

CHAPTER 7

7.3 Strengthen the Positive Links between Wild and Domesticated Biodiversity

Overall justification: Considering that most of India's landmass is under some kind of domestication, and that even 'wilderness' areas have considerable interspersal of domesticated landscapes and species, it is critical that positive links between the wild and the domesticated are encouraged. This is a seriously neglected area of research, action, and policy-making.

Actions

1. Study the Positive Relationships between Wild and Domesticated Biodiversity Initiate a nation-wide study of the positive relationship between wild and domesticated biodiversity, including:

- a. cropping patterns and animal husbandry/pastoral systems that favour maintenance of critical wild biodiversity values including as corridors or as resource reserves (e.g. *soppina bettas* or forest lands used by betelnut growers in Karnataka's Western Ghats, or safety and reserve forests in Mizoram);
- b. pollination and other services provided by wildlife to crops;
- c. actual and potential contribution of wild relatives of crops and livestock to agriculture and animal husbandry, and the unclear genetic status of some 'feral' animals like *mithun*;
- d. contribution of natural ecosystems and wildlife to apiculture and sericulture;
- e. land/water use strategies that minimise the damage of crops/livestock by wild animals including the use of green fencing;
- f. cultural landscapes and seascapes, in which wilderness and domesticated ecosystems are integrated within a single conceived unit;
- g. domestication of NTFP including medicinal plants in practices such as home gardens;
- h. prevalence of uncultivated or wild foods in agro-biodiversity-rich ecosystems;
- i. other such links.

Justification: Most of the discussion on the relationship between domesticated and wild biodiversity has centred around conflicts, e.g. the destruction of forests for agricultural expansion, or the destruction of crops and livestock by wild animals. There are only sporadic reports of the positive links between them. Many local communities have traditionally understood some of these synergies, but this indigenous knowledge is dying out, and the formal scientific world has not yet taken serious cognizance of this area of work. Hence the need for a major research effort on this topic.

Responsibility: Joint site-based teams of experts on wildlife and agriculture, from formal institutions and NGOs such as WII, IIFM, BNHS, SACON, GBPIHED, ICAR, central institutes relating to fisheries, forests, and grasslands, relevant agricultural universities, local NGOs, and associations/networks of farmers, pastoralists, fisherfolk, forestdwellers and workers.

Steps:

- i. Collate existing studies about the positive links between wild and domesticated biodiversity;
- ii. Document traditional knowledge and community understanding of these links, through community-led initiatives like Community/People's Biodiversity Registers (see Box 6.70, and Section 7.2.6.2, Action 4);
- iii. Prepare methodologies, adaptable to particular natural and agricultural conditions, for undertaking systematic, participatory studies;
- iv. Initiate such studies in the case of special conservation sites, including protected areas (PAs) and community conserved areas (CCAs), and corridors between them; to start with, choose one PA and one CCA in each state (perhaps more than one CCA in the north-east, other tribal areas, and mountainous regions) and an inter-state site in each ecoregion (see Section 7.0.1; see also Strategies 7.1.2.1 and 7.1.2.2);
- v. Encourage collaborative explorations, such as between BSI and NBPGR, and ZSI and NBAGR, to map and assess status of wild relatives of crops and livestock;
- vi. Feed the results into the management planning of such sites, and lessons from it into relevant policies and programmes of state and central government. **Time Frame:** 5 years for the initial list of sites; ongoing for the others.

2. Provide Incentives to Farmers and Pastoralists that have Pro-Wild Biodiversity Practices Provide infrastructural, legal, social, and financial incentives to farmers, pastoralists, and fisherfolk with practices that benefit wildlife, such as:

- i. agroforestry mixes that contain substantial nesting/roosting/foraging habitat or provide corridors;
- ii. biodiverse home gardens;
- iii. nomadic pastoralism which species like wolves depend upon;
- iv. regulated grazing which sustains grasslands and their wild biodiversity including bustards and floricans;
- v. beekeeping with indigenous species that also help wild plant pollination;
- vi. mixed paddy and fish cultivation;
- vii. mixed crop-livestock-apiculture-sericulture-fodder-forest systems;
- viii. forest-based sericulture and apiculture;
- ix. organic tea, coffee, and spice gardens, that leave substantial natural habitats intact amidst the plantations;
- x. agricultural and fisheries tanks, which harbour waterbird populations and maintain indigenous aquatic diversity;
- xi. traditional small-scale freshwater and coastal fisheries, including nomadic fisherfolk communities dependent on seasonal availability of fish.

Justification: Across India, agricultural, fishing and pastoral practices that favoured wildlife, or at least did not cause serious adverse consequences, are being replaced by monocultural, chemical-dependent farming, aquaculture, or intensive animal husbandry. This is largely because the economic and social incentives are geared towards such a change. If farming, fishing, and pastoral communities are to be convinced about not making such a change, or reverting back to more sustainable and biodiversity-friendly practices, the current perverse incentives will need to be reversed.

Responsibility: MoA and MoEF, supporting and orienting state agriculture, horticulture, animal husbandry, fisheries, and forest/wildlife departments, and through PRIs, farmers', fisherfolk, and pastoral communities' associations.

Steps:

- i. Based on the studies conducted in Action 1 above, or on existing knowledge, identify sites and communities where the provision of incentives are most urgently needed or will be most effective. Prime candidates for this include: in the case of nomadic pastoralism, areas such as Kachchh, Ladakh, western arid zones, and the Nilgiris; in the case of cultivation, the *jhum* areas of north-east and central/eastern India, the rainfed farming of central and Deccan India, the terraced cultivation of the Himalaya; and in the case of fisheries, the inland and coastal stretches where traditional fisheries still predominate, etc. (see also the agro-biodiversity hotspots identified in *Section 7.2.2.1*);
- ii. Build, into existing agricultural (including horticultural, fisheries, and animal husbandry) schemes and programmes, incentives for farmers, fisherfolk, and pastoralists to continue such practices (using existing ICAR schemes for IPM, integrated crop-fisheries-livestock systems, and others);
- iii. Provide special incentives in areas where the practices have eroded, but have potential for recovery, or for innovative new practices that would be conducive to wildlife;
- iv. Introduce participatory monitoring at each of these sites, to periodically assess the results, make mid-way corrections, and learn lessons to extend the approach to other areas;
- v. Revise the guidelines for key agriculture (including animal husbandry, fisheries and horticulture), and forestry/wildlife programmes and schemes, at central and state levels, to centrally integrate such an approach;
- vi. Start a scheme in the 11th Plan, for nationwide extension of this approach.

3. Generate Awareness Amongst Different Sectors of the Actual and Potential Synergism Between Wildlife and Agriculture

Create greater awareness and orientation, amongst agricultural, fisheries, and forest/wildlife scientists, wetland specialists, farmers, fisherfolk, pastoralists and other relevant sectors, towards the positive links between wild and domesticated biodiversity. In so doing, use both traditional knowledge and modern formal knowledge of these links.

Justification: While traditionally many communities were acutely aware of the synergy between wild and domesticated (and indeed such distinctions often did not exist in their cosmology), this orientation is dying down. Among formal sector scientists, and those planning agricultural and wildlife programmes, such orientation is seriously weak. Hence the need for intense and widespread awareness and orientation programmes, especially to make economic development programmes and policies sensitive to biodiversity and livelihood issues.

Responsibility: Ministry of Agriculture, Ministry of Tribal Welfare, and Ministry of Environment and Forests, with relevant state departments, institutions like WII, ITDAs, DRDAs, and ICAR, agricultural universities and forestry/wildlife training institutes, NGOs, and farmers'/pastoral/fisherfolk organisations.

Steps:

- i. Identify the key gaps in understanding the information, amongst various relevant sections of society;
- ii. Use available information, and information to be generated through Action 1 above, to fill these gaps;
- iii. Facilitate visits of community members, officials and NGOs, to sites with successful integration of, or synergy between, wild and domesticated biodiversity; these could be both traditional and new initiatives.

4. Conserve the Wild Relatives of Crops and Livestock Identify key sites important for the conservation of wild relatives of crops

and livestock, and establish measures for conserving these sites with the participation of local communities and other stakeholders. For this, build on the work done by the National Bureaus of Plant/Animal/Fish Genetic Resources, BSI, ZSI, NGOs and individuals under the Biodiversity Conservation Prioritisation Project, etc. (see *Sections 6.1.1.2* and *6.2.3.2*).

Justification: India's rich diversity of wild relatives of crops and livestock is seriously threatened by the factors that are affecting biodiversity generally (as elaborated in Chapter 5). While there are a number of studies of these species and to some extent the habitats they live in, there are very few attempts at conserving them.

Suggested Responsibility: Local communities and relevant government departments, collaboratively or individually as appropriate, with help and guidance from the national plant/animal/fish genetic bureaus, BSI and ZSI, and relevant NGOs.

Time Frame: Key sites and species to be brought under conservation in 5 years.

Steps:

- i. National plant/animal/fish genetic resource bureaus and BSI/ZSI/FSI to carry out initial mapping of critical sites for wild relative conservation, building on work already done such as those listed above and others, and the studies proposed in Action 1 above; special attention to be paid to threatened species;
- ii. Carry out site-specific consultations with communities and official agencies, to determine effective and participatory means of conserving the habitats/species, including notification under relevant provisions of the Wild Life (Protection) Amendment Act, 2002, Biological Diversity Act 2002, Environment Protection Act, 1986, Forest Act, 1927, or appropriate state legislation; or under programmes such as the Medicinal Plant Conservation Area programme of FRLHT (see *Section 6.1.3.2*, and *Box 6.20*);
- iii. Determine specific threats to these sites/species, and take measures to tackle these threats, including genetic pollution and mixing.

7.4 Prioritisation of Strategies in the National Biodiversity Strategy and Action Plan

Introductory Note: Given the large number of strategies in this document, and the difficulty of implementing all of them simultaneously, it was considered important to identify a shortlist of high priority strategies. This has been done by members of the Technical and Policy Core Group (TPCG) of NBSAP, taking into consideration comments from a wide-ranging set of people. This prioritisation exercise should be read keeping the following points in mind:

1. An attempt has been made to be as 'objective' as possible, keeping in mind various factors. However, some biases are inevitable. It is assumed, however, that these would to some extent be balanced out, since the exercise of prioritisation has been done as a consultative process amongst TPCG members, who come from different backgrounds and persuasions.
2. The three parameters used in prioritisation are explained in the endnotes. It should be noted that in many cases these three overlap; yet they are considered distinct enough to be considered as separate parameters. The first parameter (*Urgency*) is related to time, the second (*Overall Impact*) to scale/importance, and the third (*Current Neglect*) to the extent to which the strategy is currently addressed. Each parameter is given the same weightage.
3. *Feasibility* of the strategy is not built into these scores. This assessment - of how politically, financially, or socially feasible a particular strategy is depends on many factors, and will differ according to the opinions and situation of the suggested responsible agencies. Given that this is fraught with a high degree of variability, feasibility has not been entered into this matrix. Moreover, it is felt that if a strategy is sufficiently high in priority as per the above three parameters, it should be society's collective responsibility to make it feasible. Each responsible agency may wish to conduct their own feasibility exercise

for their relevant strategies.

4. This exercise has limited itself to *strategies*, and has not attempted to prioritise *actions* within each strategy. The actions within each strategy, when taken up for implementation, can be subjected to a prioritisation exercise, using the same or other parameters.
5. This exercise is strictly limited to the national plan, and does not necessarily apply to local, state, ecoregional, or thematic action plans. Those action plans could be subjected to independent prioritisation exercises, using the same or other parameters.
6. *The highest priority strategies, i.e. those with a total score of 3, are italicised.* This does not necessarily mean that implementation resources (time, finances, manpower, and so on) should be restricted primarily to these, or that they should necessarily be the first ones to be considered. *It may be possible to initiate many strategies that are not highest priority as per this exercise, and this may help to make the highest priority strategies more feasible or effective.* Also, many of these strategies may simply be an extension of what is already taking place, and could therefore be taken up easily. So while implementation must be focused on the highest priority strategies (and those coming close, i.e. with a score of 4), the others too must be considered before deciding on actual deployment of resources.

1 = High; 2 = Medium; 3 = Low

TABLE 7.1 PRIORITY OF STRATEGIES IN THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

7. Strategies and Actions	Urgency ⁱ	Overall Impact ⁱⁱ	Current Neglect ⁱⁱⁱ	Total ^{iv}
7.0 Overall Planning and Governance				
<i>7.0.1 Adopt a Landscape/Waterscape or Ecoregional Approach to Planning</i>	1	1	1	3
7.0.2 Strengthen a Decentralised Natural Resource Governance Structure	1	1	2	4
7.1.1 Wild Biodiversity: Strategies and Actions for Enhancing Understanding and Information				
7.1.1.1 Consolidate, Increase and Update the Knowledge on Ecosystems and Taxa	1	1	2	4
7.1.1.2 Create and Maintain a Comprehensive, Multi-Layered Database and Information System	1	2	1	5
<i>7.1.1.3 Enhance Understanding of Links Between Cultural (Including Linguistic) Diversity and Biological Diversity</i>	1	1	1	3
7.1.2 Wild Biodiversity: Strategies and Actions for <i>in situ</i> Conservation				
7.1.2.1 Strengthen and Expand the Official Protected Areas Network	2	1	2	5
7.1.2.2 Strengthen and Support Community Conservation Areas, Including Sacred Sites	1	2	1	4
<i>7.1.2.3 Strengthen Conservation Outside PAs and CCAs, Across The Entire Rural Land/Waterscape</i>	1	1	1	3
7.1.2.4 Conserve and Rehabilitate Threatened, Endemic, and Other Species of Conservation Significance	1	1	2	4
7.1.2.5 Conserve Biodiversity in Urban Areas	2	3	1	6
7.1.2.6 Tackle 'Non-Utilisation' Threats to Natural Ecosystems and Species	1	1	2	4
7.1.2.7 Regenerate and Restore Degraded Ecosystems	1	1	3	5
7.1.2.8 Prevent and Mitigate Human-Wildlife Conflicts	1	2	2	5
7.1.2.9 Strengthen Trans-boundary Cooperation for Conservation	1	2	2	5

7.1.3 Wild Biodiversity: Strategies and Actions for Ex Situ Conservation				
7.1.3.1 Strengthen and Enhance the Role of Zoological Parks, Aquariums, and Other Wild Animal Breeding Facilities	1	3	2	6
7.1.3.2 Strengthen and Enhance the Role of Botanical, Herbal, and Home Gardens, and Other <i>ex situ</i> Plant Collections	2	3	2	7
7.1.3.3 Strengthen Culture Collections of Micro-Organisms	1	3	1	5
7.1.4 Wild Biodiversity: Strategies and Actions for Sustainable Use and Livelihoods				
7.1.4.1 Integrate Sustainability Principles into all Resource Use Policies, Laws, and Programmes	1	1	1	3
7.1.4.2 Ensure Sustainability of Aquatic Biological Resource Uses	1	1	2	4
7.1.4.3 Ensure Sustainability of Terrestrial Biological Resource Uses	1	1	2	4
7.1.4.4 Ensure And Facilitate Sustainable Livelihoods	1	1	1	3
7.1.4.5 Ensure that Tourism and Pilgrimage are Ecologically and Socially Sensitive	1	2	1	4
7.1.5. Wild Biodiversity: Strategies and Actions for Equitable Access, Use, and Sharing of Benefits				
7.1.5.1 Secure Community Tenure over Natural Resources	1	1	2	4
7.1.5.2 Develop a Socially and Ecologically Sensitive Process for Dealing with Disputed Claims and 'Encroachments' on 'Forest' Lands	1	2	1	4
7.1.5.3 Ensure Equity in Ongoing Ecosystem Management Initiatives	1	1	2	4
7.1.5.4 Protect Traditional Knowledge, and Ensure Equitable Benefits from its Wider Use	1	1	1	3
7.1.5.5 Ensure Equitable Sharing of Benefits Arising from the Use and Marketing of Community-Managed or Developed Resources	1	1	2	4
7.1.6 Wild Biodiversity: Strategies and Actions for Building Capacity				
7.1.6.1 Build Capacity of Public Functionaries and Governance Institutions to Address Biodiversity Issues	1	1	1	3
7.1.6.2 Strengthen Nature Awareness and Interpretation Facilities at Key Biodiversity Sites	3	2	2	7
7.1.6.3 Strengthen Capacity Of NGOs	3	2	2	7
7.1.6.4 Integrate Biodiversity into the Formal Education System, Convert it Into "Learning for Life"	1	1	2	4
7.1.6.5 Strengthen Non-Formal Education on Biodiversity, Including Through Folk Media	2	1	2	5
7.1.6.6 Spread Biodiversity Awareness amongst Urban Residents	1	1	2	4
7.1.6.7 Build Capacity of Scientists and Other Academics	1	2	2	5
7.1.6.8 Build Capacity of Workers and Labour Unions	2	3	1	6
7.1.6.9 Build Capacity of the Judiciary and Legal Functionaries	1	1	2	4
7.1.6.10 Orient Financial Institutions to Support Biodiversity Activities	1	1	1	3
7.1.6.11 Build Capacity of the Armed Forces, Police, and Customs	1	1	1	3
7.6.1.12 Build Capacity of the Corporate And Business Sector	1	1	1	3
7.1.6.13 Build Capacity of the Media	1	1	1	3

7.1.6.14 <i>Build Capacity of Religious and Spiritual Leaders and Institutions</i>	1	1	1	3
7.1.6.15 Strengthen Information Dissemination Systems	2	2	2	6
7.1.7 Wild Biodiversity: Strategies and Actions for Inter-Sectoral Integration of Biodiversity				
7.1.7.1 <i>Integrate Biodiversity Concerns Through Inter-Sectoral Coordination, at All Levels of Planning</i>	1	1	1	3
7.1.7.2 <i>Integrate Biodiversity Into Water Planning</i>	1	1	1	3
7.1.7.3 <i>Integrate Biodiversity into Energy and Infrastructure Planning</i>	1	1	1	3
7.1.7.4 <i>Integrate Biodiversity into the Mining Sector</i>	1	1	1	3
7.1.7.5 Ensure Integration of Biodiversity in all International Relations	1	2	1	4
7.1.8 Wild Biodiversity: Strategies and Actions for Policy and Legal Measures				
7.1.8.1 Integrate Biodiversity into Existing Policies	2	1	2	5
7.1.8.2 Formulate New Policies for Aspects that have so far not been Dealt with at a Policy Level	2	1	1	4
7.1.8.3 Integrate Biodiversity into Existing Statutes and Associated Rules, Regulations, and Notifications	1	1	2	4
7.1.8.4 Formulate New Acts for Missing Elements	2	1	1	4
7.1.8.5 Integrate Biodiversity And Equity into Panchayat Legislation, and Make it Effective and Accountable	1	1	2	4
7.1.8.6 Strengthen Customary Law	1	1	2	4
7.1.8.7 Strengthen/Create Mechanisms For Implementing Existing Legislation	1	1	2	4
7.1.8.8 Make All Governmental Information and Records on Biodiversity Publicly Accessible	2	1	2	5
7.1.9 Wild Biodiversity: Strategies and Actions Related to Financing				
7.1.9.1 <i>Review Macro-economic Policies, Programmes, and Incentive Systems, from the Biodiversity Point of View</i>	1	1	1	3
7.1.9.2 <i>Re-orient National and State Budgets</i>	1	1	1	3
7.1.9.3 Financially Empower Institutions of Local Governance	1	2	1	4
7.1.9.4 Generate New And Innovative Financial Resources For Biodiversity	2	2	1	5
7.1.10 Wild Biodiversity: Strategies and Actions Related to Technology				
7.1.10.1 Make Existing Technologies Biodiversity-Friendly, and Introduce New Eco-sensitive Technologies	1	2	2	5
7.1.10.2 Introduce New Conservation Technologies, and Enhance the Use of Available Ones	2	2	2	6
7.1.10.3 Promote Traditional Biotechnologies and Ensure That New Biotechnologies Are Safe	1	2	2	5
7.1.11 Wild Biodiversity: Strategies and Actions at International Forums				
7.1.11.1 India To Advocate Strengthening of Biodiversity Integration Into All Environment-related Agreements	3	2	2	7
7.1.11.2 India To Advocate Biodiversity Integration Into Non-Environment Related Agreements	1	1	2	4
7.1.11.3 Enhance Civil Society Networking and Participation Relating to International Issues and Agreementss	2	2	2	6

7.1.11.4 Encourage Joint Use of International Human Rights and Environment instruments to further Environment/ Biodiversity and Livelihood Agendas	2	2	2	6
7.1.11.5 Use Other International Forums and Processes to Further Environment/ Biodiversity and Livelihoods Processes	3	3	2	8
7.2.1 Domesticated Biodiversity: Strategies and Actions for Enhancing Understanding and Information				
7.2.1.0 (i) Adapted from 7.2.1.3 (Databases)	2	2	2	6
7.2.1.0 (ii) <i>Adapted from 7.2.1.4 (Cultural and Biological Diversity)</i>	1	1	1	3
7.2.1.1 Consolidate, Increase, and Update Knowledge on Domesticated Biodiversity	2	1	2	5
7.2.1.2 <i>Monitor The Status of Domesticated Biodiversity Across India</i>	1	1	1	3
7.2.2 Domesticated Biodiversity: Strategies and Actions for <i>in situ</i> Conservation				
7.2.2.1 <i>Conserve Biologically Diverse Cultivated and Husbanded Landscapes and Sites</i>	1	1	1	3
7.2.2.2 Conserve and Re-Introduce Threatened Domesticated Biodiversity	1	1	2	4
7.2.2.3 <i>Promote in situ Conservation through Participatory Crop and Livestock Development</i>	1	1	1	3
7.2.2.4 <i>Revive Domesticated Biodiversity and Regenerate Diverse Agro-Ecosystems where they have Eroded</i>	1	1	1	3
7.2.2.5 Encourage Home and Kitchen Gardens	2	2	2	6
7.2.2.6 Tackle 'Non-Utilisation' Threats to Domesticated Biodiversity	2	2	2	6
7.2.3 Domesticated Biodiversity: Strategies and Actions for <i>Ex Situ</i> Conservation				
7.2.3.1 Create a Network of Gene Banks and Breeding Centres	2	1	2	5
7.2.3.2 Integrate Domesticated Biodiversity into Existing Zoological and Botanical Gardens	3	3	1	7
7.2.4 Domesticated Biodiversity: Strategies and Actions for Sustainable Use and Livelihoods				
7.2.4.1 <i>Use the Public Distribution System (PDS) to Relate Agro-biodiversity to Food, Nutrition, and Livelihood Security</i>	1	1	1	3
7.2.4.2 <i>Integrate Agro-biodiversity into Health and Food Related Programmes</i>	1	1	1	3
7.2.4.3 Ensure the Sustainability of Agricultural and Pastoral Lands	1	1	2	4
7.2.4.4 Encourage Sustainable Pisciculture, Apiculture, and Supplemental Agriculture-Based Livelihoods	2	2	2	6
7.2.4.5 Promote Organic Consumer Networks and Markets	2	1	2	5
7.2.5 Strategies and Actions for Equitable Access, Use, and Sharing of Benefits				
7.2.5.0 (i) Adapted from 7.1.5.2 (Encroachment)	1	2	1	4
7.2.5.0 (ii) Adapted from 7.1.5.3 (Equity in Ecosystem Initiatives)	1	1	2	4
7.2.5.0 (iii) <i>Adapted from 7.1.5.4 (Traditional knowledge)</i>	1	1	1	3
7.2.5.0 (iv) Adapted from 7.1.5.5 (Equitable benefit-sharing)	1	1	2	4
7.2.5.1 Ensure Secure Tenure to Women & Men Farmers, Pastoralists, Artisans And Fisherfolk over Land/Water	1	1	2	4

7.2.5.2 Move Towards Land Consolidation and Redistribution for Disprivileged Sections	2	1	1	4
7.2.5.3 Integrate Gender Equity into Agriculture	1	1	2	4
7.2.5.4 Enhance Livelihood Security of Nomadic Pastoralists	1	2	1	4
7.2.5.5 Clarify Ownership of Seed Collections, and Ensure Equitable Benefit-Sharing from Their Wider Use	2	2	1	5
7.2.6 Domesticated Biodiversity: Strategies and Actions for Enhancing Capacity				
7.2.6.0 (i) Adapted from 7.1.6.1 (Public Functionaries and Governance Institutions)	1	1	1	3
7.2.6.0 (ii) Adapted from 7.1.6.3 (NGOs)	3	2	1	6
7.2.6.0 (iii) Adapted from 7.1.6.4 (Formal Education System)	1	1	1	3
7.2.6.0 (iv) Adapted from 7.1.6.5 (Non-formal Education)	1	1	2	4
7.2.6.0 (v) Adapted from 7.1.6.6 (Urban Residents)	2	1	1	4
7.2.6.0 (vi) Adapted from 7.1.6.8 (Workers and Labour Unions)	2	2	1	5
7.2.6.0 (vii) Adapted from 7.1.6.9 (Judiciary and Legal Functionaries)	2	2	1	5
7.2.6.0 (viii) Adapted from 7.1.6.10 (Financial Institutions)	1	1	1	3
7.2.6.0 (ix) Adapted from 7.1.6.11 (Armed Forces, Police, and Customs)	2	2	1	5
7.2.6.0 (x) Adapted from 7.1.6.12 (Corporate and Business Sector)	2	1	1	4
7.2.6.0 (xi) Adapted from 7.1.6.13 (Media)	1	1	1	3
7.2.6.0 (xii) Adapted from 7.1.6.14 (Religious and Spiritual Leaders and Institutions)	1	1	1	3
7.2.6.0 (xiii) Adapted from 7.1.6.15 (Information Dissemination through Public Transport)	2	1	1	4
7.2.6.1 Build Capacity of Scientific Community to Address Domesticated Biodiversity Issues	1	2	2	5
7.2.6.2 Build Capacity of Rural Communities to Address Domesticated Biodiversity Issues	1	1	1	3
7.2.7 Domesticated Biodiversity: Strategies and Actions for Inter-Sectoral Coordination and Integration				
7.2.7.0 (i) Adapted from 7.1.7.1 (Inter-sectoral Coordination)	1	1	1	3
7.2.7.0 (ii) Adapted from 7.1.7.2 (Water Planning)	1	1	1	3
7.2.7.0 (iii) Adapted from 7.1.7.3 (Energy and Infrastructure Planning)	1	2	1	4
7.2.7.0 (iv) Adapted from 7.1.7.4 (Mining)	2	2	1	5
7.2.7.0 (v) Adapted from 7.1.7.5 (International Relations)	2	2	1	5
7.2.7.1 Integrate Domesticated Biodiversity into Relevant Sectoral Plans and Programmes	1	1	1	3
7.2.8 Domesticated Biodiversity: Strategies and Actions for Policy and Legal Measures				
7.2.8.0 (i) Adapted from 7.1.8.5 (Panchayat Laws)	1	1	1	3
7.2.8.0 (ii) Adapted from 7.1.8.6 (Customary Laws)	2	2	1	5
7.2.8.0 (iii) Adapted from 7.1.8.7 (Implementing Existing Laws)	2	2	1	5
7.2.8.0 (iv) Adapted from 7.1.8.8 (Right to Information)	2	1	2	5
7.2.8.1 Integrate Domesticated Biodiversity into Existing Policies	1	2	1	4

7.2.8.2 Formulate New Policies for Aspects not yet Covered at Policy Level	2	2	1	5
7.2.8.3 Integrate Domesticated Biodiversity Into Existing Laws and Associated Rules, Regulations and Notifications	1	1	1	3
7.2.8.4 Formulate New Acts For Missing Elements	2	1	1	4
7.2.8.5 Strengthen/Create Mechanisms For Implementing Legislation	1	1	2	4
7.2.9 Domesticated Biodiversity: Strategies and Actions Related to Financing				
7.2.9.0 (i) Adapted from 7.1.9.1 (Macro-economic Policies)	1	1	1	3
7.2.9.0 (ii) Adapted from 7.1.9.2 (Re-orienting Budgets)	1	1	1	3
7.2.9.0 (iii) Adapted from 7.1.9.3 (Financially Empowering Local Institutions)	1	2	1	4
7.2.9.0 (iv) Adapted from 7.1.9.4 (Generating New Resources)	1	2	1	4
7.2.9.1 Re-Orient Credit and Lending Policies in Agriculture	1	1	1	3
7.2.9.2 Provide Financial Incentives to Biodiverse Farming	1	1	1	3
7.2.9.3 Set Up Agro-biodiversity Funds	2	2	1	5
7.2.10 Domesticated Biodiversity: Strategies and Actions Related to Technology				
7.2.10.0 (i) Adapted from 7.1.4.4 (Agro-biodiversity Based Enterprise)	1	1	2	4
7.2.10.0 (ii) Adapted from 7.1.7.3 (Energy and Infrastructure Projects)	1	2	1	4
7.2.10.0 (iii) Adapted from 7.1.10.1 (Eco-sensitive and Alternative Technologies)	2	2	2	6
7.2.10.1 Promote Technologies for Organic and Biodiverse Agriculture	1	1	2	4
7.2.10.2 Ensure that Genetic Engineering Products and Processes do not Cause Adverse Impacts to Biodiversity, Health, And Livelihoods	1	1	2	5
7.2.11 Domesticated Biodiversity: Strategies and Actions at International Forums				
7.2.11.0 (i) Adapted from 7.1.11.3 (Civil Society Networking)	1	2	2	5
7.2.11.0 (ii) Adapted from 7.1.11.4 (Using Human Rights and Environment Instruments)	2	2	1	5
7.2.11.1 India to Advocate Strengthening of Biodiversity Integration into Agriculture-Related Agreements and Forums	2	2	1	5
7.2.11.2 India to Advocate Integration of Biodiversity Concerns into Non-Agricultural Agreements and Forums	1	1	1	3
7.3 Strengthen the Positive Links between Wild and Domesticated Biodiversity	1	1	1	3
<i>i. Urgency denotes the immediacy of the strategy, including strategies that need immediate initiation even if their execution may take long (with 1 denoting very immediate/urgent, and 3 denoting least immediate/urgent).</i>				
<i>ii. Overall impact denotes the level to which the strategy will have a significant, national-level impact, including localised impacts of national significance, such as the conservation of a highly endemic species (with 1 denoting highest overall impact, and 3 denoting lowest overall impact).</i>				
<i>iii. Current neglect denotes the adequacy or inadequacy with which the strategy is currently being addressed (with 1 denoting highest level of neglect, and 3 denoting least level of neglect).</i>				
<i>iv. The lower the total, the higher the priority.</i>				

7.5 Index of Lead Agencies Responsible for Strategies and Actions

For ease in finding the strategies and actions relevant to each reader, given below is an index of agencies/sector which are proposed as the lead agency responsible for implementation of each strategy and action.

This index is arranged according to the following key heads:

1. Government of India Ministries and Departments
2. State Government Departments and Agencies
3. District Authorities
4. Communities and Community Organisations
5. Research and Academic Institutions
6. NGOs, and People's Groups/Networks/Movements
7. Others

Within each of these heads, agencies are arranged alphabetically. If you are in the education sector as a government official, for instance, please see under Government of India, Ministry of Human Resource Development, or under State Government and State Education Department.

TABLE 7.1 GOVERNMENT OF INDIA MINISTRIES AND DEPARTMENTS¹

<i>Lead Agencies</i>	<i>Strategy</i>	<i>Action</i>
General (All Relevant Central Government Ministries and Departments)	7.1.2.7	2. Restore mined lands
	7.1.4.3	4. Ensure biodiversity concerns are integrated in tree plantation
	7.1.7.1	2. Integration of biodiversity at local settlement level.
	7.1.9.2	4. Integrate biodiversity budget line into each ministry/department.
	7.1.9.5	12. Set-up dedicated biodiversity funds at local, state & national levels.
	7.2.5.1	2. Provide secure and clear tenure based land record clarification.
	7.3	4. Conserve wild relatives of crops & livestock
Anthropological Survey of India	7.1.1.1	7. To enhance the understanding and use of community traditions, knowledge, practices and livelihoods related

		bio diversity amongst other sectors
	7.1.7.1	5. Move towards ecoregional planning
Central Pollution Control Board (CPCB)	7.1.2.6	3. Tackle pollution
Coastal Zone Management Authorities	7.1.5.1	1. Secure common property rights for marine communities.
	7.1.5.5	2. Ensure equitable benefits sharing use of biological resources
Council of Scientific & Industrial Research	7.1.2.6	1. Preventive measures relating to 'natural' disasters.
Department of Biotechnology	7.1.4.2	7. Ensure the sustainability of aquaculture.
	7.1.4.4	7. Enhance use of undervalued traditionally used bioresources, while ensuring their sustainability
	7.1.5.4	2. Use traditional knowledge in biodiversity management programmes
		7. Code of ethics for researchers using traditional knowledge
	7.1.5.5	3. Initiate a system of returns & rewards for intangible ecosystem benefits 4. Integrate equitable benefit sharing into relevant policies
	7.1.8.1	1. Amend national and state level policies to integrate biodiversity
	7.1.10.2	1. Introduce new conservation technology & enhance available ones.
	7.1.10.3	1. Promote traditional biotechnologies & ensure new ones are safe
	7.2.2.1	1. Conserve domesticated landscapes.
	7.2.10.1	1. Ensure that genetically engineered or modified organisms used in agriculture and health, are safe for biodiversity and human health
	7.2.11.1	3. Biosafety Protocol of Convention on Biological Diversity
Department of Economic Affairs	7.1.5.5	3. Initiate a system of returns & rewards for intangible ecosystem benefits
		4. Integrate equitable benefit sharing into relevant policies

	7.1.7.5	1. Ensure all external aid to India integrates biodiversity concerns.
		2. Ensure all foreign investment in India integrates biodiversity concerns
		3. Ensure all multi-lateral agreements integrate biodiversity concerns.
	7.1.8.1	1. Amend national and state level policies to integrate biodiversity
	7.1.9.1	2. Phase out perverse subsidies
Department of Indian System of Medicine & Homeopathy	7.1.4.4	7. Enhance use of undervalued traditionally used bioresources, while ensuring their sustainability
Department of Ocean	7.1.3.1	2. Breed aquatic and other wild animals without cruelty.
		Development
	7.1.5.1	1. Secure common property rights for marine communities.
		2. Secure freshwater wetland communities property rights.
	7.1.5.3	3. Integrate socio economic principles in CBNRM Programmes.
	7.1.5.4	2. Use traditional knowledge in biodiversity management programmes
	7.1.5.5.	2. Ensure equitable benefits sharing use of biological resources
		3. Initiate a system of returns & rewards for intangible ecosystem benefits
		4. Integrate equitable benefit sharing into relevant policies
	7.1.8.2	2. Formulate a Marine Areas Policy
	7.1.8.4	2. Enact, marine areas conservation, sustainable & equitable use Act
Department of Personnel and Training	7.1.5.1	6. Endow ownership over NTFPs to communities.
	7.1.6.1	1. Build capacity of officials from all line departments.
	7.1.7.1	7. Build capacity of officials at all levels of governance.
Department of Science and Technology	7.1.4.2	7. Ensure the sustainability of aquaculture.
	7.1.5.1	6. Endow ownership over NTFPs to communities.
	7.1.5.2	1. Prepare database and maps of notified forest lands

		and 'encroachments'
	7.1.5.3	3. Integrate socio economic principles in CBNRM Programmes.
	7.1.5.4	7. Code of ethics for researchers using traditional knowledge
	7.2.2.1	1. Conserve domesticated landscapes.
Forest Survey of India	7.1.2.3	4. Integrate biodiversity into bio-resource use activity
	7.1.4.2	2. Develop non-conventional and deep-sea fishery harvest strategy.
Genetic Engineering Approval Committee	7.1.10.3	Promote traditional biotechnologies & ensure new ones are safe
Indian Council of Cultural Relations biological diversity	7.1.1.3	Enhance understanding of the links between cultural and
	7.2.2.3	1. Promote participatory crop and livestock development
	7.3	1. Study relations between wild & domesticated biodiversity
Khadi Village Industries Commission (KVIC)	7.1.4.4	5. Strengthen biodiversity-based artisanal livelihoods.
Krishi Vigyan Kendras	7.1.5.4	1. Build community capacity to value & protect their knowledge.
	7.2.4.5	2. Encourage organic consumer networks
Ministry of Agriculture	7.0.1	1. Formulate a national policy & perspective plan on land & water use
		2. Provide legal banking to the national land/water use plan
	7.1.1.1	5. Natural and Domesticated ecosystems links study.
	7.1.2.3	4. Integrate biodiversity into bio-resource use activity
	7.1.2.6	1. Preventive measures relating to 'natural' disasters.
	7.1.3.2	3. Strengthen the use of botanical gardens, <i>ex situ</i> repositories, as seed banks
	7.1.3.3	2. Set up new culture collection centers.
	7.1.4.1	1. Ensure legal backing to sustainable and equitable use
	7.1.4.2	4. Revise existing fishing regulations and initiate innovative implementation
		5. Regulate over-capitalization.
		9. Move all freshwater wetlands towards 'wise use'
	7.1.4.4	4. Explore and introduce alternative livelihoods where

		regaining sustainability for an existing livelihood is
		not possible
	7.1.5.1	1. Establish secure common property rights for marine
		communities
		2. Secure freshwater wetland communities property rights.
		7. Code of ethics for researchers using traditional
		knowledge
	7.1.5.2	4. Initiate systematic addressal of disputed claims on lands
		to be notified
		5. Reclassify shifting cultivation lands as forest fallows.
		6. Use database & maps to 'freeze' illegal incursions
	7.1.5.4	2. Use traditional knowledge in biodiversity management
		programmes.
	7.1.5.5.	2. Ensure equitable benefits sharing use of biological
		resources
		3. Initiate a system of returns & rewards for intangible
		ecosystem benefits
		4. Integrate equitable benefit sharing into relevant policies
	7.1.7.1	5. Move towards ecoregional planning
	7.1.7.2	1. Integration of biodiversity into national and state water
		programmes.
	7.1.8.1	1. Amend national and state level policies to integrate
		biodiversity
	7.1.8.8	1. Integrate right to information in biodiversity-related laws
	7.1.9.5	11. Mobilize external funding on indigenous terms.
	7.2.1.1	1. Undertake comprehensive survey of domesticated
		biodiversity
		3. Expand knowledge on dynamics of crop & animal
		genetic diversity
		4. Identify, map & study hotspots of domesticated
		biodiversity
		6. Assess possible climate change impacts on
		domestic biodiversity
	7.2.2.1	1. Conserve domesticated landscapes.

	7.2.5.4	2. Review existing breeding policy through consultative process involving all stakeholders
	7.2.2.5	1. Document & encourage existing home garden networks.
		2. Facilitate new home gardens across India
	7.2.2.6	1. Tackle invasive alien species.
		2. Tackle serious diseases affecting threatened species
	7.2.4.2	1. Integrate locally available foods into balawadis, anganwadis.
	7.2.4.5	1. Promote organic food and agro-produce markets
		2. Encourage organic consumer networks
	7.2.5.1	1. Clarify and update land records
		2. Provide secure and clear tenure based on the above update
	7.2.5.3	1. Introduce women's perspectives on yield and biodiversity into agricultural extension and information dissemination work
		2. Move towards women occupying at least half of agricultural extension personnel positions
		3. Integrate gender aspects into national and state level policy
		4. Secure land and water rights for women
	7.2.5.4	Enhance livelihood security of nomadic pastoralists (all actions)
	7.2.5.5	1. Repatriate information on <i>ex situ</i> accessions to the communities of origin
		2. Clarify ownership of the genetic material in <i>ex situ</i> collections, and ensure equitable benefit-sharing
	7.2.6.1	1. Modify curriculum of courses in agriculture & health.
	7.2.6.2	4. Document traditional knowledge through CBR's.
	7.2.7.1	2. Integrate agro biodiversity into horticultural programmes
	7.2.8.1	1. Integrate domesticated biodiversity in agriculture policies
		2. Reforms in forest and wildlife related policies.

	7.2.8.2	1. Comprehensive policy on domesticated biodiversity
		2. Formulate a National Grazing Policy
	7.2.8.3	1. Review and revise laws relevant to agriculture.
		2. Integrate agro biodiversity into EIA.
		3. Make EIAs relating to agro biodiversity
		4. Legal protection to agro biodiversity rich areas
		5. Enhance biodiversity and farmers' rights protection.
	7.2.8.4	1. Legislation on protection of domesticated biodiversity
	7.2.9.2	1. Financial incentives for sustainable and biodiverse farming
		2. Domestic and international markets for organic produce.
	7.2.9.3	1. Create Domesticated Biodiversity Promotion Funds.
		2. Create shifting cultivation and nomadic pastoralism fund
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
	7.2.10.2	1. Ensure that genetically engineered or modified organisms used in agriculture and health, are safe for biodiversity and human health
	7.2.11.2	3. Trade Related Intellectual Property Rights of WTO.
	7.3	2. Provide incentives to farmers/pastoralists for pro-wild diversity
		3. Generate awareness amongst different sectors about wildlife-agriculture
	7.2.11.1	1. International Treaty on Plant Genetic Resources
Ministry of Civil Aviation	7.1.6.15	4. Make creative use of public transport as an educational tool.
Ministry of Chemicals and Fertilizers	7.1.11.1	3. Persistent organic pollutant treaty
		4. Convention on control of Tran boundary movement of hazardous waste
Ministry of Commerce and Industry	7.1.2.3	4. Integrate biodiversity into bio-resource use activity
	7.1.4.1	1. Ensure legal backing to sustainable and equitable use
	7.1.4.3	4. Ensure biodiversity concerns are integrated in tree plantation
	7.1.4.4	7. Enhance use of undervalued traditionally used

		bioresources, while ensuring their sustainability
	7.1.5.5	Ensure equitable sharing of benefits from the use and
		marketing of community-managed or developed resources
	7.1.6.12	1. Design programmes to orient industries to biodiversity
		related issues.
	7.1.8.1	1. Amend national and state level policies to integrate
		biodiversity
	7.1.8.3	2. Revise & strengthen national laws to integrate
		biodiversity
	7.1.11.4	1. Encourage use of Human Rights & Environment
		instruments
	7.2.4.5	Encourage organic consumer networks
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
	7.2.11.1	2. Agreement on Agriculture of WTO
	7.2.11.2	1. General Agreement on Trade and Tariffs of WTO.
		2. General Agreement on Trade in Services of WTO
		3. Trade Related Intellectual Property Rights of WTO
Ministry of Communications and Information Technology	7.1.6.13	1. Orient journalists to biodiversity related issues.
Ministry of Consumer Affairs,	7.2.4.1	1. Integrate agro biodiversity in Public Distribution System.
	7.2.4.2	1. Integrate locally available foods in Food for Work programme
	7.2.4.5	2. Encourage organic consumer networks
Ministry of Defence	7.1.2.3	5. Conserve biodiversity in armed forces jurisdiction.
	7.1.2.9	1. Identify critical trans-boundary sites for priority action
		2. International measures trans-boundary poaching.
	7.1.6.11	1. Strengthen armed forces programmes towards
		biodiversity conservation.
	7.1.8.3	2. Revise & strengthen national laws to integrate
		biodiversity
Ministry of Environment and Forests	7.0.1	1. Formulate a National policy & perspective plan on land & water use
		2. Provide legal banking to the national land/water
		use plan
	7.1.1.1	1. Undertake Inventory and status survey of
		taxonomic groups

		2. Monitor status of representative ecosystems.
		5. Natural and Domesticated ecosystems links study.
		11. Spread use of new information generation methods.
	7.1.1.2	1. Create an Indian Biodiversity Information System
		2. Prepare Biodiversity Conservation Atlas of India
		3. Digitize existing specimens.
		5. Special measures for PA & sensitive ecosystems
		7. Move towards a system of Participatory management
	7.1.2.2	1. Review & strengthen the current status of CCA's.
	7.1.2.3	1. Encourage Community-based species conservation
		2. Provide incentives for community-based conservation.
		3. Manage & conserve critical ecosystems outside the PA.
		4. Integrate biodiversity into bio-resource use activity
		5. Conserve biodiversity in armed forces jurisdiction
	7.1.2.5	5. Sustainable traditional & modern eco-friendly use.
		6. Awareness of multiple values of biodiversity.
		7. Strengthen existing legal conservation measures.
		8. Share Green funding
		9. Public participation and access to information.
	7.1.2.6	1. Preventive measures relating to 'natural' disasters.
		2. Minimize the impacts of alien invasive species
		3. Tackle pollution
	7.1.2.7	1. Regenerate and restore degraded common lands.
		3. Regenerate and restore degraded inland water bodies
	7.1.2.9	1. Identify critical trans-boundary sites for priority action
		2. Strengthen measures to combat trans-boundary
		poaching.
		3. Tackle trans-boundary threats such as dams, erosion etc
	7.1.3.1	2. Breed aquatic and other wild animals without cruelty.
	7.1.3.2	3. Strengthen the use of botanical gardens, <i>ex situ</i>
		repositories, as seed banks
	7.1.3.3	2. Set up new culture collection centers.
	7.1.4.1	1. Ensure legal backing to sustainable and equitable use
	7.1.4.2	5. Regulate over-capitalization.

		9. Move all freshwater wetlands towards 'wise use'
	7.1.4.3	1. Integrate Biodiversity concerns in forestry management practices.
		4. Ensure biodiversity concerns are integrated in tree plantation
	7.1.4.4	4. Explore and introduce alternative livelihoods.
		7. Enhance use of undervalued traditionally used bioresources, while ensuring their sustainability
	7.1.4.5	1. Draft Guidelines & awareness about sensitive tourism.
		3. Work on ecologically and socially sensitive tourism tourism policy.
	7.1.5.1	1. Secure common property rights for marine communities.
		3. Secure terrestrial ecosystems users common property rights
		4. Secure communities tenurial rights over forestlands
		5. Land classification with ecosystems & livelihood.
		6. Endow ownership over NTFPs to communities
	7.1.5.2	1. Prepare database and maps of notified forests and 'encroachments'
		2. Tally Forest and Revenue Department land records
		3. Survey and settlements for all forestlands.
		4. Initiate systematic addressal of disputed claims on lands to be notified
		5. Reclassify shifting cultivation lands as forest fallows.
		6. Use database & maps to 'freeze' illegal incursions.
	7.1.5.3	1. Ensure socio-economic and gender equity in JFM, CFM FDA etc.
		2. Initiate Joint Protected Area Management.
		3. Integrate Socio economic principles in CBNRM Programmes.
	7.1.5.4	2. Use traditional knowledge in biodiversity management programmes.
		5. Develop community-based intellectual rights systems

		6. Ensure equitable benefits sharing of traditional knowledge
		7. Code of ethics for researchers using traditional knowledge
	7.1.5.5	Ensure equitable sharing of benefits from the use and marketing of community-managed or developed resources
	7.1.6.1	1. Build capacity of officials from all line departments. 2. Build capacity of political leaders at state & national levels 4. Panchayati Raj institutions to conserve biodiversity.
	7.1.6.2	1. Enhance use of existing interpretation facilities & create new ones. 2. Develop site-specific awareness material for diverse sectors.
	7.1.6.4	3. Integrate biodiversity into existing vocational courses.
	7.1.6.5	1. Maximise opportunities for non-formal education on biodiversity. 2. Maximize the use of traditional and folk media
	7.1.6.6	1. Educational role of municipal authorities and urban NGOs 3. Use creative methods to spread biodiversity awareness
	7.1.6.11	1. Strengthen armed forces programmes towards biodiversity conservation.
	7.1.6.13	3. Provide incentives to media persons for better biodiversity coverage. 4. Sensitize newspaper and magazine, radio/TV towards biodiversity
	7.1.6.15	1. Ensure proactive and strategic information dissemination through IBIS. 2. Bridge information & capacity gap in areas like taxonomy 4. Make creative use of public transport as an educational tool
	7.1.7.1	4. Ensure inter sectoral integration of biodiversity at state

		and central levels
		5. Move towards ecoregional planning
		7. Build capacity of officials at all levels of governance.
		8. Integrate funding for biodiversity concerns into
		government agencies
	7.1.7.2	1. Integration of biodiversity into national and state
		water programmes.
		2. Move towards decentralized water harvesting schemes
	7.1.7.4	1. Ensure that mining is not detrimental to biodiversity.
		2. Enhance process of environmental clearance for mining
		3. Enhance process of forest clearance for mining
		4. Ensure ecologically sensitive restoration & mine closure.
	7.1.7.5	1. Ensure all external aid to India integrates biodiversity
		concerns.
		2. Ensure all foreign investment in India integrates
		biodiversity concerns
		3. Ensure all multi-lateral agreements integrate
		biodiversity concerns.
	7.1.8.1	1. Amend national and state level policies to integrate
		biodiversity
		2. Reconcile laws and policies which are incompatible
		with each other and with principles of conservation,
		sustainable use, and equity
	7.1.8.2	1. Formulate a Wetlands Policy
		2. Formulate a Marine Areas Policy
		3. Formulate a National Urban Environment Policy
	7.1.8.3	2. Revise & strengthen national laws to integrate
		biodiversity
		3. Strengthen Environment Impact Assessment procedure
		4. Frame rules to strengthen conservation under
		biological diversity Act.
	7.1.8.4	1. Enact, Wetlands Conservation, sustainable & equitable
		use Act.
		2. Enact, marine areas conservation, sustainable &

		equitable use Act
		3. Enact an Urban Natural Heritage Act
		4. Enact a Traditional Knowledge Protection Act, or Rules
		under Biological Diversity Act
	7.1.8.5	1. Integrate biodiversity & equity responsibilities in
		central panchayat laws
	7.1.8.6	1. Document and integrate customary law within
		statutory law
	7.1.8.7	1. Set- up Participatory monitoring mechanisms at center
		& state level
		2. Set-up environment Courts or Benches in existing courts.
		3. Review citizens' locus standi/make laws accessible to
		local communities
		5. Broadbase Membership of bodies setup under laws
	7.1.8.8	1. Integrate right to information in biodiversity
		related laws
		2. Use the Right to Information Act for public
		information provision
	7.1.9.1	1. Assess micro-economic measures from/livelihood
		perspective.
	7.1.9.2	6. Provide special funds for preventing wildlife
		related damage.
	7.1.9.3	1. Financially empower governance institutions at
		community level.
	7.1.9.4	4. Appropriate compensation for ecosystem benefits
		between states and regions.
	7.1.9.5	1. Introduce an ecosystem service tax in urban areas
		11. Mobilize external funding on indigenous terms
	7.1.10.1	1. Introduce materials efficiency in all existing
		technologies.
		3. Find the alternative natural resource raw materials.
		7. Promote biodiversity-friendly alternative products,
		recycling, and waste reduction
	7.1.10.2	1. Introduce new conservation technology & enhance

		available ones.
	7.1.11.1	1. United Nations Forum on Forests
		2. Framework convention on Climate change
		3. Persistent organic pollutant treaty
		4. Convention on control of Tran boundary movement
		of hazardous waste
	7.1.11.2	1. International Tropical Timber Organisation
		2. World trade Organization treaties
	7.1.11.4	1. Encourage use of Human Rights & Environment
		instruments
	7.1.11.5	1. Join & influence global biodiversity information facility
	7.2.1.1	6. Assess possible climate change impacts on
		domestic biodiversity
	7.2.2.1	1. Conserve domesticated landscapes.
	7.2.5.1	1. Clarify and update land records
	7.2.9.3	1. Create Domesticated Biodiversity Promotion Funds.
	7.2.3.2	1. Expand scope of botanical gardens to include
		agricultural diversity
	7.2.6.2	4. Document traditional knowledge through CBR's.
	7.2.8.1	2. Reforms in forest and wildlife related policies.
	7.2.8.2	1. Comprehensive policy on domesticated biodiversity
		2. Formulate a National Grazing Policy
	7.2.8.3	2. Integrate agro biodiversity into EIA.
		3. Make EIAs relating to agro biodiversity.
		4. Legal protection to agro biodiversity rich areas
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
	7.2.10.2	1. Ensure that genetically engineered or modified
		organisms used in agriculture and health, are safe
		for biodiversity and human health
	7.2.11.1	2. Agreement on Agriculture of WTO
		3. Biosafety Protocol of Convention on Biological Diversity
	7.2.11.2	2. General Agreement on Trade in Services of WTO
		3. Trade Related Intellectual Property Rights of WTO.
	7.3	2. Provide incentives to farmers/pastoralists for

		pro-wild diversity
	7.3	3. Generate awareness amongst different sectors
		about wildlife-agriculture
Ministry of External Affairs	7.1.2.9	3. Tackle trans-boundary threats such as dams,
		erosion etc
		2. Strengthen measures to combat trans-boundary
		poaching.
	7.1.7.5	1. Ensure all External aid to India integrates
		biodiversity concerns.
		2. Ensure all foreign investment in India integrates
		biodiversity concerns
		3. Ensure all multi-lateral agreements integrate
		biodiversity concerns.
	7.1.9.5	1. Introduce an ecosystem service tax in urban areas
		2. Introduce an industrial tax for biological resource
		& ecosystem use
		3. Introduce a tourism tax for biological resource &
		ecosystem use
Ministry of Finance	7.1.4.3	4. Ensure biodiversity concerns are integrated in
		tree plantation
	7.1.9.1	2. Phase out perverse subsidies
		3. Introduce new financial/fiscal incentives for biodiversity
	7.1.9.2	1. Assess central & state budgets for biodiversity
		livelihood perspective
	7.1.9.3	1. Financially empower governance institutions at commu
		nity level
	7.1.9.4	4. Appropriate compensation for ecosystem benefits
		between states and regions. 6. Encourage banks and
		banking institutions to generate funds for biodiversity
	7.1.9.5	1. Introduce an ecosystem service tax in urban areas
		2. Introduce an industrial tax for biological resource
		& ecosystem use
		3. Introduce a tourism tax for biological resource &
		ecosystem use

Ministry of Health	7.1.5.1	2. Secure freshwater wetland communities property rights.
	7.1.5.4	6. Ensure equitable benefits sharing of traditional
		knowledge.
	7.2.4.2	2. Integrate Nutritional local foods into public health
		programmes.
	7.2.6.1	1. Modify curriculum of courses in agriculture & health.
Ministry of Home Affairs	7.1.2.1	5. Special measures for PA & sensitive ecosystems.
	7.1.2.6	1. Preventive measures relating to 'natural' disasters.
	7.1.5.3	2. Initiate Joint Protected Area Management.
	7.1.6.1	1. Build capacity of officials from all line departments.
	7.1.7.1	7. Build capacity of officials at all levels of governance.
Ministry of Human Resource Development	7.1.5.4	5. Develop community-based intellectual rights systems
	7.1.6.4	3. Integrate biodiversity into existing vocational courses.
		5. Integrate biodiversity into adult and continuing
		education.
	7.1.6.5	1. Opportunities for non-formal education on biodiversity.
	7.1.6.6	1. Enhance educational role of municipal authorities
		and urban NGOs
Ministry of Industries	7.1.5.4	6. Ensure equitable benefits sharing of traditional
		knowledge
	7.1.5.5	3. Initiate a system of returns & rewards for intangible
		ecosystem benefits
		4. Integrate equitable benefit sharing into relevant policies
	7.1.6.12	1. Design programmes to orient industries to biodiversity
		related issues.
	7.1.8.1	1. Amend national and state level policies to integrate
		biodiversity
	7.1.8.3	2. Revise & strengthen national laws to integrate
		biodiversity
	7.1.11.1	2. Framework convention on Climate change
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
Ministry of Information and Broadcasting	7.1.6.13	1. Orient journalists to biodiversity related issues
		4. Sensitize newspaper and magazine, radio/TV

		towards biodiversity
Ministry of Law and Justice	7.1.5.1	4. Secure communities tenurial rights over forestlands.
		5. Land classification with ecosystems & livelihood
		6. Endow ownership over NTFPs to communities.
	7.1.5.2	1. Prepare database and maps on notified forests and
		'encroachments'
	7.1.6.9	1. Increase the capacity of the judiciary.
		2. Set up a Biodiversity and Environment Law Resource
		Centre at the Supreme Court, High Courts, and
		District Courts
		3. Introduce system of Law Clerks for Judges of
		Supreme & High Court.
	7.1.8.1	2. Reconcile laws and policies which are incompatible
		with each other and with principles of conservation,
		sustainable use, and equity
	7.1.8.6	1. Document and integrate customary law within
		statutory law
	7.1.8.7	2. Set-up environment Courts or Benches in existing courts.
		3. Review citizens' locus standi/make laws accessible to
		local communities
		5. Broadbase Membership of bodies setup under laws
	7.1.8.8	1. Integrate right to information in biodiversity-related laws
Ministry of Mines	7.1.6.12	1. Design programmes to orient industries to
		biodiversity related issues.
	7.1.7.3	1. Ensure that all energy and infrastructure development
		is respectful of biodiversity concerns.
	7.1.7.4	1. Ensure that mining is not detrimental to biodiversity.
	7.1.8.3	2. Revise & strengthen national laws to integrate
		biodiversity
Ministry of Non Convention Energy Sources	7.1.7.3	1. Ensure that all energy and infrastructure development is respectful of biodiversity
		concerns.
	7.1.10.1	4. Promote a range of non-conventional and alternative
		energy sources.
Ministry of Power	7.1.7.3	1. Ensure that all energy and infrastructure development

		is respectful of biodiversity concerns.
Ministry of Railways	7.1.6.15	4. Make creative use of public transport as an educational tool.
	7.1.7.3	1. Ensure that all energy and infrastructure development is respectful of biodiversity concerns.
Ministry of Road Transport and Highways	7.1.6.15	4. Make creative use of public transport as an educational tool.
	7.1.7.3	1. Ensure that all energy and infrastructure development is respectful of biodiversity concerns.
Ministry of Rural Development	7.1.2.7	1. Regenerate and restore degraded common lands.
	7.1.4.4	2. Encourage and facilitate traditional sustainable livelihoods
		4. Explore and introduce alternative livelihoods.
	7.1.5.1	1. Secure common property rights for marine communities.
		2. Secure freshwater wetland communities property rights.
		3. Secure terrestrial ecosystems users common property rights.
		4. Secure communities tenurial rights over forestlands.
		5. Land classification with ecosystems & livelihood
		6. Endow ownership over NTFPs to communities.
	7.1.5.2	1. Prepare database and maps on notified forests and 'encroachments'.
		2. Tally Forest and Revenue Department land records
		3. Survey and settlements for all forestlands.
		4. Initiate systematic addressal of disputed claims on lands to be notified
		5. Reclassify shifting cultivation lands as forest fallows.
		6. Use database & maps to 'freeze' illegal incursions.
	7.1.5.3	3. Integrate Socio economic principles in CBNRM Programmes.
	7.1.5.5	Ensure equitable sharing of benefits from the use and marketing of community-managed or developed resources

	7.1.6.1	4. Panchayati Raj institutions to conserve biodiversity.
	7.1.7.1	5. Move towards ecoregional planning
	7.2.5.1	1. Clarify and update land records
		2. Provide secure and clear tenure based on the above update
	7.2.5.3	4. Secure land and water rights for women
		5. Provide incentives to women for maintaining agro biodiversity.
Ministry of Social Justice and Empowerment	7.1.5.1	2. Secure freshwater wetland communities property rights.
		3. Secure terrestrial ecosystems users common property rights
		6. Endow ownership over NTFPs to communities.
	7.1.5.4	2. Use traditional knowledge in biodiversity management programmes
	7.1.8.1	2. Reconcile laws and policies which are incompatible with each other and with principles of conservation, sustainable use, and equity.
	7.2.5.1	1. Clarify and update land records
	7.2.5.3	3. Gender aspects into national and state level policy.
Ministry of Science and Technology	7.1.3.3	2. Set up new culture collection centers.
	7.1.4.4	4. Explore and introduce alternative livelihoods.
	7.1.5.4	2. Use traditional knowledge in biodiversity management programmes
		7. Code of ethics for researchers using traditional knowledge
	7.1.10.1	1. Introduce materials efficiency in all existing technologies.
		3. Find the alternative natural resource raw materials.
		7. Promote biodiversity-friendly alternative products, recycling, and waste reduction
	7.1.10.2	1. Introduce new conservation technology & enhance available ones.

Ministry of Road Transport	7.1.6.15	4. Make creative use of public transport as an
	and Highways	educational tool.
	7.1.7.3	1. Ensure that all energy and infrastructure development
		is respectful of biodiversity concerns.
Ministry of Tourism and Culture	7.1.7.1	8. Integrate funding for biodiversity concerns into
		government agencies
	7.1.7.2	1. Integration into national and state water programmes.
	7.1.8.1	1. Amend national and state level policies to integrate
		2. Reconcile laws and policies which are incompatible
		with each other and with principles of conservation,
		sustainable use, and equity
	7.1.8.3	2. Revise & strengthen national laws to integrate
		biodiversity
	7.1.8.5	1. Integrate biodiversity & equity responsibilities in central
		panchayat laws.
		2. Empower gram sabhas or village level institution to
		implement laws
Ministry of Tribal Affairs	7.1.2.1	7. Move towards a system of joint or participatory
		management
	7.1.5.3	3. Integrate Socio economic principles in
		CBNRM Programmes.
	7.1.5.4	2. Use traditional knowledge in biodiversity management
		programmes
		7. Code of ethics for researchers using traditional
		knowledge
	7.1.5.5	Ensure equitable sharing of benefits from the use and
		marketing of community-managed or developed resources
	7.1.7.1	5. Move towards ecoregional planning
	7.1.8.1	2. Reconcile laws and policies, which are incompatible
		with each other and with principles of conservation,
		sustainable use, and equity.
	7.1.8.5	1. Integrate biodiversity & equity responsibilities in
		central panchayat laws

	7.1.8.6	1. Document and integrate customary law within statutory law
	7.1.8.8	1. Integrate right to information in biodiversity-related laws
	7.1.9.3	1. Financially empower governance institutions at community level.
	7.1.10.1	5. Promote alternative and localized technologies in construction.
	7.2.5.1	1. Clarify and update land records 2. Provide secure and clear tenure based on the above update
	7.2.5.3	4. Secure land and water rights for women
Lead Agencies	Strategy	Action
	7.2.7.1	1. Integrate agro biodiversity into watershed development.
	7.3	3. Generate awareness amongst different sectors about wildlife-agriculture
Ministry of Urban Development and Poverty Alleviation	7.0.1	1. Formulate a National policy & perspective plan on land & water use 2. Provide legal banking to the national land/water use plan
	7.1.2.5	1. Assess +/-ve action impacts on historic & existing biodiversity 2. Planning: Norms, action for expansion areas. 3. Nurturing and restoration of current diversity 4. Prevent conversion, encroachment, & degradation. 5. Sustainable traditional & modern eco-friendly use 6. Awareness of multiple values of biodiversity. 7. Strengthen existing legal conservation measures. 8. Share Green funding. 9. Public participation and access to information.
	7.1.6.6	1. Educational role of municipal authorities and urban NGOs
	7.1.7.1	5. Move towards ecoregional planning
	7.1.8.2	3. Formulate a National Urban Environment Policy
	7.1.8.4	3. Enact an Urban Natural Heritage Act

	7.1.10.1	5. Promote alternative and localized technologies in construction.
Ministry of Water Resources	7.1.5.1	2. Secure freshwater wetland communities property rights.
	7.1.5.3	3. Integrate Socio economic principles in CBNRM Programmes.
	7.1.7.2	1. Integration of biodiversity into national and state water programmes.
		2. Move towards decentralised water harvesting schemes
	7.2.4.3	2. Ensure water security for agriculture through decentralisation
	7.2.8.1	3. Reorient Water Policy 2002.
Marine Products Export Development Authority	7.1.4.2	7. Ensure the sustainability of aquaculture.
National Afforestation and Ecodevelopment Board	7.1.2.7	1. Regenerate and restore degraded common lands.
National Biodiversity Authority	7.1.7.1	6. Create state and national level institutional structures.
National Bioresource Development Board	7.1.4.4	7. Enhance use of undervalued traditionally used bioresources, while ensuring their sustainability
	7.1.3.3	1. Collect information on existing culture collections.
	7.1.5.1	2. Secure freshwater wetland communities property rights.
National Bureau of Agriculturally Important Microorganisms	7.1.3.3	1. Collect information on existing culture collections.
National Bureau of Animal Genetic Resources	7.2.2.3	1. Promote participatory crop and livestock development
	7.2.2.4	1. Repatriate indigenous crop varieties and livestock breeds to places where they were once found
	7.2.3.1	3. Create a network of domesticated animal breeding centres
Lead Agencies	Strategy	Action
	7.2.5.4	2. Review existing breeding policy through consultative process involving all stakeholders
	7.2.8.4	1. Legislation on protection of domesticated biodiversity
National Bureau of Fish Genetic Resources	7.2.8.4	1. Legislation on protection of domesticated biodiversity

National Bureau of Plant Genetic Resources	7.1.2.6	2. Minimize the impacts of alien invasive species
	7.2.1.1	5. Assess the values provided by indigenous domesticated biodiversity
	7.2.2.3	1. Promote participatory crop and livestock development
	7.2.2.4	1. Repatriate indigenous crop varieties and livestock breeds to places where they were once found
	7.2.3.1	2. Create state, agro-ecozonal, and national gene banks.
	7.2.8.4	1. Legislation on protection of domesticated biodiversity
National Commission on Scheduled Castes & Scheduled Tribes	7.1.5.2	1. Notified forest legal status Database
		2. Tally Forest and Revenue Department land records
		3. Survey and settlements for all forestlands.
National Informatics Centre	7.1.6.15	1. Ensure proactive and strategic information dissemination through IBIS.
National Land Use Board	7.0.1	1. Formulate a National policy & perspective plan on land & water use
	7.1.5.1	3. Secure terrestrial ecosystems users common property rights
	7.1.7.1	5. Move towards ecoregional planning
National Remote Sensing Agency	7.1.1.1	11. Spread use of new information generation methods.
	7.1.1.2	1. Create an Indian Biodiversity Information System
National Sample Survey	7.0.1	1. Formulate a National policy & perspective plan on land & water use
		2. Provide legal banking to the national land/water use plan
	7.1.4.4	1. Carry out National Survey of biodiversity-based livelihood
National Wasteland Development Board	7.1.2.7	1. Regenerate and restore degraded common lands.
National Zoo Authority	7.1.3.1	1. Expand captive breeding of threatened & endemic species.
	7.2.3.2	2. Zoological parks to include indigenous livestock & poultry
National Museum of Natural History	7.1.1.2	5. Set up regional biological diversity repositories.

Natural Resource Data	7.1.1.1	11. Spread use of new information generation methods.
Management System		
National Board for Wildlife	7.1.2.1	7. Move towards a system of joint or participatory management
	7.1.2.4	1. Conservation plans for threatened, endemic species.
		2. Update the schedules of the Wild Life (Protection) Act.
National Council of Education Research & Training	7.1.6.4	1. Enhance biodiversity-related education in formal school system
Lead Agencies	Strategy	Action
		4. Develop educational inputs for ecosystem-based communities.
National Bank for Agriculture And Rural Development	7.2.9.1	1. Public sector lending to agriculture and animal husbandry
Planning Commission	7.0.1	1. Formulate a National policy & perspective plan on land & water use
		2. Provide legal banking to the national land/water use plan
	7.1.5.2	1. Prepare database and maps on notified forests and 'encroachments'
	7.1.7.1	4. Ensure inter-sectoral integration of biodiversity at state and central levels
		5. Move towards ecoregional planning
		6. Create state and national level institutional structures.
	7.1.7.3	1. Ensure that all energy and infrastructure development is respectful of biodiversity concerns.
	7.1.7.5	1. Ensure all External aid to India integrates biodiversity concerns.
		2. Ensure all foreign investment in India integrates biodiversity concerns
		3. Ensure all multi-lateral agreements integrate biodiversity concerns.
	7.1.9.2	2. Introduce natural resource budgeting in national & state budgets.
		3. Enhance the biodiversity budgets at centre and state

		5. Provide special budget consideration for ecologically fragile areas
	7.1.9.4	4. Appropriate compensation for ecosystem benefits between states and regions
Parliamentary Standing Committee on Environment, Science & Technology	7.1.6.1	2. Build capacity of political leaders at state & national levels
	7.1.7.1	6. Create state and national level institutional structures.
Tribal Cooperative Marketing Development Federation	7.1.5.1	6. Endow ownership over NTFPs to communities.
University Grants Commission	7.1.1.1	10. Encourage the widespread use of community methods and techniques for information generation
	7.1.6.4	2. Enhance biodiversity related education in college system
	7.1.6.13	2. Integrate biodiversity into journalism schools
	7.1.6.15	2. Bridge information & capacity gap in areas like taxonomy
1. Research Institutes under Government of India are under the section Research and Academic Institutions		

TABLE 7.2 STATE GOVERNMENT DEPARTMENTS AND AGENCIES

<i>Lead Agencies</i>	<i>Strategy</i>	<i>Action</i>
General (All Relevant State Government Departments)	7.1.2.1	3. Settle rights of people in protected areas
		5. Special measures for PA & sensitive ecosystems
	7.1.2.3	1. Encourage Community-based species conservation
		2. Provide incentives for community-based conservation.
	7.1.2.7	2. Restore mined lands
	7.1.4.2	7. Ensure the sustainability of aquaculture.
	7.1.4.3	4. Ensure biodiversity concerns are integrated in tree plantation
	7.1.5.1	6. Endow ownership over NTFPs to communities.
	7.1.6.2	2. Develop site-specific awareness material for diverse sectors.
	7.1.6.15	3. Integrate biodiversity into district gazetteers.
	7.1.7.1	2. Integration of biodiversity at local settlement level.

	7.1.8.7	1. Participatory monitoring mechanisms at center & state level
	7.1.9.2	4. Integrate biodiversity budget line into each ministry/department. 6. Provide special funds for preventing wildlife-related damage.
	7.1.9.5	12. Set-up dedicated biodiversity funds at local, state & national levels.
	7.2.5.1	2. Provide secure and clear tenure based land record clarification.
	7.3	4. Conserve wild relatives of crops & livestock
Large Scale Adivasi Multipurpose Societies	7.1.4.4	7. Enhance use of undervalued traditionally used bioresources, while ensuring their sustainability
North East Council	7.1.7.1	5. Move towards ecoregional planning
	7.1.8.6	1. Document and integrate customary law within statutory law
North East Indian State Governments	7.1.8.5	3. Build in Customary governance into Acts in Sixth Schedule Areas
State Agriculture Department (Including Extension Agencies)	7.1.7.2	1. Ensure that national and state water programmes integrate biodiversity concerns and values
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
	7.3	2. Provide incentives to farmers/pastoralists for pro-wild diversity
	7.2.1.2	1. Monitor status of domesticated biodiversity at the village level
	7.2.2.1	3. Promote use and conservation of uncultivated foods
	7.2.5.3	1. Introduce women's perspectives on yield and biodiversity.
		2. Move towards women occupying at least half of agricultural extension personnel positions
State Animal Husbandry Department	7.1.5.1	3. Secure terrestrial ecosystems users common property rights
		4. Secure communities tenurial rights over forestlands
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
Lead Agencies	Strategy	Action

	7.3	2. Provide incentives to farmers/pastoralists for pro-wild diversity
	7.2.3.1	3. Create network of domesticated animal breeding centres
	7.2.4.3	3. Ensure pastoral & agricultural communities fodder security
		4. Facilitate the availability of adequate organic manure
	7.2.5.1	3. Remove encroachments on grazing lands
	7.2.5.4	2. Review existing breeding policy through consultative process involving all stakeholders
		3. Role model facilitation for Government functionaries
State Environment Department	7.1.2.7	3. Regenerate and restore degraded inland water bodies.
	7.1.4.2	9. Move all freshwater wetlands towards 'wise use'
	7.1.7.1	4. Ensure inter-sectoral integration of biodiversity at state and central levels
State Education Department	7.1.6.4	4. Educational inputs for ecosystem -based communities.
		5. Integrate biodiversity into adult and continuing education
	7.1.6.5	1. Opportunities for non-formal education on biodiversity.
	7.1.6.6	2. Enhance networking and functioning of urban nature clubs.
State Forest Department/ Wild Life Divisions	7.1.2.1	1. Review current management practices from the biodiversity point of view and prepare comprehensive management plans
		6. Manage Buffer areas around PA & sensitive areas
		7. Move towards a system of Participatory management
		8. Manage buffer areas as ecologically sensitive areas.
		9. Expand & modify protected area network.
	7.1.2.3	1. Encourage Community-based species conservation
		4. Integrate biodiversity into bio-resource use activity
	7.1.2.4	3. Step up anti-poaching and anti-trade measures
		4. Rehabilitate populations of seriously threatened species
	7.1.2.6	4. Pro-active steps to counter, the impacts of climate change.

	7.1.2.7	3. Regenerate and restore degraded inland water bodies.
	7.1.2.8	1. Prevent & mitigate human-wildlife conflicts.
	7.1.3.2	1. Expand cultivation of threatened and endemic plant species.
	7.1.4.2	5. Regulate over-capitalization.
		6. Uniform ban on monsoon marine trawling while monitoring
		7. Ensure the sustainability of aquaculture
		9. Move all freshwater wetlands towards 'wise use'
	7.1.4.3	4. Ensure biodiversity concerns are integrated in tree plantation
	7.1.5.1	3. Secure terrestrial ecosystems users common property rights
		4. Secure communities tenurial rights over forestlands
Lead Agencies	Strategy	Action
	7.1.5.2	2. Tally Forest and Revenue Department land records
		3. Survey and settlements for all forestlands.
		7. Ensure Secure Land Tenure to Forest Villages.
	7.1.5.3	1. Ensure that socio-economic and gender equity is mainstreamed into JFM, Community Forest Management (CFM), watershed management, and Forest Development Agencies (FDAs)
	7.1.5.4	2. Use traditional knowledge in biodiversity management programmes
	7.1.5.5	Ensure equitable sharing of benefits from the use and marketing of community-managed or developed resources
	7.1.6.6	2. Enhance the networking and functioning of urban nature clubs
	7.1.7.2	1. Ensure that national and state water programmes integrate biodiversity concerns and issues
	7.2.2.1	3. Promote use and conservation of uncultivated foods
	7.2.4.3	3. Ensure pastoral & agricultural communities fodder security
	7.2.5.1	1. Clarify and update land records

		3. Remove encroachments on grazing lands
	7.2.5.3	4. Secure land and water rights for women
		5. Provide Incentives to women for maintaining agro
		biodiversity.
	7.2.5.4	Enhance livelihood security of nomadic pastoralists
		(all actions)
	7.3	2. Provide incentives to farmers/pastoralists for
		pro-wild diversity
State Irrigation Department	7.1.4.2	9. Move all freshwater wetlands towards 'wise use'
	7.1.7.2	1. Ensure that national and state water programmes
		integrate biodiversity concerns and values
	7.2.5.1	1. Clarify and update land records
	7.2.5.3	4. Secure land and water rights for women
		5. Provide Incentives to women for maintaining agro
		biodiversity.
State Land Use Board	7.1.2.1	7. Move towards a system of joint or participatory
		management
	7.1.5.1	3. Secure terrestrial ecosystems users common
		property rights
	7.1.5.2	1. Notified forest legal status Database
		2. Tally Forest and Revenue Department land records
		3. Survey and settlements for all forestlands.
	7.1.5.3	1. Ensure that socio-economic and gender equity is
		mainstreamed into JFM, Community Forest
		Management (CFM), watershed management, and
		Forest Development Agencies (FDAs)
Lead Agencies	Strategy	Action
	7.1.7.1	4. Ensure inter-sectoral integration of biodiversity at
		state and central levels
	7.1.9.2	5. Provide special budget consideration for ecologically
		fragile areas
	7.2.1.2	1. Monitor status of domesticated biodiversity at the
		village level
	7.2.4.3	3. Ensure pastoral & agricultural communities

		fodder security
	7.2.5.1	1. Clarify and update land records
		3. Remove encroachments on grazing lands
	7.2.5.3	4. Secure land and water rights for women
		5. Provide Incentives to women for maintaining agro
		biodiversity.
State Panchayat Departments (or equivalent)	7.2.5.3	5. Provide Incentives to women for maintaining agro
		biodiversity.
State Rural Development Department	7.1.5.1	1. Clarify and update land records
		3. Secure terrestrial ecosystems users common
		property rights
	7.1.5.5	Ensure equitable sharing of benefits from the use and
		marketing of community-managed or developed resources
	7.2.5.3	4. Secure land and water rights for women
		5. Provide Incentives to women for maintaining agro
		biodiversity.
State Department of Women & Child Development	7.1.5.1	2. Secure freshwater wetland communities
		property rights.
	7.1.5.3	3. Integrate Socio economic principles in
		CBNRM Programmes.
State Bioresource Board	7.2.9.1	1. Public sector lending to agriculture and animal
		husbandry
State Biodiversity Board	7.1.7.1	3. Ensure intersectoral Integration of biodiversity at
		district level
		6. Create state and national level institutional structures
State Fisheries Department	7.1.4.2	9. Move all freshwater wetlands towards 'wise use'
	7.1.5.5	Ensure equitable sharing of benefits from the use
		and marketing of community-managed or
		developed resources
State Tourism Department	7.1.2.7	3. Regenerate and restore degraded inland water bodies.
State Tribal Development Department	7.1.5.2	1. Notified forest legal status Database
		2. Tally Forest and Revenue Department land records
		3. Survey and settlements for all forestlands.
State Watershed Department	7.1.5.3	1. Ensure that socio-economic and gender equity

		is mainstreamed into JFM, Community Forest Management (CFM), watershed management, and Forest Development Agencies (FDAs)
	7.1.7.2	1. Ensure that national and state water programmes integrate biodiversity concerns and values
State Wildlife Advisory Board	7.1.2.1	2. Improve the effectiveness of protected area management practices

TABLE 7.3 DISTRICT AND MUNICIPAL AUTHORITIES

<i>Lead Agencies</i>	<i>Strategy</i>	<i>Action</i>
District Level Authorities	7.1.6.15	3. Integrate biodiversity into district gazetteers.
	7.1.9.5	12. Set-up dedicated biodiversity funds at local, state & national levels.
	7.2.2.1	2. Conserve outstanding sustainable farms as agro biodiversity hotspots
Disaster Management Authority	7.1.2.6	1. Preventive measures relating to 'natural' disasters.
Disaster Management Training and Research Institutes	7.1.2.6	1. Preventive measures relating to 'natural' disasters.
Local Agriculture Authorities	7.2.2.1	2. Conserve outstanding sustainable farms as agro biodiversity hotspots
Municipal Authorities/ Corporations	7.1.6.6	2. Enhance networking and functioning of urban nature clubs
		3. Use creative methods to spread biodiversity awareness
	7.1.3.2	2. Promote the use of home/terrace/kitchen/ institutional gardens to cultivate threatened and endemic wild plants

TABLE 7.4 COMMUNITIES AND COMMUNITY ORGANISATIONS

<i>Lead Agencies</i>	<i>Strategy Action</i>	
General (Including Local Communities, Experts, Representatives, Bioresource/Forest User Groups etc)	7.0.1	1. Formulate a National policy & perspective plan on land & water use
		2. Provide legal banking to the national land/water use plan
	7.1.1.1	3. Conduct ecosystems research

		7. Enhance understanding & use of community traditions & knowledge.
	7.1.1.2	4. Encourage Biodiversity-related community knowledge database
	7.1.2.4	3. Step up anti-poaching and anti-trade measures
	7.1.2.6	1. Preventive measures relating to 'natural' disasters.
	7.1.2.7	1. Regenerate and restore degraded common lands.
		2. Restore mined lands
	7.1.3.2	2. Promote the use of home/terrace/kitchen/institutional gardens to cultivate threatened and endemic wild plants
	7.1.4.2	8. Add value to catch and by-catch.
	7.1.5.1	4. Secure communities tenurial rights over forestlands.
	7.1.5.4	1. Build community capacity to value & protect their knowledge.
		2. Review existing breeding policy
	7.1.6.15	3. Integrate biodiversity into district gazetteers.
	7.1.7.1	1. Formulate guidelines to integrate biodiversity at local/national levels 5. Move towards ecoregional planning
	7.1.8.1	2. Reconcile laws and policies which are incompatible with each other and with principles of conservation, sustainable use, and equity
Lead Agencies	Strategy	Action
	7.2.2.2	2. Conserve threatened livestock breeds
	7.2.4.4	2. Promote sustainable cultured fisheries
		3. Promote sustainable apiculture
		4. Promote sustainable sericulture
		5. Promote ecotourism based on agro biodiversity
	7.2.5.3	7. Culturally and ecologically appropriate measures
	7.2.6.2	2. Local, state, and national biodiversity festivals
	7.1.6.2	2. Develop site-specific awareness material for diverse sectors.
	7.3	4. Conserve wild relatives of crops & livestock
Communities and Community	7.1.1.1	3. Conduct ecosystems research

Institutions (Including Panchayats, Gram Sabhas, Village Councils, EDCs, VFCs and Other Relevant Formal Local Institutions/ Authorities)		10. Community techniques for information generation
	7.1.1.2	4. Encourage Biodiversity-related community knowledge database
	7.1.1.3	1. Understand links between cultural & biological diversity
	7.1.2.2	2. Protect, revive, and revitalize sacred sites
		3. Undertake an assessment of the biogeographic coverage, and ecological values of CCAs.
		4. Expand the network of CCAs
		5. Experience of CCA to be applied to PA
		6. Facilitate a national CCA network
	7.1.2.3	2. Provide incentives for community-based conservation.
	7.1.2.6	1. Take preventive measures relating to 'natural' disasters.
		4. Pro-active steps to counter, the impacts of climate change.
	7.1.2.8	1. Prevent & mitigate human-wildlife conflicts.
	7.1.2.9	2. Strengthen international measures to combat trans-boundary poaching and wildlife trade
	7.1.3.2	2. Promote the use of home/terrace/kitchen/institutional gardens to cultivate threatened and endemic wild plants
	7.1.4.2	7. Ensure the sustainability of aquaculture.
	7.1.4.3	2. Ensure biodiversity concerns are built in community forest use
		4. Ensure biodiversity concerns are integrated in tree plantation
	7.1.4.4	3. Facilitate appropriate adaptations in traditional livelihoods.
		5. Strengthen biodiversity-based artisanal (including medicinal plant-based) livelihoods
		6. Introduce or strengthen bioresource-based enterprise amongst local communities

	7.1.5.1	1. Secure communities tenurial rights over forestlands.
		6. Endow ownership over NTFPs to communities.
	7.1.5.2	2. Tally Forest and Revenue Department land records
		3. Survey and settlements for all forestlands.
Lead Agencies	Strategy	Action
	7.1.5.3	3. Integrate Socio economic principles in CBNRM Programmes.
	7.1.7.2	1. Integration of biodiversity into national and state water programmes.
	7.1.10.1	6. Alternative, decentralized water harvesting systems.
	7.2.1.1	1. Undertake comprehensive surveys of domesticated bio diversity
		2. Document indigenous knowledge & practices to domesticated diversity
		4. Identify, map & study hotspots of domesticated biodiversity
	7.2.1.2	1. Monitor status of domesticated biodiversity at the village level
	7.2.2.1	2. Conserve outstanding sustainable farms as agro-biodiversity hotspots
		3. Promote use and conservation of uncultivated foods
	7.2.2.2	1. Conserve & re-introduce threatened indigenous taxa of crops.
	7.2.3.1	1. Create and strengthen community gene banks
	7.2.4.4	1. Facilitate biodiversity-based enterprise and livelihoods
	7.2.4.3	1. Maintain sustainable productivity of agricultural land
	7.2.5.2	1. Redistribute lands amongst landless and marginal farmers
	7.2.5.3	6. Establish rural enterprises based on traditional crops
Community Based Organizations	7.1.1.1	6. Determine sustainable use & practices for ecosystems
		7. Enhance understanding & use of community traditions & knowledge.
	7.1.1.3	1. Understand links between cultural & biological diversity
	7.1.2.2	5. Experience of CCA to be applied to PA

	7.1.9.2	7. Advocate special biodiversity funding at political level
	7.2.5.4	6. Networking, documentation and dissemination
	7.2.6.2	3. Documentation of traditional knowledge
Farmers' Groups/Networks/Associations	7.1.2.1	1. Review current management practices from the
		biodiversity point of view and prepare comprehensive
		management plans
	7.1.4.2	8. Add value to catch and by-catch.
	7.2.2.1	2. Conserve outstanding sustainable farms as
		agro-biodiversity hotspots
		4. Create a national Network of Domesticated Biodiversity
	7.2.2.3	1. Promote participatory crop and livestock development
	7.2.3.1	1. Create and strengthen community gene banks
	7.2.4.1	1. Integrate agro biodiversity in Public Distribution System.
	7.2.4.4	1. Facilitate agro biodiversity-based enterprise and
		livelihoods
		2. Promote sustainable cultured fisheries
		3. Promote sustainable apiculture
Lead Agencies	Strategy	Action
		4. Promote sustainable sericulture
		5. Promote ecotourism based on agro biodiversity
	7.2.5.3	1. Introduce Women's perspectives on yield and
		biodiversity.
	7.2.6.2	1. Awareness of biodiversity issues in local communities
		2. Local, state, and national biodiversity festivals
	7.2.9.1	3. Micro-credit schemes to encourage biodiverse farming
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
Fisherfolk Groups/Networks	7.1.4.2	7. Ensure the sustainability of aquaculture.
	7.1.5.1	1. Establish secure common property rights of traditional
		marine communities
		3. Secure terrestrial ecosystems users common
		property rights
		4. Secure communities tenurial rights over forestlands
	7.2.10.1	1. Promote organic & biodiverse agriculture technologies
Self Help Groups	7.1.1.2	4. Encourage Biodiversity-related community

		knowledge database
	7.1.3.2	2. Promote the use of home/terrace/kitchen/institutional gardens to cultivate threatened and endemic wild plants
		wild plants
	7.1.5.1	4. Secure communities tenurial rights over forestlands.

TABLE 7.6 NGOs, AND PEOPLE'S GROUPS/NETWORKS/MOVEMENTS

Lead Agencies	Strategy	Action
NGOs (General)	7.1.1.3	1. Understand links between cultural & biological diversity
	7.1.2.1	7. Move towards a system of joint or participatory management
	7.1.2.3	2. Provide incentives for community-based conservation.
	7.1.2.4	3. Step up anti-poaching and anti-trade measures
	7.1.2.6	4. Pro-active steps to counter, the impacts of climate change.
	7.1.5.2	3. Survey and settlements for all forestlands.
	7.1.5.4	1. Build community capacity to value & protect their knowledge
		2. Use traditional knowledge in biodiversity management programmes
	7.1.6.2	2. Develop site-specific awareness material for diverse sectors.
	7.1.6.5	3. Communities to handle new media technologies.
	7.1.6.6	2. Enhance networking and functioning of urban nature clubs.
		3. Use creative methods to spread biodiversity awareness.
	7.1.6.15	3. Integrate biodiversity into district gazetteers.
	7.1.9.5	10. Encourage NGOs/Academics & Citizens to generate biodiversity funds.
	7.1.11.2	2. World trade Organization treaties
	7.1.9.2	7. Advocate special biodiversity funding at political level
	7.1.9.4	4. Introduce innovative funding mechanisms
	7.2.2.1	2. Conserve farms as agro biodiversity hot specks

	7.2.2.2	1. Conserve & re-introduce threatened indigenous taxa of crops.
	7.2.5.4	6. Networking, documentation and dissemination
	7.2.6.2	3. Documentation of traditional knowledge
Ashoka Trust for Research Environment & Ecology	7.1.1.1	9. Integrate evaluation into ongoing schemes and projects
Beej Bachao Andolan	7.2.2.2	1. Conserve & re-introduce threatened indigenous taxa of crops
Bombay Natural History Society (BNHS)	7.1.6.6	2. Enhance networking and functioning of urban nature clubs
	7.3	1. Study relations between wild & domesticated biodiversity
Centre for Ecological Sciences	7.1.1.1	10. Community techniques for information generation
	7.1.2.8	1. Prevent & mitigate human-wildlife conflicts.
	7.1.5.4	3. Carry out community-based traditional knowledge documentation.
		4. Create network of traditional knowledge holders and databases
Lead Agencies	Strategy	Action
Centre for Environment Education (CEE)	7.1.6.2	2. Develop site-specific awareness material for diverse sectors.
	7.1.6.3	1. Orient NGO's in aspects of wild and domesticated biodiversity.
	7.1.6.6	2. Enhance networking and functioning of urban nature clubs.
Centre for Science & Environment	7.1.1.1	8. Research on biodiversity impacts of climate change.
C.P. Ramaswamy Environment Education Centre	7.1.6.2	2. Develop site-specific awareness material for diverse sectors.
	7.1.2.2	1. Review & strengthen the current status of CCA's.
Foundation for Ecological Society	7.1.8.3	1. Integrate biodiversity into the Constitution of India
Foundation for Revitalization of Local Health Traditions	7.1.1.1	10. Community techniques for information generation
	7.1.5.4	3. Carry out community-based traditional knowledge documentation.
		4. Create network of traditional knowledge holders

		and databases.
International Collective in Support of Fisherworkers Jal Biradri	7.1.5.1	1. Secure common property rights for marine communities.
	7.1.10.1	6. Promote alternative, decentralised water harvesting systems in villages and cities
Kennel Club of India	7.2.2.2	3. Conserve threatened livestock breeds
Kalpavriksh	7.1.2.2	1. Review & strengthen the current status of CCA's.
		3. Assessment of biogeography coverage of CCA
	7.1.2.8	1. Prevent & mitigate human-wildlife conflicts.
Legal Action for Wildlife & Environment	7.1.8.3	1. Integrate biodiversity into the Constitution of India
National Alliance of People's Movements	7.1.7.1	5. Move towards ecoregional planning
	7.1.7.2	2. Move towards decentralized water harvesting schemes
National Fish Workers Forum	7.1.5.1	1. Secure common property rights for marine communities.
	7.1.5.5	2. Ensure equitable benefits sharing use of biological resources
National Innovation Foundation	7.1.1.2	1. Create an Indian Biodiversity Information System
	7.1.5.4	3. Carry out community-based traditional knowledge documentation.
		4. Create network of traditional knowledge holders and databases.
People's Science Movement	7.1.1.1	10. Community techniques for information generation
People's Groups/ Networks/Movements	7.1.2.2	2. Protect, revive, and revitalize sacred sites
	7.1.5.2	1. Notified forest legal status Database
	7.1.7.2	2. Move towards decentralized water harvesting schemes
Lead Agencies	Strategy	Action
	7.2.2.1	4. Create a national Network of Domesticated Biodiversity.
	7.2.2.2	2. Conserve threatened livestock breeds
	7.2.9.1	3. Micro-credit schemes to encourage biodiverse farming

RANWA	7.1.2.2	1. Review & strengthen the current status of CCA's.
Society for Participatory Research in India	7.1.1.1	10. Community techniques for information generation
Sristi	7.1.5.4	3. Carry out community-based traditional knowledge
		documentation.
		4. Create network of traditional knowledge holders
		and databases
World Wide Fund for Nature India	7.1.1.2	1. Create an Indian Biodiversity Information System
	7.1.6.3	1. Orient NGO's in aspects of wild and domesticated
		biodiversity.
	7.1.6.6	2. Enhance networking and functioning of urban
		nature clubs.
Wildlife Trust of India	7.1.2.8	1. Prevent & mitigate human-wildlife conflicts.

TABLE 7.7 OTHERS

<i>Lead Agencies</i>	<i>Strategy</i>	<i>Action</i>
Commissioner of Charities	7.1.9.5	9. Encourage public/religious institutions to generate
		biodiversity funds.
Confederation of Indian Industries	7.1.2.3	6. Conserve biodiversity under corporate sector
	7.1.9.4	8. Encourage the Corporate Sector to generate funds
		for biodiversity
Courts (both High Courts and Supreme Court)	7.1.8.7	5. Broadbase Membership of bodies setup under laws
Educational Institutions (including schools)	7.1.2.3	8. Conserve biodiversity in academic campuses.
	7.1.3.2	2. Promote the use of home/terrace/kitchen/
		institutional gardens to cultivate threatened and
		endemic wild plants
Environmental Impact Assessment Consultants	7.1.7.2	2. Move towards decentralised water harvesting schemes
Federation of Indian Chambers of Commerce	7.1.2.3	6. Conserve biodiversity under Corporate sector
	7.1.6.12	1. Design programmes and packages to orient industries
		to biodiversity-related issues
Housing and Urban Development Corporation Ltd	7.1.2.6	1. Preventive measures relating to 'natural' disasters.

Industrial Associations	7.1.6.12	2. Promote responsible advertising by the corporate & development sector.
Journalism Institutes	7.1.6.13	2. Integrate biodiversity into journalism schools
Life Insurance Corporation of India and Other Insurance Companies	7.1.6.10	1. Orient financial institutions to support biodiversity related activities.
Lead Agencies	Strategy	Action
	7.1.9.5	7. Encourage insurance companies provide biodiversity friendly livelihood
	7.2.9.1	Crop and livestock insurance for organic farming.
Law Enforcement Agency (Including Police)	7.1.2.4	3. Step up anti-poaching and anti-trade measures
Media Groups	7.1.6.5	3. Build capacity of communities to handle new media technologies.
Mining companies	7.1.2.7	2. Restore mined lands
National Handicraft Board	7.1.4.4	5. Explore and introduce alternative livelihoods where regaining sustainability for an existing livelihood is not possible
	7.2.4.5	2. Encourage organic consumer networks
National Human Rights Commission	7.1.11.4	1. Encourage use of Human Rights & Environment instruments
National Financial Institutions	7.1.6.10	1. Orient financial institutions to support biodiversity related activities.
National Watershed Development Network	7.1.2.7	1. Regenerate and restore degraded common lands.
Police/Customs	7.1.5.4	1. Build community capacity to value & protect their knowledge.
Training Institutes	7.1.6.11	2. Strengthen capacity of police/customs towards biodiversity conservation.
Press Institute of India	7.1.6.13	2. Integrate biodiversity into journalism schools
Paper Industry	7.1.10.1	2. Reduce, eliminate pollution from existing technologies
Reserve Bank of India	7.1.6.10	1. Orient financial institutions to support biodiversity related activities.
	7.1.9.5	6. Encourage banks to generate funds for biodiversity.
Spiritual/Religious Associations	7.1.2.3	7. Conserve biodiversity in religious/spiritual institutions

or Institutions		
	7.1.9.5	9. Encourage public/religious institutions to generate
		biodiversity funds.
Worker Unions	7.1.6.8	1. Organise orientation and training sessions for workers.

Notes

1. The Convention on Biological Diversity requires countries to 'protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.'
2. The two terms, ecotourism and sensitive tourism, are used interchangeably here, for reasons of convenience and continuity.
3. Paragraph 3 of the Sixth Schedule of the Indian Constitution, 1950, empowers District Councils and Regional Councils to make laws relating to certain subjects enlisted in the same paragraph.
4. Whereas the potential capacity is estimated to be 20 MW/sq km, a capacity of just 60 MW has actually been installed