

Strategies and Actions

Structure of the Chapter

The strategies and actions recommended in this chapter are arranged as follows:

1. The overall **planning** and **governance** measures for biodiversity (*Section 7.0*) lay out the broad framework within the context of which the specific strategies and actions (*Sections 7.1* and *7.2*) are to be seen. This overall framework consists of landscape- and waterscape-level planning, integration of wild and domesticated biodiversity, and decentralised governance mechanisms.
2. The specific strategies and actions are divided into two main parts: **wild/natural biodiversity** (*Section 7.1*), and **domesticated biodiversity** (*Section 7.2*). A third part links wild and domesticated biodiversity (*Section 7.3*). *It should be noted that the domesticated biodiversity section is considerably smaller than that on wild biodiversity, because several strategies are relevant to both, and are not repeated after having been discussed in the section on wild biodiversity. These strategies are merely listed at the beginning of each relevant section in the domesticated biodiversity part.*
3. Strategies and actions for **aquatic (freshwater and marine) ecosystems** will often be different from those for **terrestrial ecosystems**, since these ecosystems differ considerably in species composition, ecosystem functions, physiological adaptations and resource values. Nonetheless, major issues related to the conservation and sustainable use of these resources have several commonalities (e.g. gaps in knowledge on the inventory and distribution of species, threats to their survival, impacts of natural and human forces, livelihood concerns of the resource-dependent populations, equitable access and benefit-sharing, etc.). Most of the strategies and actions outlined in this chapter are not differentiated for terrestrial or aquatic ecosystems. Only where there is a particular relevance or a need have specific strategies and actions for aquatic or terrestrial ecosystems been proposed.
4. *Sections 7.1* and *7.2* are each divided into 11 sub-sections, the first five of which can be seen as broad goals and the next six as means towards achieving these goals. These sections are:
 - i. Enhancing the **understanding** and **information** on biodiversity, including research;
 - ii. Strengthening **in situ conservation** measures;
 - iii. Strengthening **ex situ conservation** measures;
 - iv. Ensuring the **sustainable use** of biological resources, and the security of **sustainable livelihoods** based on these resources;
 - v. Ensuring **equity** in accessing, using, and sharing the benefits of biodiversity;
 - vi. Building **capacity** of all actors to achieve the above strategies;
 - vii. Achieving **integration** of biodiversity into various developmental and welfare sectors;
 - viii. Adopting **policy** and **legal measures** to achieve the above strategies;
 - ix. Ensuring adequate **financing** to achieve the above strategies;
 - x. Adopting **technological** means to achieve the above strategies; and;
 - xi. Advocating appropriate positions at **international forums**.



5. Each strategy is elaborated through one or more specific action points (though in some cases the strategy may only have one action point).
6. Each action point (and in a few cases the strategy itself, when specific actions are not necessary), is divided into the following:
 - i. A broad **description** of the action;
 - ii. The **justification** for the action;
 - iii. The suggested **responsibility** for taking the action (see also Section 7.5, Index of Lead Agencies Responsible for Strategies/Actions);
 - iv. The broad **time frame** within which the action needs to be taken;
 - v. The specific **steps** that need to be considered for the action (some action points may not have the steps elaborated; as far as possible the steps are in chronological sequence); and;
 - vi. Specific **Government of India schemes** that could be linked to the action, or in some cases, to the overall strategy (these are given in a box at the end of the action; note that these are not given for all actions).
7. It is important to read various strategies and actions in conjunction with each other, where they are related, and in the context of the entire action plan. **Taken out of context, these strategies and actions could be misleading or could lead to measures that contradict other parts of the action plan.** In particular, strategies and actions relating to conservation (e.g. those in Section 7.1.2) need to be read in conjunction with those relating to livelihoods (Section 7.1.4) and equity (Section 7.1.5), and vice versa, to ensure that the NBSAP's twin focus on ecological and livelihood security is maintained.
8. An overall **priority ranking** of the strategies is given at the end of this chapter, as Section 7.4.

What Strategies and Actions are Relevant for you?

Given that there are several hundred strategies/actions in this chapter, some readers may not want to go through the entire lot to glean what is relevant for them. An index of **lead agencies responsible for the strategies and actions** is given as Section 7.5; using this, government agencies, institutions, NGOs, community groups, and others can quickly locate which are the strategies and actions most relevant for them. However, readers are urged to read these in context of other strategies and actions, and the overall principles underlying the action plan (see Chapter 2).



7.0 Overall Planning and Governance

7.0.1 Section: Adopt A Landscape/Waterscape or Ecoregional Approach to Planning

Actions

1. Formulate a National Policy and Perspective Plan on Land and Water Use

Formulate a policy and perspective plan, which guides the process of long-term planning for the conservation and sustainable use of land and water across the country. Such a National Policy and Perspective Plan on Land and Water Use (NPPPLWU) should specify and map lands/waters for specific uses, including biodiversity conservation, subsistence and domestic use by local communities, commercial use by communities, and industrial/urban use. Clear priority needs to be given to ensuring ecological security and the livelihood security of those most dependent on biodiversity (see *Chapter 2* for a discussion of these concepts).

This policy should aim towards a clear demarcation of the following categories:

- i. Areas critical for wild biodiversity conservation (e.g. most current protected areas, community conserved areas, biosphere reserves, ecologically sensitive areas, etc.; see *Section 6.1.2*), which should not be open for any large-scale development, or any form of destructive/damaging human activity; such areas would include strictly protected sites where no human intervention is to be allowed (see *Section 7.1.2*, especially *Sections 7.1.2.1* and *7.1.2.2*);
- ii. Areas critical for domesticated biodiversity conservation and sustainable agricultural systems (see *Sections 7.2.2* and *7.2.4*, especially *Section 7.2.2.1*);
- iii. Areas critical for other ecosystem benefits, such as water flows and recharge, soil fertility, coastal protection, and others (including, for instance, all sources of major rivers, immediate catchments of lakes, mangroves/coral reefs, relatively intact forests and grasslands with high water retention and absorption abilities, etc.) (see *Section 7.1.2*, in particular *Section 7.1.2.3*);
- iv. Areas critical for sustainable extraction and use of natural resources and cultural/livelihood security, including forest, wetland, marine, grassland, agricultural/pastoral and other ecosystems, with primacy given to the domestic and livelihood needs of traditional local communities; these would to some extent overlap with the above three categories (see *Sections 7.1.4* and *7.2.4*);
- v. Areas other than the above, which can be used for producing industrial raw materials, locating industries, urban expansion, infrastructural development, and other such land/water uses (see *Sections 7.1.4* and *7.1.7*, especially *7.1.4.2*, *7.1.4.3*, and *7.2.4.3*);
- vi. Large ecoregions demarcated on biodiversity and cultural criteria, cutting across various land/water uses and some across state political borders, for integrated planning purposes (see *Boxes 7.0.2* to *7.0.5*), including Biosphere Reserves, river basins, etc.

These areas should be demarcated clearly at national and state levels, and an overall **land/water use atlas** depicting them should be produced. It should be noted that there will be some overlap amongst categories (i) to (iv) and (vi) above.

The NPPPLWU should be evolved through a **widespread process of consultation** with diverse stakeholders and rightholders, using the governance framework suggested in *Section 7.0.3*. At both micro and macro level, it should encourage a combination of community-based natural resource mapping incorporating cultural and customary rights, and perspectives with modern scientific tools and understanding.

The NPPPLWU should, in particular, help to:

- i. Encourage positive links between wild/natural biodiversity and domesticated biodiversity (as elaborated in *Section 7.3*); and;
- ii. Assess urban-rural links relating to biodiversity, acting to minimise the negative effects of one on the other.

The areas under (i) to (iv) above should ordinarily be 'off-limits' to any further large-scale commercial and devel-



omponential projects including big dams, mining, urban growth, large industries (including commercial tourism), major governmental infrastructure, ports, pipelines, etc. However, *within each of the above broad categories, there needs to be flexibility for micro-level management priorities, determined at local levels by the resident and user communities.* Necessary policy and legal backing needs to be given to ensure the above, and to recast the government's role in such areas away from *eminent domain to public trust* (see Box 7.0.1). The NPPPLWU should also incorporate sustainable livelihood options for people in such areas (see Sections 7.1.4 and 7.2.4), and devise strategies for larger landscape/waterscape- and ecoregional-level management within which such options are integrated. *It should specify that local ecological and livelihood security needs are to be accorded higher priority than 'national' and 'international' economic requirements like raw materials, energy, minerals, etc.*

The most important and urgent need is to go beyond the artificial boundaries of compartmentalised land/water uses, and conceptualise the conservation and management of entire landscapes/waterscapes. This 'landscape' (or 'ecoregional' or 'ecosystem') approach provides a comprehensive framework for bringing together a wide range of different approaches to conservation, helping to integrate or coordinate the various sectors with an interest in biodiversity, and regulate those sectors that could harm it. A movement towards such a vision of bioresource and land/water management, is slowly emerging, as evident from the numerous examples given in Chapter 6.

However, there remain a number of serious challenges and difficulties, such as:

- i. Inadequate understanding of the ecological, cultural, and socio-economic linkages across large landscapes and waterscapes, and of the impacts of activities in one region on other regions;
- ii. The thoughtless or careless actions of people who are impacting a much larger area than their own surrounds, e.g. upstream communities, or consumerist city-dwellers who 'parasitise' a very large hinterland;
- iii. Compartmentalisation of government departments, academic disciplines, and NGOs, with the effect of carving up a landscape/waterscape into artificially separated components and a serious lack of coordination amongst them, even in the case of Biosphere Reserves and other such initiatives at landscape/waterscape planning;
- iv. Short-term planning perspective, leaving out or neglecting the long-term impacts over large land/water areas;
- v. Vested interests, who would subvert ecologically and culturally sensitive planning processes;
- vi. Lack of institutional mechanisms for ensuring that local knowledge, rights, and priorities find a central place in planning processes and decisions; and;
- vii. Continued belief in the eminent role of the state to determine land and water uses (which needs to change to a 'public trust' regime; see Box 7.0.1).

Considerable effort and ingenuity will be needed to cope with these challenges. The increasing mobilisation of communities and people's groups across India is likely to play a key role in this, as is the growing realisation within government of the rationality of this approach.

Box 7.0.1 Role of the State Towards Public Lands/Waters: from Eminent Domain to Public Trust

The current role of the state, towards public territories is one of *eminent domain*, by which it has the right to assign these lands/waters for any purpose it deems to be in public interest. In many countries this has evolved towards the more enlightened notion of *public trust*, in which the state holds the lands in trust, ensuring that its long-term benefits to society are sustained. The Supreme Court of India has held such a notion to be applicable in India:

'The notion that public has a right to expect certain lands and natural areas to retain the natural characteristics is finding its way into the law of the land. The ancient Roman Empire developed a legal theory known as "the doctrine of public trust". It was founded on the idea that certain common properties as rivers, seashores, forests, and the air were held by the government in trusteeship for the free and unimpeded use of the general public...the public trust doctrine imposes the following restrictions...first, property subject to the trust must not only be used for a public purpose, but it must be held available for

use by the general public, second, the property may not be sold, even for a fair cost equivalent, and third, the property must be maintained for particular types of uses...’ (Supreme Court in *M.C. Mehta vs. Kamal Nath and others*. 1996(9) SCALE 141).

Any diversion of ecologically sensitive areas to other uses, or destruction of such areas, should therefore be unacceptable in such a public trust doctrine, since ‘public interest’ clearly needs to be defined as the protection of their critical ecological functions such as water and biodiversity. Moreover, any use of culturally sensitive areas, such as those under Schedule V and VI of the constitution (predominantly *adivasi* or tribal areas), also needs to be brought under the public trust doctrine, making it incumbent upon the state not to divert them through the use of the Land Acquisition Act or other instruments, for purposes that the tribal communities do not consider ecologically or culturally acceptable.

(Adapted from *Policies, Laws, Institutions, and Planning for Biodiversity BSAP*)

The ecoregional or ecosystem or landscape/waterscape approach is also gaining ground across the world. Its clear articulation at an international level has come recently from the Convention on Biological Diversity (see Box 7.0.5).

One of the strengths of such an approach would be to consider ecological systems as a whole, attempting to overcome the hurdles often placed by political boundaries. The 10 ecoregions chosen for planning under the NBSAP (see Map 1, Chapter 1), are examples of the kind of demarcation that can be done, based upon ecological and cultural attributes as also, to some extent upon administrative considerations (see Box 7.0.2). Mountain and hill ranges, river basins, coastlines and adjacent marine waters, wetlands and their catchments, plains, and other geographical or ecological features are obvious criteria for defining such ecosystems (see Box 7.0.3 on the Western Himalaya and the Gangetic Plains as ecoregions). Often communities themselves visualise or conceptualise such landscape/waterscapes, and attempt to manage them in an integrated manner (e.g. the Arvari Sansad in Rajasthan, and Rathong Chu valley in Sikkim; see Sections 6.1.2.2 & 6.1.7.2). Another example of the ecosystem approach, extremely relevant to countries like India, is the strategy related to ‘Cultivated Landscapes’ (see Section 7.2.2.1). Potentially, Biosphere Reserves could also play such a role, provided their current primary focus on protected areas shifts to a larger landscape level, with an integrated land/water use focus.

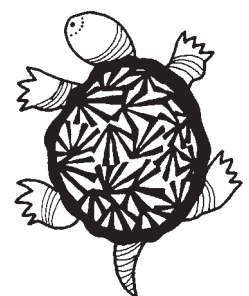
Justification: As of now, land use planning has not found a formal place within the existing policies and laws of the country, even though there has been talk of carrying it out for several years, and even though, there are land use planning bodies at national and state levels. While the justification for carrying out land-use planning has been mentioned in earlier sections, it is important to add here that any steps towards such an exercise would require the support of various government departments and local communities with a stake in natural resources. An overall policy integrating the roles of all such sectors is essential.

Suggested responsibility: Planning Commission, along with MoEF, Ministry of Agriculture, Ministry of Rural Development, Ministry of Urban Development, Ministry of Tribal Affairs, the National Soil Survey and Land Use Board, specialised land-use planning and remote sensing institutes, Anthropological Survey of India, existing inter-state commissions and agencies such as the North-East Council, river basin authorities, national level forums of bioresource user groups and networks like National Alliance of People’s Movements, and relevant NGOs.

Time frame: Four years

Steps:

- i. Planning Commission to set up an expert working group, to guide the drafting of the NPPPLWU, consisting of land/water use planning experts, wildlife and agro-biodiversity specialists, members of people’s action groups such as National Alliance of Peoples Movements, mapping and remote sensing institutions, officials from relevant ministries and departments, and relevant NGOs;
- ii. The expert working group to facilitate a process of local, state, and ecoregional (inter-state) land and water use planning (emphasising and utilising the opportunity of the 74th Amendment which requires developmental planning across the landscape; see Box 7.0.8), and to conduct public hearings and consultations in



- several relevant places in the country, covering diverse occupational and ethnic groups, ensuring especially the participation of ecosystem-dependent communities;
- iii. Distil essential points and elements from these local/state/ecoregional plans, and assess previous work on land/water use planning, by central and state agencies, to integrate into the NPPPLWU draft;
 - iv. Circulate the draft NPPPLWU widely for comments, in various Indian languages;
 - v. Finalise and pass the NPPPLWU, and set up participatory mechanisms to implement it and monitor its implementation, including through related legislation (see *Action 2* below).

Box 7.0.2 Ecoregional Authorities

(Recommendations of Ecoregional BSAPs)

Almost all the Ecoregional BSAPs prepared as part of the NBSAP process have suggested the need for the establishment of an authority or a monitoring body for an entire ecoregion. These proposed authorities include:

- An **Aravalli Development Authority**, with the purpose of 'coordinating conservation, development, and judicious utilization of the natural resources of the Aravallis, with the states of the ecoregion' (*Aravalli Ecoregional BSAP*)
- An independent **East Coast Interstate Ecoregional Biodiversity Committee**, comprising representatives from all the eastern coastal states (*East Coast Ecoregional BSAP*).
- A **Regional Biodiversity Conservation and Management Authority** for the contiguous forest/tribal belts of Maharashtra and Chhattisgarh, headquartered at Nagpur and Jagdalpur (*Central Forest Belt Ecoregional BSAP*).
- A **North-East Ecoregional Biodiversity Conservation Authority** (*North-East Ecoregional BSAP*).
- A **Coastal Biodiversity Authority** (CBA), comprising members from line agencies of coastal states, academics, communities, and other sections of society of the western coastal states (*West Coast Ecoregional BSAP*).
- As part of the strategy for Conservation sites outside Protected Areas (PAs) in Western Himalaya, a **management network (authority)**, involving municipal boards, universities, college and school authorities, district administration, and people's representatives (*West Himalaya Ecoregional BSAP*).
- A **Western Ghats Conservation, Planning and Development Board**, vested with the authority, to examine and approve/modify/reject any proposal or activity (including 'Impact Assessments'), which has a bearing on biodiversity conservation, planning and development (*Western Ghats Ecoregional BSAP*).
- A **Gangetic Plains Inter-state Committee/Ecoregional Authority** to oversee and enforce the proposed actions and monitor the outcome on a periodic basis, and to ensure that local communities play an active role in such a committee (*Gangetic Plains Ecoregional BSAP*).

Box 7.0.3 The Ecosystem Approach in the Gangetic Plains and Western Himalaya

(Recommendations of Relevant BSAPs)

Gangetic Plains: 'In order to protect and conserve the biodiversity of the river, it is essential to include the floodplains and entire catchment area with the water body of the river under one umbrella. The various activities in the floodplains and catchment area must be monitored regularly to avoid any adverse effect in the river. The cultivation in riparian zone up to the water line and in the catchment area of the river adds nutrients, chemical pesticides and silt load to the river. Promotion of biofertiliser and biopesticides in the catchment area will certainly improve the condition of rivers. Plantation in the catchment area should be encouraged with site-specific and commercially important trees. It will definitely divert people from agriculture to horticulture and silviculture. Promotion of agro-forestry practices will reduce the silt load in the surface run-off.'

Other measures suggested include treating the entire basin as a single unit (integrated land/water use planning), setting up of a Centre of Excellence for research, and an ENVIS Centre for information collation and dissemination.

Western Himalaya: Integrate crop fields, orchards, pastures and grasslands, agro-forests, tree plantations and natural forest in such a way that the overall land cover gives the impression of an intermediate 'forest type' with a mix of natural and human-made components. Here the intermediate forest type includes a range of modified and transformed forest types evolved with local communities. It could be promoted in areas under the influence of human settlements.

The 'intermediate' nature of such forests is with respect to their position between natural forest and plantations in vegetational composition, between the low intensity of natural forest exploitation systems and the high intensity of plantation system with selected cultivars.

The approach should be to link and nest various forms of agriculture (including pastoralism), horticulture, plantations and natural forests, with varying degrees of mixing depending upon the natural terrain, climate and socio-economic needs of communities.

Departments of Horticulture, Agriculture, Animal Husbandry, Fisheries, and Forest need to interact and develop a participatory approach to develop a balanced mix of different systems giving an overall impression of intermediate forest system so that a certain level of ecosystem benefits continue to flow. This would be a highly dynamic and linked system – for example, natural forests would provide litter for manuring crops and orchards. This needs a landscape or bioregional/ecoregional approach, which attempts to see entire ecological units in a holistic fashion, and integrates various land/water uses within this unit, by assessing the impacts of one use or value on the other. This approach also requires the central involvement of local communities, NGOs, and scientific institutions.

With respect to the linkage between the **Western Himalaya and Gangetic Plains**, there is a need to recognise the flow of ecosystem benefits from the former to the latter, and develop a payment system (see Section 7.1.9.4, Action 4). Corridors for upward migration of species (expected when global warming increases in intensity) need to be jointly developed. This may particularly apply to dry deciduous forest vegetation along the river courses in the mountains, as these areas connect tropical plains, foothills, Shivaliks and part of the Lesser Himalaya.

Sources: *Gangetic Plains Ecoregional BSAP, Western Himalaya Ecoregional BSAP*

2. Provide legal backing to the national land/water use plan

Provide a secure legal backing to the NPPPLWU, by using appropriate provisions of the Environment Protection Act, the Biological Diversity Act, the Wildlife (Protection) Act, the National Wildlife Action Plan, the panchayat laws including the Panchayat (Extension to Scheduled Areas) Act, and the constitutional provisions for Schedule V and VI areas. This should incorporate a clear provision for a transparent process by which changes can be made in the NPPPLWU, including public hearings and consultation, particularly with populations that may be affected by such changes. It may also require a review of current legal classification and demarcation of forest, revenue, and other lands, conforming more closely to ecological and cultural boundaries than to administrative ones (see also Sections 7.1.5 and 7.1.8). The legal measures should also relate to the overall governance structure being recommended in Section 7.0.2 below.

Legal backing could also be given to ongoing initiatives at landscape level planning, including official ones such as at Chilika Lake (Orissa) and the Nilgiri Biosphere Reserve (Tamil Nadu/Kerala/Karnataka), and people's efforts such as at the Arvari Basin (Rajasthan) (see Section 6.1.7.2).

Suggested responsibility: As in Action 1 above, and also including the Ministry of Law.

Box 7.0.4 Regional Planning for Conservation and Development: Recommendations from a National Workshop

A. Incorporation of Ecological Concerns in Landscape/Regional Planning

- Identify on priority basis, clusters of PAs and non-PA areas which seem contiguous through potential corridors and linkages.
- Consider assemblage of large mammals and patterns of dispersal on the basis of recorded events (scientific and historical) to delineate the landscape.
- Characterize ecological features and attributes such as terrain, topography, hydrology, artifacts, flora and fauna in identified landscapes.

- Superimpose land use features, settlements, and livestock distribution to assess biotic pressures on the landscape.
- Undertake SWOT (Strength, Weakness, Opportunities and Threats) analysis to understand interrelationships between ecological, social, cultural and economic attributes.
- Assign priorities, based on the statement of conservation values and objectives.
- Evolve mechanisms and processes to ensure strategy continuum across Wildlife Management Plans, Forest Working Plans and District and Panchayat Plans.

B. Building Alliances: Mechanisms for Inter-Agency Cooperation, Inter-State Relations, Trans-Boundary Issues and Ecodevelopment

- Build an information base through research and monitoring, integrate into the planning process; and integrate local indigenous knowledge and modern scientific knowledge.
- Encourage and strengthen local institutions through appropriate legal and research inputs.
- Pick up commonalities of agenda between different agencies and Government sectors for integrated planning (e.g. water resources, ecotourism, rural development, watershed development, employment and agriculture).
- Assess Tenth Five-Year Plan approach paper and sectional drafts from the biodiversity point of view, and develop strong mechanisms for effective advocacy for Regional Planning.
- Institutionalize dialogue at different levels (PA, State, Village and within Forest Departments) and build alliances with people's initiatives.
- Revitalize institutions/statutory bodies (e.g. State Wildlife Advisory Board, National Board for Wildlife).
- Strengthen inter-sector linkages and evolve planned mechanisms for resource amelioration, including assigning overriding priority to local community needs.
- Identify and use existing fora to build consensus on ecological and economic concerns and also sensitize others (such as through Indian Society of Ecological Economics, and the NBSAP network).
- Build capacity through skill development and attitudinal reorientation of Government organizations, NGOs, Panchayats and communities to achieve the objectives of integration of conservation and development at a regional scale.
- Develop regional planning as an integral component of their curricula of existing formal institutions.
- Evolve fora and mechanisms for conflict resolution at different levels.
- Set up PA-and landscape-level bodies comprising primary stakeholders for participatory management.
- Develop demonstration models of integrated regional planning to promote the concept.
- Formulate land/water use plans at local, state, national levels based on the regional approach. These plans should identify critical conservation areas within and across stated levels where human activities should be compatible with conservation values.

Source: Regional Planning for Conservation and Development: Recommendations of the National Workshop, 6-8 August, 2001, New Delhi, jointly organised by Wildlife Institute of India and Project Tiger

Box 7.0.5 The Ecosystem Approach in the Convention on Biological Diversity

At its fifth meeting, the Conference of Parties (COP) of the Convention on Biological Diversity (CBD) adopted a holistic approach to biodiversity called the 'Ecosystem Approach'.

Description of the Ecosystem Approach

1. The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Thus, the application of the ecosystem approach will help to reach a balance of the three objectives of the Convention: conservation; sustainable use; and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.
2. An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organisation, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognises that humans, with their cultural diversity, are an integral component of many ecosystems.

3. This focus on structure, processes, functions and interactions is consistent with the definition of 'ecosystem' provided in Article 2 of the Convention on Biological Diversity: "Ecosystem' means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.' This definition does not specify any particular spatial unit or scale, in contrast to the Convention definition of 'habitat'. Thus, the term 'ecosystem' does not, necessarily, correspond to the terms 'biome' or 'ecological zone', but can refer to any functioning unit at any scale. Indeed, the scale of analysis and action should be determined by the problem being addressed. It could, for example, be a grain of soil, a pond, a forest, a biome or the entire biosphere.
4. The ecosystem approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning. Ecosystem processes are often non-linear, and the outcome of such processes often shows time-lags. The result is discontinuities, leading to surprise and uncertainty. Management must be adaptive in order to be able to respond to such uncertainties and contain elements of 'learning-by-doing' or research feedback. Measures may need to be taken even when some cause-and-effect relationships are not yet fully established scientifically.
5. The ecosystem approach does not preclude other management and conservation approaches, such as biosphere reserves, protected areas, and single-species conservation programmes, as well as other approaches carried out under existing national policy and legislative frameworks, but could, rather, integrate all these approaches and other methodologies to deal with complex situations. There is no single way to implement the ecosystem approach, as it depends on local, provincial, national, regional or global conditions. Indeed, there are many ways in which ecosystem approaches may be used as the framework for delivering the objectives of the Convention in practice.

Principles of the Ecosystem Approach

The following 12 principles are complementary and interlinked:

Principle 1: The objectives of management of land, water and living resources are a matter of societal choice.

Principle 2: Management should be decentralised to the lowest appropriate level.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Principle 4: Recognising potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem management programme should: (a) Reduce those market distortions that adversely affect biological diversity; (b) Align incentives to promote biodiversity conservation and sustainable use; (c) Internalise costs and benefits in the given ecosystem to the extent feasible.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem benefits, should be a priority target of the ecosystem approach.

Principle 6: Ecosystems must be managed within the limits of their functioning.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Principle 8: Recognising the varying temporal scales and lag-effects that characterise ecosystem processes, objectives for ecosystem management should be set for the long term.

Principle 9: Management must recognise that change is inevitable.

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Source: Decisions Adopted By The Conference Of The Parties To The Convention On Biological Diversity At Its Fifth Meeting. UNEP/CBD/COP/5/23. Nairobi, 15-26 May 2000.

7.0.2 Section: Strengthen a Decentralised Natural Resource Governance Structure

Move towards a governance structure for natural resources that is truly decentralised and democratic, sectorally coordinated, and able to work effectively at all scales from local to national. Such a structure should aim to shift from representative to participatory democracy, ensuring that citizens have a meaningful voice in all relevant decision-making forums.



Justification: A successful landscape/waterscape approach, if it is to cover the entire country, needs multiple layers of governance and management. It is clear that today's governance structures in India are not quite able to (or sometimes willing to) achieve the goals of conservation, sustainable use, and equity relating to biodiversity. It is also clear that decision-making today (based largely on a representative model of democracy) often leaves out those people who are most critically affected by the loss of biodiversity. The following governance framework is proposed for the country (with the caveat that this needs to be worked out in much greater detail):

1. At the **village level**, *panchayats* are already mandated by the Constitution. However, greater focus needs to be on empowering the *gram sabha*, village tribal council, or other equivalent body (here referred to as '**village assembly**') that consists of all the adults of the hamlet or village and not only a small number of 'representatives'. This should be the functional decision-making unit, where all adult women and men are conveniently able to participate in decision-making using the basic principles of participatory democracy (rather than 'representative' democracy, see *Box 7.0.7*), and where rights and responsibilities are clearly established and transparent (as specified in other sections like *Sections 7.1.5.1* and *7.2.5.1*). All critical decisions relating to local natural resources should be taken by the village assembly, with decisions at larger (district, state, national) levels involving local resources being taken only with the involvement and consent of the relevant village assemblies. Special provision needs to be made to facilitate the equal participation of women and other underprivileged sections including the landless (for some recommendations on this, see *Strategies 7.1.5.3, 7.1.5.4* and *7.2.5.2*), and to revive and strengthen community spirit (as elaborated in *Box 7.0.6*).

For the purposes of the Biological Diversity Act, the term 'local body' used therein should refer to the village assembly. The Biodiversity Management Committees (BMCs), for which provision is made in the Act, should either be this assembly as a whole, or a subset established by it, which is accountable to the assembly. Links also need to be made between these Committees and other bodies that may already exist for overlapping purposes, such as Forest Protection Committees, *Van Panchayats*, Ecodevelopment Committees, Watershed Committees, Water Users Associations, etc.; indeed, it may be appropriate to consider adapting such existing committees to also take on the tasks of the BMCs, by making them more democratic and accountable to the village assembly. Finally, financial autonomy and control should also be strengthened at the level of this assembly.

Box 7.0.6 Revitalise and Nurture Community Spirit and Innovation

Social, economic and other measures are needed to revive, strengthen and protect community spirit and innovation among ecosystem- and biodiversity-dependent people.

Justification: The loss of community spirit and communal management controls is known to be one of the major causes of loss of biodiversity (see *Section 5.2.2*). Ultimately, therefore, the effort towards conservation (especially common property resources such as forests, grasslands, wetlands, marine areas, as also agricultural ecosystems) also needs to be an effort towards revitalising and nurturing communities themselves. The converse is also true – the loss of biodiversity sometimes leads to community breakdown.

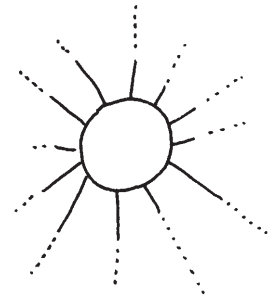
Suggested responsibility: Community institutions, with help from NGOs, government agencies, and independent experts and activists.

Time frame: Ongoing

Steps

- i. Encourage and support community (*adivasi*/farmers/fisherfolk) networks on biodiversity.
- ii. Use Biodiversity Management Committees under the Biological Diversity Act to facilitate regular dialogues and conflict resolution amongst various sections of the village.
- iii. Initiate Participatory Community Natural Resources Planning at the village level. Such planning should include discussion on the human dimension of biodiversity.
- iv. Encourage Community-based audit of biodiversity, and its contributions to local ecology and economy.

2. In the case of **towns** and **cities**, the basic decision-making unit has been mandated in the 74th Constitutional Amendment to be the **urban ward**. Such wards need to coordinate with each other on common property resources that harbour biodiversity, including urban green areas and wetlands. Facilitation for such coordination, and for wards to be able to perform conservation and sustainable use functions, should be the responsibility of municipal corporations or equivalent city management bodies, with a central role being played by NGOs and independent experts. Each town/city should also have an overall Biodiversity Management Committee, comprising officials from relevant line departments, NGOs, independent experts, and representatives of wards on a rotational basis.
3. *Governance structures need to essentially emanate from these basic units of the village assembly and the urban ward (see Box 7.0.8), and all decisions relating to the resources within the jurisdiction of these bodies should be taken only with their involvement and consent (thereby moving from a representative to a participatory democratic system, see Box 7.0.7). In rural India, ecologically defined **village clusters** (such as those around a forest patch or wetland, or those in a micro-catchment or valley), should be facilitated to federate, and representatives of each *gram sabha* chosen by the *sabha* members should be members of the governing bodies of these federations. Where appropriate, these would merge with or be part of apex tribal governing bodies and *zilla* (district)-level bodies that may already exist, while moving these also towards more democratic functioning.*



These people's forums or associations should be linked to **micro-landscape-level bodies**, which also have representation of the relevant government line departments. Existing initiatives towards this kind of structure, such as the District Planning Committees, District Rural Development Agencies, and Forest Development Agencies, need to be reviewed and reoriented keeping in mind the need for local community empowerment and the sharing of decision-making powers.

4. Such village clusters would in turn be amalgamated into larger administrative units, including at **taluka** and **district** levels. At this level, coordination between the rural and urban bodies responsible for biodiversity needs to be established. The **District Planning Committees** (DPCs) should include, on a rotational basis, representatives of village clusters and urban committees. The same would apply in the case of Autonomous District Councils (see Box 7.0.9).

Box 7.0.7 Rights and Responsibilities Regarding Decision-making: Moving towards Participatory Democracy

Increasingly, in India and other countries, citizens are no longer content to let their elected or selected representatives take key decisions that impact their lives. They want a say in such decision-making, both because such a process may more accurately reflect ground reality, and because the sense of ownership this gives to citizens makes the decision's implementation more effective. In other words, there is a move away from 'representative democracy' to 'participatory democracy'. Such a move is as necessary in the case of biodiversity (and more generally, natural resources) as in any other field. A classic illustration of this is the slogan of the villagers of Mendha (Lekha) in Maharashtra, who have defined their move towards tribal self-rule as '*Mawa nate mate sarkar, Dilli, Bombai mawa sarkar*' (our representatives make the government in Delhi and Bombay, and we are the government in our village). The role of the government in such a situation is clearly that of facilitation, mediation for dispute resolution, guarding citizens from destructive outside forces etc.

Such a move would require the following elements in relation to biodiversity:

1. The right of a community to meaningfully participate in all decisions related to territories and natural resources on which it is dependent or to which it has a customary claim, and the responsibility to ensure the conservation and sustainable use of related biodiversity; this entails effective access to all forums of decision-making;
2. The right to receive and obtain all relevant information, in forms that are locally understandable and accessible to all, and the responsibility of making available relevant information (within the bounds of traditional knowledge protection, as set out in Section 7.1.5.5);

3. The right to participate in ecological and social assessments, monitoring and evaluation, and other such processes emanating from outside, and the responsibility of carrying these out with respect to their own activities;
4. The right of free, prior, and informed consent (as described in *Box 7.1.5.1*);
5. The responsibility of ensuring that women and other underprivileged sections within the community have full access to decision-making forums and equitable access/share of benefits that accrue (*see Section 7.1.5.4*);
6. Other such rights and responsibilities that would ensure meaningful decisions being taken on conservation, sustainable use, and equity.

Box 7.0.8 Urban and Rural Natural Resource Governance: The Role of the 74th Amendment

(*see also Section 7.1.8.5, regarding the 73rd Amendment*)

Certain provisions of the 74th Constitutional Amendment (Nagarpalika Act) are of great relevance to decentralised governance of biodiversity and natural resources:

Art 243-ZD 2(b) provides for a representative District Planning Committee, and Metropolitan Planning Committee in case of metros (with population exceeding 10 lakhs). These Planning Bodies are constituted with due representation of elected representatives.

The article states that 'District Planning Committee shall, in preparing the draft development plan

- a. have regard to:
 - i. matters of common interest between the Panchayats and the Municipalities including **spatial planning, sharing of water and other physical and natural resources, the integrated development of infrastructure and environmental conservation;**
 - ii. the extent and type of available resources whether financial or otherwise;
- and
- b. consult such institutions and organizations as the Governor may, by order, specify.'

It may be noted from the above clause that **there are several opportunities to intervene for biodiversity and environmental conservation** within the framework of the local governance initiatives. The clause is so framed that it stresses the need for spatial planning within a district, but this does not prevent neighbouring districts, even from different states, from meeting and exchanging views on common use of natural resources or environmental conservation initiatives. The Committee, which has recommendatory powers, would have to make its voice felt within the overall Governance structures of the State, by preparing a Development Plan (Clause 4 of the Article). This **Development Plan** would primarily focus on the needs of the District, but can also present the overarching objective of planning spatially across districts sharing common natural resources or habitats.

In the case of Metros, the Metropolitan Planning Committee will 'prepare a draft development plan for the Metropolitan area as a whole' [Art. 243-ZE (i)]. The composition does not explicitly include village-level institutions where the metropolitan area includes rural settlements. In constituting this Committee (the same applies to the DPC) there should be representation not from only higher levels, say *Taluka Panchayats*, but also from *Gram Sabhas* and Ward Committees, as the case may be. This can be on a rotational basis, as proposed, provided the composition includes representatives that are closest to the people, at smaller units of governance. Even 10 years after the enactment, most States have ignored their responsibility in implementing this provision, as also the need for constituting Ward Committees. Communities and people's movements need to step up their advocacy on these issues.

Art 243-ZE 3 (i) as quoted above, re-emphasises the need for coordination between Municipalities and Panchayats, including 'coordinated spatial planning' and 'environmental conservation'. On due consultation with 'institutions and organisations', it advocates the formulation of a 'development plan' to be forwarded for the overall planning within the State. This could be a powerful vehicle for the proposed land and water use planning process proposed in *Section 7.0.1*.

The Twelfth Schedule, which provides a list of issues within the mandate of local governance, explicitly recognises various

features of biodiversity conservation and environmentally compatible planning. These include regulation of land-use; water supply for domestic, industrial and commercial purposes; urban forestry; protection of the environment and promotion of ecological aspects; and provision of urban amenities and facilities such as parks, gardens, and playgrounds.

It would be appropriate to link the Biological Diversity Act (BD Act), with the above features of the 74th Constitutional Amendment. For instance, if the BD Act mandates the creation of a forum whose exclusive function is biodiversity-related, then that forum should report to and work within the ambit of the various institutions (e.g. District Planning Committee), set up under the constitutional amendments.

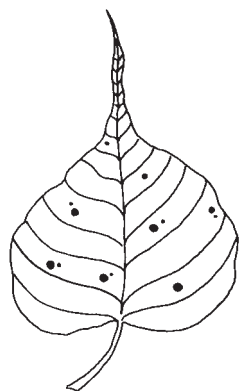
Adapted from Contribution by Leo Saldanha

Box 7.0.9 Autonomous District Councils

(Recommendations from various BSAPs)

- The **North-East Ecoregional BSAP** states that the forests under the control of Village Councils, Anchal Samitis and other traditional institutions such as Syiemship, Sirdarship, Doloiship and Nokmaship are usually managed by customary laws. However, the District Council Acts, wherever applicable to these forests, are too weakly enforced. As part of its analysis of smuggling across international borders, the BSAP states that 'strengthening and empowering the District Council forest protection mechanism as well as involving the local people through constituting forest protection committees and giving the total responsibility of protection to them seem to be the only possible solution to this problem.' Many of the actions presented in the BSAP give the responsibility to these councils, along with other agencies.
- The **Karbi Anglong Sub-state BSAP** states that the Karbi Anglong District Council has a major role in any kind of biodiversity conservation movement in the area. Several responsibilities have been entrusted to the District Council.
- The **Arunachal Pradesh State BSAP** notes that the 'tribal council unlike the formal judiciary is more accessible to the local people, especially to those residing in the remote areas.'
- The **Mizoram State BSAP** highlights the role of the autonomous district councils in the state towards the management of the supply and safety reserves (see Section 6.1.8.2).
- The **Ladakh BSAP** suggests several responsibilities for the Ladakh Hill Development Council (LAHDC). It recommends that the LAHDC submit a proposal to the Jammu & Kashmir Government to incorporate biodiversity protection into the Ladakh Hill Development Council Act. It also suggests that a research cell be constituted within LAHDC to function as a repository of all biodiversity research work conducted in Ladakh.

5. These DPCs, and representatives of village clusters and urban committees on a rotational basis, should be represented on the **State Biodiversity Boards**, which are mandated under the Biological Diversity Act. It is critical that these Boards go beyond the current composition provided for in the Act, and include a substantial cross-section of women and men from the grassroots, and in particular from those underprivileged sections who are most dependent on biological resources. These district and local bodies should also be represented on the key state-level decision-making bodies, including the **Planning Board**, and have a say in the **Committee of Secretaries** and the **Council of Ministers**.
6. There is a critical gap in current governance structures relating to biodiversity, which is to do with **inter-state issues**. Specific recommendations on this have been made (see Section 7.0.1), but the structures needed would in most cases have to be created anew, since there are none that are currently relevant. Under NBSAP, for the 10 ecoregions that cut across states, the recommendation is to create an appropriate **Ecoregional Authority**, with representation from all relevant state governments, NGOs, and local communities (especially those communities that live on the borders or engage in trans-boundary movements, including nomads). These Authorities should be vested with adequate powers to have a say in state-level decisions, and should be mandated under the Biological Diversity Act or some other equivalent legislation. However, **inter-state coordination bodies** are required for all border areas, not only in these designated ecoregions.



7. Some environmentalists and planners have suggested that there be some rethinking about the relationship between **ecological boundaries** and **political constituency boundaries**. Would decision-making be more sensitive to ecological issues if these two sets of boundaries coincided? In the *Livelihoods, Lifestyles and Biodiversity Thematic BSAP*, for instance, the following recommendation has been made: 'Reconstitute electoral constituencies along the coastal region for maximum community participation in PRIs, State Assemblies and Parliament. Constitute an agency to realign and demarcate current constituencies under the Election Commission and State Governments.'

The justification given is, 'Empirical observations have shown that the current electoral constituencies are vertically placed in the coastal regions, whereas the community lives horizontally along the coast. As a result, coastal/fishing communities become a minority in these governance systems. Realigning and demarcating constituencies will increase their space in governance and decision-making... (and) system of diminishing rights and responsibilities (to primary/ secondary/ tertiary users of the coastal and marine resources) will enable equity in use and administration of these resources' (*Livelihoods, Lifestyles and Biodiversity Thematic BSAP*).

Such a recommendation obviously has far-reaching implications, and needs to be carefully considered, not only in the case of coastal areas but also for inland areas, and ranging from village clusters (e.g. sharing a forest patch) to intra-state and inter-state regions (e.g. river basins, hill ranges). A movement towards bioregional planning through political re-alignments is gaining ground in some other countries, and it would be worth observing the results to learn lessons relevant for India's own unique conditions.

8. Many of the above agencies and individuals can either be linked informally or formally through biodiversity networks. Such networks can be permanent, or temporary and specific to an identified short-term task.
9. Finally, the above state and ecoregional bodies need to be represented on the proposed **National Biodiversity Authority**, and on other decision-making institutions including the **National Development Council** (see also *Chapter 8* on the implementation mechanism for the NBSAP).

Suggested responsibility: Ministry of Rural Development, Ministry of Tribal Affairs, Ministry of Urban Affairs, Ministry of Environment and Forests, Ministry of Law, with the full involvement of relevant state government agencies, *panchayati raj* institutions, national level forums of bioresource user groups and networks (like National Alliance of People's Movements, the National Fishworkers Forum, National Forum for Forest Workers and Forest Peoples, and others), and relevant institutions and NGOs working on governance issues.

Time frame: Two years for work plan (see Steps below); followed by 5 years for implementation.

Steps:

(Note: Some of the measures recommended above involve steps that are beyond the scope of this report, hence the steps below are only indicative.)

- i. Government of India to explore the creation of a Commission on Governance of Natural Resources, consisting of the above agencies and other experts and knowledgeable and experienced persons (including from local communities). The Commission could set in motion a consultative process of preparing a work plan to put the governance structure into place, including the necessary administrative, institutional, and legal changes needed. Key elements from *Sections 7.1, 7.2 and 7.3* need to be integrated into this work plan.
- ii. The work plan could be presented to Parliament, and to the National Development Council; implementation could be initiated thereafter.
- iii. In the above steps, close links need to be maintained with the process of formulating the National Policy and Perspective Plan on Land and Water Use (*Section 7.0.1*).