crab fattening programme of DOD, ban on fishing during monsoon, turtle excluder devices in trawl nets to reduce bycatch, etc.
c) Marine and coastal	X		Seaweed culture, mussel culture, pearl culture, etc.
d) Dry and subhumid land	X		Sustainable collection of NTFPs in dry and subhumid lands undertaken.
e) Forest	X		Sustainable collection of NTFPs has been contributing substantially to the local livelihoods all over India.
f) Mountain	X		Considering the life support and economic value of mountain biodiversity elements, especially ecologically and economically important plant groups (e.g., medicinal plants, wild edible plants, etc.), efforts are being made to assess the sustainable harvest potential for economic enterprises. For example, studies have established that fruits of *Myrica esculenta* (a popular wild edible tree) can contribute to the cash

Programme of work	Yes	No	Details
			economy of local rural inhabitants of Kumaun in the Himalayas, if harvested properly. At the village level, the income generated through harvest of *Myrica* fruits was significant and at the same time existing intensity of harvest does not affect the natural recruitment process. Likewise, for Himalayan medicinal plants, the need has been felt for conducting assessment of the current requirement of raw material based on the analysis of market trends of herbal drug formulation. For example, in the Himalayan region, assessment of medicinal plants' requirement was carried out on the basis of use value index. Assessment of the stock (175 species) revealed that users (industry) rely more on exclusive wild forms (64.6%). Also, it was noticed that destructive modes of harvesting prevail. In view of these facts, efforts are being made to popularize the domestication of Himalayan medicinal plants so that pressure on wild populations is minimized.

III) Has the global or national target been incorporated into relevant plans, programmes and strategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

JFM has been a successful exercise that has been incorporated in the functioning of various schemes of the State Forest Departments. Networks of Medicinal Plant Conservation Areas (MPCAs) have been established in various parts of the country for *in situ* as well as *ex situ* conservation of medicinal plants.

IV) Please provide information on current status and trends in relation to this target.

So far, more than 80,000 committees under JFM scheme have been established in India, covering about 17 million hectares, which is more than the area under the Protected Area Network (about 14 million hectares). There has been an increasing trend over the period for the area brought under the JFM scheme.

V) Please provide information on indicators used in relation to this target.
• Area under JFM programme • Number of MPCAs • Involvement of local people in natural resource management
VI) Please provide information on challenges in implementation of this target.
Keeping involvement of local people proactive for conservation is one of the foremost challenges, along with limited financial resources for positive incentives. Most urban, and many industrial, users of bioresources seem unaware of the unsustainability of their consumption patterns. Standards for the certification of forests and forest products are imperative in the light of global initiatives on certification. Any forest product (timber or non timber) traded in the international market needs to have a certification that the product is derived from sustainably managed forests.

Box IX.

Target 4.2	**Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	
According to the Biological Diversity Act, 2002, no person, who is a citizen of India or a body corporate, association or organization which is registered in India, shall obtain any biological resource for commercial utilization, or bio-survey and bioutilization for commercial utilization except after giving prior intimation to the State Biodiversity Board (SBB) concerned. The SBBs have the authority to regulate any such activities that are against the objectives of conservation, sustainable utilization or equitable sharing of benefits. Six Ecologically Sensitive Areas have been notified in the country under the Environment (Protection) Act, 1986 for imposing restrictions on the industries, operations, processes and other developmental activities that have a detrimental effect on the environment. The National Environment Policy, 2006 envisages the identification and giving legal status to environmentally sensitive zones having environmental entities with incomparable values and requiring special conservation efforts.	

Techniques for sustainable harvesting of bioresources such as non-violent honey collection, sustainable tapping of gum karaya (gum of *Sterculia urens*), etc., have been developed to control unsustainable harvesting of such produce. The National Environment Policy, 2006 calls for formulating appropriate methodology for reckoning and restoring environmental values of forests, which are unavoidably diverted to other uses.

Categories of forest management, such as Reserved Forests, are strictly managed in terms of harvesting of any material, which is allowed only with due permission of the Government.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Conservation of agricultural lands. Lack of adequate grazing land for domestic livestock, making them unsustainable.
b) Inland water	X		Programme for conservation and management of wetlands being implemented wherein unsustainable harvesting from water bodies is not allowed.
c) Marine and coastal	X		Marine protected areas have been established for the conservation of coral reefs especially on the islands of Andaman and Nicobar.
d) Dry and subhumid land	X		Afforestation and regeneration of dry and subhumid lands is being undertaken
e) Forest	X		Biosphere reserves provide the opportunity of sustainable utilization of natural resources. Sample/preservation plots created by different states can also provide the opportunity of sustainable utilization of natural resources
f) Mountain	X		Nearly 450 plants of the Himalayan region are endangered mainly because of habitat destruction and over-exploitation. *Panax pseudo-ginseng, Calamus inermis, Phoenix rupicola, Dioscorea deltoidea, Coptis teeta, Picrorhiza kurrooa*, etc., and a large number of orchids are some examples. Efforts are being undertaken to prevent unsustainable harvesting of such species.

III) Has the global or national target been incorporated into relevant plans, programmes and strategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X
Please provide details below.	
Multiple options for sustainable utilization have been tried out which include legislative measures such as the provisions of Biological Diversity Act, 2002, scientific techniques of harvesting such as non-violent honey collection methods, local level sustainability programmes such as JFM, etc.	
IV) Please provide information on current status and trends in relation to this target.	
Awareness level on sustainable use is increasing.	
V) Please provide information on indicators used in relation to this target.	
Increase in the application of various measures for controlling unsustainable use.	
VI) Please provide information on challenges in implementation of this target.	
Lack of awareness of genetic resources and their value. Increasing proclivity of local people towards short term financial gains from natural resources such as NTFPs. Limited financial resources for providing incentives for sustainable utilization.	

Box X.

Target 4.3	**No species of wild flora or fauna endangered by international trade**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	
India is a Party to the Convention on International Trade in Endangered Species (CITES). National targets are planned and considered under CITES, Environment (Protection) Act, 1986 and Biological Diversity Act, 2002. International trade in endangered species is prohibited.	

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Exchange of crop species material is regulated by the Ministry of Agriculture (MoA).
b) Inland water	X		International trade in endangered species is regulated through CITES.
c) Marine and coastal	X		Regulation of shark fishing (whale shark), sea cucumbers, corals, salt water crocodiles, sea turtles (4 sp.), whales and some shells. Trade is not allowed in these living beings.
d) Dry and subhumid land	X		International trade in endangered species is regulated through CITES.
e) Forest	X		International trade in endangered species is regulated through CITES.
f) Mountain	X		International trade in endangered species is regulated through CITES.

III) Has the global or national target been incorporated into relevant plans, programmes and strategies?

a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

National targets are planned and considered under National Environment Policy, 2006, Biological Diversity Act, 2002 and Biological Diversity Rules, 2004.

IV) Please provide information on current status and trends in relation to this target.

Conservation programmes are being implemented for endangered species such as Siberian cranes, tigers, sea cow and elephants.

V) Please provide information on indicators used in relation to this target.

Increase in the populations of endangered species.

VI) Please provide information on challenges in implementation of this target.

Limited allocation of funds, lack of awareness, etc.

Box XI.

Goal 5	**Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.**
Target 5.1	**Rate of loss and degradation of natural habitats decreased**

I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

Please provide details below.

Nearly 600 PAs have been established in the country. Apart from the network of PAs, 14 biosphere reserves have also been declared. Reserved forests are one of the most strictly protected forest areas outside the PAs. Extensive forested areas in the country are under reserved forest category.

More than 80,000 JFM committees are making a visible positive impact on the restoration of degraded forests and efficient management of forested areas. India also has areas declared as a part of the International Bird Area Network. India has documented more than 14,000 sacred groves and it is estimated than the number all over the country might be ten times this number. Apart from this, there are extensive local level efforts initiated for conservation through Community Conserved Areas.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	**Yes**	**No**	**Details**
a) Agricultural	X		Various programmes are being undertaken, e.g., kitchen herbal gardens, household food and nutritional security.
b) Inland water	X		A programme for the conservation and management of identified wetlands in the country is being implemented, which has resulted in reducing the rate of loss and degradation of these habitats.
c) Marine and coastal	X		A mangrove conservation programme has been in operation and, so far, 35 mangrove areas have been identified for intensive conservation and management in the country. The State Governments are continuously persuaded to identify new and

Programme of work	Yes	No	Details
			additional mangrove conservation areas. Intensive conservation and management of coral reefs has also been initiated. Other critical habitats (such as sand dunes, beaches and sea grass beds) are protected under CRZ. Creation of new PAs under Wildlife Protection Act in the marine sector is being considered.
d) Dry and subhumid land	X		Sustainable harvesting of NTFPs is promoted.
e) Forest	X		The NAEB evolves mechanisms for ecological restoration of degraded forest areas and adjoining lands, including ecologically fragile areas, through systematic planning and implementation in a cost effective manner.
f) Mountain	X		Sustainable harvesting of NTFPs is encouraged and promoted.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

The National Environment Policy, 2006 provides for formulation of an innovative strategy for increase of forest and tree cover from the 2003 level of 23.69% of the country's land area to 33% by 2012, through afforestation of degraded forest lands, wastelands and tree cover on private and revenue lands. This Policy also calls for: promoting reclamation of wasteland and degraded forestland, through formulation and adoption of multi-stakeholder partnerships, involving the land owning agency, local communities and investors; promoting sustainable alternatives to shifting cultivation where it is no longer ecologically viable, ensuring that the culture and social organization of local people are not disrupted; encouraging agro-forestry, organic farming, environmentally sustainable cropping patterns, and adoption of efficient irrigation techniques; and promoting plantation of only such species as are conducive to the conservation and sustainability of given ecosystems.

The National Forest Policy also aims at maintaining environment and ecological balance. It lays stress on the conservation of natural heritage sites, preserving flora,

meeting the fuel, fodder, NTFP and other requirements of rural and tribal people, and increasing forest productivity at the national level though community involvement.
IV) Please provide information on current status and trends in relation to this target.
Various programmes are being implemented to decrease rate of loss and degradation of natural habitats.
V) Please provide information on indicators used in relation to this target.
Reduction in areas of degraded habitats.
VI) Please provide information on challenges in implementation of this target.
Dissemination of information, lack of awareness, inadequate funds, population pressure.

Box XII.

Goal 6	**Control threats from invasive alien species.**
Target 6.1	**Pathways for major potential alien invasive species controlled**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	

In India, in the context of the prevention of invasive alien species introduction, there are six agencies which are responsible for issuance of certificate for export/import of bioresources. These are:

i. Plant Quarantine Division, NBPGR, issues phytosanitary certificates for export of material and permits for import of germplasm, under the Plant Quarantine Order (PQO), 2003 of the Destructive Insects and Pests Act, 1914.

ii. The Plant Protection Adviser issues permits for import of live insects and microbial cultures, plants and plant products, and phytosanitary certificates along with the organism for export under the PQO.

iii. Department of Animal Husbandry and Dairying deals with import of livestock and issues health certificates for livestock to be exported, if required by the importing country, under the Livestock Importation Act, 1898.

iv. Directorate General of Foreign Trade (DGFT) issues licenses before export of any living organism or their product from the country under the Foreign Trade (Development & Regulation) Act, 1992.

v. The MoEF issues approvals, along with quarantine certificates, for export of wild animals and articles under the Wildlife (Protection) Act, 1972.

vi. The National Biodiversity Authority, MoEF, is empowered to issue approvals for export of biological material from the country under the Biological Diversity Act 2002.

At the central level, there are two relevant departments in the MoA – the Department of Agriculture and Cooperation (DAC) and Department of Agricultural Research and Education (DARE) – which are concerned with plant protection outreach and research, respectively. Through ICAR, about 90 institutes and more than 100 universities in the country have programmes on various invasive alien species. Guidelines on quarantine and strategic plans for exotic introduction have been published. Besides the programmes at national and state level under the ICAR, the threat of invasive pest species gaining entry into India through imported plant/planting material is taken care of under the Plant Quarantine (Regulation of Import into India) Order, 2003. However, the risk analysis for invasiveness of a plant species per se is not under the purview of the PQO.

In addition, CITES regulations and IMO guidelines for ballast water introduction are in place.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		
b) Inland water	X		
c) Marine and coastal	X		
d) Dry and subhumid land		X	
e) Forest	X		Establishment of Asia-Pacific Forest Invasive Species Network (APFISN) under FAO. The format for submitting country reports on stock taking of national activities has been finalised by MoEF.
f) Mountain		X	

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?

a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

IV) Please provide information on challenges in implementation of this target.
Limited knowledge as well as human expertise about biological life history of various invasive alien species. Limitations due to natural processes in recovery of natural habitats that have undergone the invasion. Inadequate financial resources to recover habitats from invasive species. Due to obvious reasons, the species threatening immediate economic activities are paid more attention and, hence, other species get neglected, resulting in increased amount of threat.

Box XIII.

Target 6.2	**Management plans in place for major alien species that threaten ecosystems, habitats or species**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	
The taxa causing the most damage in India include insects, mites, molluscs, weeds and pathogens. The DAC organizes discussions with the ICAR and other related departments at regular intervals to advance strategies and programmes to address serious pest problems, including invasive alien species. A national committee on exotic fish introduction is also in place.	
II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) beenestablished, please indicate here, and give further details in the box(es).	

Programme of work	**Yes**	**No**	**Details**
a) Agricultural	X		
b) Inland water	X		
c) Marine and coastal	X		
d) Dry and subhumid land		X	
e) Forest	X		
f) Mountain		X	

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Box XIV.

Goal 7	**Address challenges to biodiversity from climate change, and pollution.**
Target 7.1	**Maintain and enhance resilience of the components of biodiversity to adapt to climate change**

I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	**Yes**	**No**	**Details**
a) Agricultural	X		
b) Inland water	X		
c) Marine and coastal	X		
d) Dry and subhumid land		X	
e) Forest	X		
f) Mountain	X		In view of the climate sensitive nature of mountain biodiversity, efforts are being made to understand the responses of biodiversity elements (species/ecosystems) towards changing climate. For example, a detailed investigation on the status of biodiversity (especially plant diversity) in the timberline zone of west Himalayas has been conducted. Such studies in climate sensitive habitats are supposed to form the basis for indicating changes as a consequence of global warming.

Programme of work	Yes	No	Details
			Indirect evidences from species studies are being generated to predict the changes. Also, this type of species level study would form a basis for formulating conservation plans.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

The National Environment Policy, 2006 calls for assessing the need for adaptation to future climate change, and the scope for incorporating these in relevant programmes, including watershed management, coastal zone planning and regulation, forestry management, agricultural technologies and practices, and health programmes. The Policy also envisages promoting research in glaciology to evaluate the impacts of climate change on glaciers and river flows.

Box XV.

Target 7.2	Reduce pollution and its impacts on biodiversity

I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

Please provide details below.

Environmental Impact Assessment (EIA) is mandatory legally for 32 categories of development activities in India vide a notification issued in 1994 under the Environment (Protection) Act 1986. The objective of the EIA is to minimize environmental impacts of development processes.

National River Conservation Directorate has been set up to reduce pollution in the rivers under the NRCP. The Ganga Action Plan and Yamuna Action Plan are being implemented. Several other rivers are under active consideration of the NRCP.

NLCP has taken up lakes such as Powai, Ooty and Kodaikanal for conservation.

Ecologically Sensitive Areas are notified under the Environment (Protection) Act 1986, so as to impose restrictions on industries, operations and other developmental activities in the region that have a detrimental effect on the environment, to provide for restoration of denuded areas, management of catchment areas, watershed management etc. for planned development, while ensuring sustainable livelihoods for local communities and stakeholders. Six such areas have so far been declared. These are: Doon Valley, Murud Janjira, Dahanu, Mahabaleshwar Panchgani, part of Aravallis, and Numaligarh (no development zone).

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Promotion of organic agriculture, promotion of education and awareness decreased use of poly bags, diversity of low input (fertilizers and pesticides).
b) Inland water	X		National River Action Plan to improve the water quality of rivers, through the implementation ofpollution abatement schemes.
c) Marine and coastal	X		Environment (Protection) Act, CRZ Notification, Prevention of Water Pollution Act
d) Dry and subhumid land	X		EIA Notification, 1994, notifications for ecologically sensitive areas.
e) Forest	X		EIA Notification 1994, notifications for ecologically sensitive areas.
f) Mountain	X		EIA Notification, 1994, notifications for ecologically sensitive areas.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?

a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

The National Environment Policy, 2006 seeks to: accelerate national programmes for dissemination of improved fuelwood stoves and solar cookers, suited to local cooking practices and biomass resources; promote reclamation of wasteland by energy plantations for rural energy through multi-stakeholder partnerships; and strengthen efforts for partial substitution of fossil fuels by biofuels, through promotion of biofuels plantations, promoting relevant research and development, and strengthening regulatory certification of new technologies.

Box XVI.

Goal 8	**Maintain capacity of ecosystems to deliver goods and services and support livelihoods.**
Target 8.1	**Capacity of ecosystems to deliver goods and services maintained**

I) National target: Has a national target been established corresponding to the global target above?

a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

Please provide details below.

Intensive programmes all over India have been undertaken to enhance the capacities of ecosystems to deliver goods and services. Holistic programmes like JFM not only give importance to forest areas but also help recharge the groundwater table and control soil erosion. The programme is operational on more than 17 million hectares spread all over the country.

At Panchayat (village council) level, there have been watershed committees all over the country. Watershed programmes have been implemented through these committees, mainly focusing on groundwater recharge and soil erosion.

Ecodevelopment approach in and around Project Tiger areas have been implemented for improving the natural habitats and also reducing the dependence of local people on forests.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	**Yes**	**No**	**Details**
a) Agricultural		X	
b) Inland water	X		
c) Marine and coastal	X		Coast protection, regulation of fishing, ecodevelopment societies, fisheries cooperatives are in place.
d) Dry and subhumid land		X	
e) Forest	X		
f) Mountain		X	

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X
Please provide details below.	

The National Enviroment Policy, 2006 has identified several actions towards ensuring that capacity of ecosystems to deliver goods and services are maintained. These *inter alia* include: restrict the diversion of dense natural forests and areas of high endemism of genetic resources, to non-forest purposes, only to site-specific cases of vital national interest; revisit CRZ Notification to make the approach to coastal environmental regulation more holistic, and thereby ensure protection to coastal ecological systems; identify and give legal status to environmentally sensitive zones in the country having environmental entities with incomparable values requiring special conservation efforts; formulate an appropriate methodology for reckoning and restoring the environmental values of forests; parallel multi-stakeholder partnerships for afforestation and enhancement of wildlife to derive both environmental and ecotourism benefits; mitigate the impacts on river and estuarine flora and fauna, and the resulting change in the resource base for livelihoods, of multipurpose river valley projects, power plants and industries; formulate and implement ecotourism strategies for identified wetlands through multistakeholder partnerships; adopt appropriate land use planning and watershed management practices for sustainable development of mountain ecosystems; adopt "best practice" norms for infrastructure construction in mountain regions to avoid or minimize damage to sensitive ecosystems and despoiling of landscapes; take measures to regulate tourist inflows into mountain regions to ensure that these remain within the carrying capacity of the mountain ecology; mainstream the sustainable management of mangroves into forestry sector regulatory regime, ensuring that they continue to provide livelihoods to local communities; and promote good practices norms in all relevant sectors to conserve natural resources and reduce adverse environmental impacts.

Box XVII.

Target 8.2	**Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

Please provide details below.

Local level governance has been strengthened through Panchayat systems and building supportive bodies, such as BMCs, watershed committees, along with national and state level legislations. Special attention has been paid to tribal areas by declaring scheduled areas and by providing special facilities for livelihoods, local food security and health care. JFM committees have created opportunities for sustainable livelihoods based on natural resources. Measures for conservation adopted for better fish biosecurity and also for health management have been taken.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Agriculture related subjects, household food security, programme for tribal areas, underutilized crops, new markets for diversification, etc.
b) Inland water	X		Extensive programmes of pisciculture have been undertaken by providing improved seedlings in states like Andhra Pradesh. In eastern Indian states like Orissa and West Bengal, homestead waterbodies have been part of the traditional systems to provide food security by maintaining fresh water fishes.
c) Marine and coastal	X		Prawn culture has been supported in coastal areas of Karnataka and West Bengal.
d) Dry and subhumid land		X	
e) Forest	X		Through JFM Programme in most of the participating 28 states of the country, extensive focus has been given towards NTFPs. It includes the NTFPs of commercial value as well as those for household use mostly in te form of supplementary food. JFM has resulted in increasing the availability of NTFPs for poor people in many parts of the country.
f) Mountain	X		As a stock taking exercise, inventories of Himalayan bioresources are being developed as follows: a. Family wise inventory of plants (in progress)

Programme of work	Yes	No	Details
			b. Inventory of Himalayan medicinal plants (completed). Total species – 1748 (1020 herbs, 339 trees, 338 shrubs, 51 pteridophytes). c. Inventory of wild edible plants of the Himalayas (completed). Total species – 675, representing 84.4% of total wild edible plants reported from India. d. Status assessment and mapping of these resources is also being attempted.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

The National Environment Policy, 2006 envisages: universal adoption of community based practices such as JFM, Van Panchayats and their variants, in forest management, with assured participation of women, throughout the country; rationalization of restrictions on cultivation of forest species outside notified forests, to enable farmers to undertake social and farm forestry where their risk-return-term profiles are more favourable than cropping; promote site-specific ecodevelopment programmes in fringe areas of PAs, to restore livelihoods and access to forest produce by local community, owing to access restrictions in PAs; strengthen the protection of areas of high endemism of genetic resources, while providing alternative livelihoods and access to resources to local communities who may be affected thereby; integrate wetland conservation into sectoral development plans for poverty alleviation and livelihood improvement; encourage cultivation of traditional varieties of crop and horticulture by promotion of organic farming, enabling farmers to realize a price premium; promote sustainable tourism through adoption of best practice norms for tourism facilities and access to ecological resources and multi-stakeholder partnerships to enable local communities to gain better livelihoods; consider particular unique mountain scapes as entities with incomparable values, in developing strategies for their protection; mainstream the sustainable management of mangroves into forestry sector regulatory regime, ensuring that they continue to provide livelihoods to local communities; and promote good practices norms in all relevant sectors to conserve natural resources and reduce adverse environmental impacts.

Box XVIII.

Goal 9	**Maintain socio-cultural diversity of indigenous and local communities.**
Target 9.1	**Protect traditional knowledge, innovations and practices**

I) National target: Has a national target been established corresponding to the global target above?

a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

Please provide details below.

The Biological Diversity Act and Rules provide for preparing PBRs at Panchayat level in consultation with local people. The registers shall contain comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use, or any other traditional knowledge associated with them.

TKDL, an easily navigable computerized database, has been prepared for documentating traditional knowledge related to use of medicinal plants in India. TKDL will help in preventing misappropriation of traditional knowledge by patenting.

National Innovation Foundation has been established to record the traditional knowledge, innovations and practices at the grassroots level for the purpose of product development and appropriation, so as to ensure benefit sharing with the knowledge holder.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	**Yes**	**No**	**Details**
a) Agricultural	X		ICAR project on Indigenous Technical Knowledge (ITK), passport data updation, and validation also started with regard to ITK.
b) Inland water	X		
c) Marine and coastal	X		Wildlife Protection Act provides hunting rights to tribals of Andaman and Nicobar Islands and tribal reserves.
d) Dry and subhumid land		X	
e) Forest	X		
f) Mountain	X		

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X
Please provide details below.	
Legislative measures such as Biological Diversity Act, 2002, and Plant Variety Protection and Farmers Rights Act provide the basis for incorporating this target in all the relevant plans, programmes and strategies. The National Environment Policy, 2006 recognizes that the traditional knowledge possessed by local communities is the basis of their livelihoods, and also a potent means of unlocking the value of genetic diversity through reduction in search costs. The Policy therefore seeks to formulate a system to enable the local communities to derive benefits from providing access to their traditional knowledge. Further, cultivation of traditional varieties of crops and horticulture is to be encouraged, by promotion of organic farming, enabling farmers to realize a price premium.	
IV) Please provide information on current status and trends in relation to this target.	
There is an increasing awareness about the need to protect traditional knowledge, innovations and practices, and several programmes are being formulated.	
V) Please provide information on indicators used in relation to this target.	
Availability of documentation.	
VI) Please provide information on challenges in implementation of this target.	
Acceptance of documentation by local people.	

Box XIX.

Target 9.2	**Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit sharing**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

Please provide details below.

The mechanism of benefit sharing as envisaged in the Biological Diversity Act, 2002 is as follows. Section 3 of the Act provides for mandatory prior approval by the NBA for obtaining any biological resources occurring in India or associated knowledge for commercial or any other use. Further, Section 6 of the Act provides that prior approval of NBA is also required before applying for any IPRs in or outside India for any invention based on research or information on a biological resource obtained from India. The NBA grants such approvals subject to terms and conditions so as to secure equitable sharing of benefits arising out of the use of accessed biological resources and associated knowledge.

Similarly, Indian industry is required to provide prior intimation to the concerned SBB about the use of biological resource and the SBB has the power to restrict any such activity which violates the objectives of conservation, sustainable use and equitable sharing of benefits. The NBA, as well as the SBBs, is required to undertake mandatory consultation of the concerned local level BMCs for taking decisions relating to access and benefit sharing (ABS), thereby formalizing the prior informed consent (PIC) by communities for ABS.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) beenestablished, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Plant Variety Protection and Farmers Rights Act provides for protection of farmers rights.
b) Inland water	X		Biological Diversity Act
c) Marine and coastal	X		Biological Diversity Act
d) Dry and subhumid land	X		Biological Diversity Act
e) Forest	X		Biological Diversity Act
f) Mountain	X		Biological Diversity Act. In addition, considering the diversity of indigenous communities and their traditions in mountain areas of the Himalaya, the G. B. Pant Institute of Himalayan Environment and Development (GBPIHED) under the MoEF has initiated a core programme called 'Indigenous Knowledge Systems' (IKS). The programme focuses on documentation of IKS and subsequently provides support in protecting the rights and developing benefit sharing mechanisms for indigenous communities.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?	
a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X
Please provide details below.	
Enactment of Biological Diversity Act, 2002 has given a major impetus to the protection of rights of indigenous and local communities over their traditional knowledge. The National Environment Policy, 2006 seeks to ensure that the local communities derive benefits from providing access to their traditional knowledge.	
IV) Please provide information on current status and trends in relation to this target.	
Biological Diversity Act is only beginning to be implemented.	
V) Please provide information on indicators used in relation to this target.	
Development of suitable models.	
VI) Please provide information on challenges in implementation of this target.	
Complexity of socio-cultural aspects.	

Box XX.

Goal 10	**Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources.**
Target 10.1	**All transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable agreements**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	
Legislative frameworks are in place with the enactment of Biological Diversity Act, 2002, Plant Variety Protection and Farmers Rights Act, and the Patents Act (Second and Third Amendments), and targets are being established. It is envisaged in the National Environment Policy, 2006 to take measures to enable the country and local communities	

to derive benefits from providing access to biological resources and associated traditional knowledge.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) been established, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural			Please see I) above.
b) Inland water			Please see I) above.
c) Marine and coastal			Please see I) above.
d) Dry and subhumid land			Please see I) above.
e) Forest			Please see I) above.
f) Mountain			Please see I) above.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?

a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

Same as given at I) above

Box XXI.

Target 10.2	Benefits arising from the commercial and other utilization of genetic resources shared with the countries providing such resources

I) National target: Has a national target been established corresponding to the global target above?

a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X

Please provide details below.

India has enacted the Biological Diversity Act, 2002 and Biological Diversity Rules, 2004, which primarily aim at facilitating access to biological resources and associated knowledge subject to certain terms and conditions, which secure equitable sharing of benefits arising out of the use of biological resources.

India, as the President of Like Minded Megadiverse Countries (LMMCs) for a two-year period from March 2004-March 2006, has navigated the deliberations on behalf of LMMCs for developing an International Regime on ABS under the aegis of CBD. It is expected that such a regime would ensure that the benefits arising from the commercial and other utilization of genetic resources and associated knowledge are shared with the countries providing such resources and knowledge, in accordance with the provisions of the CBD.

II) National targets for specific programmes of work: If such national target(s) ha(s)(ve) beenestablished, please indicate here, and give further details in the box(es).

Programme of work	Yes	No	Details
a) Agricultural	X		Documentation of biodiversity of land races, folk varieties, cultivars, domesticable stocks and breeds of animals, and chronicling of knowledge relating to biodiversity, has been provided for in the Biological Diversity Act and Rules. The Act also provides for ensuring equitable sharing of benefits arising out of the use of biological resources and associated knowledge.
b) Inland water	X		Same as above
c) Marine and coastal	X		Same as above
d) Dry and subhumid land	X		Same as above
e) Forest			Same as above
f) Mountain	X		In addition, the efforts regarding conservation of medicinal plants are ongoing through international organizations like International Centre for Integrated Mountain Development (ICIMOD) in the mountain areas of India, Nepal, Pakistan, etc. These processes will help evolve ABS mechanisms related to medicinal plants and associated knowledge.

III) Has the global or national target been incorporated into relevant plans, programmes andstrategies?

a) No	
b) Yes, into national biodiversity strategy and action plan	
c) Yes, into sectoral strategies, plans and programmes	X

Please provide details below.

Same as given in I) under Target 9.2.

Box XXII.

Goal 11	**Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention.**
Target 11.1	**New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	X
Please provide details below.	
MoEF is the operational nodal point for GEF funded projects in India. Thirteen projects are under implementation, and three have been completed. Eleven projects have been approved in principle for GEF funding and are in the preparatory phase. UNDP GEF/ CCF Small Grant Programmes has supported ninety projects in India since 1992 to support activities that demonstrate community based approaches. Financial resources have also been accessed from India Canada Environment Facility (ICEF) for Canada India Institutional Strengthening Project.	

Box XXIII.

Target 11.2	**Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under theConvention, in accordance with its Article 20, paragraph 4**
I) National target: Has a national target been established corresponding to the global target above?	
a) No	X
b) Yes, the same as the global target	
c) Yes, one or more specific national targets have been established	

Global Strategy for Plant Conservation (GSPC)

The Conference of the Parties, in decision VI/9, annex, adopted the Global Strategy for Plant Conservation. Parties and Governments are invited to develop their own targets with this flexible framework. The Conference of the Parties considered the Strategy as a pilot approach for the use of outcome oriented targets under the Convention. In decision VII/10, the Conference of the Parties decided to integrate the targets into the reporting framework for the Third National Reports. Please provide relevant information by responding to the questions and requests contained in the following tables.

Box XXIV.

Target 1.	**A widely accessible working list of known plant species, as a step towards a complete world flora.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	
Please specify	
A working list of such plant groups as angiosperms, gymnosperms, pteridophytes, bryophytes, lichens and some groups of algae and fungi is in place.	
II) Has your country incorporated the above global or national target into relevant plans, programmes and strategies?	
a) Yes	X
b) No	
Please specify	
The BSI, along with some other national laboratories and academic institutions, has an ongoing programme for the survey and inventorization of plant diversity.	
III) Current status (please indicate current status related to this target)	
A working list of such plant groups as angiosperms, gymnosperms, pteridophytes, bryophytes, lichens, algae and fungi is available, but information on lower groups of plants (bryophytes, lichens, algae and fungi) is widely scattered.	
IV) Measures taken to achieve target (please indicate activities, legislative measures and other steps taken with a view to achieve the target)	
Capacity building in taxonomy in areas where adequate expertise is not available, e.g., lower groups and some other specialized groups of plants.	
V) Progress made towards target (please specify indicators used to monitor progress towards the target)	
Progress has been made as per the targets. Quarterly and annual targets are set and physical progress made against the targets is monitored.	
VI) Constraints to achieving progress towards the target	
Lack of adequate number of taxonomists for different taxonomic groups of plants, especially lower groups, and lack of opportunities for trained taxonomists.	

Box XXV.

Target 2.	**A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	
Please specify	
A preliminary assessment of the conservation status has been done in case of flowering plants, pteridophytes and few bryophytes only.	
II) Has your country incorporated the above global or national target into relevant plans, programmes and strategies?	
a) Yes	X
b) No	
Please specify	
The BSI, along with some other national organizations and some NGOs, e.g., Foundation for Revitalization of Local Health Traditions (FRLHT), has ongoing programmes on survey and inventorization of rare, endangered and threatened species of flora.	
III) Current status (please indicate current status related to this target)	
About 1,500 species of angiosperms, and some gymnosperm, pteridophytes and bryophytes have been preliminarily assessed as rare and threatened. Red Data Sheets on 1,182 species, based on pre-1994 World Conservation Union (IUCN) categories, have been prepared and 708 Red Data Sheets have been published in four volumes of Red Data Books brought out by BSI so far. The IUCN Red List has 1,236 plant species from the country under various categories of threat as per its 1997 criteria. Recently, a red list of 1,255 threatened vascular plant species of India has been compiled. A pictorial identification manual of plant species included in different appendices of CITES as well as those in Negative List of Export has been prepared by the Environmental Information System (ENVIS) Centre of BSI. Development of a digital database on the threatened plants of India has been initiated.	
IV) Measures taken to achieve target (please indicate activities, legislative measures and other steps taken with a view to achieve the target)	
The BSI, along with some other national organizations and some NGOs, e.g., FRLHT, has ongoing programmes for the survey and inventorization of rare, endangered and threatened species of flora alongwith their conservation status.	

V) Progress made towards target (please specify indicators used to monitor progress towards the target)
Same as given in III) above.
VI) Constraints to achieving progress towards the target
Lack of adequate number of specialists in different taxonomic groups, especially lower groups of plants, and lack of population data of species.

Box XXVI.

Target 3.	**Development of models with protocols for plant conservation and sustainable use, based on research and practical experience.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	
Please specify	
The BSI, through advisory services like identification of species/habitats needing conservation intervention, continuously helps in development of such models. Recently, an in-country programme "Investing In Nature (IIN)-India" has been initiated by the Botanical Garden Conservation International (BGCI), Worldwide Fund for Nature (WWF) and Earth Watch in collaboration with the National Botanical Research Institute (NBRI), Lucknow under which a number of botanical gardens have been involved for the purpose. The MoEF also provides a one-time grant for the creation and augmentation of facilities in botanical gardens across the country to develop model protocols for conservation under its 'Assistance to Botanic Gardens' Programme.	
II) Has your country incorporated the above global or national target into relevant plans, programmes and strategies?	
a) Yes	X
b) No	
Please specify	
The MoEF has an ongoing programme on 'Assistance to Botanic Gardens' as mentioned under I) above.	
III) Current status (please indicate current status related to this target)	
Ten botanical gardens under BSI have an ongoing programme. Besides, a number of other gardens attached with other national organizations and academic institutions have implemented *ex situ* conservation programmes with financial assistance from the	

MoEF. In some states, like Karnataka and Maharashtra, medicinal plant conservation areas are being developed by the FRLHT, a Centre of Excellence of the MoEF, in collaboration with State forest departments and local people.
IV) Measures taken to achieve target (please indicate activities, legislative measures and other steps taken with a view to achieve the target)
Awareness programmes, public education and distribution of planting materials are some of the measures proposed to be undertaken.
V) Progress made towards target (please specify indicators used to monitor progress towards the target)
Physical verification of the conservation of targeted species is used as an effective indicator for monitoring.
VI) Constraints to achieving progress towards the target
Lack of adequate information on conservation biology and edaphic requirements of targeted species are major constraints.

Box XXVII.

Target 4.	**At least ten percent of each of the world's ecological regions effectively conserved.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	
Please specify	
India already has an elaborate PA network, comprising 94 national parks and 501 wildlife sanctuaries, covering approximately 4.74% of the total geographical area of the country. To provide more adequate coverage to biological diversity, it is envisaged to increase the number of national parks to 163 and wildlife sanctuaries to 707 covering 5.74% of the total area. Besides, there are 14 biosphere reserves, 27 tiger reserves, 5 world heritage (natural) sites, 21 Ramsar sites, 309 forest preservation plots, a large number of sacred groves and a few gene sanctuaries.	
II) Has your country incorporated the above global or national target into relevant plans, programmes and strategies?	
a) Yes	X
b) No	

Please specify
The National Environment Policy, 2006 seeks to expand the PA network of the country, including Conservation and Community Reserves, to give fair representation to all bio-geographic zones of the country. In doing so, norms are to be developed for participation of local communities and other stakeholders who have a direct and tangible stake in protection and conservation of wildlife, to harmonise ecological and physical features with needs of socio-economic development.
III) Current status (please indicate current status related to this target)
Same as given in I) above.
IV) Measures taken to achieve target (please indicate activities, legislative measures and other steps taken with a view to achieve the target)
The MoEF has an ongoing programme of identifying new areas to be brought under the PA network.
V) Progress made towards target (please specify indicators used to monitor progress towards the target)
As elaborated under I) above.
VI) Constraints to achieving progress towards the target
Curtailment of almost all consumptive uses of resources from PAs has, at times, led to conflicts between conservationists and various stakeholders.

Box XXVIII.

Target 5.	**Protection of fifty percent of the most important areas for plant diversity assured.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	
Please specify	
A multi-pronged strategy has been adopted to provide protection to important plant areas through *in situ* and *ex situ* programmes. There are about 595 PAswhere a wide range of biodiversity has been protected across various ecosystems spread all over the country. The processes of strengthening this network are going on through identifying new PAs as well as new categories of PAs by involving local communities. The Biological Diversity Act vide section 37.1 provides for setting up areas of biodiversity importance as biodiversity heritage sites in consultation with local bodies.	

Gene banks and botanical gardens have been established for the conservation of plants.	
II) Has your country incorporated the above global or national target into relevant plans, programmes and strategies?	
a) Yes	X
b) No	
Please specify	
Enactment of legal provisions for various kinds of protected areas such as national parks and wildlife sanctuaries, community and conservation reserves and heritage sites, has been undertaken by the government.	
III) Current status (please indicate current status related to this target)	
The NBA is in the process of issuing guidelines for identifying heritage sites. Similarly, a process is going on for implementing amendments to the Wildlife Protection Act for creating two new categories of protected areas, namely conservation reserves and community reserves.	

Box XXIX.

Target 6.	**At least thirty percent of production lands managed consistent with the conservation of plant diversity.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	

Box XXX.

Target 7.	**Sixty percent of the world's threatened species conserved *In-situ*.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	
Please specify	
Threatened species are being conserved *in situ* through programmes such as PAs, Project Tiger, Project Elephant, Biosphere Reserves, conservation of wetlands, mangroves and coral reefs etc.	

The National Environment Policy, 2006 seeks to formulate and implement programmes for conservation of endangered species outside PAs. Further, genetic material of threatened species of flora and fauna is to be conserved on priority.	
II) Has your country incorporated the above global or national target into relevant plans, programmes and strategies?	
a) Yes	X
b) No	
Please specify	
The BSI has an ongoing programme for the assessment of plant diversity in PAs of the country.	
III) Current status (please indicate current status related to this target)	
So far, the plant diversity in nine Biosphere Reserves (Nanda Devi, Great Nicobar, Gulf of Mannar, Nilgiri, Manas, Dibru-Saikhowa, Kanchendzonga, Simlipal and Pachmarhi), 55 national parks, 27 tiger reserves and a few wildlife sanctuaries has been documented.	
IV) Measures taken to achieve target (please indicate activities, legislative measures and other steps taken with a view to achieve the target)	
As elaborated under I), II) and III) above. The documentation of plant diversity in protected areas has been made one of the primary objectives of BSI.	
V) Progress made towards target (please specify indicators used to monitor progress towards the target)	
As elaborated under III) above.	
VI) Constraints to achieving progress towards the target	
Lack of adequate number of qualified manpower (taxonomists) to expedite the study.	

Box XXXI.

Target 8.	**Sixty percent of threatened plant species in accessible *Ex-situ* collections, preferably in the country of origin, and 10 percent of them included in recovery and restoration programmes.**
I) Has your country established national target corresponding to the above global target?	
a) Yes	X
b) No	

Please specify	
Collection and preservation of crop genetic resources is being done by the NBPGR, New Delhi. The Indian National Gene Bank of the NBPGR presently comprises a seed repository, holding nearly 1,45,000 accessions; tissue culture repository having 800 accessions, and 1,000 samples cryopreserved in liquid nitrogen. The Bureau is assigned the task of collecting the germplasm and maintaining them in seed banks and field gene banks, for short and medium term preservation. The Bureau also supplies these genetic materials to both Indian and foreign agencies, on request, for research purpose only.	
II) Has your country incorporated the above global or national target into relevant plans, programmes and strategies?	
a) Yes	X
b) No	
Please specify	
India has undertaken measures for *ex situ* conservation of both wild as well as domesticated plants, especially the threatened species. The major facilities of *ex situ* conservation are botanical gardens, field gene banks, seed banks, cryobanks and tissue culture repositories. At present, there are 150 organized botanical gardens or large parks in the country, of which 33 gardens (including the historical Indian Botanical Garden of the BSI) are managed by Central or State Governments; 70 gardens and parks are in the public domain and 40 gardens are run by universities. The BSI, with the Indian Botanical Garden, Howrah, Botanical Garden of Indian Republic, NOIDA and nine experimental botanical gardens attached to its circle offices across the country, has an ongoing programme of collection, introduction, multiplication, maintenance and scientific study of rare and threatened medicinal and economically important plants. Presently, this facility is serving as living repositories of an estimated 1,50,000 live plants belonging to about 4,000 largely indigenous and selected highly valued economic exotic species. This includes over 250 endemic and threatened species and a number of wild progenitors of cultivated crop plants.	
III) Current status (please indicate current status related to this target)	
Same as given under II) above.	
IV) Measures taken to achieve target (please indicate activities, legislative measures and other steps taken with a view to achieve the target)	
As elaborated under II) and III) above. In addition, the DBT has initiated a number of programmes relevant to *ex situ* conservation of biodiversity, such as germplasm facilities, tissue culture pilot plants, biocontrol agents, biofertilizer, clean technologies and bioinformatics. Some of the important national facilities sponsored by the Department are: National Facility of MTCC at Chandigarh; Blue-Green Algae at Indian Agricultural Research Institute (IARI), New Delhi; Marine Cyano-bacteria at Tiruchirapalli; Plant Tissue	