CHAPTER 7

STRATEGIES AND ACTIONS

Chapter 7.0:
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 (Ch.7.3), lay out the broad framework within the context of which the specific strategies and actions (Ch.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** (Ch.7.1), and **domesticated biodiversity** (Ch.7.2). *It should be noted that the domesticated biodiversity part is considerably smaller than the wild biodiversity one,* because several strategies that are elaborated in the latter are relevant for the former, but are not repeated; these strategies are listed at the beginning of each relevant section in the domesticated biodiversity part.

3. Each of these parts, is divided into 11 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 as follows:
   (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) Taking **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;
   (xi) Advocating appropriate positions at **international forums**.

4. Each strategy is elaborated through specific action points (though in some cases the strategy may only have one action point).

38.	Shream		785	-do-	76.	Tuft		29	-do-

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
77.	Hump	All in	47	Entire Is	82.	Ranger	All in	426	Entire Is
78.	Gander	Andaman	5	-do-	83.	Warf	Andaman	11	-do-
79.	Goose	Group of	1	-do-	84.	Tree	Group of	3	-do-
80.	Flat	Islands	936	-do-	85.	Channel	Islands	13	-do-
81.	Spike		42	-do-					

And whereas the above islands are already declared as Reserved Forests vide Notification No.59/G/635 dated 17.4.63 and No.WP/2/G-1 (M.) 327 dated 12.7.1977 under Indian Forest Act 1927.

And whereas, the Lieutenant Governor (Administrator), Andaman and Nicobar Islands considers that the areas comprised in the aforesaid uninhabited islands which are Reserved Forests under the Indian Forest Act 1927 (Act 16 of 1927) are having adequate ecological, faunal, floral, geo-morphological, natural or zoological significance for the purpose of protecting propagating and developing wildlife and its environment.

Now, therefore, in exercise of the powers conferred by section 26-A read with sub-section (1) of Section 18 and clause (29) of section 2 of the Wildlife (Protection) Act, 1972 (Act 53 of 1972) the Lieutenant Governor (Administrator), Andaman and Nicobar Islands is pleased to declare the entire area comprised in each of the above uninhabited islands to be Sanctuaries for the purpose of protecting, propagating or developing wildlife or their environment under the aforesaid Act with immediate effect.

(Ishwari Prasad Gupta)
Lt.Governor
Andaman & Nicobar Islands

By order and in the name of Lt.Governor

Sd/-
(S.R.Mehta)
Secretary, (Environment & Forests)
Andaman and Nicobar Administration

5. Each action point (and in a few cases the strategy itself where 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;
   (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);
   (vi) The **priority** assigned to the action (not yet assigned in many casese???);
   (vii) Specific **Government of India schemes** that could be linked to the action, or in some cases, the overall strategy.

6. An overall **priority ranking** of the strategies is given at the beginning of this chapter (needs to be included???).

ANNEXURE – XVII

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ANDAMAN AND NICOBAR ADMINISTRATION
FOREST DEPARTMENT

NOTIFICATION

Port Blair, dated the 18th October 1999.

No192/99/ F. No. CWLW / WL / 61. – Whereas, it appears to the Lt. Governor (the Administrator) of the Union Territory of A & N Islands that by reason of its ecological faunal, floral, geomorphological and Zoological association and importance, the area specified in the schedule to this notification needs to be constituted as Marine National park for the wildlife therein and its environment.

AND WHEREAS, in exercise of the powers conferred upon him by sub-section (1) of section 35 of the Wildlife (Protection) Act, 1972, the Lt. Governor, A & N Islands declared his intention to constitute the said area as Marine National park vide notification No. 314/83/CF/WL/4-Vol.I dated 24.5.83.

NOW, THEREFORE, in exercise of the powers conferred upon him by sub-section (4) of section 35 of the Wildlife (Protection) Act, 1972 as amended up-to 1991 the Lt. Governor, A & N Islands hereby declares the said area as "Mahatma Gandhi Marine National Park".

SCHEDULE

LOCATION AND DESCRIPTION OF BOUNDARY:

A compact area of about 281.50 sq. km. spread over Bay or Bengal, in South – West coast of main South Andaman Island having land coverage of 100 metres belt, runs along high level sea water from Bada Balu to Wandoor, except Revenue occupied areas, besides names and unnamed rocks such as Jollybuoy, Rifleman, Malay, Pluto, Redskin, Boat, Snob, Sister, Grab, Hobday, Alexandra, Tarmugli, Twins etc.

NORTH:

The boundary starts from a point 'A' located in the sea at ½ Km off shore the sheet rock of northern tip of the Tarmugli Island and it stretches both way forming 90° angle towards west up to 8.775 km. And at a 106°.30' towards east up to Pillar 'B' located on high water mark below the Forest Rest House in Wandoor.

EAST:

From the above side pillar 'B' the boundary runs southemly direction forming a belt of 100 metres above high water mark along Wandoor PF Block No. IV, Manglutan Port Mout P.R.F. Block No.1 and then the boundary follows high level water mark along the coast below Wandoor, Manglutan, Manjeri, and Guptapara villages. Again the boundary forms 100 mtrs. belt above high water mark of, Chidiatapu - Bimblitan P.R.F. Block No.1 till it reaches the pillar 'C' located at the outskirts of the western boundary of Badabalu village.

CHAPTER 7. 1. 7
NATURAL ECOSYSTEMS AND TAXA: STRATEGIES AND ACTIONS FOR POLICY AND LEGAL CHANGES AND MEASURES

(please note that the other parts of this chapter have been worked on and will come in soon. this version deals with the forest policy and gives a framework of the rest of the chapter. details of references, formatting etc. will be included in the next version. -shruti.)

7. 1. 7 (1) Identification of Gaps, Required Strategies and Actions Related to Existing Policy

This section will identify gaps and make recommendations in connection with The Forest Policy, 1988, The Joint Forest Management Circular, 1990, The Ocean Policy Statement, National Mineral Policy, 1993, The New Economic Policy and The Tourism Policy.

7. 1. 7 (1) (a) The Forest Policy, 1988

Basic Objectives

GAP
The first Basic Objective talks of *preservation*.
Similarly, the second Basic Objective states that conservation could be achieved by *preserving* various elements of biodiversity.
STRATEGY
In the context of sustainable use by traditional forest-dependent local communities being viewed as a major aspect of conservation at least outside of protected areas, this distinction needs to be addressed and rectified.
ACTION
Redrafting and amendment of the said section of the policy should be carried out accordingly.

GAP
The fifth Basic Objective points towards afforestation programmes, *especially on all denuded, degraded and unproductive lands*. It does not mention the kind of afforestation, which is crucial to biodiversity concerns. As far as *unproductive lands* are concerned, the policy runs the risk of recommending alterations to existing ecosystems. The concept of labeling particular lands as *unproductive* might be regressive from the point of view of conserving a diversity of ecosystems and the variety of life sustained by these ecosystems.
STRATEGY
From the point of view of biodiversity conservation, it would be useful to mention, even at the level of policy, the fact that afforestation programmes on denuded and degraded lands should necessarily include a diversity of indigenous local flora. This calls for a clarification.
The concept of *unproductive lands* and the treatment of such land needs to be reviewed, and a shift in policy on the issue of *unproductive lands* is called for.
ACTION
The said clarification as well as shift in policy to be made in the policy document. The Forest Policy to be redrafted and amended accordingly.

GAP
The seventh Basic Objective recommends *increasing the productivity of forests to meet essential national needs. National Needs* is an ambiguous term, and needs to be defined to some extent in the Forest Policy, as the term could have various interpretations.
Another issue that this Objective throws up has been contested by some actors within the NBSAP[1], is commercialization of forest resources. It is seen by some as impinging on the availability of these resources to local beneficiaries for sustainable use.
STRATEGY

[1] One section of the Access, Benefit Sharing and Intellectual Property Rights TWG

The Forest Policy, while talking of National Needs in the context of conservation, should indicate stake-holder priorities.
ACTION
Clarification of the Policy to be made in the policy document. Redrafting and amending the Forest Policy to be conducted accordingly.

The Principal Aim

GAP
Ensuring environmental stability and ecological balance, which it says are vital for *all life forms* (which could be read as biodiversity) are specified as the principal aim of the Forest Policy.
It also specifically states that the *derivation of direct economic benefit* or commercialization would have to be *subordinated* to the principal aim.
STRATEGY
From the point of view of emerging issues related to the access, benefit sharing and commercialization of natural resources by traditional forest-dependent communities, the distinction needs to be made at this policy level, of various forms of 'commercialization'. In addition to this, a special status could be accorded under the policy, to tribal populations etc., not only for sustainable use[2], but also for planned and regulated commercialization without which it would be difficult to ensure in situ conservation outside protected areas.
ACTION
Clarification to be made in the policy document. Policy to be redrafted and amended accordingly.

Essentials of Forest Management

GAP
The Forest Policy states that for the conservation of biological diversity, the network of national parks, sanctuaries, biosphere reserves and other protected areas should be strengthened and extended adequately.
While some participants of the NBSAP process[3] agree with this to the extent of recommending that Biosphere Reserves require a stronger legal/statutory identity, others are in favour of doing away with the entire system of protected areas as it exists[4], or doing away with it in certain states of the North East[5], at least.
STRATEGY
This section (Essentials of Forest Management) of the Forest Policy, even if it talks of protected areas, needs to state and recognize the role of traditional communities in conserving biodiversity. As of now, it only recognizes the minor forest produce requirements of such communities under Essential of Forest Management.
ACTION
Clarification to be made in the policy document. Redrafting and amendment of the policy to be conducted accordingly.

Strategy

The Forest Policy enlists sixteen points under Strategy. Of these, some strategies call for re-examination from the point of view of conserving biodiversity.

GAP
Under sub-heading 4. 2. of the policy that deals with Strategy related to Afforestation, Social Forestry and Farm Forestry, 4. 2. 3 says *village and community lands, including those on foreshores and environs of tanks, not required for other productive uses, should be taken up for the development of tree crops and*

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[2] This is, in fact, provided for in pieces of legislation, and should be asserted in the Policy as well.
[3] Western Ghats Ecoregion
[4] Laws, Policies, Institutions and Planning TWG
[5] Sub-thematic review on Customary Law

fodder resources... The revenues generated through such programmes should belong to the Panchayats where lands are vested in them...

In developing these areas for *tree crops*, the area could cease to host a diversity of life forms. Biodiversity would be disturbed.

STRATEGY

The policy should articulate a clarification regarding the variety/diversity and indigenous nature of the crops that should be grown on such land.

ACTION

Clarification of policy by redrafting and amending the policy document accordingly.

GAP

Sub-heading 4. 7 under Strategy denounces the practise of shifting cultivation, and, in fact, says that *areas already damaged by such cultivation should be rehabilitated through social forestry and energy plantation.* Improved agricultural practices are recommended by the policy. A number of voices from among NBSAP consultations in the north east disagree with this point of view. There are conflicting stands on *jhoom* or shifting cultivation.

STRATEGY

Area/state-specific strategy to be employed regarding *jhoom* and *podu.*

ACTION

Forest Policy to be amended to make way for certain exceptions regarding shifting cultivation.

And at the least, a clarification should be made in the policy document, regarding the meaning of *improved agricultural practices* as some of these may be contrary to the goal of biodiversity conservation.

GAP

Sub-heading 4. 8. 3 says that *adequate grazing fees should be levied to discourage people in forest areas from maintaining large herds of non-essential livestock.* This affects the efforts to retain domesticated diversity, and does not check the 'root' of the problem. (possibility of a reference to the sub-thematic review on pastoral nomads here will be explored.)

STRATEGY

Change this strategy. No grazing fees should be levied. Efforts to increase fodder supply to be made.

ACTION

Amendment to be made in the policy document to this effect.

GAP

Sub-heading 4. 11 deals with Forestry Education. The word *manpower* used here is not gender-sensitive.

STRATEGY

Re-word this sentence to make it politically correct.

ACTION

Amend the policy document accordingly.

GAP

Sub-heading 4. 12 deals with Strategy related to forestry research. One of the priority areas for research has been enlisted as *revegetation of barren/marginal/waste/mined lands and watershed areas.* Here, meaning of *revegetation* to include floral diversity has not been made.

Furthermore, the concept of *waste lands* needs to be re-examined, along with the question of whether or not revegetation would be appropritate/relevant for land classified as waste land.

STRATEGY

Clarification about the kind of revegetation should be made in the policy document.

The concept of waste lands needs to be debated upon with a view to removing it from this section of the document.

ACTION

Amend the policy document by making a clarification regarding the nature of revegetation, keeping biodiversity concerns in view.

Initiate a consultative debate on the meaning of the classification of *wastelands* from the ecosystems diversity point of view, and amend the policy accordingly. (will also check NBSAP consultations for specific mention of this anywhere.)

7. 1. 7 (1) (b) The Joint Forest Management Circular, 1990

7. 1. 7 (1) (c) The Ocean Policy Statement

7. 1. 7 (1) (d) The National Mineral Policy, 1993

7. 1. 7 (1) (e) The New Economic Policy

7. 1. 7 (1) (f) The Tourism Policy

7. 1. 7 (2) Identification of gaps, and recommended amendments to statutes and associated rules, regulations and notifications

This section will analyze, and make recommendations in connection with relevant parts of the Indian Constitution, The Indian Forest Act, 1927 (IFA), The Forest (Conservation) Act, 1980 (FCA), The Wild Life (Protection) Act, 1972 (WLPA), The Environment (Protection) Act, 1986 (EPA), and The Mines and Minerals (Development and Regulation) Act, 1957.

7. 1. 7 (2) (a) The Constitution of India

7. 1. 7 (2) (b) The Indian Forest Act, 1927 (IFA)

7. 1. 7 (2) (c) The Forest (Conservation) Act, 1980 (FCA)

7. 1. 7 (2) (d) The Wild Life (Protection) Act, 1972 (WLPA)

7. 1. 7 (2) (e) The Environment (Protection) Act, 1986 (EPA)

7. 1. 7 (2) (f) The Mines and Minerals (Development and Regulation) Act, 1957 (MMDRA)

7. 1. 7 (3) Recommendations for Strengthening the Implementation of the Existing Law

This section will enlist action points aimed at enhancing the capacity of legal practitioners to understand and deal with biodiversity-related law, biodiversity law education, institutional mechanisms for regulating the use of natural resources, enhancing measures for accountability, appropriate fora for contesting government and private action pertaining to biodiversity....

PRIORITISATION OF STRATEGIES IN THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

Introductory Note:

This prioritisation exercise may please be read keeping the following 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 to some extent would 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 below, are explained in footnotes. 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 one (Urgency) is related to time, the second (Overall Impact) to scale/importance, and the third to current state of focus. Each parameter is given the same weightage.
3. Feasibility of the strategy is not built into these scores. An 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 a feasibility exercise for themselves, 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. It is urged that nodal agencies and coordinators of those action plans conduct their own prioritisation exercises, using the same or other parameters.
6. The highest priority strategies, i.e. those with a Total score of 3, are highlighted in blue. This does not necessarily mean that implementation resources (time, finances, humanpower, and so on) should be restricted primarily to these, or that they are the first ones to be considered. Many strategies that are not highest priority below, may be possible to initiate and 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, the others too must be fully considered before deciding on actual deployment of resources.

Priority of Strategies in the National Biodiversity Strategy and Action Plan

1 = High; 2 = Medium; 3 = Low

7. STRATEGIES AND ACTIONS	Urgency [1]	Overall Impact[2]	Current Neglect[3]	Total[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
7.1.1.3 Enhance Understanding of Links Between Cultural (Including Linguistic) Diversity and Biological Diversity	1	1	1	3
7.1.1.4 Monitor and Evaluate Major Activities and Schemes	1	12	1	3
7.1.2 Wild Biodiversity: Strategies and Actions for *In-Situ* 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
7.1.2.3 Strengthen Conservation Outside PAs and CCAs, Across The Entire Rural Land/Waterscape	1	1	1	3
7.1.2.4 Conserve and Rehabilitate Threatened, Endemic, and Other Critically Important Species	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 Ex Situ Plant Collections	2	3	2	7
7.1.3.3 Strengthen Culture Collections of Micro-Organisms	1	3	1	5

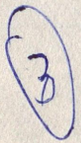
Priority of Strategies in the National Biodiversity Strategy and Action Plan

1 = High; 2 = Medium; 3 = Low

7. STRATEGIES AND ACTIONS	Urgency [1]	Overall Impact[2]	Current Neglect[3]	Total[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
7.1.1.3 Enhance Understanding of Links Between Cultural (Including Linguistic) Diversity and Biological Diversity	1	1	1	3
7.1.1.4 Monitor and Evaluate Major Activities and Schemes	1	1	1	3
7.1.2 Wild Biodiversity: Strategies and Actions for *In-Situ* 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
7.1.2.3 Strengthen Conservation Outside PAs and CCAs, Across The Entire Rural Land/Waterscape	1	1	1	3
7.1.2.4 Conserve and Rehabilitate Threatened, Endemic, and Other Critically Important Species	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 Ex Situ Plant Collections	2	3	2	7
7.1.3.3 Strengthen Culture Collections of Micro-Organisms	1	3	1	5

(2)

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
7.1.4.6 Promote Biodiversity-Friendly Alternative Products, Recycling, and Waste Reduction	2	2	2	6
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 Move Towards Inter and Intra-Community Equity	1	1	2	4
7.1.5.5 Protect Traditional Knowledge, and Ensure Equitable Benefits from its Wider Use	1	1	1	3
7.1.5.6 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	2	4
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 Workers and Labour Unions	2	3	1	6
7.1.6.8 Build Capacity of the Judiciary	1	1	2	4
7.1.6.9 Orient Financial Institutions to Support Biodiversity Activities	1	1	1	3



7.1.6.10Build Capacity of the Armed Forces	1	1	1	3
7.6.1.11 Build Capacity of the Corporate And Business Sector	1	1	1	3
7.1.6.12 Build Capacity of the Media	1	1	1	3
7.1.6.13 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 Integrate Biodiversity Concerns Through Inter-Sectoral Coordination, at All Levels of Planning	1	1	1	3
7.1.7.2 Integrate Biodiversity Into Water Planning	1	1	1	3
7.1.7.3 Integrate Biodiversity into Energy and Infrastructure Planning	1	1	1	3
7.1.7.4 Integrate Biodiversity into the Mining Sector	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 not Been Dealt With at a Policy Level so Far	2	1	1	4
7.1.8.3 Integrate Biodiversity into Existing Statutes and Asociated 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 Assess Panchayat Legislation To Integrate Biodiversity And Equity, and Make it Effective, Accountable, and Efficient	1	1	2	4
7.1.8.6 Document, Encourage, Review, And Build Upon Customary Law, And Provide It Space Within Statutory 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 Publicly Accessible All Governmental Information and Records on Biodiversity	2	1	2	5
7.1.8.9 Reconcile Laws And Policies which are Incompatible With Each Other and with Principles Of Conservation, Sustainable Use, And Equity	1	1	1	3
7.1.8.10 Analyze Judge Made Law From The Point Of View Of Biodiversity Concerns	2	2	2	6
7.1.9 Wild Biodiversity: Strategies and Actions Relating to Financing				
7.1.9.1 Phase Out Perverse Incentives And Replace Them With Positive Incentives	1	1	1	3
7.1.9.2 Reorient National And State Budgets	1	1	1	3

1 = High; 2 = Medium; 3 = Low

7. STRATEGIES AND ACTIONS	Urgency[1]	Overall Impact[2]	Current Neglect[3]	Total[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
7.1.1.3 Enhance Understanding of Links Between Cultural (Including Linguistic) Diversity and Biological Diversity	1	1	1	3
7.1.1.4 Monitor and Evaluate Major Activities and Schemes	1	12	1	3
7.1.2 Wild Biodiversity: Strategies and Actions for *In-Situ* Conservation				
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
7.1.4.6 Promote Biodiversity-Friendly Alternative Products, Recycling, and Waste Reduction	2	2	2	6
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 Move Towards Inter and Intra-Community Equity	1	2	1	4
7.1.5.5 Protect Traditional Knowledge, and Ensure Equitable Benefits from its Wider Use	1	1	1	3
7.1.5.6 Ensure Equitable Sharing of Benefits Arising from the Use and Marketing of Community-Managed or Developed Resources	1	2	1	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	2	4
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 Workers and Labour Unions	2	3	1	6
7.1.6.8 Build Capacity of the Judiciary	1	1	2	4
7.1.6.9 Orient Financial Institutions to Support Biodiversity Activities	1	1	1	3

[1] Urgency denotes the immediacy of the strategy, including strategies that need immediate initiation even if their execution may take long.
[2] 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).
[3] Current neglect denotes the level to which the strategy is currently ignored or inadequately addressed.
[4] The lower the total, the higher the priority.

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 All Non-Environment Related Agreements	1	1	2	4
7.1.11.3 Enhance Civil Society Networking and Participation Relating to International Issues and Agreements	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	???			
7.2.1 Domesticated Biodiversity: Strategies and Actions for Enhancing Understanding and Information				
7.2.1.1 Consolidate, Increase, and Update Knowledge on Domesticated Biodiversity	2	1	2	5
7.2.1.2 Monitor The Status of Domesticated Biodiversity Across India	1	1	1	3
7.2.1.3 Create and Maintain Databases of Domesticated Biodiversity	2	2	2	6
7.2.1.4 Enhance Understanding of Links Between Cultural Diversity and Domesticated Biodiversity	1	1	1	3
7.2.2 Domesticated Biodiversity: Strategies and Actions for *In-Situ* Conservation				
7.2.2.1 Conserve Biologically Diverse Cultivated and Husbanded Landscapes and Sites	1	1	1	3

(5)

7.2.2.3 Promote In Situ Conservation Through Participatory Crop and Livestock Development	1	1	1	3
7.2.2.4 Revive Domesticated Biodiversity and Regenerate Diverse Agro-Ecosystems Where They Have Eroded	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 *Ex-Situ* 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 Use the Public Distribution System (PDS) to Relate Agrobiodiversity to Food, Nutrition, and Livelihood Security	1	1	1	3
7.2.4.2 Integrate Agrobiodiversity into Health and Food Related Programmes	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				
(add equivalent of 7.1.5.2, 7.1.5.4, 7.1.5.5, 7.1.5.6)				
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 of Actors in Each Sector				
(add equivalent of 7.1.6.1, 7.1.6.3, 7.1.6.4, 7.1.6.5, 7.1.6.6, 7.1.6.7, 7.1.6.8,				

(add equivalent of 7.1.6.1, 7.1.6.3, 7.1.6.4, 7.1.6.5, 7.1.6.6, 7.1.6.7, 7.1.6.8, 7.1.6.9, 7.1.6.10, 7.1.6.11, 7.1.6.12, 7.1.6.13)				
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				
(add equivalent of 7.1.7.1, 7.1.7.2, 7.1.7.3, 7.1.7.4)				
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				
(add equivalent of 7.1.8.5, 7.1.8.6, 7.1.8.8)				
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 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 Relating to Financing				
(add equivalent of 7.1.9.1, 7.1.9.2, 7.1.9.3, 7.1.9.4, 7.1.9.5)				
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 Agrobiodiversity Funds	2	2	1	5
7.2.10 Domesticated Biodiversity: Strategies and Actions Related to Technology				
7.2.10.1 Promote Organic and Biodiverse Agricultural Technologies	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 4
7.2.11 Domesticated Biodiversity: Strategies and Actions at International Forums				

(7)

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 Planning and Governance at Land/Waterscape Levels				
7.3.1 Adopt a Land/Waterscape or Ecoregional Approach to Planning	1	1	1	3
7.3.2 Strengthen the Positive Links between Wild and Domesticated Biodiversity	1	1	1	3
7.3.3 Strengthen a Decentralised Natural Resource Governance Structure	1	1	2	4

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[2] 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).
[3] Current neglect denotes the level to which the strategy is currently ignored or inadequately addressed.
[4] The lower the total, the higher the priority.

AK comments sent 7/5/02 overall caution that funds are not key constraint, but...

EXISTING FINANCIAL MEASURES, BUDGETS OF ENVIRONMENT AND FOREST, AGRICULTURE AND RELATED DEPARTMENTS

Also that particip. mech. can eventually reduce fund needs.

Sourcing?

FIVE YEAR PLANS AND ENVIRONMENT SECTOR

Government of India [GoI] has placed economic growth and poverty eradication at the centre of its development strategy. The Ninth Five Year plan [1997-2001] was produced, as part of an ongoing process overseen by the Planning Commission. The Five Year Planning process has included the production of a Mid term review and Approach paper to Tenth Five year Plan. The Five Year Planning process has indicated the links between environment and economic growth and the importance of environmental sustainability as an integral part of sustainable development.

The Five Year Planning process sets the framework under which sectoral activities (water, health, education, agriculture, roads and private sector development) are allocated funds under the Medium Term Expenditure Framework. The respective sector plans address environmental integration to varying extents. However, the mechanisms for actually implementing environmental integration within the respective sectors are not clearly developed.

The Tenth Five Year Plan Approach paper [2002-2007] refers:
To reflect the importance of these dimension in development planning the Tenth Plan has established specific and monitorable targets for a few key indicators of human development, which include:

- Reduction of poverty ratio by 5 percentage points by 2007 and by 15 percentage points by 2012;
- Increase in forest and tree cover to 25% by 2007 and 33% by 2012.
- All villages to have sustained access to potable drinking water within the Plan period;
- Cleaning of major polluted rivers by 2007 and other notified stretches by 2012.

Is it?

National Environmental Policy has been approved and the Ministry for Environment and Forests is the nodal agency. India's Five Year Planning is an excellent example of a economic growth and poverty reduction strategy which recognises the links between economic growth and environment, and introduces issues of long term sustainability within economic growth and poverty eradication efforts. The challenge is to ensure that these issues are reflected in implementation of the Five Year Planning and its key components, and that environmental sustainability is an integral part of policy dialogue at the national level.

As a part of the Tenth Plan formulation process, there is an immediate opportunity for Planning Commission to promote environmental sustainability within the Five Year Planning process, through active engagement with the sectoral groups and the Ministry of Environment and Forests [MOEF] to influence national planning, priority setting and budget allocation. As part of this assistance, a number of longer term sustainability issues will need further promotion, development and institutionalisation with the Planning Commission, Government of India, including adequate integration of environmental issues which directly impact on and sustain economic growth.

Really? Does not seem to reflect sustainab. concerns

The 9th Plan for the sector of Environment and Forests was formulated in the spirit of Agenda 21 in recognition of the basic premise that environmental protection and economic development are mutually supportive aspects of the same agenda. Developmental policies impinge heavily upon the environment requiring intersectoral policy integration and coordination. At present there is no institutionalised policy-integrating and coordinating mechanism, with the result that a compartmental approach to environmental protection continues to be followed with extremely indifferent results.

GNP and national income do not reflect environmental degradation or the consumption of natural resources and are inadequate measures of productivity and social costs when environmental damage occurs. National income accounting without environmental accounting limits the information available to policy makers for gauging the impact of economic activity on the environment. A natural resources budget and a State of the Environment Report needs to be placed before Parliament along with the economic budget each year, as laid down in the Government of India's policy statement of 1992 on Environment and Development.

Maj or gap

India is one of the 12 mega biodiversity countries of the world and harbours more than 48,000 recorded flora and 81,000 fauna (including insects). Habitat loss and conversion, unsustainable legal and illegal harvesting and the introduction of exotics are some of the main threats to biodiversity. Current ***in situ*** and ***ex situ***

Delete para?

status, gaps, & recomm. mixed up

Start with Budget process, allocations to env. over the years (& within that directly to biodiv.), descr. of key biodiv.-related schemes, etc.

Then analyse & point out gaps & weaknesses

Date :- **Name:-**

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SS1	**Bass - Brussels (PCANY)**	o	0:30		
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SS1	**Bass - Central Park South (PCA**	o	2:45		
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SS2	**Bass - Vienna (PCANY)**	o	5:30		
SS1	**Bass-Prague (PCANY)**	o	6:00		
SS2	**Bass-Prague (PCANY)**	o	6:00		
SS3	**Conrad - Brussels**	o	8:00		
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SS3	**Grand Hyatt HongKong**	o	8:30		
SS3	Hilton - Amsterdam	o	8:45		
SS3	Hilton - Antwerp	o	9:00		
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conservation efforts are based on a combination of ecosystem based schemes and a focus on apex key species. There is a need to identify the keystone and umbrella species. Conserving such species ensures protection of all related species as well.

Macro-economic policies and measures:

There is very little systematic work on the relationship between macro-economic measures and Environment (or environment in general). What is known is that many current measures, such as subsidies to chemicals in agriculture, tax incentives to industries in "marginal" areas (which are also usually biodiversity rich), and rapid (including "single-window") clearances for certain industries, are insensitive to Environment concerns. They also do not enhance or protect the livelihood security of small farmers, fisher folk, and forest-dwellers. On the other hand, there may be measures such as subsidies to non-conventional or renewable energy sources that may help to conserve Environment.

An assessment of such macro measures is urgently needed to analyse the impact of sectoral and macro-economic policies on the adoption of environmentally sustainable practices and advise on the appropriate policy options. As required, there is need to develop with the Ministry of Environment and Forests a time bound work plan for their engagement in the Plan process and the identify appropriate institutional mechanisms to ensure biodiversity integration during operationalisation of the Environment Action Plan.

MOEF FINANCIAL ALLOCATIONS:

As a percentage of the total plan outlay of state and central governments, the allocation to the Environment and Forestry Sector is around one per cent. However, even the low level of outlay is not being fully utilized.

Table 1: Central Plan Outlay/Expenditure (In Rs crores)

Plan Outlay	
8 th Plan outlay 1200.00*	0.48
8 th Plan expdr. 1631.90	
9 th Plan outlay 3013.84	1.1
1997-00 outlay 1947.8	0.64
1997-00 expdr. 1506.5	0.54
2000-2001 outlay 850.00	0.72

Subsequently revised on year to year basis to Rs. 1797.50 crore.

External aided projects:

Government of India (GOI) also does not have a strategy for prioritising the needs in the sector and then coordinating between donors. MOEF has only ensured that funds from the two largest donors do not go to the same state. There is need to improve the capability of the Ministry to monitor and guide the implementation of all environment and forest related activities. In addition there are problems of financial procedure and adequacy of staff. Spending as an indicator in all states shows dismal progress.

In the World Bank project, in the last three years less than Rs.25 crores has been spent on the project against a target of Rs.150 crores. During the period 1999 - 2000 an amount of Rs.100 crores was to be spent on the project, but the expected real spending is only a quarter of the amount. The level of external assistance received has declined both in nominal and real terms: Rs.317 crores in 1997-98 but only Rs.234 crores in 1998-99 and further declined to Rs.189 crores in 1999-00.

FIVE YEAR PLANS AND FORESTRY SECTOR

The basic purpose of NFAP is to establish direct linkage between the National Forest Policy and the National Five-Year Plans (FYPs). In the past, there has not been a comprehensive and constant programme structure for forestry. Every plan has had its own programme structure, so it was difficult to get linkages and establish trends. Although plans had specified objectives and programmes, the main activity under most of them was tree planting. The emphasis of the different FYPs regarding forestry was as follows:

- First and second FYPs: rehabilitation of degraded forests, introduction of economic species, survey and demarcation;
- Third and fourth FYPs: increasing productivity of forests through fast growing species plantation, scientific assessments and some logging;

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SS5	Hilton - Caracas	o	10:30		
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SS4	Hilton - Charles de Gaulle	o	10:45		
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SS4	Hilton - Cobham	o	11:00		
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SS4	Hilton - Coventry	o	11:00		
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SS3	Hilton - Drake	o	11:00		
SS5	Hilton - Drake	o	11:15		
SS6	Hilton - Dresden	o	11:30		
SS6	Hilton - Dresden	o	11:30		
SS3	Hilton - Dresden	o	11:30		
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- Fifth FYP: large scale plantation, social forestry and forest conservation;
- Sixth FYP: social forestry and fuel-wood reserves to save natural forests;
- Seventh FYP: forest conservation, massive afforestation and wasteland development;
- Eight and Ninth FYP: preservation of biological and genetic diversity (both flora and fauna), protection of forest against biotic interference, utilisation of wastelands, and promotion of people's participation through joint forest management (JFM).
-

The percentage share of Forestry Sector Outlay changed from 0.32 percent of the total outlay in First FYP to 0.94 percent in Eighth FYP. The highest allocation was in the Seventh FYP (1.09%). For the sustainable development of the sector, allocation to the forestry sector should be raised to about 4 to 5 percent of the total outlay of the country.

logic?

FOREST & WILDLIFE:

when?

Remote sensing data on forests shows that since 1983 the depletion in the dense forest cover has been controlled. The improved scenario could be because of the general ban on green felling, liberalized wood imports (touching 2 billion US $), the successes of farm forestry and participatory policies introduced in many states. Planning Commission constituted a Task Force on "Greening India through agroforestry and Joint Forest Management". The Task Force recommended implementation of agroforestry and Joint Forest Management. Over an area of 43 million ha, policy and legal support to remove all constraints in greening programme and financial support through the "Green India Fund".

reduced. Reality.

(though this may actually be causing forest loss some in other country!)

Issues relating to productivity, access and marketing of NTFP are neglected. Local value added activities, such as processing, based on NTFPs should be encouraged. The nationalization of major Non Timber Forest Produce (NTFP) has increased the exploitation of the poor. Government should give up its monopoly on NTFPs and set up promotional Marketing Boards as distinct from commercial Corporations. Continuing subsidies on government supply of wood and bamboo to industries, act as a disincentive to industry to pay a remunerative price to farmers. The current import policy of government must review its decision to allow cheap and duty free import of pulp & timber. It has adverse impact on agroforestry development.

Links to Financial res. not clear

On the whole, performance in forestry has been satisfactory, but the states have not been able to realize the full potential of this sector, particularly the poverty alleviation focus of the 1988 Indian Forest Policy. The strategy of the Forestry Sector should be two pronged – one, producing market oriented products on farms and two, protecting forests for environmental benefits and for sustaining the livelihood of the forest dwellers.

OUTLAY FOR FORESTS

Forests are managed by states primarily with state funds supported by external donors. For the forestry sector, during the Eighth Plan (1992-97) the state plan outlay was Rs.3,550 crores, whereas funds received from the Ministry of E & F as centrally sponsored scheme were only about Rs.500 crores, or less than 20% of the total. This would be even less than 15% if one took into account the transfer of funds from District Rural Development Agencies (DRDA) to district field agencies for forestry related work. For the Ninth Plan the State Plan outlay is Rs 6,300 crores, whereas the contribution of centrally sponsored schemes would not be more than Rs.1,500 crores. Most externally aided projects in the forestry sector are negotiated with the states and external aid is reflected in the state budgets. Investment in forestry in India is likely to decline sharply in the next two years, however, because of a ban imposed by countries like Japan and Denmark on assistance to India. Rough estimates indicate that annual external funding in the forestry sector will decline from the present level of Rs.844 crores to just Rs.300 crores by 2002-03 unless special efforts are taken to start new projects. There is likely to be a decline in assistance from the World Bank too as no new projects have been signed after UP (1997) and Kerala (1998), nor are there any in the pipeline.

Was

Which 2 years?

MP? Mah.?

PLANNING AND MOBILISASTION OF FUNDS

Planning in the forestry sector is done by the Planning Commission, Ministry of Environment and Forests and the States on the basis of the Five-Year Plans. Since the commencement of the First Five-Year Plan (FYP) in 1951, up to the Eighth FYP, which ended in 1996-97, Rs. 85 million have been spent on plan activities of forestry development. During this period afforestation of about 26.90 million ha. has been carried out. Financial allocation to the forestry sector has increased from Rs. 76 million in the First FYP to Rs 40,818 million in the Eight FYP but it has always been less than 1% of the total plan outlay of the country. It is one of the main reasons for the continuous deterioration of forest resources and also for the depletion of biodiversity.

except 7th (see above)

This perceived to be

Though forests & forest lands cover over 22% of India's landmass.

Site Specialist - Mamoler

28th

Type of Call	Date	Site	Time	Duration in mins	Process	Reason/Solution/Comments	Contact Person name
4152	"	Bars Chica	19:05	2	0	£ 8:25	
4146	"	Glauchester	20:10	2	0	£ 15:47	
4146	"	Ponce	20:20	2	0	£ 9:51	
"	"	Oberusal	22:00	2	0	£ 17:46	
I*(CC)	"	US office	23:58	1	0	Internet Problem Solved	Ahmet
YC	"	US office	00:00	1	0	Still not able to open Idealyield Page	Ahmet.

Type of Call - CC = Client Called. YC = You Called. DD = Direct Dial-in. TD = TROI Dial-in.

A provision of Rs 68 million has been made for the Ninth Plan. During 1997-98 of the Ninth Plan, afforestation of 1.48 million ha has been done which includes the distribution of 1033 million seedling (making 0.516 million ha on the basis of 2000 seedlings per ha.). Thus up to 1997-98 total afforestation is 28.38 million ha which includes a notional target of 4.65 million ha (equivalent of 9309 million seedling distributed to people). Average Annual Plan Outlay for forestry sector during the Eight FYP was about Rs. 8.16 billion, whereas, the estimated annual withdrawals (recorded and unrecorded) from the forests were worth Rs 300 billion during the same period which is about 36 times more than the planned investment.

Other assessments also reveal that forestry in India has continuously suffered net disinvestment (i.e loss due to deforestation and forest degradation being in excess of the investment in resource creation and enhancement). In one of the estimates the annual disinvestment has considerably reduced in absolute terms from Rs 650,000 million in 1970 to Rs 169,500 million in 1980 and to Rs 59,550 million in 1990s. Considering that the gross annual investment in forestry in 1995 has only been about Rs 34,500 million, the situation is one of net disinvestment to the order of some Rs 25,000 million annually. To have positive net investment and to turn towards sustainable development, it is necessary that the gross investment is made higher than the disinvestment. This calls for intensive efforts (along with innovative and efficient measures) for fund mobilisation from all potential sources, public and private, domestic and external. It is necessary to have a balanced combination of the funding sources to ensure stability of fund flow. To avoid the fluctuation and to facilitate targeted funding for forestry, it will be useful to establish a National /State Forest Fund(s).

EXTERNALLY AIDED PROJECTS

At present, 19 externally aided projects are under implementation in 13 states of the country with the total approved assistance of Rs. 42278 million. The annual assistance ranges from Rs. 4500 to 5000 million. Main donor agencies are the World Bank, OECF Japan, DFID, EEC, UNDP, Germany and SIDA.

These projects have certainly given a big boost to planned development of forestry in India but these financial assistance are not the additionality rather of the State Plan Outlay. External assistance received is allocated through the Central and State Plan Budget. It has been observed that states having externally aided projects are not making adequate provision of funds commensurate to the requirements of project programmes. This will have adverse implications on funds of external assistance. This problem needs to be addressed by the state governments.

REQUIREMENT OF FUNDS

To fulfill the policy objective of having 33% of country's area under forest and tree cover, an annual programme of afforestation and regeneration of 3 million ha. is required. On the current cost norm it needs an estimated annual budget of Rs. 52,850 million against the average annual availability of Rs. 8,160 million for Forestry and Wildlife sectors and Rs. 16,150 million in total taking together all related programmes under different ministries, which is much less than the requirement.

The works of regeneration and plantation will be mostly covered in two programmes of NFAP i.e., increasing forest productivity and expanding forest areas. Average annual estimates of investment in these two components of NFAP are Rs. 19,574 and Rs. 20,280 million respectively with a total of Rs. 39,854 million, less than Rs. 52,850 million required for 33% forest/tree cover. It is because (I) Investment estimates in NFAP is for regeneration/ plantation of 48.2 million ha. (2.4 million ha per year) against 60 million ha. (3.0 million ha per year) referred in paragraph 12 and (ii) NFAP proposals do not take into account all expenditures in agroforestry and private plantations. Any how, Annual (average) estimate of Rs. 39,854 million required for proposed regeneration/plantation in SFAPs is much more than the available Average Annual Plan of Rs. 8,160 million for Forestry and Wildlife.

REORIENTATION OF BUDGETS OF DEVELOPMENT/WELFARE DEPARTMENTS

SS	SITE	Process	IST	27-Apr	Comments
SS6	**Mirvac-Quay West - Sydney**	D1	8:30		
SS6	Hilton - Seoul	D1	8:30		
SS6	Hilton - Tokyo	D1	9:30		
SS6	Hilton - Tokyo Bay	D1	12:30		
SS6	Hilton - Frankfurt	O	10:00		
SS6	Shangri La Makati	D1	10:30		
SS6	Shangri La Singapore	D1	10:30		
SS6	**Jarvis Regents Park**	**O**	**11:00**		
SS6	**Hilton - Bracknell**	O	11:30		
SS6	Hilton - Park Lane	O	12:30		
SS6	**Hilton - Mainz**	O	11:45		
SS6	Hilton - Amsterdam	O	12:30		
SS6	**Hilton - Basel**	O	10:30		
SS6	**Hilton - Watford**	O	14:15		
SS6	Hilton - Glasgow	O	12:15		
SS6	Hilton - Seoul	D2	15:30		
SS6	**Hilton - Tokyo**	D2	17:00		
SS6	Shangri La Singapore	D2	17:00		
SS6	Shangri La Makati	D2	14:30		
SS6	**Hilton - Edinburgh**	O	15:00		
SS6	**Hilton - Islington**	O	15:00		
SS6	Serena- Nairobi	D1	15:30		
SS6	Hilton - Izmir	D1	16:30		
SS6	Hilton - Tel Aviv	D1	16:30		
SS6	Hilton - Vienna Plaza	D1	16:30		
SS6	KEM - Atlantic	D1	16:30		
SS6	KEM - Jahreszeiten	D1	16:30		
SS6	MC - Opera Paris	D1	16:30		
SS6	Support US Mail Forwarding				
SS6	**Movenpick Nurnberg**	**D1**	**16:30**		

Taxing Agriculture:
Today, several inputs such as water, electricity and fertilizers are being provided to the farmers at highly subsidised rates. The subsidy on these accounts largely accrue to the rich farmers as compared to the low and marginal ones. Given this, it may be more feasible, in the beginning, to mobilise more resources from the farm sector through gradual reduction in subsidies, and proceed to introduce a full fledged agricultural income tax at an appropriate time in the future.

V. Controversial pl. discuss

Public Distribution System:
As regards the public distribution system, the objective of targeting the system towards the genuine poor should be more vigorously pursued. Ultimately food subsidy should be restricted to cover only the population below the poverty line. For the people above the poverty line who have the purchasing power to buy food, the requirement is only to ensure availability of food grains at a stable price in the market. There is no need to extend food subsidy to this population. While subsidy is restricted only to rice and wheat under PDS there is a need to retain the viability of fair price shops. To ensure viability of fair price shops, it may be desirable that the fair price shops be permitted to sell commodities other than rice and wheat within their premises at full market prices.

Safeguards to counter

Decentralisation:
The main features of the 73 rd Constitutional Amendment Act, 1992 include provisions for establishment of mandatory three/two tiers of Panchayati Raj Institutions (PRIs), regular elections to panchayats, a legal status to gram sabhas, reservation of seats for scheduled castes/scheduled tribes and women, setting up of independent state finance commissions for strengthening of finances of local bodies at all levels and constituting of independent state election commissions. Article 243 I of the Constitution provides for the constitution of a State Finance Commission (SFC) to review the financial position of panchayats and to make recommendations regarding principles governing devolution of financial powers to PRIs. These provisions need to be judiciously implemented.

Imp. to link decentralised financial control to bodies — will it help?

The functional autonomy of PRIs along with their financial autonomy must be clearly delineated. Even in respect of the 29 subjects identified in the Eleventh Schedule, it is necessary for the sate governments to clearly identify
what would be done by the three tiers of panchayats at their levels. This should be based on the rule that what can be done at the lower level should be done at that level only and not at a higher level. Detailed instructions and guidelines would have to be issued by the concerned departments to their field officers in this regard.

The state governments are required to constitute District Planning Committees (DPCs) as envisaged under Article 243 (Z) and (D) of 74 th
Amendment Act to facilitate the process of decentralised planning. DPCs are to be set up in each district to prepare composite plans covering both urban and rural areas.

Links with Watershed Development :
One of the least understood but a most useful concept is the complementarity between forests and agriculture. If it is strengthened, the local community develops a stake in the preservation of forests which can deter individual attempts at encroachments or degradation. Traditional agro-forestry patterns are a reflection of farmers' own perception of complementarity between trees and crops, but the issue is wider than one between trees and crops. However, the fund allocation in forestry projects for soil conservation measures do not appear to be adequate. The Ministry of Rural Areas and Employment recently permitted its funds to be used in watershed schemes by the FD, but a similar initiative is needed from the Ministry of Agriculture too.

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Too many schemes & lack of convergence
A good number of Plan schemes are in operation with similar objectives and
targeting the same population. Generic components like extension, training and IEC (Information, Education & Communication) get repeated in most of such schemes leading to wastage. For every new scheme, there is a tendency to develop new implementation machinery at national, state and district levels. There are schemes that are seen no longer productive, but still continue. All this calls for a lot of consolidation and convergence.

give examples

Though a rigorous procedure has been in place for introducing new Centrally
Sponsored Scheme (CSS), there is a proliferation of CSS which could not be kept in check. Following a direction from the National Development Council, several CSS schemes were sought to be transferred to the

Give a list of relevant schemes (from FICCI booklet?)

Manish - S

SS	SITE	Process	IST	23-May	Comment
SS6	Hilton - Frankfurt	O	10:00		
SS6	Jarvis Regents Park	O	11:00		
SS6	Hilton - Bracknell	O	11:30		
SS6	Hilton - Park Lane	O	12:30		
SS6	Hilton - Mainz	O	11:45		
SS6	Hilton - Amsterdam	O	12:30		
SS6	Hilton - Basel	O	10:30		
SS6	Hilton - Watford	O	14:15		
SS6	Hilton - Glasgow	O	12:15		
SS6	Hilton - Edinburgh	O	15:00		
SS6	Hilton - Islington	O	15:00		

F3 mins

Mews

395580.

states. In February 1999 the Planning Commission prepared a list of such schemes with an outlay of Rs. 3,709 crore annually for handing them over to the states. But Central Ministries have been reluctant to fall in line, and as of July 2000 they have agreed to give up schemes worth only Rs. 163 crore and transfer them to the states. In the meanwhile several new CSS have been introduced in the last two years.

In the 9th Plan, the Ganga Action Plan – Phase II has been converted from 50:50 sharing CSS into a 100% CSS. In spite of this, assets created are not being adequately utilized because of lack of operation and maintenance funds by the State Governments. A solution to the problem of Operation and Maintenance of assets under various National River Conservation Directorate (NRCD) programmes needs to be urgently found.

Agriculture and Cooperation Sector

The Department of Agriculture and Cooperation (DAC) has 182 attached/ subordinate/ autonomous offices under it. All this is notwithstanding the fact that Agriculture is a state subject. The Department runs 147 schemes with a total Ninth Plan outlay of Rs.9,228 crore. DAC's major developmental programmes/activities relate to cereals, pulses, oilseeds, commercial crops and horticulture. The Department, it is observed, has split the major components into crop-specific schemes -- and even within a particular crop into various activities -- thus multiplying the schemes virtually for all the components.

In each scheme related to a crop, be it cereal crop, oilseeds, pulses or horticulture, there are common components for providing subsidy and loan. There are subsidies on many components such as seed and planting material, production of breeder, foundation and certified seeds and also for distribution apart from subsidy for transportation, front line and field demonstrations, farmers' training, subsidy on agricultural implements, micro nutrients, and the like. In case of horticulture, subsidy is provided for nurseries, planting materials, area expansion, workshops, seminars and publicity including irrigation devices. For example, in ICDP rice, subsidy is on all these components and when a scheme is considered for pulses or oil-seeds, the same components also figure there. This, it is seen, results in overlapping of subsidy on different crops under various schemes; a cluster of farmers in a particular area, then, could avail subsidy on implements, on micro-nutrient or on sprinkler sets under more than one scheme. Further, for training front line demonstration and field demonstrations expenditure could have been minimised to a large extent if these were organised on cropping system- based approach instead of a crop-specific approach.

From early 1960s/70s, schemes are being implemented without having any evaluation done to know their shortcomings or impact. While doling out money, due consideration is not given to the likely delivery of inputs. For example, money is invest ed in revival/modernisation of sugar mills but after modernisation the mills are in red, their net worth completely eroded. A major problem being faced by those mills, i.e. artificially high state-administered prices of sugar cane, has not been addressed.

The Ministry has now submitted a proposal for macro management scheme which is reportedly based on area approach rather than crop approach. Yet it has not spelt out how a merger of 34 schemes (28 + 6 being weeded out) would assist states and what are the activities that will be supported through the macro management programme. There is no information on manpower created for the Department-run 147 schemes at the Central, State and district levels and how this manpower would be re-deployed after macro- management scheme becomes operational. As and when macro- management scheme becomes operational, 31 more schemes would become redundant on which the Department has yet to take a view. It is high time the Department carried out a detailed exercise on convergence and weeding out of existing schemes. Instead of 147 schemes that are currently in operation, it would appear, 8 or 9 schemes would suffice to address the problems in Agriculture Sector in a focused and cost-effective manner.

The food security situation in the country can therefore be considered to be satisfactory as far as the food production aspect is concerned. The incentive being given to farmers by way of higher minimum support prices could lead to high costs in future as farmers use more fertilizer and pesticides (and possible use of inferior land) to increase output of these two crops in preference to others. This will discourage exports and at the same time lead to higher prices for the consumer. The net result is likely to be even greater excess supply, which is not matched by demand and even greater surplus of cereal stocks with FCI.

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Summing up

Subsidies which encourage inefficient resource allocation and sub-optimal use of finite natural resources should be phased out especially in water, energy, fertilizers etc. Incentives for clean process and green products need to be introduced. Unless environment measures make good business sense and improve the bottom-line, in the long-run industry will continue to evade its corporate responsibility especially when the cost of penalty is lower than that of compliance and the enforcement system is weak. On the whole, performance in forestry in India has been satisfactory, but it has not been able to realise the full potential of this sect or, particularly the poverty alleviation focus of the 1988 Indian Forest Policy.

Improving quality of life through greater attention to environment In the last thirty years, there is enough empirical evidence to say that environmental conservation must go hand in hand with economic development; any economic development that destroys the environment will create more poverty, unemployment and diseases and thus may not qualify to be called *development*. For the poor who depend on nature for their daily survival, Gross Nature Product is more important than the Gross National Product. Environmentally destructive economic development will impoverish the poor further and destroy the resource base for their livelihood.

A certain part of the additionality of funds would be reserved for forestry and related activities and would be available when the states change their policies in favour of greater peoples' involvement in those activities. How State Governments follow up these policies would need monitoring when allocating more funds for such programmes.

STRATEGIES AND ACTIONS TO GENERATE ADDITIONAL FINANCIAL RESOURCES / MACRO-ECONOMIC AND FISCAL MEASURES

Clearly, the Policy Statement on Environment & Development stipulates that
economic growth indicators like GNP and GDP would include depletion costs of environmental resources, that the Government would prepare each year a natural resources budget reflecting the state and availability of land, forests, water etc. and further that these resources would be rationally allocated in keeping with principles of conservation and sustainable development. Yet no progress has been made in this direction since the Policy Statement. GNP and national income do not reflect environmental degradation or consumption of natural resources. National income accounting without environmental
accounting limits the information available to policy makers for gauging the impact of economic activity upon the environment in its role both as a "sink" for waste and a "source" for development. It is, therefore, essential that a natural resources budget is placed before Parliament along with the economic budget each year and a State of the Environment report is presented along with the Economic Survey. A similar exercise needs to be mandated for
the states.

These must also be independent processes, or at least fully participatory

Under the Environment (Protection) Act, 1986, the Central Government has wide powers to take measures to protect and improve the environment and can mandate the States to present a natural resources budget and a State of the Environment report before their legislatures to ensure judicious use of natural resources for sustained development. This should entail an accounting of States' natural resources, both renewable and non-renewable,
their quantity and quality, the nature of development activities that may be undertaken on the basis of the resources available and preparation of an action plan for sustainable development, abatement of pollution and restoration of the health of natural resources. Such accounting of natural resources by States would also be used as an input into the national natural resources budget to ensure that information regarding the ecological capital available for development is taken into account while shaping national policies. Such an approach would help mitigate and even prevent ecological disasters such as drought, for example. The capacity building required for formulating such environmental agenda would have to be provided through the Ministry of Environment & Forests (MOEF), & relevant inst/NGOs.

The following policy initiatives need to be examined in regard to
the environment sector:

1. The present system of subsidies in electricity, fertilizer and water sectors encourages overuse of scarce natural resources and leads to

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inefficient resource allocation. The problem of nitrification, salanity and water-logging is essentially on account of under-pricing of these scarce resources. Therefore, subsidy on fertilizer, electricity and water should be phased out. These savings should be channelised for the development of the environment and forest sectors.

Not necessarily!

Can only happen if bio-tech. made avail. simultaneously otherwise politi. impossible

2. National Accounts Statistics must include environment accounting in order that environmental concerns get integrated in our development plans. Effects of economic activities on the wealth of our natural resources must be truly reflected in our national income.

Needs to be developed

3. Cashing in on biodiversity is not just about money:
The full benefits of biodiversity are not always picked up on using conventional economic analysis. Suitable methodologies remain undeveloped. This is because of the cross-cutting and non-financial nature of biodiversity benefits - not only across different areas, but also through time. This has critical implications for poor people who often depend on the biodiversity "leftovers" - or those of little importance to richer groups. The need is to develop means to pay incentives for local conservation and resource recycling activities that produce National or Global benefits.

4. Subsidies or donations for alternatives to fuelwood biomass (e.g., LPG, kerosene) and energy-saving technologies (e.g., solar cells, astra ovens, biogas plants, smokeless chullas).

5. Based upon above actions, identify appropriate processes and mechanisms which could facilitate and support the integration of these ~~economic growth-focused~~ development related environmental priorities into the Five year plan and other development processes. Processes are likely to include creation / strengthening of appropriate open and transparent fora to discuss trade-offs in development options, and development / dissemination of appropriate incentives which promote environmental sustainability.

integrated of bef. in to dev?

6. Special consultation sessions need to be held with parliamentarians during this time. Working groups to develop their submissions/presentations to Planning Commission to influence decisions on prioritisation and budget allocation. Lobby the National Development Council to ensure that the importance of environmental integration as part of sustainable development is accepted and promoted within the Five Year Planning process and by the sectoral groups.

7. Identify additional actions and opportunities (within the Five Year Planning process) for Planning Commission to further engage in analytical debate regarding environment - economic growth links, environment- poverty links, natural resource accounting and environmental economics, so as to enable better internalisation of the costs of environmental impacts, and more informed debate on trade-offs between respective development options.

8. Cash rewards for outstanding efforts toward biodiversity conservation. Collection of taxes, fees, fines related to the use of biodiversity.

Separate the two & elaborate

9. Though there is recognition that hilly areas need special attention in terms of development, and for this purpose the Planning Commission allocates special funds for hill regions and has some focused development programmes there, a corresponding recognition of the ecological fragility of the hills and mountains is not reflected in the financial allocations. It is important for the Planning Commission to make special provisions in the State and Central budgets for promoting sustainable development in the hill areas and for ensuring that projects based in, and affecting, the hill and mountain ecosystems have the resources require to be executed in an environmentally friendly manner. In order to facilitate this the recommendations of the Planning Commissions' expert committees on hill areas and the Himalayas should be implemented.

Similarly for other sensitive areas?

Give precise reference incl. year

10. Working with the Economic and Financial Ministries, highlight key issues relating to fiscal policy for economic growth and poverty reduction and better environmental management, and how best to take forward environmental sustainability in regard to the financial management legislation. Identify additional actions and opportunities for better internalisation of the costs of environmental impacts, and more informed debate on trade-offs between respective development options.

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11. Finally, the budget of the forestry and wildlife sector is less than one percent of the total budget. The allocation of funds to this sector should be substantially increased.

to what?

- Banking strategies
- Pvt. sector?
- Transp. in funds
- Reorientation of external assistance
- Innovative fund raising
- Trust funds
- Debt-for-swaps
- Charity/relief instatn.

REVIEW OF PERFORMANCE DURING 8TH FIVE YEAR PLAN AND GOALS SET FOR THE 9TH PLAN

The Ministry of Environment & Forests was allocated an outlay of Rs.1200 crores for its 8th Plan 1992-97. The actual expenditure in 1992-93 was Rs.274.65 crores, in 1993-94 it was Rs.303.52 crores, in 1994-95 Rs.328.25 crores, in 1995-96, Rs.296.64 crores and in 1996-97 it was Rs.428.84 crores, making a total of Rs.1631.90 crores.

SECTOR WISE/YEAR WISE APPROVED OUTLAYS & EXPENDITURE IN VIIITH PLAN.(Rs.Crores)

Sector	8th Plan Outlay Original	Outlay 1992-93	Expdt. 92-93	Outlay 93-94	Expdt. 93-94	Outlay 94-95	Expdt. 94-95	Outlay 95-96	Expdt. 95-96	Outlay96-97	Expdt. 96-97
1	2	3	4	5	6	7	8	9	10	11	12
Environment	325	48.00	45.09	70.00	71.15	79.00	103.52	80.00	63.00	125.00	124.18
NRCD	350	55.00	54.19	65.00	64.91	78.00	31.34	79.00	42.09	106.00	121.53
NAEB	275	115.00	114.45*	98.00	90.33	103.00	103.13	104.00	93.18	90.00	87.55
Forests & Wildlife	250	62.00	60.92	85.00	77.13	100.00	90.26	107.50	98.37	148.40	95.58
Total	1200	280.00	274.65	318.00	303.52	360.00	328.25	370.50	296.64	469.40	428.84

* During 1992-93, the then National Wastelands Development Board was bifurcated into two separate Boards. NWDB was transferred to Department of Wastelands Development and NAEB was retained in Ministry of Environment & Forests. The allocation of Rs.115.00 crores was for both the boards. The expenditure of Rs. 114.45 crores relates to both the Boards. Expenditure under NAEB was Rs.72.736 crores during 92-93.

```
pkzip SNAPSHOT.ZIP GTAG.DBT > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP GZIM.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP KATOVERB.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP MARKETS.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP PACKAGE.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP RATE_AVL.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP RATE_AVL.DBT > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP RATE_DET.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP RATE_HDR.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP RATE_HDR.DBT > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP RCALEND.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP REVSTAT.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP ROOMSTAT.DBF > NUL
if errorlevel 1 goto SNAP_ERROR
pkzip SNAPSHOT.ZIP USERLOG.DBF > NUL
if errorlevel 1 goto SNAP_ERROR

if exist IYSNAP.CHK del IYSNAP.CHK
IYSNAP > IYSNAP.OUT
if not exist IYSNAP.CHK goto NO_IYSNAP
if errorlevel 1 goto RENAME_ERROR
batchman setcursor 24,1
echo ____________________________________
echo R_IYCOPY.BAT SUCCESSFUL > IYCOPY.SPH
cd ..
goto DONE

:NO_GFIRM
batchman setcursor 25,1
echo File GFIRM.DBF not found - Invalid directory
echo File GFIRM.DBF not found > IYCOPY.ERR
goto FAILURE

:COPY_ERROR
batchman setcursor 25,1
echo Failed to copy required files
```

SECTOR-WISE PLAN OUTLAY & EXPENDITURE IN PERCENTAGE UNDER THE VIIITH PLAN

(Rs. in Crores)

Sector	8th Plan Outlay Original	Total Outlay Revised	Total Expdt.	Allocations (% increase over original outlay)	Expdt. (% increase over original outlay)
1	2	3	4	5	6
Environment	325.00	402.00	406.95	23.69	25.21
NRCD	350.00	383.00	314.07	9.42	(-)10.27
NAEB	275.00	510.00	488.64	85.45	77.68
Forests & Wildlife	250.00	502.90	422.24	101.16	68.90
Total	1200.00	1797.90	1631.90	49.82%	36.00%

Notes:

- Increase in outlays/expenditure over original approved Plan outlay in case of NAEB is due to the fact that the major schemes of NAEB were got approved from CCEA at enhanced outlays for 8th FYP so as to increase area coverage under afforestation/Eco-development activities.
- Increase in outlays/expenditure over original approved Plan outlay in case of Environment is due to the fact that year-wise outlays for certain schemes like Environmental Impact Assessment, Industrial Pollution Control Project, Conservation & Survey etc. were approved by Planning Commission at increased levels.
- Increase in outlays/expenditure over original approved Plan outlay in case of Forest and Wildlife is due to the fact that the major schemes like World Bank aided Forestry Research Education Extension Scheme of ICFRE, Eco-Development in and around Protected Areas, Project Tiger, Development of National Parks and Sanctuaries, Project Elephant etc. were approved at enhanced level in VIII Plan due to increased activities.
- Under NRCD, during VIIIth Plan, except GAP Phase I which was 100% central funded, all schemes are implemented on a 50:50 sharing basis.

OUTLAY FOR THE NINTH PLAN AND ANNUAL PLANS 1997-98, 1998-99, 1999-2000 and 2000-2001

Overall Plan outlay/expenditure sector-wise (Rs. in Crores)

Year	Environment	NRCD	Forests & Wildlife	NAEB	Total
9th Plan approved outlay	887.00	766.84	860.00	500.00	3013.84
1997-98Outlay	198.00	109.00	144.70	92.00	543.70
Expenditure	115.37	99.44	122.70	69.19	406.70
1998-99Outlay	210.91	191.70	209.13	92.35	704.09
Expenditure	144.00	107.48	174.24	72.05	497.77
Outlay	191.50	200.00	215.00	93.50	700.00
	118.11	157.24	178.10	86.45	539.90
Expenditure	229.90	210.05	258.05	152.00	850.00
2000-2001 Outlay					

NRCD - National River Conservation Directorate,

NAEB- National Afforestation and Eco-Development Board.

Give table of all plan outlays

```
echo Failed to copy required files > IYCOPY.ERR
cd ..
goto FAILURE

:NO_SNAP
batchman setcursor 25,1
echo Snapshot archive not found
echo Snapshot archive not found > IYCOPY.ERR
cd ..
goto FAILURE

:SNAP_ERROR
batchman setcursor 25,1
echo Failed to archive required files
echo Failed to archive required files > IYCOPY.ERR
cd ..
goto FAILURE

:RENAME_ERROR
batchman setcursor 25,1
echo Failed to rename snapshot archive
echo Failed to rename snapshot archive
cd ..
goto FAILURE

:NO_IYSNAP
batchman setcursor 25,1
echo Program IYSNAP not accessible
echo Program IYSNAP not accessible > IYCOPY.ERR
cd ..
goto FAILURE

:FAILURE
batchman setcursor 26,1
echo R_IYCOPY.BAT Failed - Please write down message above and contact
 IS Manager ...
echo ... then press any key to continue
batchman beep 900,10
batchman getkey
goto DONE

:DONE
```

Virinder, my comments are in tracking changes mode, some directly made into the text, others that you need to respond to in brackets.

General:

1. Pl. put sources for all the information/data.
2. I think we need to put in an overall caution that funds are not the most critical gap/requirement for biodiversity, but are nevertheless important for a series of actions; also that when properly done, participatory mechanisms may actually reduce the need for 'external' funding (external meaning outside of the community or outside of the government).
3. The flow below is somewhat confusing and at times overlapping. I would suggest that you start with an overall statement on the process of budgeting for or allocating finances/schemes for biodiversity and related sectors; then give the situation in India with regard to successive 5-year plans and external funding including both positive and negative trends in budgets (also including the key biodiversity-related schemes in various ministries); then the major gaps and weaknesses including under-budgeting, under-valuation of biodiversity, perverse incentives, and so on; and finally the strategies and actions arising from this.

More specific comments below.

EXISTING FINANCIAL MEASURES, BUDGETS OF ENVIRONMENT AND FOREST, AGRICULTURE AND RELATED DEPARTMENTS

FIVE YEAR PLANS AND ENVIRONMENT SECTOR

Government of India [GoI] has placed economic growth and poverty eradication at the centre of its development strategy. The Ninth Five Year plan [1997-2001] was produced, as part of an ongoing process overseen by the Planning Commission. The Five Year Planning process has included the production of a Mid term review and Approach paper to Tenth Five year Plan. The Five Year Planning process has indicated the links between environment and economic growth and the importance of environmental sustainability as an integral part of sustainable development.

The Five Year Planning process sets the framework under which sectoral activities (water, health, education, agriculture, roads and private sector development) are allocated funds under the Medium Term Expenditure Framework. The respective sector plans address environmental integration to varying extents. However, the mechanisms for actually implementing environmental integration within the respective sectors are not clearly developed.

The Tenth Five Year Plan Approach paper [2002-2007] refers:
To reflect the importance of these dimension in development planning the Tenth Plan has established specific and monitorable targets for a few key indicators of human development, which include:

- Reduction of poverty ratio by 5 percentage points by 2007 and by 15 percentage points by 2012;
- Increase in forest and tree cover to 25% by 2007 and 33% by 2012.
- All villages to have sustained access to potable drinking water within the Plan period;
- Cleaning of major polluted rivers by 2007 and other notified stretches by 2012.

National Environmental Policy (which document is this?) has been approved and the Ministry for Environment and Forests is the nodal agency. India's Five Year Planning is an excellent example of a economic growth and poverty reduction strategy which recognises the links between economic growth and environment, and introduces issues of long term sustainability within economic growth and poverty eradication efforts (are you really convinced about this? It seems to me that even conceptually, the planning process has serious flaws in integrating environment with development or vice versa...or even (though that is not the subject of our report), integrating genuine poverty eradication with development! This needs to be discussed). The challenge is to ensure that these issues are reflected in implementation of the Five Year Planning and its key components, and that environmental sustainability is an integral part of policy dialogue at the national level.

As a part of the Tenth Plan formulation process, there is an immediate opportunity for Planning Commission to promote environmental sustainability within the Five Year Planning process, through active engagement with the sectoral groups and the Ministry of Environment and Forests [MOEF] to influence national planning, priority setting and budget allocation. As part of this assistance, a number of longer term sustainability issues will need further promotion, development and institutionalisation with the Planning Commission, Government of India, including adequate integration of environmental issues which directly impact on and sustain economic growth.

The 9th Plan for the sector of Environment and Forests was formulated in the spirit of Agenda 21 in recognition of the basic premise that environmental protection and economic development are mutually supportive aspects of the same agenda (as in the comment above, I'm afraid I'm not at all convinced that this is the case. I don't think any of the 5-year plans have been developed keeping truly sustainable development, conservation, and equity in mind. If they had the situation would have been substantially different, no? again, needs TPCG discussion). Developmental policies impinge heavily upon the environment requiring intersectoral policy integration and coordination. At present there is no institutionalised policy-integrating and coordinating mechanism, with the result that a compartmental approach to environmental protection continues to be followed with extremely indifferent results.

GNP and national income do not reflect environmental degradation or the consumption of natural resources and are inadequate measures of productivity and social costs when environmental damage occurs. National income accounting without environmental accounting limits the information available to policy makers for gauging the impact of economic activity on the environment. A natural resources budget and a State of the Environment Report needs to be placed before Parliament along with the economic budget each year, as laid down in the Government of India's policy statement of 1992 on Environment and Development. (I think the MoEF now is making a state of env. Report every year or two, is it not? Don't know if this is tabled in parliament or not. But natural resource budgets are nowhere in sight...this should be stressed as a major gap in both vision and practice, esp. given the fact that it is GOI's own policy)

(I think this para is not needed here, much of this will be featuring elsewhere in the report anyway) India is one of the 12 mega biodiversity countries of the world and harbours more than 48,000 recorded flora and 81,000 fauna (including insects). Habitat loss and conversion, unsustainable legal and illegal harvesting and the introduction of exotics are some of the main threats to biodiversity. Current ***in situ*** and ***ex situ*** conservation efforts are based on a combination of ecosystem based schemes and a focus on apex key species. There is a need to identify the keystone and umbrella species. Conserving such species ensures protection of all related species as well.

Macro-economic policies and measures:

There is very little systematic work on the relationship between macro-economic measures and ~~E~~environment (or environment in general (not clear, what does this mean?)). What is known is that many current measures, such as subsidies to chemicals in agriculture, tax incentives to industries in "marginal" areas (which are also usually biodiversity rich), and rapid (including "single-window") clearances for certain industries, are insensitive to ~~E~~environment concerns. They also do not enhance or protect the livelihood security of small farmers, fisher folk, and forest-dwellers. On the other hand, there may be measures such as subsidies to non-conventional or renewable energy sources that may help to conserve Environment.

An assessment of such macro measures is urgently needed to analyse the impact of sectoral and macro-economic policies on the adoption of environmentally sustainable practices and advise on the appropriate policy options. As required, there is need to develop with the Ministry of Environment and Forests a time bound work plan for their engagement in the Plan process and the identify appropriate institutional mechanisms to ensure biodiversity integration during operationalisation of the Environment Action Plan.

MOEF FINANCIAL ALLOCATIONS:

As a percentage of the total plan outlay of state and central governments,
the allocation to the Environment and Forestry Sector is around one per cent. However, even the low level of outlay is not being fully utilized.

Table 1: Central Plan Outlay/Expenditure (In Rs crores) (pl. standardise the units, perhaps lets use both Indian and western terminology, i.e. crores and millions both?)

Plan Outlay (this table is rather unclear, is there a formating problem?)

8 th Plan outlay 1200.00*	0.48
8 th Plan expdr. 1631.90	

9 th Plan outlay 3013.84	1.1
1997-00 outlay 1947.8	0.64
1997-00 expdr. 1506.5	0.54
2000-2001 outlay 850.00	0.72

Subsequently revised on year to year basis to Rs. 1797.50 crore.

External aided projects:

(could you pl. start with a description of the total aid that India gets, the percentage of this that is targeted to biodiversity/environment; the key projects/issues to which assistance goes; the gaps in external funding; and then the recommendations such as the one in the last line of the first para below?)

Government of India (GOI) also does not have a strategy for prioritising the needs in the sector and then coordinating between donors. MOEF has only ensured that funds from the two largest donors do not go to the same state. There is need to improve the capability of the Ministry to monitor and guide the implementation of all environment and forest related activities. In addition there are problems of financial procedure and adequacy of staff. Spending as an indicator in all states shows dismal progress.

(if this is a general point about lack of spending capacity, then pl. add a few general lines on this, and then give the following as a specific example) In the World Bank project (what project?), in the last three years less than Rs.25 crores has been spent on the project against a target of Rs.150 crores. During the period 1999 - 2000 an amount of Rs.100 crores was to be spent on the project, but the expected real spending is only a quarter of the amount. The level of external assistance (for what?) received has declined both in nominal and real terms: Rs.317 crores in 1997-98 but only Rs.234 crores in 1998-99 and further declined to Rs.189 crores in 1999-00.

FIVE YEAR PLANS AND FORESTRY SECTOR

The basic purpose of NFAP (suddenly, why NFAP? Again, it would be important to first start with the factual description of forestry/forests as a separate budgetary head, why this is so, what allocations have gone into it, then gaps and recommendations. It is also important to justify why we are talking more about forests in this chapter than about other ecosystems, pl. see comment on this below as well) is to establish direct linkage between the National Forest Policy and the National Five-Year Plans (FYPs). In the past, there has not been a comprehensive and constant programme structure for forestry. Every plan has had its own programme structure, so it was difficult to get linkages and establish trends. Although plans had specified objectives and programmes, the main activity under most of them was tree planting. The emphasis of the different FYPs regarding forestry was as follows:

- First and second FYPs: rehabilitation of degraded forests, introduction of economic species, survey and demarcation;
- Third and fourth FYPs: increasing productivity of forests through fast growing species plantation, scientific assessments and some logging;
- Fifth FYP: large scale plantation, social forestry and forest conservation;
- Sixth FYP: social forestry and fuel-wood reserves to save natural forests;
- Seventh FYP: forest conservation, massive afforestation and wasteland development;
- Eight and Ninth FYP: preservation of biological and genetic diversity (both flora and fauna), protection of forest against biotic interference, utilisation of wastelands, and promotion of people's participation through joint forest management (JFM).
-

The percentage share of Forestry Sector Outlay changed from 0.32 percent of the total outlay in First FYP to 0.94 percent in Eighth FYP. The highest allocation was in the Seventh FYP (1.09%). For the sustainable development of the sector, allocation to the forestry sector should be raised to about 4 to 5 percent of the total outlay of the country.

FOREST & WILDLIFE:

Remote sensing data on forests shows that since 1983 the depletion in the dense forest cover has been ~~controlled~~reduced. The improved scenario could be because of the general ban on green felling, liberalized wood imports (touching 2 billion US $; of course it is a matter of concern that this could be causing deforestation and degradation in some other country!), the successes of farm forestry and participatory policies introduced in many states. Planning Commission constituted a Task Force (when?) on "Greening India through agroforestry and Joint Forest Management". The Task Force recommended implementation of agroforestry and Joint Forest Management. ~~O~~over an area of 43 million ha, policy and legal support to remove all constraints in greening programme and financial support through the "Green India Fund".

(the links of these paras to the financial discussion are not clear…pl. clarify or else delete?)

Issues relating to productivity, access and marketing of NTFP are neglected. Local value added activities, such as processing, based on NTFPs should be encouraged. The nationalization of major Non Timber Forest Produce (NTFP) has increased the exploitation of the poor. Government should give up its monopoly on NTFPs and set up promotional Marketing Boards as distinct from commercial Corporations. Continuing subsidies on government supply of wood and bamboo to industries, act as a disincentive to industry to pay a remunerative price to farmers. The current import policy of government must review its decision to allow cheap and duty free import of pulp & timber. It has adverse impact on agroforestry development.

On the whole, performance in forestry has been satisfactory, but the states have not been able to realize the full potential of this sector, particularly the poverty alleviation focus of the 1988 Indian Forest Policy. The strategy of the Forestry Sector should be two pronged – one, producing market oriented products on farms and two, protecting forests for environmental benefits and for sustaining the livelihood of the forest dwellers.

OUTLAY FOR FORESTS

Forests are managed by states primarily with state funds supported by external donors. For the forestry sector, during the Eighth Plan (1992-97) the state plan outlay was Rs.3,550 crores, whereas funds received from the Ministry of E & F as centrally sponsored scheme were only about Rs.500 crores, or less than 20% of the total. This would be even less than 15% if one took into account the transfer of funds from District Rural Development Agencies (DRDA) to district field agencies for forestry related work. For the Ninth Plan the State Plan outlay ~~is~~ was Rs 6,300 crores, whereas the contribution of centrally sponsored schemes would not be more than Rs.1,500 crores. Most externally aided projects in the forestry sector are negotiated with the states and external aid is reflected in the state budgets. Investment in forestry in India is likely to decline sharply in the next two years (which two years, are we not already past these years?), however, because of a ban imposed by countries like Japan and Denmark on assistance to India. Rough estimates indicate that annual external funding in the forestry sector will decline from the present level of Rs.844 crores to just Rs.300 crores by 2002-03 unless special efforts are taken to start new projects. There is likely to be a decline in assistance from the World Bank too as no new projects have been signed after UP (1997) and Kerala (1998), nor are there any in the pipeline.(I thought there is now for MP, Maharashtra, etc?)

PLANNING AND MOBILISASTION OF FUNDS

Planning in the forestry sector is done by the Planning Commission, Ministry of Environment and Forests and the States on the basis of the Five-Year Plans. Since the commencement of the First Five-Year Plan (FYP) in 1951, up to the Eighth FYP, which ended in 1996-97, Rs. 85 million have been spent on plan activities of forestry development. During this period afforestation of about 26.90 million ha. has been carried out. Financial allocation to the forestry sector has increased from Rs. 76 million in the First FYP to Rs 40,818 million in the Eight FYP but it has always been less than 1% (except the 7th plan, according to your figures above) of the total plan outlay of the country, though forests and forest lands cover over 22% of the landmass of the country. ~~It~~ This is perceived to be one of the main reasons for the continuous deterioration of forest resources and also for the depletion of biodiversity.

A provision of Rs 68 million has been made for the Ninth Plan. During 1997-98 of the Ninth Plan, afforestation of 1.48 million ha has been done which includes the distribution of 1033 million seedling (making 0.516 million ha on the basis of 2000 seedlings per ha.). Thus up to 1997-98 total afforestation is 28.38 million ha which includes a notional target of 4.65 million ha (equivalent of 9309 million seedling distributed to people). Average Annual Plan Outlay for forestry sector during the Eight FYP was about Rs. 8.16 billion, whereas, the estimated annual withdrawals (recorded and unrecorded) from the forests were worth Rs 300 billion during the same period which is about 36 times more than the planned investment (this point is important, pl. stress whereever possible).

Other assessments also reveal that forestry in India has continuously suffered net disinvestment (i.e loss due to deforestation and forest degradation being in excess of the investment in resource creation and enhancement). In one of the estimates the annual disinvestment has considerably reduced in absolute terms from Rs 650,000 million in 1970 to Rs 169,500 million in 1980 and to Rs 59,550 million in 1990s. Considering that the gross annual investment in forestry in 1995 has only been about Rs 34,500 million, the situation is still one of net disinvestment to the order of some Rs 25,000 million annually. To have positive net investment and to turn towards sustainable development, it is necessary that the gross investment is made higher than the disinvestment. This calls for intensive efforts (along with innovative and efficient measures) for fund mobilisation from all potential sources, public and private, domestic and external (if the gap is between deforestation related loss and forest related investment, should not this also call for efforts to reduce

deforestation? Otherwise, though you don't mean it, it sounds like we can compensate for deforestation by pumping in more and more money?). It is necessary to have a balanced combination of the funding sources to ensure stability of fund flow. To avoid the fluctuation and to facilitate targeted funding for forestry, it will be useful to establish a National /State Forest Fund(s).

EXTERNALLY AIDED PROJECTS

At present, 19 externally aided projects are under implementation in 13 states of the country with the total approved assistance of Rs. 42278 million. The annual assistance ranges from Rs. 4500 to 5000 million. Main donor agencies are the World Bank, OECF Japan, DFID, EEC, UNDP, Germany and SIDA.

These projects have certainly given a big boost to planned development of forestry in India but these financial assistance are not the additionality rather of the State Plan Outlay (sentence not clear). External assistance received is allocated through the Central and State Plan Budget. It has been observed that states having externally aided projects are not making adequate provision of funds commensurate to the requirements of project programmes. This will have adverse implications on funds of external assistance. This problem needs to be addressed by the state governments.

REQUIREMENT OF FUNDS

To fulfill the policy objective of having 33% of country's area under forest and tree cover, an annual programme of afforestation and regeneration of 3 million ha. is required. On the current cost norm it needs an estimated annual budget of Rs. 52,850 million against the average annual availability of Rs. 8,160 million for Forestry and Wildlife sectors and Rs. 16,150 million in total taking together all related programmes under different ministries, which is much less than the requirement.

The works of regeneration and plantation will be mostly covered in two programmes of NFAP i.e., increasing forest productivity and expanding forest areas. Average annual estimates of investment in these two components of NFAP are Rs. 19,574 and Rs. 20,280 million respectively with a total of Rs. 39,854 million, less than Rs. 52,850 million required for 33% forest/tree cover. It is because (I) Investment estimates in NFAP is for regeneration/ plantation of 48.2 million ha. (2.4 million ha per year) against 60 million ha. (3.0 million ha per year) referred in paragraph 12 and (ii) NFAP proposals do not take into account all expenditures in agroforestry and private plantations. Any how, Annual (average) estimate of Rs. 39,854 million required for proposed regeneration/plantation in SFAPs is much more than the available Average Annual Plan of Rs. 8,160 million for Forestry and Wildlife.

Some additional points:

- **What about ecosystems other than forests?**
- **Would it be possible to do some more micro-level assessment, e.g. of subcomponents of the budget like that for wildlife?**
- **What about the environment/pollution budgets of MoEF and others?**
- **It would be interesting to find out if there are states with "adequate" financial allocations, or at least much higher than national average?**

REORIENTATION OF BUDGETS OF DEVELOPMENT/WELFARE DEPARTMENTS

Taxing Agriculture:

Today, several inputs such as water, electricity and fertilizers are being provided to the farmers at highly subsidised rates. The subsidy on these accounts largely accrue to the rich farmers as compared to the low and marginal ones. Given this, it may be more feasible, in the beginning, to mobilise more resources from the farm sector through gradual reduction in subsidies, and proceed to introduce a full fledged agricultural income tax at an appropriate time in the future (this is rather controversial, lets discuss in TPCG).

Public Distribution System:

(Satheesh should see and comment on this) As regards the public distribution system, the objective of targeting the system towards the genuine poor should be more vigorously pursued. Ultimately food subsidy should be restricted to cover only the population below the poverty line. For the people above the poverty line who have

the purchasing power to buy food, the requirement is only to ensure availability of food grains at a stable price in the market. There is no need to extend food subsidy to this population. While subsidy is restricted only to rice and wheat under PDS there is a need to retain the viability of fair price shops. To ensure viability of fair price shops, it may be desirable that the fair price shops be permitted to sell commodities other than rice and wheat within their premises at full market prices.

Decentralisation:

(I think it is important below to link decentralised financial controls to biodiversity: what are the implications, the pros and cons, the possible pitfalls that need to be avoided; how will this enable conservation and sustainable use?)

The main features of the 73 rd Constitutional Amendment Act, 1992 include provisions for establishment of mandatory three/two tiers of Panchayati Raj Institutions (PRIs), regular elections to panchayats, a legal status to gram sabhas, reservation of seats for scheduled castes/scheduled tribes and women, setting up of independent state finance commissions for strengthening of finances of local bodies at all levels and constituting of independent state election commissions. Article 243 I of the Constitution provides for the constitution of a State Finance Commission (SFC) to review the financial position of panchayats and to make recommendations regarding principles governing devolution of financial powers to PRIs. These provisions need to be judiciously implemented.

The functional autonomy of PRIs along with their financial autonomy must be clearly delineated. Even in respect of the 29 subjects identified in the Eleventh Schedule, it is necessary for the sate governments to clearly identify
what would be done by the three tiers of panchayats at their levels. This should be based on the rule that what can be done at the lower level should be done at that level only and not at a higher level. Detailed instructions and guidelines would have to be issued by the concerned departments to their field officers in this regard.

The state governments are required to constitute District Planning Committees (DPCs) as envisaged under Article 243 (Z) and (D) of 74 th
Amendment Act to facilitate the process of decentralised planning. DPCs are to be set up in each district to prepare composite plans covering both urban and rural areas.

Links with Watershed Development :

One of the least understood but a most useful concept is the complementarity between forests and agriculture. If it is strengthened, the local community develops a stake in the preservation of forests which can deter individual attempts at encroachments or degradation. Traditional agro-forestry patterns are a reflection of farmers' own perception of complementarity between trees and crops, but the issue is wider than one between trees and crops. However, the fund allocation in forestry projects for soil conservation measures do not appear to be adequate (vague…is there some analysis of this?). The Ministry of Rural Areas and Employment recently (recently means?) permitted its funds to be used in watershed schemes by the FD, but a similar initiative is needed from the Ministry of Agriculture too.

Too many schemes & lack of convergence

A good number of Plan schemes are in operation with similar objectives and
targeting the same population. Generic components like extension, training and IEC (Information, Education & Communication) get repeated in most of such schemes leading to wastage. For every new scheme, there is a tendency to develop new implementation machinery at national, state and district levels. There are schemes that are seen no longer productive, but still continue. All this calls for a lot of consolidation and convergence. (could you give some examples to illustrate the points above?)

(Pl. give a list of the existing relevant schemes…I think I sent you a booklet of the GOI schemes, did I?)

Though a rigorous procedure has been in place for introducing new Centrally
Sponsored Scheme (CSS), there is a proliferation of CSS which could not be kept in check. Following a direction from the National Development Council, several CSS schemes were sought to be transferred to the states. In February 1999 the Planning Commission prepared a list of such schemes with an outlay of Rs. 3,709 crore annually for handing them over to the states. But Central Ministries have been reluctant to fall in line, and as of July 2000 they have agreed to give up schemes worth only Rs. 163 crore and transfer them to the states. In the meanwhile several new CSS have been introduced in the last two years.

In the 9th Plan, the Ganga Action Plan – Phase II has been converted from 50:50 sharing CSS into a 100% CSS. In spite of this, assets created are not being adequately utilized because of lack of operation and maintenance

funds by the State Governments. A solution to the problem of Operation and Maintenance of assets under various National River Conservation Directorate (NRCD) programmes needs to be urgently found.

Agriculture and Cooperation Sector

(the biodiv. links below are unclear. We need to assess:

- How many schemes actually integrate biodiversity?
- In their inter-links, how do all the agr. schemes impact on biodiv?
- Are there schemes meant primarily or exclusively for biodiversity?
- And so on...)

The Department of Agriculture and Cooperation (DAC) has 182 attached/ subordinate/ autonomous offices under it. All this is notwithstanding the fact that Agriculture is a state subject. The Department runs 147 schemes with a total Ninth Plan outlay of Rs.9,228 crore. DAC's major developmental programmes/activities relate to cereals, pulses, oilseeds, commercial crops and horticulture. The Department, it is observed, has split the major components into crop-specific schemes -- and even within a particular crop into various activities -- thus multiplying the schemes virtually for all the components.

In each scheme related to a crop, be it cereal crop, oilseeds, pulses or horticulture, there are common components for providing subsidy and loan. There are subsidies on many components such as seed and planting material, production of breeder, foundation and certified seeds and also for distribution apart from subsidy for transportation, front line and field demonstrations, farmers' training, subsidy on agricultural implements, micro nutrients, and the like. In case of horticulture, subsidy is provided for nurseries, planting materials, area expansion, workshops, seminars and publicity including irrigation devices. For example, in ICDP (full form pl.) rice, subsidy is on all these components and when a scheme is considered for pulses or oil-seeds, the same components also figure there. This, it is seen, results in overlapping of subsidy on different crops under various schemes; a cluster of farmers in a particular area, then, could avail subsidy on implements, on micro-nutrient or on sprinkler sets under more than one scheme. Further, for training front line demonstration and field demonstrations expenditure could have been minimised to a large extent if these were organised on cropping system- based approach instead of a crop-specific approach.

From early 1960s/70s, schemes are being implemented without having any evaluation done to know their shortcomings or impact. While doling out money, due consideration is not given to the likely delivery of inputs. For example, money is invest ed in revival/modernisation of sugar mills but after modernisation the mills are in red, their net worth completely eroded. A major problem being faced by those mills, i.e. artificially high state-administered prices of sugar cane, has not been addressed. (what are the biodiv. implications of the above?)

The Ministry has now submitted a proposal for macro management scheme which is reportedly based on area approach rather than crop approach. Yet it has not spelt out how a merger of 34 schemes (28 + 6 being weeded out) would assist states and what are the activities that will be supported through the macro management programme. There is no information on humanpower created for the Department-run 147 schemes at the Central, State and district levels and how this humanpower would be re-deployed after macro- management scheme becomes operational. As and when macro- management scheme becomes operational, 31 more schemes would become redundant on which the Department has yet to take a view. It is high time the Department carried out a detailed exercise on convergence and weeding out of existing schemes. Instead of 147 schemes that are currently in operation, it would appear, 8 or 9 schemes would suffice to address the problems in Agriculture Sector in a focused and cost-effective manner.

The food security situation in the country can therefore (why "therefore"...this does not seem to result from the above discussion?) be considered to be satisfactory as far as the food production aspect is concerned. The incentive being given to farmers by way of higher minimum support prices could lead to high costs in future as farmers use more fertilizer and pesticides (and possible use of inferior land) to increase output of ~~these~~ only two crops (rice and wheat) in preference to others. This will discourage exports and at the same time lead to higher prices for the consumer. The net result is likely to be even greater excess supply, which is not matched by demand and even greater surplus of cereal stocks with FCI.

Summing up

Subsidies which encourage inefficient resource allocation and sub-optimal use of finite natural resources should be phased out especially in water, energy, fertilizers etc. Incentives for clean process and green products need to be introduced. Unless environment measures make good business sense and improve the bottom-line, in the long-run industry will continue to evade its corporate responsibility especially when the cost of penalty is lower than that of compliance and the enforcement system is weak. On the whole, performance in forestry in India has been satisfactory, but it has not been able to realise the full potential of this sect or, particularly the poverty alleviation focus of the 1988 Indian Forest Policy.

Improving quality of life through greater attention to environment In the last thirty years, there is enough empirical evidence to say that environmental conservation must go hand in hand with economic development; any economic development that destroys the environment will create more poverty, unemployment and diseases and thus may not qualify to be called *development*. For the poor who depend on nature for their daily survival, Gross Nature Product is more important than the Gross National Product. Environmentally destructive economic development will impoverish the poor further and destroy the resource base for their livelihood.

A certain part of the additionality of funds would be reserved for forestry and related activities and would be available when the states change their policies in favour of greater peoples' involvement in those activities. How State Governments follow up these policies would need monitoring when allocating more funds for such programmes.

STRATEGIES AND ACTIONS TO GENERATE ADDITIONAL FINANCIAL RESOURCES / MACRO-ECONOMIC AND FISCAL MEASURES

Clearly, the Policy Statement on Environment & Development stipulates that
economic growth indicators like GNP and GDP would include depletion costs of environmental resources, that the Government would prepare each year a natural resources budget reflecting the state and availability of land, forests, water etc. and further that these resources would be rationally allocated in keeping with principles of conservation and sustainable development. Yet no progress has been made in this direction since the Policy Statement. GNP and national income do not reflect environmental degradation or consumption of natural resources. National income accounting without environmental
accounting limits the information available to policy makers for gauging the impact of economic activity upon the environment in its role both as a "sink" for waste and a "source" for development. It is, therefore, essential that a natural resources budget is placed before Parliament along with the economic budget each year and a State of the Environment report is presented along with the Economic Survey. A similar exercise needs to be mandated for
the states. (these must also be independent processes, or at least fully participatory and transparent)

Under the Environment (Protection) Act, 1986, the Central Government has wide powers to take measures to protect and improve the environment and can mandate the States to present a natural resources budget and a State of the Environment report before their legislatures to ensure judicious use of natural resources for sustained development. This should entail an accounting of States' natural resources, both renewable and non-renewable,
their quantity and quality, the nature of development activities that may be undertaken on the basis of the resources available and preparation of an action plan for sustainable development, abatement of pollution and restoration of the health of natural resources. Such accounting of natural resources by States would also be used as an input into the national natural resources budget to ensure that information regarding the ecological capital available for development is taken into account while shaping national policies. Such an approach would help mitigate and even prevent ecological disasters such as drought, for example. The capacity building required for formulating such environmental agenda would have to be provided through the Ministry of Environment & Forests (MOEF), and relevant institutions and NGOs.

The following ~~policy~~ strategic initiatives need to be examined in regard to
the environment sector: (these need to be elaborated into specific actions, with responsibilities, resources needed, etc.)

1. The present system of subsidies in electricity, fertilizer and water sectors encourages overuse of scarce natural resources and leads to inefficient resource allocation. The problem of nitrification, salanity and water-logging is essentially on account of under-pricing of these

scarce resources (not necessarily! It is also caused by bad technical planning, ignoring drainage patterns, ignoring ecological constraints, etc.). Therefore, subsidy on fertilizer, electricity and water should be phased out (this is politically unfeasible, unless there is a major programme to substitute chemical fertilisers with bio-fertilisers and ecologically sound ways of keeping up land productivity, which can be disseminated to farmers in the short run and which can be generated by farmers themselves eventually). These savings should be channelised for the development of the environment and forest sectors.

2. National Accounts Statistics must include environment accounting in order that environmental concerns get integrated in our development plans. Effects of economic activities on the wealth of our natural resources must be truly reflected in our national income. (this point is important, needs to be developed further)

3. Cashing in on biodiversity is not just about money:
The full benefits of biodiversity are not always picked up on using conventional economic analysis. Suitable methodologies remain undeveloped. This is because of the cross-cutting and non-financial nature of biodiversity benefits - not only across different areas, but also through time. This has critical implications for poor people who often depend on the biodiversity "leftovers" - or those of little importance to richer groups. The need is to develop means to pay incentives for local conservation and resource recycling activities that produce National or Global benefits.

4. Subsidies or donations for alternatives to fuelwood biomass (e.g., LPG, kerosene) and energy-saving technologies (e.g., solar cells, astra ovens, biogas plants, smokeless chullas).

5. Based upon above actions, identify appropriate processes and mechanisms which could facilitate and support the integration of these ~~economic~~ development-related growth-focused environmental priorities into the Five year plan and other development processes. Processes are likely to include creation / strengthening of appropriate open and transparent fora to integrate environment ~~discuss trade-offs~~ into the development options, and development / dissemination of appropriate incentives which promote environmental sustainability.

6. Special consultation sessions need to be held with parliamentarians during this time. Working groups to develop their submissions/presentations to Planning Commission to influence decisions on prioritisation and budget allocation. Lobby the National Development Council to ensure that the importance of environmental integration as part of sustainable development is accepted and promoted within the Five Year Planning process and by the sectoral groups.

7. Identify additional actions and opportunities (within the Five Year Planning process) for Planning Commission to further engage in analytical debate regarding environment - economic growth links, environment- poverty links, natural resource accounting and environmental economics, so as to enable better internalisation of the costs of environmental impacts, and more informed debate on trade-offs between respective development options.

8. Cash rewards for outstanding efforts toward biodiversity conservation. Collection of taxes, fees, fines related to the use of biodiversity. (these are two separate things, pl. put as separate points and elaborate each? Thanks)

9. Though there is recognition that hilly areas need special attention in terms of development, and for this purpose the Planning Commission allocates special funds for hill regions and has some focused development programmes there, a corresponding recognition of the ecological fragility of the hills and mountains is not reflected in the financial allocations. It is important for the Planning Commission to make special provisions in the State and Central budgets for promoting sustainable development in the hill areas and for ensuring that projects based in, and affecting, the hill and mountain ecosystems have the resources require to be executed in an environmentally friendly manner. In order to facilitate this the recommendations of the Planning Commissions' expert committees on hill areas and the Himalayas (which ones, pl. cite? The working group reports for 10th Plan that I saw were not particularly impressive?) should be implemented. (how about a similar recommendation for other sensitive ecosystems?)

10. Working with the Economic and Financial Ministries, highlight key issues relating to fiscal policy for economic growth and poverty reduction and better environmental management, and how best to take forward environmental sustainability in regard to the financial management legislation. Identify additional actions and opportunities for better internalisation of the costs of environmental impacts, and more informed debate on trade-offs between respective development options.

11. Finally, the budget of the forestry and wildlife sector is less than one percent of the total budget. The allocation of funds to this sector should be substantially increased (to what? any figure/percentage you can suggest, or should we leave it open?).

Other possible strategies/actions:

1. Banking and insurance strategies
2. Private sector financing?
3. Charities/foundations/religious institutions?
4. Transparency and participation in all funding schemes
5. Re-orientation of external assistance
6. Innovative funds if relevant for India: trust funds, debt-for-nature swaps, others?

REVIEW OF PERFORMANCE DURING 8TH FIVE YEAR PLAN AND GOALS SET FOR THE 9TH PLAN

The Ministry of Environment & Forests was allocated an outlay of Rs.1200 crores for its 8th Plan 1992-97. The actual expenditure in 1992-93 was Rs.274.65 crores, in 1993-94 it was Rs.303.52 crores, in 1994-95 Rs.328.25 crores, in 1995-96, Rs.296.64 crores and in 1996-97 it was Rs.428.84 crores, making a total of Rs.1631.90 crores.

SECTOR WISE/YEAR WISE APPROVED OUTLAYS & EXPENDITURE IN VIIITH PLAN.(Rs.Crores)

Sector	8th Plan Outlay Original	Outlay 1992-93	Expdt. 92-93	Outlay 93-94	Expdt. 93-94	Outlay 94-95	Expdt. 94-95	Outlay 95-96	Expdt. 95-96	Outlay96-97	Expdt. 96-97
1	2	3	4	5	6	7	8	9	10	11	12
Environment	325	48.00	45.09	70.00	71.15	79.00	103.52	80.00	63.00	125.00	124.18
NRCD	350	55.00	54.19	65.00	64.91	78.00	31.34	79.00	42.09	106.00	121.53
NAEB	275	115.00	114.45*	98.00	90.33	103.00	103.13	104.00	93.18	90.00	87.55
Forests & Wildlife	250	62.00	60.92	85.00	77.13	100.00	90.26	107.50	98.37	148.40	95.58
Total	1200	280.00	274.6	318.00	303.5	360.00	328.2	370.50	296.	469.4	428.84

			5		2		5		64	0	

* During 1992-93, the then National Wastelands Development Board was bifurcated into two separate Boards. NWDB was transferred to Department of Wastelands Development and NAEB was retained in Ministry of Environment & Forests. The allocation of Rs.115.00 crores was for both the boards. The expenditure of Rs. 114.45 crores relates to both the Boards. Expenditure under NAEB was Rs.72.736 crores during 92-93.

(if possible, we should give a table of the allocations to environment from 1st Plan onwards. I think this may be in Kadekodi's report)

SECTOR-WISE PLAN OUTLAY & EXPENDITURE IN PERCENTAGE UNDER THE VIIITH PLAN
(Rs. in Crores)

Sector	8th Plan Outlay Original	Total Outlay Revised	Total Expdt.	Allocations (% increase over original outlay)	Expdt. (% increase over original outlay)
1	2	3	4	5	6
Environment	325.00	402.00	406.95	23.69	25.21
NRCD	350.00	383.00	314.07	9.42	(-)10.27
NAEB	275.00	510.00	488.64	85.45	77.68
Forests & Wildlife	250.00	502.90	422.24	101.16	68.90
Total	1200.00	1797.90	1631.90	49.82%	36.00%

Notes:
- Increase in outlays/expenditure over original approved Plan outlay in case of NAEB is due to the fact that the major schemes of NAEB were got approved from CCEA at enhanced outlays for 8th FYP so as to increase area coverage under afforestation/Eco-development activities.
- Increase in outlays/expenditure over original approved Plan outlay in case of Environment is due to the fact that year-wise outlays for certain schemes like Environmental Impact Assessment, Industrial Pollution Control Project, Conservation & Survey etc. were approved by Planning Commission at increased levels.
- Increase in outlays/expenditure over original approved Plan outlay in case of Forest and Wildlife is due to the fact that the major schemes like World Bank aided Forestry Research Education Extension Scheme of ICFRE, Eco-Development in and around Protected Areas, Project Tiger, Development of National Parks and Sanctuaries, Project Elephant etc. were approved at enhanced level in VIII Plan due to increased activities.
- Under NRCD, during VIIIth Plan, except GAP Phase I which was 100% central funded, all schemes are implemented on a 50:50 sharing basis.

OUTLAY FOR THE NINTH PLAN AND ANNUAL PLANS 1997-98, 1998-99, 1999-2000 and 2000-2001
Overall Plan outlay/expenditure sector-wise (Rs. in Crores)

Year	Environment	NRCD	Forests & Wildlife	NAEB	Total

9th Plan approved outlay	887.00	766.84	860.00	500.00	3013.84
1997-98Outlay	198.00	109.00	144.70	92.00	543.70
Expenditure	115.37	99.44	122.70	69.19	406.70
1998-99Outlay	210.91	191.70	209.13	92.35	704.09
Expenditure	144.00	107.48	174.24	72.05	497.77
Outlay	191.50	200.00	215.00	93.50	700.00
	118.11	157.24	178.10	86.45	539.90
Expenditure	229.90	210.05	258.05	152.00	850.00
2000-2001 Outlay					

NRCD - National River Conservation Directorate,
NAEB- National Afforestation and Eco-Development Board.

(some random actions for NAP)

Strategy: Strengthen biodiversity-based enterprise based on indigenous artisanal skills and knowledge, and oriented to conserving the relevant resources.
Actions:

1. Initiate a country-wide study on the links between artisans and biodiversity, including traditional knowledge, the continuing dependence of artisans on biological resources, the status of these resources, and methods by which the links can be encouraged to enable secure livelihoods and a stake in conservation.
2. In the above, provide special focus on nomadic artisans whose livelihoods are based on biological resources. (anything specific from Mishra's paper for this?)
3. Based on available information and on the above study, provide infrastructural, legal, and financial support to artisans to enable secure livelihoods based on biological resources, and to facilitate their participation in the conservation of these resources.

(provide a box on natural dyes, and bamboo/cane, as examples???)
Justification: Several million households in India have historically been dependent on biological resources for their artisanal livelihoods, and have in the process developed considerable skills and knowledge related to biodiversity. Social and ecological changes have threatened this relationship, threatening both the artisans and the resources. Nomadic artisanal communities are especially seriously threatened (ref: Mishra's paper???)
Time frame: One year for Actions 1 and 2; ongoing for Action 3
Responsibility: Ministry of ???, KVIC, Dastakar, others???

Strategy: Generate new and innovative financial resources for conservation and sustainable use, and for benefit-sharing.
Actions:

1. Institute an ecosystem service tax in all cities/towns, to be charged to all those who are in the income tax bracket; the proceeds of this are to go directly into the upkeep of catchment areas, wetlands, and other ecosystems that service each particular city or town.
2. Institute a tax on the profits (check economic viability?) made by all mineral water companies; the proceeds to go directly into the upkeep of catchment areas.

Justification: Many industries, agencies, and individuals, especially in the middle and upper classes of Indian society, enjoy the benefits of biodiversity without paying for its conservation. These measures will not only generate finances, but also help in raising awareness amongst these classes, of the importance of biodiversity.
Time Frame:
Responsibility: Ministry of Commerce, Ministry of Environment and Forests, relevant state departments, others???

Strategy: Inter-sectoral integration
Actions:

1. Integrate biodiversity conservation into national and state water policies and programmes (including water provision schemes), including steps and budgets for:

(a) Studies of the specific contribution of forests and grasslands to the water security of the nation, including valuation of this contribution and the inclusion of this value into the national budget and planning (anything from Economics BSAP on this???);
(b) Conservation of natural ecosystems at all sources of rivers and streams, using the Environmental Protection Act or other appropriate law;
(c) Protection of forests or afforestation, using local species, in all catchments of water bodies;
(d) Principles of equity in the management and sharing of water resources, and the management of water sources and catchment areas;

* DU RM : FRE => DUN

* TUNFB RM : FID => AIR

* TUN HB RM : FID => AIR

* TUN CREW : FID => AIR

* TUN DU : FID => AIR

* EURC RM, IW01 RM,IW02 RM
IW03 RM,IW04 RM : PKG => TOR
OLYB RM

* TOP_KEY, HIL_CON in bucket FRE : these rate codes don't exist

* I have 2 rate codes HR11 & HR_11 ??

Thank you & Regards

Marie Helene

(e) What else???

Justification: The true contribution of biodiversity to the nation's water security is seriously under-valued, and relatively unrecognised; due to this, water policies and programmes, and plans/budgets in general, do not integrate conservation. The measures above will help in both biodiversity conservation and in water security.

Time Frame: ???

Responsibility: Ministry of Water Resources, Ministry of Environment and Forests, relevant state departments, panchayat raj institutions and village communities in source/catchment areas, others???

Strategy: Inter-sectoral integration

Actions:

1. Review and modify all Government of India guidelines relevant to development schemes, to ensure the integration of biodiversity into each of the schemes???

(do we have any examples to give as a box???)

Justification: Biodiversity remains a neglected focus in the guidelines that govern the functioning of official schemes, with the exception of a handful of environment-related schemes. Without appropriate changes in these guidelines, development schemes will remain destructive or negligent of biodiversity.

Time Frame: One year

Responsibility: A group set up under the aegis of the Planning Commission, consisting of independent biodiversity and livelihood specialists???

Strategy: Strengthen the positive links between wild and domesticated biodiversity.

***Actions*:**

1. Initiate a nation-wide study of the relationship between wild and domesticated biodiversity, including the comparative wildlife value of traditional agro-ecosystems and modern intensive farming, the role of traditional agricultural systems in providing corridors and refugia for wildlife, the role of wildlife in pollination and seed dispersal, the links between pastoralists (including nomads) and wildlife, and so on.
2. Provide infrastructural, legal, social, and financial incentives to farmers and pastoralists with practices that benefit wildlife, including (put some examples here???).
3. Promote, in all rural development and conservation programmes, continuation of, or revival/development of agricultural practices that benefit wildlife, especially in corridors used by wildlife for migration and gene dispersal???.
4. Generate awareness amongst farming and other sectors of the full benefits of wildlife to agriculture.

(there needs of course to be a complementary strategy and actions on mitigating the negative links between the two???)

Justification:

Time Frame:

Responsibility: Joint project of the Ministry of Agriculture and Ministry of Environment and Forests, with relevant state departments, institutions like Wildlife Institute of India, and farmers'/pastoral organisations.

Strategy: Promote biodiversity-friendly market practices.

Actions:

1. Promote, through appropriate infrastructural and economic support, the bio-resource based barter economy in local markets (*haats*), with appropriate checks against over-exploitation of the resources.

Date: 7/24/01
Sender: IDeaS_Support
To: Sameer Ambhore
Priority: Normal
Subject: Re: rate mapping

_____ Forward Header

Subject: Re: rate mapping
Author: Caroline van der Veen at HIMOBILE
Date: 7/23/01 12:41 PM

Dear Marie Helene,

The rate buckets DUN, AIR and TOR will NEVER be part of the rate mapping report as AIR & TOR are group rate buckets and DUN is a manually created rate bucket in Fidelio. Therefore the changes required are as follows:

- DU BR, DU RM, TUNFB RM, TUN CREW, TUN DU, EURC RM, IW01 RM,IW02 RM IW03 RM,IW04 RM and OLYB RM need to be removed from the rate mapping report and set up as system codes.

- TOP KEY and HIL_CON to be deleted as they are set up as system codes and do not exist.

- Which rate code is valid: HR 11 or HR11? The one which isn't should be removed.

Thanks & kind regards

Caroline

_____ Reply Separator

Subject: rate mapping
Author: ORYHITWFOM at ORYHITW
Date: 20/07/2001 5:57 PM

From : Marie Helene AT ORYHITWFOM
To : Ideas & Caroline

I need some changes for my rate mapping report :

	ACTUAL BUCKET		CORRECT BUCKET
* DU BR :	FIT	=>	DUN

AGROBIODIVERSITY IN N B S A P

final draft

by p v satheesh

6. **Broad strategies and related actions for achieving conservation, sustainable use, and equitable access/sharing of benefits**

➢ 50 pages (2-4 pages per subsection, on average)
(including:

- **scale** (local, state-level, national, global) of each action;
- **time period** (immediate; short term: 5 years; medium term: 10 years; and long term: 20 years for each action;
- **actors/institutions** and **mechanisms** needed to implement the suggested actions to be implemented;
- **financial resources** needed, primarily by re-orienting existing budgets, and through additional resource generation;
- If relevant or feasible in the national plan, for certain actions, detailed **project proposals** specifying the course of steps to be annexed)

Domesticated ecosystems and taxa

i) **Strategies and actions for enhancing understanding and information (including research, monitoring, etc.) for both formal and informal (community) sectors [P.V. Satheesh; Seema Bhatt for monitoring measures?]**

Much of the current information on agrobiodiversity is either largely inadequate or is concentrated in an extremely narrow and specialised circle. On the other hand the rich understanding and information available with the farming communities is systematically ignored and undermined. There is a crying need to balance these two extremes. The future of agrobiodiversity lies in enhancing the understanding among the scientific and policy communities and popularisling the information on a very large scale. In order to achieve conservation and sustainable use of agrobiodiversity, it iw very crucial that people in general and urban consumer classes in particular internalise the value of the role that agrobiodiversity can play in their nutritional security and access to safe foods.

In parallel, the enormous wealth of information, knowledge and understanding of agrobiodiversity that rests in rural communities needs to be supported through systematic promotional and affirmational actions if we want this knowledge pool to stay alive. Most of the time this knowledge gets derided and undermined to such an extent that it makes rural people feel very defensive about this knowledge. As a consequence, much of it lies subaltern and over a period of time, faces the danger of complete extinction. Particular emphasis is needed to make the younger rural generation feel confident and proud of this knowledge that lies with their communities.

crops are cultivated on the slopes . Here nomadic sheep and goat rearing gives way to a variety of other species from the Elephant , yak and mithun to buffalo , goats, pigs and chicken .In the lowlands duck rearing is popular . Unlike the vast open systems of the pastoral communities, animals here are reared close to the houses of farmers and very often stall fed. Animals are mainly reared for meat and only occasionally for milk . In the Northern hills of Sikkim and Arunachal , the yak becomes an important species providing a means of transport , food and fibre. Yak dung is used as a source of fuel . Elephant's are used in the more dense forest patches to help with the hauling of timber . The mithun a unique animal descended from the wild gaur is also domesticated here .These animals have an important socio economic and cultural significance among the people who rear them . They are sacrificed for meat and used as currency. Pigs are also a measure of wealth in these regions and unlike the rest of India where pigs are mainly reared under open scavenging systems , pigs here are well managed under closely monitored stall systems . The cattle breed found here is the Siri, which is suitable for draught work on the hill slopes.

Lower Gangetic plain

This region comprising the lowland deltaic plains of the Ganges and Brahmaputra rivers is characterized by the marshy saline swamp lands of the Sunderbans . The main crops are paddy and jute .Interestingly this region is home to perhaps one of the very few breeds of sheep adapted to wetlands, the Garole . Reared mainly for meat this breed is known for its high prolificacy and twinning capabilities. The well known breed of goat from this region is the black Bengal , small in size but with excellent quality meat and high prolificacy

The Central Plateau and hills .

Characterized by deciduous forest this region spreads across the states of Orissa , Jharkand (formerly South Bihar) Madhya pradesh, Chattisgarh and parts of Eastern Maharashtra . Extremely rich in natural resources and minerals this again is the home of a large number of tribal communities like the Kol, the Oraons , Gonds and Santhals who practice a mixed type of farming which includes a range of crop and livestock species. As this is rather heavily supplemented by forest produce little or no specialization of agriculture or livestock takes place .

There are very few well known or distinct breeds of animals from this region which only reconfirms the fact that livestock does not play a major role. Some of the tribes raise pigs . The Sambhalpuri and Nagpuri buffalo breeds which are reasonable milkers are found in this region. Breeds of goat like the Chota Nagpuri and the Ganjam and the Ganjam breed of sheep are also found here.

In the scientific community, a new understanding needs to be built that agri diversity is not limited to the issue of providing them breeding material for future experiments. Conserving them in a few gene banks and research station fields is not adequate. A much larger effort is necessary in terms of conserving entire landscapes and ecosystems. This information should urgently reach the scientific community.

A number of efforts are important in this direction.

- **Expand Knowledge on the dynamics of crop genetic diversity**

  Much is uncertain and unknown about the structure and multiple function of crop genetic diversity. Knowledge about the function of bio-diversity, synergies and complimentary ties, interactions, within agro-ecosystems, ecological processes within soils and interactions with the atmosphere and water, is rudimentary.

Action

Supportive studies on dynamics of crop genetic resources ~~of the state~~ are to be initiated. The extent of landraces, farmers stock have to be documented. The pattern of distribution of landraces in agroecosystems needs to be understood. Sufficient budget to be allocated towards such studies that evolve information and knowledge towards genetic diversity and its conservation. Advanced techniques such as GIS and Computer based formats should be adopted in generation and management of such information and knowledge.

- **Scale** : **National**
- **time period** : **Short Term**
- **actors/institutions** and **mechanisms** NBPGR, SAUs, NGOs, Biodiversity Councils at the State, District and Panchayat levels
  Surveys; PRAs, CBRs, GIS systems
- **financial resources** **Government of India in the budget it allocates to the National Biodiversity Authority when it is formed.**

- *Systematic documentation and dissemination of indigenous knowledge, technologies and institutions governing the agridiversity in different languages of India .*

Action

- A lead has been given by Honeybee Network which publishes stories on indigenous knowledge and innovations in their newsletter in six different regional languages. An agrobiodiversity focussed effort in this fashion needs to be initiated by similar NGOs and this deserves a lot of encouragement.

The Eastern Ghats .

This region is almost contiguous with the region above and covers the lower parts of the state of Orissa and descends into the state of Andhra Pradesh . Dense semi deciduous forests cover this region . The forests are central to the lives of the tribal communities who live here . Agriculture is based on some paddy, a variety of millets and pulses .Some of the interesting breeds of buffalo from this region are the Manda , Jerangi and Kalahandi . Male buffaloes are often used for draught purposes

The breeds of cattle found here are small and are kept mainly for draught and dung .In fact these animals are seldom milked and the milk is essentially left for the calf.

The species which is the most diverse here are poultry .There are many famous breeds of poultry from this region and over eight distinct strains of the Aseel are identified by people here[1].

The Western Ghats .

These hill ranges start in the north of the state Maharashtra and stretch all the way down to Kerala running parallel to the west coast of the country . The main feature of this mountain range is the heavy rainfall .Earlier these ranges were covered by very dense evergreen forests which were almost impossible to penetrate in places . Where the forests were dense, the buffalo was the preferred species as it could withstand heavy rain , thick forests and confront wild predators. The Gawli Dhangars a community of traditional buffalo rearers live in these hills in the region between Maharashtra and Karnataka and their livelihood depends on the sale of milk and milk products like *ghee*, buttermilk , yoghurt, *khoya* and milk sweets like *pedas* . Today with the loss in forest cover these communities rear cattle as well Further south in the Nilgiris , the Toda is a breed of buffalo which is reared exclusively by the Toda tribe.

The Dangi is a special breed of cattle found in the western Ghats of Maharashtra . This breed is supposed to be able to withstand heavy rain .Otherwise the cattle breeds found here are small almost dwarf like in size like the Malnad gidda of the Malnads in Karnataka . The reason for this short size has different explanations . For one , the small size makes it easy for the breed to plough in the small pocket sized landholdings which are cut into the hill slopes . Secondly, the soil is lateritic and acidic and the crops and grasses here are deficient in calcium resulting in a small bone structure and skeletal growth . .Thirdly, inexpensive

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[1] Insert box: The Poultry breeds of India"

- The central government brings out many newsletters and journals including *Yojana, People's Action etc.* ICAR has several journals to its credit [Give details of journals]. All these journals which deal with agriculture and rural development must include sections on agrobiodiversity.

- A reporting/editorial team needs to be helped to specialise on popular writing on agrobiodiversity themes for the consumption of the scientific and development community which forms the readership of these journals.

- **Scale** : **National**
- **time period** : **Short & Medium Term**
- **actors/institutions** and **mechanisms** NBPGR, SAUs, NGOs, Biodiversity Councils at the State, District and Panchayat levels
  Surveys; PRAs, CBRs, GIS systems, also audio visual
- **financial resources** **Government of India through**
  a. NEAC budget
  b. Budget made available to the NBAI
  c. MoEF special budget

Agr. Ministry

- *A special information network needs to be set up to deal with urban people especially the consumer classes.*

The most telling impact of globalisation is evident on the consumer markets in urban India. Branded foods with their glitzy advertisements and *Event Managements* take over the hearts and minds of urban consumers. Junk foods have a sway over the young minds. Fast food outlets define the fashion and social status of the student communities.

While it may be a herculean task to fight these forces and to rebuild consciousness of the *educated* classes in favour of ecologically produced foods which healthier, safer and tastier, the challenge must be squarely met. Otherwise we will not only be allowing a few generations to be swept off their feet and minds, but also will be putting the entire ecological/biodiverse agriculture at a great and irreparable risk.

Therefore efforts at various levels to reach out to these classes through well placed feature articles in newspapers, advertisements and promotional features on television and on FM Radio channels are extremely important.

- Cuisine contests, cookery columns, nutritional nuggets --- all of these need to be used to influence urban consumers and women by systematically disseminating sufficient information about the nutritive values, taste, palatability, cooking and keeping quality etc. of the native/traditional food. This effort would help in substantially increasing preference and demand for the products of the diversity.

animals means the loss to the owner is relatively small if one were to be taken away by a wild animal or bitten by a snake which is often .

In the forests of Karnataka and Kerala elephants are domesticated for helping with hauling timber

Many farmers also keep goats in this region because of their adaptability to the hill terrain and the fact that they are easy to rear .The Malabari from Kerala is a breed from this region .

An interesting feature is farmers from the adjoining dry Deccan plateau bring their sheep in to the wet uplands to graze during the winter and the summers.

Like with the other forest areas poultry are popular amongst farmers in this region. Breeds like the naked neck in the Sahyadri ranges and the Busra near the Dangs are found here . As with most Indian birds these are meat birds and are not very good layers .

.

The Islands

The southern islands of Andaman and Nicobar and the Laccadives have an economy primarily based on forests and coconut . Pigs are the preferred species reared by communities like the Jarawa , Sentinilese and the Onges . The breed of pig found here is quite distinct from the pig found in the mainland These animals have an enormous socio cultural significance in the lives of the people who live here . The other favoured species is the goat . The Nicobar chicken is the best layer amongst chicken in the country .

The Coastal regions

India is a peninsula and has a rather long coast line .People living on the coast have livelihood patterns unique to their region .Just like the forest provides so does the sea . Most people living on the coast consume sea food and therefore do not necessarily need other animal protein. However sea food is not available all the time and many coastal communities also practice agriculture and livestock rearing which is however quite distinct from pastoral and forest based systems .

Here again there are differences between the Eastern coast and the western coasts of the country both in geographical terms and ecological terms and practices vary quite substantially between two coasts

The West coast

The west coast of the country is uniformly characterized by heavy rainfall and lateritic soils . The main crop is paddy .While the size of the paddy plots on the coast in the State of Maharashtra are small they increase substantially as one moves south into Goa . Running parallel to the coast are the western ghat hill regions . Where the hills start food cops like

- For instance attempts such as the ECO NET created by an NGO – Institute of Cultural Research and Action, Bangalore in supplying organic products and native/tribal food items along with education for the urban consumers clearly highlights this point. The Zaheerabad Consumers Action Group started by the Deccan Development Society meets periodically to discuss the merits of traditional crops; workshops are held in various residential colonies to teach women a variety of cuisine from traditional millets; a Millet Cook Book has been published and distributed to the group and a series of cookery videos have been prepared and are exhibited. These special cuisine shows on traditional foods is also serialised on Doordarshan.

  Such actions need to be replicated on a large scale.

Navdanya?

Such examples should be in earlier chapter (6.2) & cross-refer

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

Biodiversity Festivals

At the level of rural communities, the need to bring back and confront them with the enormous knowledge of their own communities is the key to reinstill confidence in their practices.

While biodiversity can be discussed in academic circles, scientific fora, policy making bodies and activist groups, none of these can by themselves serve the purpose of helping people to internalise the spirit of biodiversity. Because the spirit of biodiversity transcends all the academic, scientific and activist spaces. It is in essence a spiritual activity. This essential character of biodiversity can only be understood in a celebration of the concept.

What is a Biodiversity Festival ?

Much of the discourse around biodiversity in the mainstream is related to its *use* in an economic sense. In recent times, *sustainability* has also become an added concern. The discourse always hinges on the *economics* of biodiversity and its use for scientific purposes like breeding. What it seems to tell people is that IT IS PRACTICAL to think of biodiversity and therefore we must attempt such a thinking.

This view of biodiversity is not only limited but can also be very limiting. Ultimately it can even become instrumental in destroying the biodiversity it intends to protect. In contrast, what can really nourish and protect biodiversity is the way this concept is cherished by the humankind all over the world as a part of their spiritual and cultural heritage, a cosmic way of looking at their universe.

Shift to Ch. 6.2, add examples from NBSAP process / DDS Uttara Kannada Sikkim

Say Fowl !!

Gallus gallus or poultry was reported to have been first domesticated in the jungles of the Indian subcontinent from its wild progenitor the red jungle fowl . Since then poultry rearing has spread throughout the world . In India, besides eggs and meat , birds are also reared for cock fights and to be given away as bride price or dowry. This activity is almost entirely managed by women .The most famous breeds of poultry are found in the eastern states of the country .

Breeds of the North Eastern States

Chittagong

Also known as Malay these birds are found in the north eastern states of the country .They are large birds with the male birds weighing from 4 to 5 kgs and females from 3 to 4 kgs These are good game birds being both strong and hardy .

Daothigir

These birds are found in Assam and reared by the Bodos .This a fairly heavy breed with a good growth rate

Frizzle fowl

The North eastern regions and the hot humid coastal regions of the country are home to this breed . Known for excellent adaptability in a tropical climate the rachis of the feather is curved due to the presence of adominant frizzle gene in (F) due to which plumage looks curly. This feature increases the heat dissipation from the body

Haringhata

A small bodied black bird it is found in the state of West Bengal . This bird has the typical conformation of a layer bird .

Miri

This bird gets its name from the Miri tribe who mainly rear this bird in the state of Assam in north eastern India . Its a small size black bird .

Naked Neck

As the name indicates the neck of the birds do not have any feathers or have only a tuft of feathers in the front of the neck above the crop . These birds are ideally suited for hot tropical climates .Bird of this breed are found in hot and humid coastal regions and the north eastern states .

A festive spirit characterised by celebrations and rituals has always marked this cosmic comprehension of biodiversity. Foregrounding this understanding of biodiversity and explain its spiritual and celebratory significance is at the centre of a Biodiversity Festival. Such festivals should become a regular feature of the nation's cultural calendar.

- The way the governments conduct *Apna Utsav*, Dastakar Festival and Handicraft and other festivals, space should be created at the District Level, State Level and National Level to hold biodiversity festivals. This will provide the ecological communities practicing biodiversity on their landscapes the much-needed non-material recognition and enthuse them to continue their spirit of diversity.

Elaborate a little?
Space = Money, admin-support, Physical space etc?
How to ensure some level of farmers control?

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

?

Can these actions also be taken up by farmers' unions & groups?

Seed Festivals

KVKs?

- At a smaller scale, the local agricultural departments can organise indigenous seed festivals at the level of each block/mandal. Such festivals could be held prior to the sowing season. Such festivals encourage informal exchange of the local seeds and helps a vibrant gene flow among the farmers. It will also help to generate a lot of awareness about the local level living agrobiodiversity within the farming communities especially among the younger generations for whom this awareness is most critical to help their community knowledge systems survive and flourish.

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

font?

RESEARCH FOCUS AND ORIENTATION

- Among the scientific and concerned policy circles, there is a great concern that the current agricultural research and development (R&D) is too preoccupied with a narrow definition of productivity and therefore has failed to take the larger picture of rural systems in their totality. The complexities of these systems do not find any analytical space in these research agendas and normally they are dismissed as irrelevant. The greater focus on increased productivity is also oblivious to the wider issues of people's livelihoods and their control over their resources. In recent years even this focus is further getting much narrowed down to the genetic engineering options at the exclusion of everything else. Most universities are getting funding only for such research from Western funding agencies, both private and public. Increasingly private. In the quest for privatisation of research institutions, this dangerous trend is also going unobserved.

Birds of Andhra Pradesh

The state of Andhra Pradesh has some of the finest breeds of poultry including the famous Aseel .

Aseel

The original home of this breeds is Andhra Pradesh . Well known for its stamina and majestic gait this breed is popular with those who practice the sport of cock fighting. The standard weight varies from 3 – 5 kgs for cocks and 2-4kgs for hens . tehse birds are also famous for their delicious meat .

Ghagus

This bird is reared by nomadic groups in the states of Andhra .Pradesh and Karnataka . This is a small sized bird with small combs and wattles .The neck is thick and loose and the shank is feathered . These birds and hardy and supposed to be resistant to a number of common diseases but are today becoming scarce .

Denki

Also from Andhra Pradesh the Denki is a fairly heavy bird with a glossy and lustrous plumage and a compressed single comb . Cocks good fighters and the birds in general are fairly resistant to diseases .

Kalasthi

Similar to the Denki but smaller in size these birds are popular in the state of Andhra Pradesh

Birds of the west coast

Ankaleshwar

From Ankleshwar in the State of Gujarat this breed is small and has a single comb. Birds are hardy and resistant to disease .

Busra

Found in the region around Bombay in the states of Maharashtra and Gujarat these birds are small to medium sized and light feathered .

Tellicheri

These birds take heir name from Tellicheri a small tow in North Kerala .These small birds with black skin . The plumage varies in colour from black to grey and sometimes various combinations of colours . The meat of these birds is said to have medicinal value.

In order to counter this trend and put back agrobiodiversity back on the agenda of research, there is increasing need to start more research into total biomass production of a village ecosystem; into multiple cropping systems like *baranaja* of Garhwal Hills, *Pannendu Pantalu* of the Deccan and *Navdhanya* of the South; into the revival and enhancement of indigenous crop varieties and livestock breeds; and into the various incentive systems which would encourage farmers towards biodiverse agriculture.

Research and development needs to build much more on the many important characteristics contained within our crop and livestock diversity, including grain productivity, taste, smell, colour, drought and disease resistance, ability to grow in adverse conditions, efficiency in input use, fodder output, and others. In India, though substantial work has been done along these line, manu traditional varieties are yet to be fully screened for their usefulness in specific conditions.

Process of doing research - farmer-based, agro-ecosystem based, site-specific ....

- **Scale** : **National and local level**
- **time period** : **Immediate & medium term**
- **actors/institutions** and **mechanisms** : NBPGR, SAUs, KVKs, NGOs
- **financial resources** : **Ministry of Agriculture in a special budget; reallocation of existing budget; MoEF in its budget for biodiversity bill related initiatives.**

ii) Strategies and actions for in-situ conservation (of agro-ecosystems and taxa) [P. V. Satheesh]

- *Cultivating Landscapes*

Much of in situ conservation efforts in biodiversity need a landscape approach. Efforts to reward a farmer or two, or find one or two institutions to work on agrobiodiversity, or offer a few incentives to a few farmers will not suffice. Serious conservation needs far more serious efforts like cultivating an entire landscape.

Recent studies in ecosystem approach have brought in a number of new dimensions to the complex relationship between agrobiodiversity and the ecosystems.

Should come in earlier chapter, maybe the intro.

Also can take from CBD decisions

Ecosystem management provides a comprehensive framework for bringing together a wide range of different approaches to conservation, helping to integrate or co-ordinate the various sectors with an interest in biodiversity.

Ecosystem analysis can help decision makers consider options for landscape-scale developments. The ecosystem approach implies: intersectoral co-operation; decentralisation of management to the lowest level appropriate; equitable distribution of benefits; use of adaptive management policies that can deal with uncertainties and are modified in the light of experience and changing conditions; and a multi-disciplinary

Birds from the Nicobar Islands

Nicobari

A native of the Nicobar islands these birds are round , compact , small and short with a stout neck .They are of a brownish matte colour. and are well adapted to thrive in tropical environments .These birds are the best layers amongst native breeds

Birds from other parts of the country

Brown Desi

Abundantly found in U.P these birds are of the layer type light to deep brown in clour and have a single comb

Kadaknath

This unusual bird from Madhya pradesh is also known as Kalamasi meaning fowl with black flesh . The skin ,beak , shank , toes and soles of feet of this bird are a dark gery . . Even the internal organs show a black pigmentation . This dark pigmentation is due to the deposition of melanin .Despite the strange colouring the flesh is supposed to be delicious. These birds are of medium size and are medium layers as compared to indigenous breeds laying up to 80 eggs per year . It is bred by tribal communities in the Jhabua and Dhar districts in Western Madhys Pradesh. Under free range conditions these birds are resistant to disease..

Faverolla

This small bird with small comb and wattles is from Kashmir . A unique feature of this bird are its feathered combs .

Punjab brown

This bird is found in the states of Punjab and Haryan . It's a meat type of bird with brown plumage . males weigh 3-4 kgs and females weigh 2-2.5 kgs .

Tetri

These are small birds with speckled black and white feathers , yellow beak and legs. Birds are poor layers .

Teni

These are small sized all purpose birds found all over the country as they are ideal for conditions in Indian villages . They are excellent brooders , can forage actively and tolerate , excellent sitter , tolerates high tropical temperatures .

approach that takes into account scientific, social, and economic issues (Slocombe 1991; Grumbine 1994; and Miller 1996).

Our understanding of ecosystem functioning remains very incomplete. For example, we do not know how much biodiversity can be lost from an ecosystem before essential services (such as nutrient cycling) begin to be affected. Some ecologists argue that the health and stability of ecosystems are correlated with biodiversity, so reducing diversity may compromise the integrity of the system. Others contend that ecosystem properties are determined by the functional traits of dominant species, or the composition of functional groups. This implies that at least some species may be redundant. A more balanced view is that while ecosystem processes may reflect the activities of a few dominant species, systems with greater diversity are more likely to contain the most productive species. System resilience is evolutionarily reinforced through the multiple interactions and feedback loops that characterise more complex food webs (Levin 1999). Sensible ecosystem management, therefore, calls for conserving all of the elements of the system, recognising that the incompleteness of our knowledge makes it risky to lose any of the pieces. Managing ecosystems and landscapes with a unified strategy to save most of their inhabitants, can be a cost-effective approach to biodiversity conservation. It addresses the worry that a simple focus on managing populations of particular species of interest will cause us to fall farther and farther behind in the overall effort to conserve biodiversity….

[from a paper by ……..]

Similar concerns are echoed elsewhere in the world in order to focus attention on the need to *Cultivate Landscape*

In his paper *Uncultivated Foods and Landscape Approach*, P V Satheesh argues that

> *Landscape approach widens your challenges of understanding the Uncultivated Foods. It lessens the dangers of confining the issue of uncultivated foods to farms and forests and thereby limit our understanding of it. In our work with the uncultivated food at SANFEC, we have tried to look at a number of landscapes to help expand our perception of the uncultivated foods.*
>
> - *Natural landscape*
> - *Ecological landscape*
> - *Social landscape*
> - *Cultural landscape*
> - *Economic landscape*
> - *Political landscape*
>
> *The constantly overlaying, intersecting dynamic character of these landscapes make it a fascinating approach to understand the complexity of uncultivated foods.*

Does it fit in this form here – some of this could go into Vision note others elsewhere

The specialty of Indian breeds .

Most Indian breeds are poor layers . Averaging from 45 – 80 eggs a year, they compare rather poorly when compared to breeds like the white leghorn who lay up to 200 eggs per year or more .On the other hand, the exotic varieties introduced into the country face problems of drop in egg production , low feed efficiency , thin shelled eggs and high mortality during the summer months due to heat stress. . This is where Indian breeds score over exotics . They can tolerate heat , are resistant to disease and are supposed to be superior in taste both eggs and meat.

Breeds of Ducks

Ducks are reared in those parts of the country where plenty of water is available and are therefore in the eastern and southern states of the country :Assam , West Bengal , Orissa , Andhra Pradesh ,Tamil .Nadu , and Kerala. They are frequently raised in paddy fields . The known Indian breeds are Indian runner , White Bearded , Nageshwari and Sylhet .

Breeds of Guinea fowl

Guinea fowl are also reared in many parts of the country . There are no defined breeds but pearl , lavender and white varieties have been documented.

In view of the fact that the uncultivated foods are a part of biodiverse agricultural landscape, this argument for uncultivated foods is an argument for agrobiodiversity. In continuation of his argument, Satheesh looks at the political landscape and the dominant terms within this landscape:

> *Terms like food security have become politically loaded today. Globally the word has been heavily distorted to mean making food available to people through trade obliterating all discussions on*
>
> - *the location where it is grown,*
> - *its quality and safety*
> - *how many food miles it travels and*
> - *whether it is culturally and socially acceptable to the local communities*
>
> *In a subversive manipulation of the term, food security has often been used as an instrument to destroy local agriculture and livelihoods. Global food security, a concept that is used in opposition to household food security, has brought about horrendous aberrations in South Asia. The most poignant example of this was witnessed in India recently. Even while the state godowns were struggling with their inability to store 60 million tonnes of excess grains produced in the country and were allowed to rot, people in some parts of the country were trying to stave off hunger by eating dried mango kernels. Many of them met their death in this civilisationally challenged process.*
>
> *It is to confront this brutal food politics and to restore people's access and control over their own food security that one needs to look at the role of uncultivated foods and the essential farming landscape for them.*
>
> *This effort can help communities regain control over their food resources. It is well known that uncultivated foods have always helped communities to cope with stress periods. But a bit less discussed aspect is that they have also supported a farming system dominated by food crops. As one study in Bangladesh tells us, there is an inverse relationship between the cultivated and the uncultivated. The study points sthat when the cultivated sources decrease, uncultivated increase thereby offering food cushions to people.*
>
> *The presence of uncultivated foods in the farming landscape also restores the nutritional security, which is left out deliberately in the political debates on food security. In South Asia, general estimates tell us that about 30% to 60% of people's nutrition come from uncultivated sources.*

Incl. fish? otherwise sounds much too high

Therefore, he argues that the way to look at agrobiodiversity is to look at

- The survival of people's agriculture on its own inherent strengths
- Assured food security within the local and community resources
- Food and nutritional security as elements of the same farming system

paddy gives way to cash crops like rubber , mango , spices and cashew nut for which these regions are famous .

Only those animals which can survive the heavy rainfall are found here . The soils here are acidic and the cattle found here are very small typified by the Vechur of Kerala which is no larger than a goat .

Breeds of goat are found all along this coast . The Surti , a breed of goat perhaps derived from small Arabian goats which were brought by Arabian traders are found in the coastal district of Surat in Gujarat . They are very good milkers . In Kerala , the Tellicherry breed is found in around the coastal town of Tellicherry. Pigs are reared all over the coast but are better known in Goa .

The East Coast .

The east coast is quite unlike the west coast .It is broader . and the plains are formed by the delta's of many large rivers , the Mahanadi , Godavari , Krishna and Kaveri. These plains are extremely fertile and paddy and coconut are the principal crops .One of the best known Indian breeds of cattle the Ongole is the favourite draught animal of the coastal plains of Andhra Pradesh . This breed renowned in India for its draught and dairy capabilities is bred in other countries as a meat animal . This region is also prone to severe cyclones.

There are breeds of sheep and goat found here as well which are reared by communities like the Gollas . These shepherds migrate with their animals from the coast upwards into the hills of the Eastern ghats and back again . Sheep breeds found here do not have wool but are covered with hair and are mainly kept for meat and dung . Both the sheep and goat breeds go by the name of Nellore .

Crop based systems .

As mentioned earlier, the big revolution in civilization probably occurred when crop farming and animal farming were brought together. This enabled the creation of surpluses which could then be traded for money .

In India the yoke fell on the male of the species, bos indicus otherwise also known as zebu cattle to assist in agricultural operations . The presence of a distinct hump at the back made it possible to yoke the plough easily . It was also possible to attach a pair of bovines to carts which could then be used for transport .

Insert poultry breeds

Action

The biodiverse regions in Indian agriculture offer natural clues for such landscape. For eg. the contiguous areas in the Deccan plateau which stretch across the Telangana belt in AP, North Karnataka and the Marathwada region of Maharashtra offer a natural landscape where the existing biodiversity can be strengthened and enhanced even while reviving the lost diversity. Similarly the central Indian adivasi landscape which stretches from the northen Telangana districts of AP to Chandapur in Maharashtra, the northwestern forest belts of Orissa and large part of central MP is home to huge diversity of rice and millets.

A Regional Landscape Plan for these areas should be put in place in which they are given a *protected area status* in terms of agrodiversity. This will create a biodiversity corridor that will not only be true to the nature of landscape but also regenerate a fascinating diversity in agriculture. Besides in some ways all these are historically very important places. For eg. the Deccan was the home of the Bahmani kingdom and therefore has a remarkable tale to tell in terms of historical monuments etc. The regenerated agricultura biodiversity corridors can also be spaces for ecotourism and historical trails can be recreated. The Bahmani trails in the Deccan, the Gondvana trails in the central belt can be coterminus with the agrodiversity. When they come into existence, they can match the *Potato Parks* of the Andean communities or the farm landscapes in the U K.

The current concern that these regions are at the moment economically underdeveloped can be turned into a celebration with the rejuvenation of history and ecology.

In any such *Cultivating Landscape* approach, substantial portion of the benefit of agri-diversity accrue to people other than the farmers who cultivate it. What ever the benefits and uses the farmers derive are either coming mostly in the 'future' or they are "non marketed" in nature. However, to conserve and use the agridiversity, the farmers have to put in efforts and the costs of this effort are substantial. It may be true that both monetary and non monetary incentives are required to motivate the farmers to conserve agri-diversity. But market and policy reforms are definitely needed to provide a basic structural framework for such monetary incentives to conserve and use agri-diversity. Main action plans in this respect are given below;

What kind?

?

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

- **Relating agrobiodiversity to Food, nutritional and livelihood Security**

Agrobiodiversity needs to be treated not just as an issue related to science and environment. It is an issue which is intricately related to people's food, nutritional and livelihood securities.

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Chap 1. In the beginning .....

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- Housing
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- Markets
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Chap 5 It must not end
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Chap 6 Reorienting ourselves
- Reorienting programmes
- Reorienting Policy
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As has been described in the Profile, the rice-wheat based centralised PDS has completely destabilised the biodiverse agriculture in the country especially in the rainfed regions which form about 65% of India's farming area. There is an urgent need to restructure the PDS in favour of community level production, storage and distribution giving the communities total control over their food security. There must also be a decisive shift from a centralised food security to household food security.

Strategy :

In the process of preparing the Sub State Plan for Agro biodiversity in Medak District of Andhra Pradesh, over 20,000 farmers have unanimously demanded that the PDS should include millets and sorghum. This will not only make available nutritionally superior local grains like finger millet, foxtail millet, sorghum etc to each locality where the PDS operates. The procurement of these grains for PDS will provide a huge market for the farmers in the rainfed areas and will cause the revival of nutritiionally superior millet farms which are inherently biodiverse.

Action :

(a) The PDS procurement system should be reworked to include grains like millets and sorghum. In the new procurement policy, state governments have been given the responsibility of procurement of grains. This situation should be optimised in favour of agrobiodiversity by making it possible for the state governments to procure local grains like millets, bajra and sorghum for PDS. Those state governments which opt for such procurement should get a special funding support from the central government.

(b) In one of the high profile workshops on *PDS and Food Security* held by the National Institute of Rural Development which was attended by the food secretaries of many state governments, chief secretaries, academicians, food policy analysts a strong recommendation was made that the PDS operations should be decentralised and each village panchayat should be enabled to run its own decentralised PDS system. The recommendation further said that the local communities should be enabled to procure, store and distribute the grains within their own communities. It also recommended that dalits and women should have a major representation in the management of this local PDS.

If this recommendation is followed, it will at once fulfil a number of worthwhile objectives: locally managed PDS, equity, gender and sustainability.

(c) A number of NGOs have followed biodiversity based food security system. The Deccan Development Society in Andhra Pradesh has been working on this model of PDS in Medak District for over seven years. This is entirely managed by dalit women and has shown an example of how to manage a sustainable PDS at the community level. Similarly Academy of Development Sciences in Maharashtra, PREPARE in Orissa,

Shift to Ch. 6.2 & cross-refer in (d)

Foreword / Introduction

They came to the Indian sub continent in search of pasture for their animals . Across the cold and rugged mountain ranges they herded their cattle and their horses and started a civilization which was to have an ever lasting impact on the Indian sub continent .The Aryans, the greatest cattle rearers of all time found pasture and settlements on the banks of the Himalayan rivers . The favourite food of the Aryans was "panch amruth" or five nectars based on products derived from milk : ghee, yoghurt and milk itself flavored with honey . Abundance, was symbolized by the divine cows Kamadhenu , Nandini and Surabhi , gifted by the gods to the sages an the favourite god was a cow herd or Gopal whose descendants the Yadavs still practice a profession stared by their ancestors thousands of years ago .

The importance of livestock in the story of human civilization is significant especially with reference to the Indian context. Animals continue to cater to the ever increasing needs of a single species, the homo sapien . Livestock and livestock products contribute in some way to every household , the contribution often increasing as one goes down the economic ladder . Livestock rearing forms an important livelihood activity for most Indian farmers supplementing incomes , offering employment opportunities , supporting agriculture as well as contributing to the health and nutrition of millions of households .

The Livestock sector accounts for 9 % of the GDP next only to agriculture in the rural sector. However, this sector seldom performs at optimal levels and is riddled with inconsistencies and contradictions . Although India today has the distinction of having attained the status of being the largest producer of milk in the world , the average rural household in most of the country still cannot afford to consume milk . We are the original home of some of the finest breeds of cattle but these breeds are fast disappearing in the country and the best germ plasm of these breeds are found in countries as distant as Australia and Brazil . We have ancient texts eliciting in detail the health and care of cattle , elephants and horses but animal management and health remains a major issue in the rural areas

History is said to be a dialogue of the present with the past . It becomes even more important to look into the history of livestock in our country as we step into a new millennium and peer into an uncertain future Perhaps the past will help us understand the inconsistencies and contradictions better . This perhaps will and pave the way for better programmes and policies which do not constantly defeat each other .

DRCSC in West Bengal have established different forms of food banks at the community level to meed the food security needs.

(d) All these models need to be studied closely and implemented with the help of NGOs in various parts of the country in order to ~~understand the efficacy of these systems for~~ a biodiversity based food security system at the community level.

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

Increase effective use of crop genetic diversity in food production

One of the most important issues that characterises food security or its absence is the issue of nutritional security. As the *State of Food Insecurity in the World - 2000*, an FAO publication argues : ***Meaningful action to end hunger reauires knowledge of not just the number of hungry people around the world but also of the depth of their hunger.*** In explaining its position, the publication argues that ***When dietary intake is adequate, the variety of foods is generally greater, providing more energy and better nutrition.***

According to the *depth of hunger* index which measures the kilocalories that people are falling short of in their dietary intake, India with its shortage of 290 kilocalories, occupies 16th out of 19 places in the Asia Pacific region, just managing to stay ahead of Bangladesh, North Korea and Mongolia. Significantly a country like Myanmar with a shortage of 200 kcals is 12 paces ahead of India partly because of a rich agrobiodiversity still practised on its farmlands.

Crop genetic diversity performs vital functions in agriculture, land and water use. The diversity of plants, animals and micro organisms is essential for maintaining the productivity and sustainability of farm crops and animas managed forests and rangelands, aquaculture and fisheries. Future global food security is dependent on harnessing and sustaining crop.

Food security is national security and sovereignty Bio diversity ~~of~~ farmer knowledge systems is the key to achieving this food security.

Action

1. Establish the policy frameworks that ensure political commitment, incentives, educational and institutional capacities to support crop genetic diversity in food production, such as multiple crop production, traditional varieties, Recognition to indigenous cultivates farmers stocks etc..,

- **Scale**
- **time period**

Thematically this book is divided into three parts .The first part deals with the history of domestication and traditional systems of animal rearing .The second part deals with emerging systems and the contradictions within ,as well as future global trends ,The third discusses possible alternatives . Each of the themes themselves are so large that it has not been possible to cover the entire range of subjects within a topic , however an attempt has been made to link different issues together and present the mosaic perhaps a little more clearly.

One has tried to be dispassionate while presenting the facts but sometimes passion forces one to speak perhaps a little louder and a little more harshly especially when policies and programmes are designed without a care or concern except the economic one which then forces animals to be used and exploited to serve human needs and then abandoned when they are no more useful .Let us not forget that the care of another species requires compassion and the relationship between domestic animals and their human caretakers is an old and compassionate one .

- **actors/institutions** and **mechanisms**
- **financial resources**

Cultivating Communties

Ultimately the effort of conservation of agrobiodiversity can also be an effort at cultivating communities. Many sociological researchers analysing the impact of green revolution have traced the loss of biodiversity and food crops to the development of agrarian tensions in rural India.

other than Vandana, who?

In the Mobile Biodiversity Festival - 2001 conducted by the Deccan Development Society as a part of the development of sub state plan for agrobiodiversity in the Deccan region, dalit women repeatedly argued that the shrinking biodiversity on the farms in their region was the cause of the widening chasm in their relationship with the land owners. As long as the landlords maintained biodiversity on their farms and paid the labour in kind [crops], there was a lot of human relationship between them. But with the diversity gone and monocultural commodity crops having taken over their space along with payment to labour in cash, the human relationship had also gone out of the communities. Now all relationship were mechanical and commodified.

Therefore the advice by the women to the land owners was to revert to biodiversity and food crops on their lands so that the communities can rebuild themselves.

delete or shift to earlier chapt.

The IFOAM [International Forum for Organic Agricultural Movement], the largest movement for organic agriculture in the world has chosen "Cultivating Communities" as the motto for the Congress for 2002 being held in Vancouver in Canada. The IFOAM says that this choice was to highlight the role of organic agriculture in sustaining healthy, vibrant communities whether they be communities of micro organisms in the soil, communities of beneficial insects in the orchard or rural and urban communities anywhere in the world.

This aspect of agrobiodiversity needs to be included in all discourses on the subject as well as included in the agricultural curriculums, school text books and state policies wherever the agrobiodiversity is discussed.

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

iii) **Strategies and actions for ex-situ conservation (botanical gardens?, gene banks, home gardens)**

Community Gene Banks

However the real work needs to be done at the level of the communities. Many farming communities complain that even if they want to revert to their traditional forms of agriculture, they cannot access genetic material. This is a serious concern.

Chap 1.

In the begenning .....

The domestication of animals

The story of the domestication of animals is over 14,0000 old . It is believed that the oldest animals to be domesticated were dogs , presumably as companions to the human race during hunting . Through the years different species have been domesticated in different parts of the world from their wild progenitors to cater to different human needs (Table 1) of food , fibre , fuel , medicine and transport . In some cases these animals have spread throughout the world for example cattle , goat , sheep while in others they have remained localized in their region of origin like the alpaca , lama , yaks , Yet others are in a state of semi domestication like the Elephant , Mithun , mink and silver fox.

The region of domestication and the need for domestication has given e rise to certain distinct patterns of livestock farming.

A large number of animals were domesticated around the grasslands of West and Central Asia .These were mainly the herbivorous species that ate grass : sheep , goat , cattle , horse and camel. . Early cattle, sheep and goat rearers were migratory and herded their animals in search of grasslands . When the pressure on grasslands became too much they migrated out in search of fresh pasture or invaded fresh territory . Many major invasions including those of the Mongols are attributed to times when the pressure on grass lands became excessive [1i].

In contrast species of the forest like the elephant , the water buffalo, pigs and chicken were first domesticated in the region of South Asia and Indo china in areas which were heavily forested and where plenty of water was available . They were domesticated by different forest dwelling communities for food and draught . Interestingly , these patterns of livestock rearing are still seen today . In the drier parts of the world herders still herd their cattle , sheep and goat in search of pasture while in the forests of the world , different tribes and groups still keep buffalo, pigs and chicken much as their ancestors did thousands of years ago .

The major revolution in livestock farming happened when it was successfully incorporated with crop farming wherein the wastes from agriculture -crop residue and straw -could be used to feed animals .In exchange the energy of animals could be used to work the land and the waste of animals – dung- could be used to feed the field .The other products :grain , seeds

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[1] Braudel 1979

On the other hand, the Ex Situ gene banks suffer from non viability of their seeds in the absence of a large scale, dynamic interface with the living environment.

In order to address both these concerns, it is very important to create community gene banks on the basis of in situ, on farm conservation. Such on farm conservation effort by the communities will not only offer a solution to the problem of conservation and ecology but also be integral to the questions of gender and equity.

Most small and marginal farming communities in marginal landscapes have depended upon women to select, save and safeguard the diversity in their farming systems. The gradual destruction of these farming systems due to the oblivious state policies which are positively a disincentive to these systems have also taken away the control over their own genetic resources from the small and the marginal particularly the women. More and more dependence on market for plant material have made the women powerless in their communities and eroded their knowledge and skill base. The poor have been marginalised in their own agriculture.

Establishment of *real* community gene banks [as against the many fake claims being made for this title] therefore can offer solution to multiple problems such as these.

Action

(a) In each of the *empowerment* and *poverty alleviation* programmes establishment of such Community Gene Banks should be promoted. Many states have been promoting women SHGs [self help groups] under DWCRA and watershed intiatives. DRDAs under IRDP programme are also very active in these efforts. The Scheduled Caste Finance Corporations offer many programmes and incentives to the dalit women in rural areas.

esp. amongst them ?

All these programmes must recognise that Community Gene Banks can be truly empowering to the marginalised and the women. In the globalising world where new seed colonialism will be a real threat to the poor, control over their germplasm will place the poor and the women at a greatly advantageous position.

Therefore all these programmes must write into their plans Community Gene Banks as initiatives of poverty alleviation, empowerment of the women and the marginalised.

(b) Many NGOs have initiated such programmes. The notable examples are : the Community Gene Fund programme of the Deccan Development Society in Medak District of AP, the efforts at seed collection by the *Beej Bachao Andolan* in the Garhwal region of Uttaranchal, *Seed Sanghas* of Green Foundation in Bangalore, Traditional Seed Banks of Centre for Indian Knowledge Systems and the Community Seed Banks of MSSRR Foundation in Tamil Nadu etc.

Not an NGO - a farmers' initiative

Chap 1.

Table 1

	Species	Latin name	Wild progenitor	Latin name	First known domestication		Distribution of wild progenitor
					Date	Place	
1.	Water buffalo	*Bubalus bubalis*	Water Buffalo	*Bubalus arnae*		China Indo China	India , S. Asia , possibly W. Asia
2.	Cattle (taurine)	*Bos taurus*	Aurochs	*Bos primigenus*	6200BC	Turkey	Europe , Asia N. Africa
3.	Cattle (zebu)	*Bos indicus*	Derived from *Bos taurus*			Baluchistan , central Asia	Asia , N. Africa
4.	Yak	*Bos grunniens*	Yak	*Bos mutus*	Not known	Not known	Tibet Himalayas
5.	Mithun	*Bos frontalis*	Gaur	*Bos gaurus*	2500 BC		S and SE Asia
6.	Goat	*Capra hircus*	Wild goat	*Capra aegragrus*	7-8000 BC	W Asia	W Asia
7.	Sheep	*Ovis aries*	Mouflon	*Ovis orientalis*	7-8000 BC	W Asia	W Asia
8.	Asian elephant	*Elephas maximus*					S Asia
9.	Dromedary	*Camelus dromedarius*	Dromedary	*Camelus sp*	3000 BC	W asia	Asia , probably N Africa
10.	Horse	*Equus caballus*	Wild Horse	*Equus ferus*	3500 BC	S Ukraine	Russia, Central Asia
11.	Donkey	*Equus Asinus*	African ass	*Equus africanus*	4000 BC	Egypt	N Africa , possible W Asia
12.	Pig	*Sus domesticus*	Wild boar	*Sus scrofa*	7000BC	asia	Europe , Asia n Africa
13.	Chicken	*Gallus gallus*	Red jungle fowl Ceylon jungle fowl Grey jungle fowl Green jungle fowl	*Gallus gallus* *Gallus lafayetti* *Gallus sonneratii* *Gallus varius*	4000 BC	S and SE Asia	S and SE Asia
14.	Pigeon	*Columba livia*			3000 BC		Europe , Africa, Asia from India to Japan

Source : Global Bio diversity : Status of the Earth's Living resources ; Groombridge Brian : Editor , (1992) Compiled by World Conservation Monitoring Centre Chapman and Hall , London

The government can utilise the capacities and experience of such NGOs to initiate programmes of its own. It can also support the NGO initiatives with necessary funding support and other recognition.

(c) The Government shall honour the best Community Gene Banks in the country on the basis of a set of parameters which can include the range of traditional germplasm they have in store, the rate at which they are used and renewed, how much they are controlled and managed by women and the marginalised.

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

iv) **Strategies and actions for equitable access, use, and sharing of benefits (land/resource rights, intra–community equity, empowerment for decision-making and governance, sharing of economic benefits)**
[P. V. Satheesh, Ashish Kothari & Shruti Devi for IPRs?]

Gendering Agriculture & enhancing diversity

- In all discourses on gender and empowerment, the issue of agrobiodiversity should come in very strongly. Biodiversity in agriculture is the key instrument in enabling women-friendly agriculture. Women have hisrorically played and continue to play a key role in seed selection, conservation and crop planning, especially in rainfed farming systems. As a matter of fact, it is these systems which have remained central to agrodiversity in India.

Engendering state policies is the priority of all the actors in development, governmental and non governmental. In this effort nothing can be more fundamental than diversity in agriculture. The complex diverse patterns in biodiverse farming systems have a direct relationship with the *skill and intellectual base* of women in the rural communities. Therefore it is crucial to recognise that the erosion of diversity in agriculture not only erodes this fascinating skill base of rural women but also snatches away from them the last vestiges of their intellectual leadership of the community.

Therefore all policies on *gendering* agriculture should concentrate on creating a major space for diversity in cropping systems. This is the only way to realise women's perspective of agriculture and their intelletual leadership.

The National Agricultural Policy, the Planning Commission's Strategy for Agriculture should seriously take this up. Both in the NAP and in the Planning Commissions Approach Paper to X Plan, there is no discussion whatsoever on the significant role that women play in agriculture as well as in the conservation and enhancement of biodiversity. This critical gap needs to filled urgently.

, milk , meat and wool were used for human consumption. It was this great revolution which led to food surpluses and helped societies go beyond the level of mere subsistence .

Animals also came to represent wealth , power and domination . Elephants , horses and camels were used to symbolize the might of the ruler as well as assist in war .

India today represents the entire diversity from tribal communities who are largely dependant on the forests for their survival and rear chicken mainly for cock fights to a highly organized and fast growing commercial poultry industry . From semi nomadic pastoralists who annually migrate in search of fodder to settled dairy farmers who use the latest technology in their plants .

But before we discuss this in detail , let us return to the history of domestication and breeds found in India

- ***Issues of Equity***

  Food and nutritional security of landless labourers and rural poor is directly linked to agri diversity, both domesticated and wild forms. In the Deccan, farm labourers get their wages in kind if they harvest food crops. In the case of commodity crops, the payment is always in cash. When the farms practice crop diversity, the farm labour can access not only more food but also a diverse variety of food which enhances their food as well as nutritional security.

  Landless people derive most part of their food in the Western Ghats region, Javadi Hills of Tamil Nadu and the homesteads in West Bengal and Kerala from multipurpose fruit tree species like Jack, jamun, mahua and mango avialble in the wild form or planted on the avenues and other common places. That is the reason most of these trees have become a part of people's legend, cultural and folklore and play a significant part in religious and other rituals.

  - Conservation of such species as a part of the farm forestry and common property plantation programmes would increase their access and supply and ultimately help to enhance the food security of the rural poor to a great extent.

Emphasis on homestead farming in agri. & health policies

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

Cultivating/creating Markets

- Though it is customary wisdom that market forces and policies follow customer preferences, in the case of food, markets have not only *manipulated* peoples tastes but also have maintained a stranglehold on the *quality* of food that reaches consumers. This has filled the market with cheap, unsafe and homogenous foods. Consumers are deprived of variety, safety and nutrition in their foods. This market failure has also directly affected agricultural biodiversity by forcing farmers to produce only those foods which the markets have favoured.

  In opposition to this and to help create markets which create a supporting environment to agrobiodiversity, alternative markets that are not mediated by the dominant market and media have to be created.

  At the national level, a good example is the recent KVIC intervention called *DESI* Institutions like KVIC, TRIFED can expand their own lead at the national level. Many state governments have started direct farmer - consumer markets like the *Rytu Bazaar*

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Table 2

Species	World	India (FAO)	India (ICAR)
Cattle	787	30	30
Buffalo	72	19	15
Sheep	920	59	42
Goat	351	29	20
Pig	353	3	3
Ass	77	3	3
Horse	384	9	6
Camel	56		8
Chicken	606		18

Source: Domestic Animal Diversity Conservation and Sustainable Development ; ed : Sahai and Vijh (2000) SI publications Karnal

in Andhra Pradesh. These markets can also play a large role in this area by organic value adding to farmers produce and create niche markets for organic farmers, who are invariably biodiverse farmers. A large number of NGOs who are working on organic farming and sustainable agriculture across the country should play a decisive role in this by setting up markets at the local levels.

In some ways this needs building of coalitions and collective efforts between farmers, civil society groups and consumer groups at various stages in production, exchange and marketing. All this should translate into the kind of value addition by the primary stakeholders that can convert potential prefernce into actual preference thus generating greater and increasing number of consumers, not from the elite groups but across all classes and regions, for the products of agri diversity and the value it brings along.

How would community certification work?

One caution that should be exercised right from the beginning is that the ***certification processes*** *should not get out of the hands of the community. Once this is allowed to happen, the control will pass onto the hands of the super markets and large national and international certification agencies who will control not only the content but also the process of biodiverse farming systems. There lies a great danger*

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

- ***Lending policies***

It is very important to reform state lending and insurance policies to create a level playing field for farmers practising biodiverse agriculture.

The Currrent state lending policies are positively adverse to the farmers who practise biodiversity in their agriculture. It is also a policy which has least sensitivity towards ecological agriculture. For eg. the lending rates of rural banks for various agriculture crops promote crops like grape which, because of their monoculture, high water guzzling and high pesticide use practices are environmentally disastrous. On the other hand in dryland areas where farming practices are inherently diverse and use very little or no chemicals at all, the loans by the same banks are abysmally low.

The Manjeera Grameena Bank in Medak District of Andhra Pradesh offers the following loans:

Crop	***Loan per acre***	***Level of water used***	***Level of pesticide use***	***Whether environmentally positive or negative***	***Whether positive to biodiversity or not***
Grape	Rs.107,900	Very high	Extremely high	Highly negative	***Very negative***

Chap 2

Patterns of Livestock rearing :

India has the distinction not merely of having a rich and diverse number of animal species , we also have the distinction of having some of the widest range of breeds within each species, thereby representing a significant percentage of the worlds domesticated livestock diversity . Of the breeds found in the world those found in India are represented in Table 2

This rich diversity is directly accounted for by the fact that the subcontinent itself is diverse in culture, in agroecological zones, in social and economic practices . These breeds have developed and evolved over time to suit the different production goals and requirements of these different farmers .

Traditionally livestock rearing was also distinctly related to castes and communities with specialized groups rearing distinct animal types .Even today these communities continue to rear these animals and therefore any development programme has to take into account these regional differences , preferences and choices.

Map : Major agro ecological zones in the country and livestock practices within :

Pastoral systems

Large tracts of the country are semi arid or arid and frequently threatened by droughts. Sustained agriculture is impossible or extremely difficult . However these regions border grasslands which are covered by pasture for parts of the year . These are the regions where even today , migratory or semi migratory systems of livestock rearing continue to be practiced . The species most suitable for migrating is the sheep .

Sheep live in groups and herd well and are primarily grazers in their eating habits that is their major food is grass . Often cattle ,camel , goat , yak and even buffalo migrate .
There are many reasons why pastoralism still exists. Semi arid regions , grasslands and the arid regions where these systems are practiced are ecologically fragile zones which cannot be exploited or abused indiscriminately . Contrary to popular perception livestock contribute to the wealth of these grasslands by dispersing valuable grass seeds, by keeping unnecessary weeds in check and by fertilising these grasslands with their dung . In return they consume

Banana	Rs.18,000	Very high	High	Negative	***Negative***
Ginger	Rs.15,000	High	Low		
Sugarcane	Rs.10,000	Very high	Low		***Negative***
Potato	Rs.10,000	High	Medium	Negative	***Negative***
Sorghum	Rs.1400	Nil	Nil	Highly positive	***Highly Positive***
Millets	Rs.1400	nil	nil	Highly positive	***Highly positive***

As can be seen from the table, a crop like Grape which has highly negative effect on environment and biodiversity gets a loan of Rs.107,900 per acre while sorghum and millets which are highly positive both for environment and for biodiversity receive just Rs.1400 per acre, which is just about 1.5% of the loan for grape.

It is also very interesting that the loans are offered only for *pure crops* i.e. crops which are monoculture. Therefore even the paltry Rs.1400 loan for sorghum will be paid when a farmer grows only the monocrop of sorghum on her land. But the farmers' regular practice is to grow at least six to eight crops along with sorghum. Such farmers who are *naturally* diversity farmers have no hopes of getting any bank credit for their crops.

This utter disregard for agrobiodiversity in the lending policy weans farmers away from cultivating diversity on their farms. In this fashion, state has actually presided over the destruction of diversity in agriculture.

Strategy: Bank lending policies must ensure that farmers who cultivate diversity on their farms attract high support from the lending institutions.

Action: *There should be a thorough review of the lending policies of NABARD and its subordinate rural banks. This review should be done along the parameters of EIA and Biodiversity Assessment. NABARD and its subsidiary rural banks must initiate a new lending policy. This policy must increase both the share and quantum of loans to farms which practise biodiversity. Simultaneously it must also reduce loans both in terms of share and quantum to those farms which are monoculture in nature and use non ecological methods.*

No other relevant banks?

Strategy: Crop insurance policies must recognise the high contribution of biodiverse farmers to the larger environmental and scientific cause of agrobiodiversity. Therefore there should be adequate insurance cover for these farmers

Action: Like with the lending policies, government should initiate a thorough review of the crop insurance policies. Currently most insurance cover is offered to monocultures and commodity crops. Food crops and polycultural farming get very paltry insurance cover. This policy must be thoroughly reviewed. The kind of risks that dryland farmers cultivating diversity on their lands must be thoroughly understood and analysed. Their contribution to larger cause of biodiversity and the future of agricultural environment must also be

grass which cannot otherwise be consumed by humans and convert them to a range of valuable animal products : milk , meat , wool , manure . People living in these areas are almost completely dependant on their livestock resources for their survival because any other form of farming is very difficult .

Pastoral systems are some of the most flexible systems . Livestock numbers increase in response to favourable conditions and shrink when conditions are non favourable. During drought years when grazing lands get eroded or simply when the pressures in the area become too high pastoral communities have the option of either selling their stock , changing to another less demanding species or migrating to another area where fodder is available in greater quantity . Over the years pastoral systems have grown , evolved , and adapted to changes in their environment and today many interesting and complex systems are found dotted over the sub continent . Some have even adopted agriculture and practice crop farming for a few months of the year during the monsoon .The communities who practice pastoralism have developed breeds to suit the conditions and requirements of their region . For example in sheep, breeds from the Himalayas are wool yielding breeds , the breeds from the hot desert are dairy breeds while in the south the breeds are primarily meat breeds. Pastoral systems become non viable when so called development takes over and the conflicting interests of settled farmers and urban pressures come in the way of migrations .

Major pastoral systems in India and where they exist :

The Western Himalayan Zone These mountainous regions which form the northern border of the country experience temperate climates .The areas of Kashmir , Ladakh , Himachal and Uttaranchal fall in this region .Land holdings here are small and farming at best difficult because of the extremely harsh conditions in winter . However, in the summer these hill slopes are covered with excellent pasture and are home to a number of pastoral sheep and goat rearing communities the Bhakarwals , Gaddi and Gujjars who migrate into these pastures in the summer and come down into the valley in the winter . Some of the finest wool breeds of sheep are found in this region Changthang , Gurez , Karnal , Bhakarwal , Biangir Bhadarwal and Gaddi. This is also the region of the Pashmina goat . Other important breeds of goat are the Chegu Kashmiri , Gaddi , Changthangi and the Bakharwal . Yak are reared in Ladakh and the two humped Bactrian camel maybe found to a very limited extent in the area bordering Tibet. Slightly south, in the hills of Uttaranchal the Van Gujjars herd buffalo under migratory systems .

understood and analysed. In recognition of this, they should get adequate insurance cover so that they feel confident in pursuing their current practices.

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

v) **Strategies and actions for enhancing capacity of actors in each sector (including education, training, etc., stressing on currently weak themes like taxonomy) [P. V. Satheesh]**

Community Biodiversity Registers

One of the most powerful tools that can be used to mobilise communities around their biodiversity and related knowledge systems is the Community Biodiversity Register.

A document prepared by the local people listing all the life forms of their particular area, their characteristics and how they use them, is called ***Community Biodiversity Register****.*

The *Community Biodiversity Registers* give information on

- The variety of uses to which people in that area are putting these biological resources.
- People's Knowledge and their Science which are crucial in maintaining these biological resources.

Biodiversity Registers can be used to :

1. Understand Monitor and evaluate biodiversity
2. In consultation with the communities prepare guidelines for management
3. As a ready source of information on biodiversity and its uses.
4. Protect Community Rights on their biodiversity and their knowledge about it

Why Biodiversity Registers ? The reasons are many. But some of them can be listed as below.

A. Biodiversity is disappearing at an alarming rate.
B. Developed countries are patenting our biodiversity
C. Traditional knowledge is being lost.
D. The true potential of our biological wealth is still unknown.
E. It will promote agriculture, medicine and forestry that is viable and sustainable.

There are a number of actors in India who have worked extensively on CBRs. The Centre for Ecological Studies at the Indian Institute for Science, Bangalore was the pioneer in

In Search of the Rathi

As the sun descended in to the clear desert horizon, our jeeps sped silently along a superb road along the left bank of the Ganga Canal, north of Bikaner city in Rajasthan towards the Pakistan border, The landscape was stark with only a few trees , some camels and almost no human inhabitation .A cool winter wind mad e the drive extremely pleasant as we made our way to a tiny settlement about 40 kms from the border . We were in search of the Rathi a breed of cow supposedly a mix of the Sahiwal , red Sindhi , Tharrparkar and Dhanni breeds and their keepers the Raths a tribe of Muslim cattle herders .

We reached our destination and found a small settlement which consisted of a house and a huge cattle shed. It was empty save for the women of the household. The cows were still away grazing but were expected back soon the women informed us. They asked us to wait and quietly disappeared. They were not comfortable talking to a group of urban strangers.

Shortly afterwards in the twilight we heard the low musical tinkling of cow bells and even as we turned we saw the herd returning walking with a dignity which could put a professional ramp walker to shame . This gorgeous herd of 40 or more cattle, more disciplined than school children happily wended their way to the shed . One of the women came out and called quietly. A cow came up to her and she placed a vessel beneath it. Within seconds we heard the sound of milk being drawn into a vessel .It was for our tea. There was no tethering of the animals no coaxing and cajoling. After being milked the cow quietly joined her friends in the shed. Soon we could hear the cheerful sounds of animals consuming their daily ration of special green fodder and concentrate.

There was no doubt that these people and their herds were some of the best managed anywhere in the country. We turned our attention to the Rath who owned the herd . He knew about the best fodder , best methods of rearing , the best medicines and what best to do when the animals were sick . There was a discernable deep bond strengthened over centuries between this tribe and their herd which spoke volumes for the relationship between animals and humans and how it should be .

CBRs. Similarly Navadhanya, Gene Campaign, the Deccan Development Society and many other organisations have worked extensively on CBRs.

There are two schools of thought in the CBR. One school of thought sees CBR as a process of documentation of people's knowledge but does not lay a great stress on the process. Much of their method of preparation is individual based, the kind of individuals who are called *Knowledgeable Individuals.* A school teacher in a village, college students on vacation or voluntary service, NGO staff, well meaning scientists --- all of these fill the bill in developing
CBRs. Though the knowledge belongs to communities, there is not much stress on the participation of communities in the development of such registers. Again the *innovators* and *knowledgeable individuals* within the community are the main suppliers of information.

The second school of thought, lead by the Deccan Development Society believe that the process is as important as the product. For them, the community and its participation is very important in the process of preparation of the CBRs. They believe that all knowledge belongs to the communities. Isolating individuals as knowledge holders is inadvertently accepting the Western notion that knowledge belongs to individuals.

The AP Coalition in Defence of Diversity, a coalition of 140 Ngos has till date produced more than about 500 CBRs *exclusively on the theme of agrobiodiversity.* The Coalition has the aim of producing one CBR for each mandal [AP equivalent of block] of Andhra Pradesh.

Strategy

All over the country, especially in the agrodiversity - rich adivasi and dryland belts of the country, there is an immediate need to produce Community Biodiversity Registers both to document community knowledge, protect it from being patented by unscrupulous commercial interests and transnational corporations. More importantly, the production of CBRs needs to be used for mobilisation of rural communities to generate awareness about the enormity and value of their knowledge of biodiversity.

Action

The Ministry of Environment and Forests in collaboration with the Ministry of Human Resources Development and the Ministry of Rural Development must immediately take steps to produce CBRs. This could be by providing a national fund for CBRs which can be drawn upon by the MHRD an MoRD to start grassroots action. Each rural school in the country can be entrusted with the task of producing a CBR in its area. The NGOs in these regions can be collaborators in the task by mobilising the local communities. Scientists from agricultural universities, ICAR and other institutions can work as support scientists in this programme by providing their taxonomical expertise.

Trans Gangetic plain

Lying in the shadow of the Himalayas, this area covers the states of Punjab Haryana and Western Uttar Pradesh . While parts of it are transected by Himalayan rivers other parts remain semi arid .In the semi arid region sheep , goat – the Beetal breed-, camel and cattle are reared under semi migratory systems while the area which is irrigated and under crop land is home to some of the finest dairy buffalo breeds of the country like the Murrah and the Nili ravi as well as the dual purpose cattle breed of cattle the Hariana The predominant crop in this region is wheat .Today these states are heavily irrigated and are the epi center of the country's green revolution" . Herders migrate seasonally from the semi arid areas to the irrigated areas in search of crop residue which is then exchanged for dung .

The Western dry desert

South of the Indus valley and to the west of the Gangetic plains lies the arid region of the country .This region is characterized by extreme hot desert conditions .Agriculture is limited to a few millets and pulses and it is not possible for families to sustain themselves on agriculture alone . Landholdings are immense but largely unproductive . The main occupation is livestock rearing .Although apparently barren, two remarkable species nourish and sustain animals. Sevan grass (*Lasirus indicus)* and the Khejri tree (P*rosopis cineraria)* support animals through long periods of drought and water scarcity . It is quite amazing that some of the best dairy breeds of cattle and goat originate in this region The famous breeds of this region are the Rathi* and Tharparkar ,in cattle and the Sirohi in goat which has out performed cross breeding efforts involving exotics . There are a large number of sheep breeds are also found in the region: the Jaisalmeri , Pugal , Nali and Marwari , These breeds produce a coarse wool too rough for garmernts but suitable for carpets . Livestock herders manage their herds under extensive range systems and migrate out during the winter and summer and normally return to their home villages in the monsoon . Annual migrations usually take them to the agricultural regions surrounding them in Punjab and Haryana .In bad years when there is a severe drought these herders may migrate as far as the states of Madhya Pradesh and Maharashtra in the south . The desert of course is also home to the camel

The desert is fringed by grasslands like the Banni of the Kutch .The famous grass of this grassland is the Jhinjwa . Some of the countries famous dairy cattle breeds , the Reds Sindhi and Sahiwal as well as the Kutchi breeds of sheep and goat are from this region

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* Insert box on Rathi

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

Comparative Advantage

Strategy

The organic market in the world is evolving into phenomenal proportions of nearly ten billion dollars of annual trade. During the last decade there has been a remarkable shift in the food preferences of the consumers in the West, particularly in Europe. They are engaged in constant search of safe foods outside of the produce from their industrial agriculture. In recent years the threat of being flooded with GM foods has intensified this search. The European consumers do not want to be trapped by the uncertainty of safety embedded in the GM foods. They want to find an alternative to this biotechnological nightmare.

The biodiverse farmers of India can provide an answer to this search. The produce from their farms can be a post modern solution to the biotech Life Industry. Their fields which are rich in diverse foods, not only can be the source of safe food but also provide the kind of variety that the *knowledgeable* consumers of the Western consumer movement are seeking.

It is this emerging market that the agricultural policy designers and the economists should carefully look at. When this market becomes a reality we should be ready with our export strategy. In the meanwhile the ecological farmers in different parts of India who mainly constitute the small and marginal segments should be supported constantly so that their agriculture is not disrupted.

Action

- In the model of *set aside* subsidies that are offered to farmers in England and the subsidies offered to the Swiss farmers for organic agriculture, the Indian farmers who produce on the principle of biodiversity should get a conservation bonus. This will ensure a large number of farmers to revert back to their ecological agriculture.

- The current subsidies being given to chemical farmers has created an enormous distortion in farming sector. These farmers who work in highly endowed environments like delta areas already have the advantage of best soils and assured irrigation at a very cheap rates. Besides, they are also offered subsidised fertilisers, pesticides and their produce [mainly rice and wheat] find a ready market in the form of state procurement.

  In contrast, the farmers in rainfed areas who rigorously practice biodiversity in their agriculture and produce food in the face of enormous disadvantages have very little state support.

Gujarat Hill and Plain and Semi arid Rajasthan (North Central plateau)

This region borders the desert and is characterized by low hills and dry thorny scrub forests In the absence of irriagtion, agriculture is limited and livestock is a necessary means of livelihood . This region is home to nomadic communities like the Maldharis, Bhadawars and the Rebaris . Camel , cattle , buffalo , sheep and goat are predominantly reared in this region . Maldhari herders from the Gir forest keep the internationally famous Gir breed of cattle and the Jaffarbadi breed of buffalo .Where water is available and agriculture is possible draught breeds of cattle have been bred like the Nagore of Nagore district of Rajasthan and the Kankrej of Gujarat and Rajasthan .

The Chambal region

Although this region is not identified as a distinct agro ecological zone it is distinct in its land forms .This is the region lying south and south east of the Transgangetic plain . Highly degraded, this area is dissected by land forms known as ravines which are the effects of water erosion. The area is drained by the Chambal river and is also known as the Chambal valley . The vegetation consists of thorny scrub and agriculture is difficult . The species which can best survive this kind of degraded environment is the goat as it consumes almost anything and can also negotiate the ravines easily ..The world famous Jamnapari and Barbari goats are from this region

The Deccan plateau

Further South is the Deccan Plateau which covers the semi arid parts of the states of Maharashtra , Karnataka and Andhra Pradesh . Agriculture here is characterized by sorghum ,pearl millet , some wheat , cotton , oil seeds , groundnuts and different pulses. The shortage of water allows only one monsoon harvest and agriculture needs to be supplemented with livestock rearing .Shepherding communities in this region- the Dhangars of Maharashtra , the Kurumas of Andhra and the Kurubas of Karnataka - practice semi nomadic systems of animal rearing. They migrate to the areas with higher rainfall in search of fodder in the winter and summer and return to their homes only in the monsoons where they practice crop farming for three months . These migrations benefit crop farmers in the high rainfall areas , as they invite these shepherds and their animals to camp in their fields for a few days every year ..In return for the crop stubble , grain and some times money , the sheep fertilize the fields of crop farmers with sheep dung which is the most highly valued organic manure . The breed of sheep reared by these communities is the Deccani. Most shepherds also like to keep a few goats and the Osmanabadi is the preferred breed . The wool of the Deccani is woven into coarse blankets which are very popular in the region

The conservation bonus will have the effect of offsetting this distortion and creating a level playing field and offering farmers honest options. The added advantage of this policy would be that it will not attract any punitive action from the WTO regime and will make offer the Indian biodiverse farmers a *competitive advantage* in the international food market.

The Food and Agriculture Ministry and the Commerce Ministry along with the Planning Commission and the Agriculture Prices and Costs Commission should seriously look at this win - win option. Because this will not only enable us to be competitive in the burgeoning international organic food market but will rejuvenate our rainfed agriculture, create enormous amount of livelihoods in rural areas but will also be a giant step forward in environmental regeneration.

Cautious re-export-led strategy?

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

S3. **Socio-political sensitisation of the scientific community**

Not necessarily, could also simply be the narrow focus of science-

Most of the programmes related to agricultural diversity at the national level are *purely conservationist* as they are either shaped by the international agencies or by the donor agencies for narrowly set objectives. However issues like equity, gender, food and nutritional security along with the cultural and ethical issues associated with the agricultural diversity are much broader socio political issues. To address them *socio-political sensitization of the scientific community* is very essential.

In order to achieve this, whenever the scientific community concerned in the conservation of bio-diversity such as the scientists of the NBPGR is trained in biodiversity issues, the training should be enlarged to consist of issues like gender, equity and national sovereignty. Such sensitised scientists must become an integral part of policy making and programme implementation process.

Within the scientific bodies like the ICAR, NBPGR and other national as well as state level scientific research institutions, there must be separate policy research and programme implementation departments that can go deeper into issues whicht are beyond science but have a bearing on policies of biodiversity.

Orientation programmes?

Action: The ICAR and CSIR to look in to the possibility.

S 4 Education on Domesticated biodiversity:

The education curriculum whether at the primary level or at the higher education level has very little focus on agrobiodiversity. Since the children and students who pass through all

Southern plateau

The semi arid plateau extends further south through Karnataka and into the state of Tamil Nadu. Here too shepherds practice semi migratory systems of animal rearing. Sheep breeds like the Bellary , Hassan , Mandya and Bannur are popular in Karnataka , while in Tamil Nadu the Mecheri , Kilakarsal , Vembur , Coimbatore, Nilgiri , Ramnad white , Madras Red and Tiruchi black are popular .Unlike breeds in the north, southern breeds of sheep do not have wool but are called hairy sheep . Their use is more for dung and meat .

Forest based systems

In the heavily forested areas of the subcontinent , livestock has not played as important a role in the economy and livelihoods of people as it has in the arid and the semi arid areas . The forest provides food, fodder, timber , fuel and medicines. .Where forest resources abound even agriculture is not important . Livestock therefore has not been developed for producing milk or wool but rather to adapt to forest conditions including the presence of wild predators like the tiger . Depending on the forest, buffalo , pig , elephant, the Mithun and chicken have been domesticated . The wild progenitors of these species were themselves inhabitants of the forest . Although cattle and goat are also reared in forests they have been a later introduction . Unlike in the grasslands, livestock cannot play a major role within forests as it would lead to impossible conflicts with other natural systems.

A large number of distinct tribal communities live in our forests and their livelihood is dependant on the survival of these forests . While there are communities who still mainly hunt and gather like the katkaris of the western ghats , most tribal communities practice agriculture In many forests, slash and burn agriculture continues to be practiced . The crops grown are mainly different millets, some pulses and a very few oil seeds.

Major Forest based Livestock Systems in India

The Eastern Himalayas

These hill ranges form the north eastern borders of India . As opposed to the north west Himalayas these ranges are covered with evergreen forests and characterized by a warmer and more humid climate Stretching from Sikkim to Nagaland and across the Brahmaputra valley to the hills of Megahlaya and Mizoram these hills are the home of a number of tribal communities. While paddy is grown in the valley a variety of millets , maize and horticultural

these levels are the repositories of all food related messages from the media it is very important that they develop a context within which they can analyse these messages.

We must understand that this has a very deep impact on their personal and community lives since food defines culture. In order to help them unravel these relationships and also understand the basic relationship between agrobiodiversity and related nutritional issues spceial courses are offered at various levels. Besides, their curriculum in subjects such as biological, agricultural and environmental sciences should contain sections on these themes. Existing courses need to be modified so as to include various values, benefits, equity, cultural and ethical aspects of agrobiodiversity. This will help create interest and respect on diversity in young minds.
Besides the curriculum attempts, innovative methods like *Biodiversity Contests* followed by Honeybee network, IIM Ahmedabad and *Contests on Kitchen Garden Diversity* conducted by *Hittalagida* Network, UAS Bangalore are worth examining.

A1. The UGC and ICAR New Delhi along with the State Education departments must jointly initiate the process of syllabus modification so as to include different aspects of agricultural biodiversity. *The NGOs working on agrobiodiversity must also be involved* in this process so as to sensitise the exercise in terms of equity, security, ethical and cultural dimensions of biodiversity.

A2 Initiate bio-diversity contest fund in each state agricultural and other universities to conduct contests on agrobiodiversity and give prizes regularly.

- Action: It will be a great boost to the understanding on biodiversity if all state governments take up this effort in association with the ecological NGOs. However Gujarat Government may be requested to take this immediately in association with Honeybee network and *Hittialgida* Network respectively in these two states.

- A part of such fund can be passed on the major media quiz contests, a format which attract huge audiences, especially from the younger generation. The fund can be used to provide attractive prizes to participants and in the process create a nationwide curiosity and interest in the subject.

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**

<u>In Situ consetvation, Participatory Crop Improvement and Exchange</u>

The NBPGR has undertaken the largest germplasm exploration and insitu conservation in India. Based on the experience gained in this respect, an elaborate arrangement to in situ conservation in the field along with participatory crop improvment for direct exchange of plant materials among farmers temselves are very

STRATEGY for *education programme:* 2003-2007 contd.

Defining Quality Package

3

A Quality Package

To ensure Quality education to all children



Essentials (Non-negotiables)	Desirables (Not crucial)
-Teacher-pupil ratio (1:35)	- Sanitation
-Curriculum development	- Linkages with health
-Reading material	- School infrastructure
-Assessment and Evaluation	- Furniture/Supply
-Teaching Learning Material	- School/Garden
-Teacher training and development	- Music, art, sport, yoga
-Community-school linkages	
-Support group	
-(Mother tongue curriculum)	

unicef

much required. Here again experiences of few NGOs like NAVA DANYA, New Delhi, dds, A D S and GREEN Foundation Bangalore are worth following.

A.1. Preparation of Action plan for insitu consevation and Participatory crop improvement – Action: **NBPGR along with SAUs in each state with active involvement of NGOs and farm organisation to take inititativee.**

A2. Develop Agri diversity catelogue **for the crops to be conserved insitu along with their special features, consumptive use values and other non market benefits in different regions.**

Action **by NBPGR along with SAUs/ State Agriculture and Horticulture Depts. in each state with active involvement of NGOs**

A3. Training and Orientation **to farmers, extension agents and NGOs on** Participatory Crop Improvement and Breeding techniques, N O

Action: **NBPGR to prepare the outline, ICAR to provide the fund and SAUs/ State Agriculture and Horticulture Departments to implement**

A.4. S.6. Integration of dom. bd. issues into forest, environment and bd. concerns:

Agri diversity and the wild relatives of crops have some complimentary effects on forestry and its bio-diversity. This may be in terms of soil fertility improvements through legume crop or no or less use of chemicals and consequently less/nil harmful effects on forestry and surrounding eco-system and so on. The mutually beneficial relationship between forestry and an important form of domesticated bio diversity; the honey bees is very well established. The harmony and proximity are much more discernable if agro-ecosystem and its diversity are taken in to consideration.



STRATEGY for GOI-UNICEF *education programme* 2003-2007

Focus During The Entire MPO Period

- Target Population
- An Essential Quality Package
- Capacity Building
- Advocacy
- Service Delivery
- Monitoring and Evaluation
- Research and Studies
- Support Groups

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Satheesh, Part 2, Ver. 2

Mk 9/6/02 Comments to be sent

[illegible] comments in track changes mode.

[illegible] 2002

AGROBIODIVERSITY IN N B S A P

final draft

by p v satheesh

(add sources where data/information from outside is used)

(livestock and pets are missing)

6. *Broad strategies and related actions for achieving conservation, sustainable use, and equitable access/sharing of benefits*

- 50 pages (2-4 pages per subsection, on average)
  (including:
- **scale** (local, state-level, national, global) of each action;
- **time period** (immediate; short term: 5 years; medium term: 10 years; and long term: 20 years for each action;
- **actors/institutions** and **mechanisms** needed to implement the suggested actions to be implemented;
- **financial resources** needed, primarily by re-orienting existing budgets, and through additional resource generation;
- If relevant or feasible in the national plan, for certain actions, detailed **project proposals** specifying the course of steps to be annexed)

Domesticated ecosystems and taxa

Strategies and actions for enhancing understanding and information (including research, monitoring, etc.) for both formal and informal (community) sectors

Much of the current formalised information on agrobiodiversity is either largely inadequate or is concentrated in an extremely narrow and specialised circle. On the other hand the rich understanding and information available with the farming communities is systematically ignored and undermined. There is a crying need to balance these two extremes. The future of agrobiodiversity lies in enhancing the understanding among the scientific and policy communities and popularisling the information on a very large scale. In order to achieve conservation and sustainable use of agrobiodiversity, it iw very crucial that people in general and urban consumer classes in particular internalise the value of the role that agrobiodiversity can play in their nutritional security and access to safe foods.

In parallel, the enormous wealth of information, knowledge and understanding of agrobiodiversity that rests in rural communities needs to be supported through systematic promotional and affirmational actions if we want this knowledge pool to stay alive. Most of the time this knowledge gets derided and undermined to such an extent that it makes rural people feel very defensive about this knowledge. As a consequence, much of it lies subaltern and over a period of time, faces the danger of complete extinction. Particular emphasis is needed to make the younger rural generation feel confident and proud of this knowledge that lies with their communities.
In the scientific community, a new understanding needs to be built that agri diversity is not limited to the issue of providing them breeding material for future experiments. Conserving them in a few gene banks and research station fields is not adequate. A much larger effort is necessary in terms of conserving entire landscapes and ecosystems. This information should urgently reach the scientific community.

A number of efforts are important in this direction.

Expand Knowledge on the dynamics of crop genetic diversity

Much is uncertain and unknown about the structure and multiple function of crop genetic diversity. Knowledge about the function of bio-diversity, synergies and complimentary ties, interactions, within agro-ecosystems, ecological processes within soils and interactions with the atmosphere and water, is rudimentary.

Action

Supportive studies on dynamics of crop genetic resources of the state are to be initiated. The extent of landraces, farmers stock have to be documented. The pattern of distribution of landraces in agroecosystems needs to be understood. Sufficient budget to be allocated towards such studies that evolve information and knowledge towards genetic diversity and its conservation. Advanced techniques such as GIS & Computer based formats should be adopted in generation and management of such information and knowledge.

Studies on the biodiverse farming systems where mixed and multiple cropping are integral to agriculture has to be done on a very large scale in India. These studies can look at the economics of the systemic production of this form of ecological agriculture and come up with reasons to move farmers away from monocropping into which thy have been trapped at present.

- **Scale** : **National**
- **time period** : **Short Term**
- **actors/institutions and mechanisms** NBPGR, SAUs, NGOs, Proposed Biodiversity Councils under the Biodiversity Bill (what are these?) at the State, District and Panchayat levels
  Surveys: PRAs, CBRs, GIS systems
- **financial resources** **Government of India in the budget it allocates to the National Biodiversity Authority when it is formed. Matching budgetary and personnel support must come from the national and state agricultural ministries and agricultural departments.**

- ***Systematic documentation and dissemination of indigenous knowledge, technologies and institutions governing the agridiversity in different languages of India.***

Action

- A lead has been given by Honeybee Network which publishes stories on indigenous knowledge and innovations in their newsletter in six different regional languages. An agrobiodiversity focussed effort in this fashion needs to be initiated by similar NGOs and this deserves a lot of encouragement.

Simultaneously detailed case studies on innovative examples and initiatives and what made them work have to be promoted. Such case studies will not only deepen our understanding of the way

- The central government brings out many newsletters and journals including *Yojana, People's Action etc.* ICAR has several journals to its credit [Give details of journals]. All these journals which deal with agriculture and rural development must include sections on agrobiodiversity.

- A reporting/editorial team needs to be helped to specialise on popular writing on agrobiodiversity themes for the consumption of the scientific and development community which forms the readership of these journals.

* Scale	:	National
* time period	:	Short & Medium Term
* actors/institutions and mechanisms		NBPGR, SAUs, NGOs, Biodiversity Councils at the State, District and Panchayat levels
		Surveys; PRAs, CBRs, GIS systems, also audio visual
* financial resources		**Government of India through** **a. NEAC budget** **b. Budget made available to the NBAI** **c. MoEF special budget** **d. Budget allocation from the Ministry of Agriculture, Rural Development and state departments of agriculture and rural development.**

~~(Agr. Ministries and depts. Also)[DONE]~~

- *A special information network needs to be set up to deal with urban people especially the consumer classes.*

The most telling impact of globalisation is evident on the consumer markets in urban India. Branded foods with their glitzy advertisements and *Event Managements* take over the hearts and minds of urban consumers. Junk foods have a sway over the young minds. Fast food outlets define the fashion and social status of the student communities.

While it may be a herculean task to fight these forces and to rebuild consciousness of the *educated* classes in favour of ecologically produced foods which healthier, safer and tastier, the challenge must be squarely met. Otherwise we will not only be allowing a few generations to be swept off their feet and minds, but also will be putting the entire ecological/biodiverse agriculture at a great and irreparable risk.

Therefore efforts at various levels to reach out to these classes through well placed feature articles in newspapers, advertisements and promotional features on television and on FM Radio channels are extremely important.

- Cuisine contests, cookery columns, nutritional nuggets --- all of these need to be used to influence urban consumers with a special focus on women by systematically disseminating attractively argued information about the nutritive values, taste, palatability, cooking and keeping quality etc. of the native/traditional food. This effort would help in substantially increasing preference and demand for the products of the diversity.

CG Shift to 6.2

Such examples should be in Ch[illegible] and you can cross-refer here if need be. For instance attempts such as the ECO NET created by an NGO – Institute of Cultural Research and Action, Bangalore in supplying organic products and native/tribal food items along with education for the urban consumers clearly highlights this point. The Zaheerabad Consumers Action Group started by the Deccan Development Society meets periodically to discuss the merits of traditional crops; workshops are held in various residential colonies to teach women a variety of cuisine from traditional millets; a Millet Cook Book has been published and distributed to the group and a series of cookery videos have been prepared and are exhibited. These special cuisine shows on traditional foods is also serialised on Doordarshan. Navdanya has many outlets of natural foods at the Delhi Haat. In the annual market groups like *Beet Bachao Andolan* participate with a number of natural foods. BBA also makes its own jams and pickles from organic for this market. So does Academy of Development Studies, Maharashtra. Green Foundation has established a consumers network in bangalore which is directly catered to by farmers. There is a growing network of such initiatives all over the country.

Such actions need to be replicated on a large scale.

- Scale
- time period
- actors/institutions and mechanisms
- financial resources

? Such festivals should become a regular feature of the nation's cultural calendar.

- The way the governments conduct *Apna Utsav*, Dastakar Festival and Handicraft and other festivals, a space should be created ~~(meaning? What kind of space, money, administrative support, physical space, others? And how to ensure that some level of farmers' control remains once this becomes a government programme?)[DONE]~~ at the District Level, State Level and National Level to hold biodiversity festivals. There should be special enclosures for biodiversity in the above festivals. In several farmers fairs, there should be separate enclosures for biodiversity. Governments must actively seek out the farmers and help them to participate in these festivals. For the first few years, they may also need financial support for participation. Once their work and their value spreads, this may not be necessary. Such an action will provide the ecological communities practicing biodiversity on their landscapes the much-needed non-material recognition and enthuse them to continue their spirit of diversity.

• Scale	:	Primarily local [block/mandal levels] but also at state/national levels
• time period	:	Annual periodicity
• actors/institutions and mechanisms	:	DRDAs, Agr Depts, MoA, MoEF, MoRD Farmers organisations NGOs, Self Help groups
• financial resources	:	Allocate part of the current extension, information budget

~~(such actions could also be targetted at farmers' unions and groups) [DONE]~~

Seed Festivals

- At a smaller scale, the local agricultural departments, Krishi Vigyan Kendras, Self Help groups, DWCRA groups, local NGOs (and KVKs?) can organise indigenous seed festivals at the level of each block/mandal. Such festivals could be held prior to the sowing season. Such festivals encourage

informal exchange of the local seeds and helps a vibrant gene flow among the farmers. It will also help to generate a lot of awareness about the local level living agrobiodiversity within the farming communities especially among the younger generations for whom this awareness is most critical to help their community knowledge systems survive and flourish.

- Scale : Local
- time period : Immediate & continuous
- actors/institutions and mechanisms : Agricultural Departments, NGOs, farmers organisations, SHGs
- financial resources

Research focus and orientation

- Among the scientific and concerned policy circles, there is a great concern that the current agricultural research and development (R&D) is too preoccupied with a narrow definition of productivity and therefore has failed to take the larger picture of rural systems in their totality. The complexities of these systems do not find any analytical space in these research agendas and normally they are dismissed as irrelevant. The greater focus on increased productivity is also oblivious to the wider issues of people's livelihoods and their control over their resources. In recent years even this focus is further getting ~~much~~ narrowed down to the genetic engineering options at the exclusion of everything else. Most universities are getting funding only for such research from Western funding agencies, both private and public. Increasingly private. In the quest for privatisation of research institutions, this dangerous trend is also going unobserved.

In order to counter this trend and put back agrobiodiversity back on the agenda of research, there is increasing need to start more research into total biomass production of a village ecosystem; into multiple cropping systems like *baranaja* of Garhwal Hills, *Pannendu Pantalu* of the Deccan and *Navdhanya* of the South; into the revival and enhancement of indigenous crop varieties and livestock breeds; and into the various incentive systems which would encourage farmers towards biodiverse agriculture.

Research and development needs to build much more on the many important characteristics contained within our crop and livestock diversity, including grain productivity, taste, smell, colour, drought and disease resistance, ability to grow in adverse conditions, efficiency in input use, fodder output, and others. In India, though substantial work has been done along these line, many traditional varieties are yet to be fully screened for their usefulness in specific conditions.

Much of this research must be done using participatory tools with farmers. A lot of it also has to be farmer ~~lead~~ led so that the rich perceptions that farmers have on their biodiveristy are not lost in the research design. Farmer-~~lead~~ led research will also be site specific and therefore recommendations emanating from such research will be well adaptable to the agroecosystems of the area ~~without challenging its harmony~~

The *Crops of Truth*, a study done by the Deccan Development Society and the studies quoted by Dr Amitava Mukherjee in his books ..... are an example of the way such studies can be conducted.

~~(something on the process of doing the R&D...farmer-based, agroecosystem and site-specific etc.?)~~[DONE]

- **Scale** : **National and local level**
- **time period** : **Immediate & medium term**
- **actors/institutions and mechanisms** : **NBPGR, SAUs, KVKs, NGOs**
- **financial resources** : **Ministry of Agriculture in a**

special budget: reallocation of existing budget: MoEF in its budget for the structures to be created once the Biodiversity Bill is passed. *Strategies and actions for in-situ conservation (of agro-ecosystems and taxa)*

Cultivating Landscapes

Much of in situ conservation efforts in biodiversity need a landscape approach. Efforts to reward a farmer or two, or find one or two institutions to work on agrobiodiversity, or offer a few incentives to a few farmers will not suffice. Serious conservation needs far more serious efforts like cultivating an entire landscape.

Recent studies in ecosystem approach have brought in a number of new dimensions to the complex relationship between agrobiodiversity and the ecosystems.

(the text below needs to come either into the Introduction of the NBSAP, or in a vision statement if we do one; we need also to add here the recent Ecosystem Approach principles agreed upon by the Convention on Biological Diversity, let me know if you need these)[DONE. SENT TO PROFILE. I NEED THE CBD AGREEMENT]

Add 2-3 lines on CBD Ecosystem Approach here — check also Agrobiodiv. papers from COP6

Similar concerns are echoed elsewhere in the world in order to focus attention on the need to *Cultivate Landscape*

In the paper *Uncultivated Foods and Landscape Approach*, it has been (hello?) argued that (the following text does not fit in this form here, some of this could go into the vision note, some of it elsewhere...the actions chapter needs to be very crisp) [DONE]

Ref.?

The new perception of ***MFCAL [Multifunctional Character of Agriculture and Land Use]*** which is actively promoted by the FAO has to be taken into policy considerations while looking at agrobiodiversity. MFCAL argues that agriculture is not only the issue of crop production but also conservation of an entire landscape.

Action

humanized

The biodiverse regions in Indian agriculture offer natural clues for such landscape approach. For eg. the contiguous areas in the Deccan plateau which stretch across the Telangana belt in AP, North Karnataka and the Marathwada region of Maharashtra offer a natural landscape where the existing biodiversity can be strengthened and enhanced even while reviving the lost diversity. Similarly the central Indian adivasi landscape which stretches from the northen Telangana districts of AP to Chandapur in Maharashtra, the northwestern forest belts of Orissa and large part of central MP is home to huge diversity of rice and millets.

Add a list & map of such landscapes/ecoregions? — Relate to agroecol-regions map

A Regional Landscape Plan for these areas should be put in place in which they are given a *protected* *status* in terms of agrodiversity. This will create a biodiversity corridor that will not only be true to the na of landscape but also regenerate a fascinating diversity in agriculture. Besides in some ways all these historically very important places. For eg. the Deccan was the home of the Bahmani kingdom and therefore a remarkable tale to tell in terms of historical monuments etc. The regenerated agricultura biodiver corridors can also be spaces for ecotourism and historical trails can be recreated. The Bahmani trails in Deccan, the Gondvana trails in the central belt can be coterminus with the agrodiversity. When they come existence, they can match the *Potato Parks* of the Andean communities or the farm landscapes in the U K.

The current concern that these regions are at the moment economically underdeveloped can be turned into a celebration with the rejuvenation of history and ecology.

most of

In any such *Cultivating Landscape* approach, substantial portion of the benefit of agri-diversity accrue to people other than the farmers who cultivate it. What ever the benefits and uses the farmers derive are either coming mostly in the 'future' or they are "non marketed" in nature. However, to conserve and use the agridiversity, the farmers have to put in efforts and the costs of this effort are substantial. It may be true that both monetary and non monetary incentives are required to motivate the farmers to conserve agri-diversity. But market and policy reforms ~~(what reforms, pl. specify or cross-refer to describing these elsewhere)~~ (refer to the section on *CULTIVATING MARKETS* in this chapter) are definitely needed to provide a basic structural framework for such monetary incentives to conserve and use agri-diversity. Main action plans in this respect are given below;

Imp. new idea - needs to be developed further.

- Scale
- time period
- actors/institutions and mechanisms
- financial resources

- ***Relating agrobiodiversity to Food, nutritional and livelihood Security***

Actions other than PDS? Health services? Balwadis? Food for Work? etc.

Agrobiodiversity needs to be treated not just as an issue related to science and environment. It is an issue which is intricately related to people's food, nutritional and livelihood securities.

As has been described in the Profile, the rice-wheat based centralised PDS has completely destabilised the biodiverse agriculture in the country especially in the rainfed regions which form about 65% of India's farming area. There is an urgent need to restructure the PDS in favour of community level production, storage and distribution giving the communities total control over their food security. There must also be a decisive shift from a centralised food security to household food security.

'national'

Strategy :

CG Add lines on overall strategy with substate BSAP only as an example

In the process of preparing the Sub State Plan for Agro biodiversity in Medak District of Andhra Pradesh, over 20,000 farmers have unanimously demanded that the PDS should include millets and sorghum. This will not only make available nutritionally superior local grains like finger millet, foxtail millet, sorghum etc to each locality where the PDS operates. The procurement of these grains for PDS will provide a huge market for the farmers in the rainfed areas and will cause the revival of nutritiionally superior millet farms which are inherently biodiverse.

Action

(a) The PDS procurement system should be reworked to include grains like millets and sorghum. In the new procurement policy, state governments have been given the responsibility of procurement of grains. This situation should be optimised in favour of agrobiodiversity by making it possible for the state governments to procure local grains like millets, bajra and sorghum for PDS. Those state governments which opt for such procurement should get a special funding support from the central government.

What policy?

not a millet?

(b) In one of the ~~high profile~~ workshops on *PDS and Food Security* held by the National Institute of Rural Development which was attended by the food secretaries of many state governments, chief secretaries, academicians, food policy analysts a strong recommendation was made that the PDS operations should be decentralised and each village panchayat should be enabled to run its own decentralised PDS system. The recommendation further said that the local communities should be enabled to procure, store and distribute the grains within their own communities. It also recommended that dalits and women should have a major representation in the management of this local PDS.

Ref.?

If this recommendation is followed, it will at once fulfil a number of worthwhile objectives: local managed PDS, equity, gender and sustainability.

Shift this para to Chap 2 and cross-refer in (d) below.

(d) A number of community based food security models (see section [illegible] in PROFILE [illegible]) [illegible] need to be studied closely and adapted with the help of NGOs in various parts of the country in order to enhance or create a biodiversity based food security system at the community level.

- Scale
- time period
- actors/institutions and mechanisms
- financial resources

Increase effective use of crop genetic diversity in food production

One of the most important issues that characterises food security or its absence is the issue of nutritional security. As the *State of Food Insecurity in the World - 2000*, an FAO publication argues : ***Meaningful action to end hunger reauires knowledge of not just the number of hungry people around the world but also of the depth of their hunger.*** In explaining its position, the publication argues that ***When dietary intake is adequate, the variety of foods is generally greater, providing more energy and better nutrition.***

According to the *depth of hunger* index which measures the kilocalories that people are falling short of in their dietary intake, India with its shortage of 290 kilocalories, occupies 16th out of 19 places in the Asia Pacific region, just managing to stay ahead of Bangladesh, North Korea and Mongolia. Significantly a country like Myanmar with a shortage of 200 kcals is 12 paces ahead of India partly because of a rich agrobiodiversity still practised on its farmlands.

Crop genetic diversity performs vital functions in agriculture, land and water use. The diversity of plants, animals and micro organisms is essential for maintaining the productivity and sustainability of farm crops and animas managed forests and rangelands, aquaculture and fisheries. Future global food security is dependent on harnessing and sustaining crop.

Food security is also an issue of national security and sovereignty (check language?) Bio diversity ~~on~~ in ? farmer knowledge systems is the key to achieving this food security.

Action

Need to specifically point to changes in Agri/Health policies — or addition of chapter?

stablish the policy frameworks (more details needed, or do you want to say that the policy and laws to ensure all the other actions in this chapter, need to be enacted?) that ensure political commitment, incentives, educational and institutional capacities to support crop genetic diversity in food production, such as multiple crop production, traditional varieties, Recognition to indigenous cultivates farmers stocks etc..,

- Scale
- time period
- actors/institutions and mechanisms
- financial resources

Ultimately the effort of conservation of agrobiodiversity can also be an effort at cultivating communities Many sociological researchers analysing the impact of green revolution have traced the loss of biodivers and food crops to the development of agrarian tensions in rural India

Ref. 7 b

G. VANAVIL

In the Mobile Biodiversity Festival - 2001 conducted by the Deccan Development Society as a part of th development of sub state plan for agrobiodiversity in the Deccan region, dalit women repeatedly argued that the shrinking biodiversity on the farms in their region was the cause of the widening chasm in their relationship with the land owners. As long as the landlords maintained biodiversity on their farms and pa the labour in kind [crops], there was a lot of human relationship between them. But with the diversity gc and monocultural commodity crops having taken over their space along with payment to labour in cash. human relationship had also gone out of the communities. Now all relationship were mechanical and commodified.

Therefore the advice by the women to the land owners was to revert to biodiversity and food crops on ti lands so that the communities can rebuild themselves.

(delete or shift to an earlier chapter)

Crops of Truth, a study on farmers perception of biodiversity in the Deccan region of Andhra Pradesh, farmers across caste, gender and class define the need for biodiversity on their farms in dozens of ways. Farmers related their agrobiodiversity to

Shift to Ch-4.2 (Values)

- Soils
- Farming practices
- Moisture requirements
- Special qualities of the crops
- Household needs
- Diet
- Nutrition
- Seed Selection
- Culture
- Gender

In a much more detailed analysis, the farmers discussed what prompts them to make particular decisions grow a certain crop on their fields and listed out 16 points which they take into consideration before the plant a crop.

1 *Need to raise two or more crops during a year*
2 *Crop durations*
3 *Need for cash*
4 *Ensuring food security*
5 *Need for fodder*
6 *Need for fuel wood*
7 *Need for thatching/fencing material*
8 *Need for fibre*
9 *Need for vegetables*
10 *Need for oil*
11 *Special foods for specific festivals*
12 *Rejuvenating soil fertility and 'strength'*
13 *Storability*

14 *Need to prepare land for the next crop*
15 *Medicinal properties*
16 *To ward off/reduce pest incidence*

During the normal discussions of a national identity culture is a very big issue. But while planning for nation agriculture which deeply impacts on more than 600 million people of this country and their culture, someho culture tends to be forgotton. Therefore all these aspects of agrobiodiversity need to be included in all discourses on the subject as well as included in the agricultural curriculums, school text books and state policies wherever the agrobiodiversity is discussed.

Culture is an often forgotten and neglected part of cropping practices. But for the farmers, especially wome culture in an inalienable part of their decision to raise diverse crops on their lands. In the SAP reports from different states the way crops are intricately related with peoples cultural and rituals uses has been documen in detail. In fact the use of nine grains *Navdhanya* to propitiate the nine planets in Hindu religion spreads ac the country. Muslims consider certain crops like bajra as sacred for their rituals. If one looks deeper into Buddhist and Christian traditions in India, one finds a large number of examples of sacred crops. The innumerable adivasi cultural traditions spread across the country are a testimony to the deep spiritual relationship between the people and the diversity on their farms.[See box : ***Culture and Diversity***]

CULTURE AND DIVERSITY

Each festival in the Deccan, as is the case elsewhere in India, is the cultural manifestation of a particular season and a particular social and psychological condition. Some festivals are celebratory. Some are austere. Some are ostentatious, while some are reflective. According to the character of each festival, specific grains assume importance for use in that particular festival. The following table gives us a brief glimpse of the character of various grains, as perceived by the community in relation to their culture.

- ***Pyalala jonna – as popped sorghum for Nagula Panchami, a day on which snakes are worshipped as symbols of fertility and probably for their role in farming as controllers of rats and other pests.***
- ***Korralu (foxtail millet)is cooked as Paayasam, a sweet pudding, on the day of Peddala amaasya-- the Hindu Al Souls Day, the day on which the dead are remembered and worshipped. Chickpea is used for making Bajji, a fried snack for many festivals***
- ***Finger millet, peanut, and chickpea are used for making a sweet pancake – Polelu – for a number of festivals***

This already establishes a range of grains that achieve festival status and also represent a cultural expression. The popped sorghum on the day of Nagula Panchami is an austere food--respectful austerity-- to worship snak gods for fertility and for protection of crops from rats etc. Foxtail millet porridge, another austere food is offered with great respect to the departed ancestors on the day of Peddala Amavasya: the day of the Ancestors

However, peanut and chickpea, two grains that are considered rich, are also celebratory; you make sweet brea –pole– with them, on celebratory festivals like Ugadi, Dasara, Diwali, and on a special farmers' festival called Erokka Punnami, the day on which all the bullocks in the village are decorated and taken out in a procession a the beginning of the farming season.

Two festivals in the Deccan are pure celebrations of diversity. The Soonyam Pandugu in December is heralde with a visit to the farm by the entire family of the farmer. They go singing around their farm. Several version of the songs are available : Olega Sagam Olega and Beliyo Jolave, a song which urges the sorghum to grow well. Such songs are sung to propitiate Bhootalli (the Mother Earth), "who is pregnant at that time", and bear a host of crops: sorghum, pigeonpea, a variety of pulses, and a host of vegetables (sabbanda Kooragayalu). It i that time of pregnancy, when the Mother Earth craves to taste different things. To satisfy her craving people cook Bajjikoora, a fascinating dish in which all the available vegetables (leafy and otherwise) and tender grain [including the green pods of pigeonpea, dolichos lablab, chickpea, chillies, green peas, lathyrus, amaranthas and other leafy greens] are cooked together and offered to the Mother. The singing also is to please the Mother

The expected result of all this is to persuade the Mother to think: "These people are making such an effort to k happy. Therefore I also should keep them happy by making the harvest bountiful". Though this is the expected it is not negotiated as a crude business act. It is an act of love. An act of gratitude. An act of worship, and fin act of celebration.

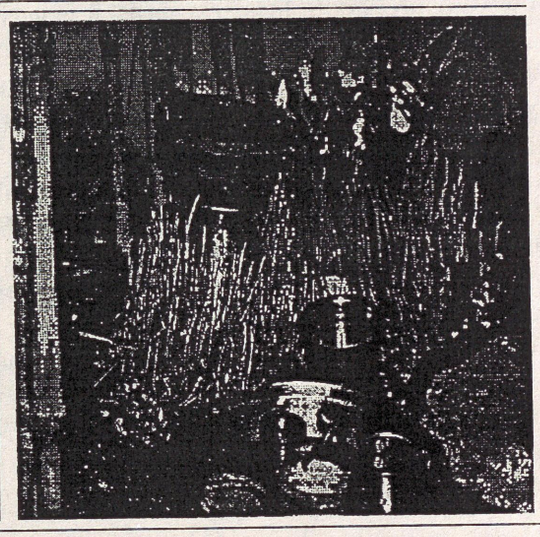
The second festival which joyously celebrates diversity, is Endlagatte Punnam, a festival which precedes the

Dasara is the most important festival in the region. It is post-monsoon and the landscape, which is normally brown and arid, is covered with carpets of greenery. The streams are full, and flow with vibrant life. Most crops are ready for harvesting, and the farmers are relaxed. It is also the time of the year which marks the end of one season and the beginning of another: a continuity of life. This is the time for preparations for sowing the *PEDDA PANTA*, the big crop for the winter season. *Dasara* heralds this season.

GATLU : THE GERMINATION RITUAL

CG Delete if space constraints — add to Dom Bio & Culture BSAPs?

Women mix five most important seeds for the winter crop are mixed with ***Untasted soil*** *of single crop-growing land : Sayi Jonna Chenu. The soil must not have been cultivated that year : land that has been kept waiting for a new crop. Into this soil they mix seeds of winter jowar, lathyrus, chickpea and linseed: all crops which grow without longing for water. Water is the scarcest commodity in the dryland region. Therefore any crop that can grow without water needs to*



This soil-seed spread is placed on a leaf plate and two fresh pots are kept on it. Each pot is decorated with a piece of sugarcane and a jowar earhead: a bouquet of crops ready for harvest from the monsoon crop season. Auspicious betel leaves are spread all across and flower garlands adorn the pots.

Another pot full of oil is placed in front and an earthen lamp is lit on top of the pot. The lamp glows all through the day and night until the ritual days are over. Five measures of rice in dried coconut cups are kept around the pots. The entire scene is enchanting [Laka laka antadi].

The seeds for the ritual are brought either from the house of the Patel, the village headman, who traditionally is the seed keeper for the village. [The poor cannot afford to keep their own seeds. It is the job of the rich]. Alternatively seeds are brought from those who are known to preserve seeds. Or from their own seed baskets.

On the final day, when the seeds sprout, women in the community visit each others houses and look at the seeds and compare how well the sasi (seedling) has grown. It is an indication for them to understand whose seeds have greater potency.

The seeds with the pots are taken to the farm and planted there with ritual observations.

In preparation for *Pedda Panta*, the big cropping season, women perform a fascinating ritual called *Ga Koorchodam*. They go into isolation and sit *Gattilu*. This is a five to seven day ritual when, in their isola they worship *Amba Bhavani*, a form of *Durga*, the famous Hindu goddess. But beyond the worship of thi Goddess lies another ritual, which is unparalleled for its creative brilliance. This is the element of seed wors and the observation built into this ritual. [*See box: GATTILU : THE GERMINATION RITUAL*]

Strategies and actions for ex-situ conservation
(botanical gardens?, gene banks, home gardens)

Community Gene Banks

However the real work needs to be done at the level of the communities. Many farming communities complain that even if they want to revert to their traditional forms of agriculture, they cannot access genetic material. This is a serious concern.

On the other hand, the Ex Situ gene banks suffer from non viability of their seeds in the absence of a large scale, dynamic interface with the living environment.

In order to address both these concerns, it is very important to create community gene banks on the basis of in situ, on farm conservation. Such on farm conservation effort by the communities will not only offer a solution to the problem of conservation and ecology but also be integral to the questions of gender and equity.

Most small and marginal farming communities in marginal landscapes have depended upon women to select, save and safeguard the diversity in their farming systems. The gradual destruction of these farming systems due to the oblivious state policies which are positively a disincentive to these systems have also taken away the control over their own genetic resources from the small and the marginal particularly the women. More and more dependence on market for plant material have made the women powerless in their communities and eroded their knowledge and skill base. The poor have been marginalised in their own agriculture.

Establishment of ~~real~~ community gene banks [~~as against the many fake claims being made for this title~~] therefore can offer solution to multiple problems such as these.

Action

(a) In each of the *empowerment* and *poverty alleviation* programmes establishment of such Community Gene Banks should be promoted. Many states have been promoting women SHGs [self help groups] under DWCRA and watershed intiatives. DRDAs under IRDP programme are also very active in these efforts. The Scheduled Caste Finance Corporations offer many programmes and incentives to the dalit women in rural areas.

All these programmes must recognise that Community Gene Banks can be truly empowering to the marginalised, especially the women amongst them. In the globalising world where new seed colonialism will be a real threat to the poor, control over their germplasm will place the poor and the women at a greatly advantageous position.

Therefore all these programmes must write into their plans Community Gene Banks as initiatives of poverty alleviation, empowerment of the

women and the other marginalised.

(b) Many NGOs [illegible] have initiated such programmes. The notable examples are : the Community Gene Fund programme of the Deccan Development Society in Medak District of AP. the efforts at seed collection by the *Beej Bachao Andolan* in the Garhwal region of Uttaranchal [illegible], *Seed Sanghas* of Green Foundation in Bangalore, Traditional Seed Banks of Centre for Indian Knowledge Systems and the Community Seed Banks of MSSRR Foundation in Tamil Nadu etc.

The government can utilise the capacities and experience of such NGOs to initiate programmes of its own. It can also support the NGO initiatives with necessary funding support and other recognition.

(c) The Government shall honour the best Community Gene Banks at various levels in the country (panchayat level, block level, district level, state level, regional level and national level (not for each state, or even for units below that?) on the basis of a set of parameters which can include the range of traditional germplasm they have in store, the rate at which they are used and renewed, how much they are controlled and managed by women and the other marginalised.

- Scale
- time period
- actors/institutions and mechanisms
- financial resources

ii) **Strategies and actions for equitable access, use, and sharing of benefits (land/resource rights, intra–community equity, empowerment for decision-ma and governance, sharing of economic benefits)**

Gendering Agriculture & enhancing diversity

- In all discourses on gender and empowerment, the issue of agrobiodiversity should come in very strongly. Biodiversity in agriculture is the key instrument in enabling women-friendly agriculture. Women have hisrorically played and continue to play a key role in seed selection, conservation and crop planning, especially in rainfed farming systems. As a matter of fact, it is these systems which have remained central to agrodiversity in India.

Engendering ~~(see comment in next para)~~ state policies is the priority of all the actors in development, governmental and non governmental. In this effort nothing can be more fundamental than diversity in agriculture and other spheres of life. The complex diverse patterns in biodiverse farming systems have a direct relationship with the *skill and intellectual base* of women in the rural communities. Therefore it is crucial to recognise that the erosion of diversity in agriculture not only erodes this ~~fascinating~~ skill base of rural women but also snatches away from them the last vestiges of their intellectual leadership of the community.

Therefore all policies on *gendering* ~~(difference between engendering and gendering?) (we can use diverse words?)~~ agriculture should concentrate on creating a major space for diversity in cropping systems. This is the only way to realise women's perspective of agriculture and their intelletual leadership.

The National Agricultural Policy, and the Planning Commission's Strategy for Agriculture should seriously take this up. Both in the NAP and in the Planning Commissions Approach Paper to X Plan, there is no discussion whatsoever on the significant role that women play in agriculture as well as in the conservation and enhancement of biodiversity. This critical gap needs to filled urgently.

Strategy

- Women have historically promoted biodiversity on their farms and foods. They have provided their communities an intellectual leadership in the areas of polycultural practices and seed preservation. They have also developed special perspectives on yields and diversity.

  This gendered understanding of agriculture is crucial for conservation of agrobiodiversity. This must be promoted at several levels.

Action

- **Introduce women's perspectives on yield and biodiversity into agricultural extension and dissemination of information.** [PLEASE SEE BOX, HOW WOMEN SEE AND CONTRIBUTE TO CROP DIVERSITY] (I hope you have more on this, such as an example, earlier, otherwise people may not understand what you are trying to say?)
- **Simultaneously, presence of women in agricultural extension should be ensured by probably making 50% of all agricultural extension personnel are women. More importantly it must be ensured that there is a significant induction of women farmers from the small and marginal sections, by lowering the recruitment qualifications if need be. This action will bring a range of farming expertise in agrobiodiversity which is in the domain of women's knowledge system into the official extension system and enrich it.**
- **States like Andhra Pradesh have introduced a scheme of land purchase at a subsidised price for women from Scheduled Castes. Schemes like this must be promoted and enlarged. Women, especially from the marginalised sections of society, as owners of farmlands are bound to conserve and enhance diversity on their farms. This will be one of the best bets for biodiversity. However care must be exercised that the personnel from agricultural extension and DRDA do not force them to raise crops prescribed by the government. In several cases such pressure is brought upon the women and they have been driven to practise floriculture where they would have cultivated food crops.**
- **Those women farmers who are committed to grow diverse food crops on their lands should be extended with financial help and conservation bonus. This will not only give them the much needed financial assistance but also enhance their self esteem and build confidence that they are practising the right thing and that the State endorses their practice.**
- **Establish rural enterprises based on traditional crops.**
- **Set up dehusking mills in the villages to process millets.**
- ~~Increase women in the official Extension roles?~~ [DONE]
- ***Issues of Equity***

Food and nutritional security of landless labourers and rural poor is directly linked to agri diversity, both domesticated and wild forms. In the Deccan, farm labourers get their wages in kind if they harvest food crops. In the case of commodity crops, the payment is always in cash. When the farms practice crop diversity, the farm labour can access not only more food but also a diverse variety of food which enhances their food as well as nutritional security.

Landless people derive most part of their food in the Western Ghats region, Javadi Hills of Tamil Nadu and the homesteads in West Bengal and Kerala from multipurpose fruit tree species like Jack, jamun, mahua and mango avialble in the wild form or planted on the avenues and other common places. That is the reason most of these trees have become a part of people's legend, cultural and folklore and play a significant part in religious and other rituals.

- Conservation of such species as a part of the farm forestry and common property plantation programmes would increase their access and supply and ultimately help to enhance the food security of the rural poor to a great extent.

  Basically homestead farming in the adivasi areas, coastal and hill regions of the country is rich with biodiversity. There should be a policy to conserve and promote such homestead farming and its biodiversity. Shortsighted policies which have disturbed this biodiversity should be debated extensively and corrective measures taken.

CG Need to develop see Shanthar Kumar's paper

(what about an emphasis on biodiverse homestead farming in agricultural, rural development, and health policies?)

- Scale
- time period
- actors/institutions and mechanisms
- financial resources

~~Subse~~ 7.2.1?

Media and its negative influence on diversity

Strategy

- Media has been the single~~most~~ influence on the food and fashions of people. Unfortunately media has neither understood ~~or~~ shown ~~no~~ special interest or sensitivity towards the value of and need for agrobiodiversity. While in other forms of diversity for eg. wildlife diversity and forest diversity, media might have played some positive role, in the case of agridiversity media has been very ineffectual and most of the time has played very harmful role

  probably greatest nor any

  The branded foods which media peddles has distorted the food tastes and preferences of people. Similarly media has also been the tool to portray farmers who cultivate diversity in their agriculture as backward, non-progressive. This image must be changed drastically.

Action

- **Media must be used consistently and effectively to**

  Too general

  - **Build increased level of awareness among people about the high nutritional value of traditional millets and sorghum**
  - **Well organised campaigns on this issue must be conducted through professional event managers and media must be persuaded to collaborate in this.**
  - **Success stories of farmers cultivating diversity on their fields and getting good yields must be documented and disseminated.**
  - **Farmers who are growing crops on the verge of extinction**, and those showing innovative ways of combining biodiversity and productivity, **must be honoured and made role models for other farmers in their region.**
  - **Regular workshops for the media professional on biodiversity must be held so that they are sensitised to the issue of agrobiodiversity.**
  - **Media fellowships by the MoEF must be provided to professionals who have aptitude and skill to write on agrobiodiversity issues.**

  Fits into a section on incentives?

  Krishi Darshan?

Issue of Cattle wealth

(livestock as a major issue is not only about cattle; I think Nitya's note on this for the Agrobiodiv. TWG could be looked at)

- Absence of cattle in the villages was cited as a major reason for failure to practice biodiversity by a large number of farmers in different regions of the country. Cattle manure is very important for traditional cropping systems. Besides mechanisation in ploughing and other agricultural practices are inherently monoculture in nature.

This situation must be retrieved and the cattle population in villages must be enlarged through a series of actions. [THIS CANNOT BE A GENERAL RECOMMENDATION. IN MANY AREAS THERE ARE FAR TOO MANY CATTLE FOR VARIOUS REASONS, AND NEEDS A MORE BALANCED APPROACH DEPENDING ON LOCAL SITUATION. I'M NOT SURE, EVEN IF IT WERE, CATTLE DO NOT ADVERSELY AFFECT AGROBIODIVERSITY]

Action

- **All government *income generation* programmes must encourage farmers to increase their cattle herds in their villages through appropriate loans and other encouragement. Special loans for purchase of bullocks must be a part of the lending policy of banking institutions and state programmes like DRDA, DPAP etc.** (problematic as a general recommendation...I think this needs to be very site-specific: in several areas there actually is a real need to reduce cattle or other livestock, or change the pattern of livestock holding, to ensure ecological sustainability)[AS PER MY COMMENT ABOVE]
- **The manner in which the government subsidises chemical fertilisers, it must also subsidise purchase of farmyard manure in the short run as well as extend loans for** purchase of farmyard manure **to small and marginal farmers** (actually, why not advocate a replacement of fertiliser subsidy by farmyard manure subsidy?). Such subsidies could be gradually shifted entirely in favour of FYM by stopping all subsidies to chemical fertilisers.**Units for production of biofertilisers using cattle dung and other biological wastes must be set up in all villages. As has been demonstrated in many cases such units can be backyard units and run by men and women within their household. They must be trained in running such units and produce biofertilisers. This will enhance the quality of the cattle dung to turn into highly rich biofertiliser and add enormous value to the cattle dung.** [A RECENT STUDY ON *HUMAN AND SOCIAL CAPITAL ON SOIL FERTILITY MANAGEMENT*, it has been found out that in some villages the total transaction in FYM are almost equal to the entire annual budget of local panchayats. It also supports upto 20% of all livelihoods in the village: SEE BOX : SFM, BIODIVERSITY AND LIVELIHOODS]

[actions on threatened breeds, on securing the diversity of indigenous breeds, etc...?]

Cultivating/creating Markets

- Though it is customary wisdom that market forces and policies follow custormer preferences, in the case of food, markets have not only *manipulated* peoples tastes but also have maintained a stranglehold on the *quality* of food that reaches consumers. This has filled the market with cheap, unsafe and homogenous foods. Consumers are deprived of variety, safety and nutrition in their foods. This market failure has also directly affected agricultural biodiversity by forcing farmers to produce only those foods which the markets have favoured.

In opposition to this and to help create markets which create a supporting environment to agrobiodiversity, alternative markets that are not mediated by the dominant market and media have to be created.

At the national level, a good example is the recent KVIC intervention called *DESI* (will form?). Institutions like KVIC, TRIFED can expand their own lead at the national level. Many state governments have started direct farmer - consumer markets like the *Rytu Bazaar* in Andhra Pradesh. These markets can also play a large role in this area by organic value adding to farmers produce and

create niche markets for organic farmers, who are invariably biodiverse farmers. A large number of NGOs who are working on organic farming and sustainable agriculture across the country should play a decisive role in this by setting up markets at the local levels.

In some ways this needs building of coalitions and collective efforts between farmers, civil society groups and consumer groups at various stages in production, exchange and marketing. All this should translate into the kind of value addition by the primary stakeholders that can convert potential prefernce into actual preference thus generating greater and increasing number of consumers, not from the elite groups but across all classes and regions, for the products of agri diversity and the value it brings along.

One caution that should be exercised right from the beginning is that the ***certification processes*** *should not get out of the hands of the community. Normally in the anxiety to link up with the market mechanism where all organic produce has to be certified by "authorised" agencies, it is invariably very big agencies which get the "authority" to certify. They set their own standards which have to be followed by farmers even if they are not in line with their traditional ecological practices. IN ADDITION, THE AGENCIES ALSO CHARGE A HEFTY FEE WHICH THE SMALL FARMERS ARE IN NO POSITION TO PAY. (you need to say how community level certification will work, or works if it is already there?) DONE. Once this is allowed to happen, the control will pass onto the hands of the super markets and large national and international certification agencies who will control not only the content but also the process of biodiverse farming systems. There lies a great danger*

- **Scale**
- **time period**
- **actors/institutions** and **mechanisms**
- **financial resources**
- *Lending policies*

It is very important to reform state lending and insurance policies to create a level playing field for farmers practising biodiverse agriculture.

The Current state lending policies are positively adverse to the farmers who practise biodiversity in their agriculture. It is also a policy which has least sensitivity towards ecological agriculture. For eg. the lending rates of rural banks for various agriculture crops promote crops like grape which, because of their monoculture, high water guzzling and high pesticide use practices are environmentally disastrous. On the other hand in dryland areas where farming practices are inherently diverse and use very little or no chemicals at all, the loans by the same banks are abysmally low.

The Manjeera Grameena Bank in Medak District of Andhra Pradesh offers the following loans:

Crop	*Loan per acre*	*Level of water used*	*Level of pesticide use*	*Whether environmentally positive or negative*	*Whether positive to biodiversity or not*
Grape	Rs.107,900	Very high	Extremely high	Highly negative	***Very negative***
Banana	Rs.18,000	Very high	High	Negative	***Negative***
Ginger	Rs.15,000	High	Low		
Sugarcane	Rs.10,000	Very high	Low		***Negative***
Potato	Rs.10,000	High	Medium	Negative	***Negative***
Sorghum	Rs.1400	Nil	Nil	Highly positive	***Highly Positive***
Millets	Rs.1400	Nil	nil	Highly positive	***Highly positive***

As can be seen from the table, a crop like Grape which has highly negative effect on environment and biodiversity gets a loan of Rs.107,900 per acre while sorghum and millets which are highly positive both for environment and for biodiversity receive just Rs.1400 per acre, which is just about 1.5% of the loan for grape.

It is also very interesting that the loans are offered only for *pure crops* i.e. crops which are monoculture. Therefore even the paltry Rs.1400 loan for sorghum will be paid when a farmer grows only the monocrop of sorghum on her land. But the farmers' regular practice is to grow at least six to eight crops along with sorghum. Such farmers who are *naturally* diversity farmers have no hopes of getting any bank credit for their crops.

This utter disregard for agrobiodiversity in the lending policy weans farmers away from cultivating diversity on their farms. In this fashion, state has actually presided over the destruction of diversity in agriculture.

Strategy: Bank lending policies must ensure that farmers who cultivate diversity on their farms attract high support from the lending institutions.

Action: *There should be a thorough review of the lending policies of NABARD and its subordinate rural banks (no other relevant banks, are all within NABARD?). This review should be done along the parameters of EIA and Biodiversity Assessment. NABARD and its subsidiary rural banks must initiate a new lending policy. This policy must increase both the share and quantum of loans to farms which practise biodiversity. Simultaneously it must also reduce loans both in terms of share and quantum to those farms which are monoculture in nature and use non ecological methods.*

Strategy: Crop insurance policies must recognise the high contribution of biodiverse farmers to the larger environmental and scientific cause of agrobiodiversity. Therefore there should be adequate insurance cover for these farmers

Action: Like with the lending policies, government should initiate a thorough review of the crop insurance policies. Currently most insurance cover is offered to monocultures and commodity crops. Food crops and polycultural farming get very paltry insurance cover. This policy must be thoroughly reviewed. The kind of risks that dryland farmers cultivating diversity on their lands must be thoroughly understood and analysed. Their contribution to larger cause of biodiversity and the future of agricultural environment must also be understood and analysed. In recognition of this, they should get adequate insurance cover so that they feel confident in pursuing their current practices.

- Scale
- time period
- actors/institutions and mechanisms
- financial resources

(iii) **Strategies and actions for enhancing capacity of actors in each sector (including education, training, etc., stressing on currently weak themes like taxonomy)** [P. V. Satheesh]

Community Biodiversity Registers

One of the most powerful tools that can be used to mobilise communities around their biodiversity and related knowledge systems is the Community

Biodiversity Register.

Strategy

misused (including for IPRs)

All over the country, especially in the agrodiversity - rich adivasi and dryland belts of the country, there is an immediate need to produce Community Biodiversity Registers both to document community knowledge, protect it from being ~~patented~~ by unscrupulous commercial interests and transnational corporations. More importantly, the production of CBRs needs to be used for mobilisation of rural communities to generate awareness about the enormity and value of their knowledge of biodiversity.

Action

or support

(I would caution against a recommendation that could lead to a single national approach (like JFM), could become bureaucratic and out of the hands of the community) The Ministry of Environment and Forests in collaboration with the Ministry of Human Resources Development and the Ministry of Rural Development must immediately take steps to SET UP APPROPRIATE STRUCTURES AT THE COMMUNITY LEVEL FOR THE PRODUCTION OF CBRs. SUCH STRUCTURES SHOULD BE ~~OUTSIDE THE CONTROL OF THE GOVERNMENT MACHINERY AND~~ TOTALLY MANAGED AND CONTROLLED BY THE COMMUNITIES IN ORDER TO ENSURE THAT THE COMMUNITIES HAVE FULL VOICE IN DOCUMENTING THEIR BIODIVERSITY TREASURE AND ASSOCIATED KNOWLEDG.

This could be achieved by providing a national fund for CBRs which can be drawn upon by the MHRD and MoRD to support such grassroots action. The local communities with the help of the rural schools in their area can be entrusted with the task of producing a CBR in its area. The NGOs in these regions can be collaborators in the task by mobilising the local communities. Scientists from agricultural universities, ICAR and other institutions can work as support scientists in this programme by providing their taxonomical expertise.

KVKs?

- Scale
- time period
- actors institutions and mechanisms
- financial resources

Comparative Market Advantage

Strategy

Source?

The organic market in the world is evolving into phenomenal proportions of nearly ten billion dollars of annual trade. During the last decade there has been a remarkable shift in the food preferences of the consumers in the West, particularly in Europe. They are engaged in constant search of safe foods outside of the produce from their industrial agriculture. In recent years the threat of being flooded with GM foods has intensified this search. The European consumers do not want to be trapped by the uncertainty of safety embedded in the GM foods. They want to find an alternative ~~to this biotechnological nightmare.~~

The biodiverse farmers of India can provide an answer to this search. The produce from their farms can be a post modern solution to the biotech Life Industry. Their fields which are rich in diverse foods, not only can be the source of safe food but also provide the kind of variety that the *knowledgeable* consumers of the Western consumer movement are seeking.

It is this emerging market that the agricultural policy designers and the economists should carefully look at. When this market becomes a reality we should be ready with our export strategy. In the meanwhile the

ecological farmers in different parts of India who mainly constitute the small and marginal segment should be supported constantly so that their agriculture is not disrupted.

[illegible]

Action

- In the model of *set aside* subsidies that are offered to farmers in England and the subsidies offered to the Swiss farmers for organic agriculture, the Indian farmers who produce on the principle of biodiversity should get a conservation bonus. This will ensure a large number of farmers to revert back to their ecological agriculture.

- The current subsidies being given to chemical farmers has created an enormous distortion in farming sector. These farmers who work in highly endowed environments like delta areas already have the advantage of best soils and assured irrigation at a very cheap rates. Besides, they are also offered subsidised fertilisers, pesticides and their produce [mainly rice and wheat] find a ready market in the form of state procurement.

  In contrast, the farmers in rainfed areas who rigorously practice biodiversity in their agriculture and produce food in the face of enormous disadvantages have very little state support.

The conservation bonus will have the effect of offsetting this distortion and creating a level playing field and offering farmers honest options. The added advantage of this policy would be that it will not attract any punitive action from the WTO regime and will make offer the Indian biodiverse farmers a *competitive advantage* in the international food market.

The Food and Agriculture Ministry and the Commerce Ministry along with the Planning Commission and the Agriculture Prices and Costs Commission should seriously look at this win - win option. Because this will not only enable us to be competitive in the burgeoning international organic food market but will rejuvenate our rainfed agriculture, create enormous amount of livelihoods in rural areas but will also be a giant step forward in environmental regeneration.

Such markets at some stage can completely distort the production and consumption pattern of the rural biodiverse communities. This aspect of carefully designed markets which allow the local communities to first have the choice and option to consume the safe and diverse foods they produce has to be ensured very meticulously.

- The market should be organised in priority in the following levels
  - Household consumption to be the first priority of the production system
  - Local village markets to be the first recipients of the surplus produce.
  - Local mofussil and urban consumers to be the second targets
  - The export markets should be the last choice because they are fickle, faddy and unreliable. They may not be sustainable for these very reasons.

The concept of food miles which argues against the long range travel of food from the location where it is produced to the location where it is consumed, must be always borne in mind when such policies are framed and markets are targeted.

[illegible] actions on an [illegible] strategy need to be added [illegible] need to prioritise local [illegible]
[illegible] issues of [illegible] [DONE]
[illegible]
[illegible] period
[illegible] institutions and mechanisms
[illegible] resources

Not fully sustainability issues?

Convert to Strategy Action, etc format

S3. **Socio-political sensitisation of the scientific community**

CG Add moderation

Most of the programmes related to agricultural diversity at the national level are *purely conservationist* as they are either shaped by the international agencies or by the donor agencies for narrowly set objectives (not necessarily, all is not due to deliberate design, much is also due to a historically narrow focus of science, and many people are doing this because they genuinely believe it's the best way).[MOST OF THE TIME, NOT] However issues like equity, gender, food and nutritional security along with the cultural and ethical issues associated with the agricultural diversity are much broader socio political issues. To address them *socio-political sensitization of the scientific community* is very essential.

In order to achieve this, whenever the scientific community concerned in the conservation of bio-diversity such as the scientists of the NBPGR is trained in biodiversity issues, the training should be enlarged to consist of issues like gender, equity and national sovereignty. Such sensitised scientists must become an integral part of policy making and programme implementation process.

Not means to ensure this!

Within the scientific bodies like the ICAR, NBPGR and other national as well as state level scientific research institutions, there must be separate policy research and programme implementation departments that can go deeper into issues whicht are beyond science but have a bearing on policies of biodiversity.
(what about orientation programmes for agr. and other sectors?)

?

Action: The ICAR and CSIR to look in to the possibility.

S 4 Education on Domesticated biodiversity:

The education curriculum whether at the primary level or at the higher education level has very little focus on agrobiodiversity. Since the children and students who pass through all these levels are the repositories of all food related messages from the media it is very important that they develop a context within which they can analyse these messages.

History, Culture

We must understand that this has a very deep impact on their personal and community lives since food defines culture. In order to help them unravel these relationships and also understand the basic relationship between agrobiodiversity and related nutritional issues spceial courses are offered at various levels. Besides, their curriculum in subjects such as biological, agricultural and environmental sciences should contain sections on these themes. Existing courses need to be modified so as to include various values, benefits, equity, cultural and ethical aspects of agrobiodiversity. This will help create interest and respect on diversity in young minds.
Besides the curriculum attempts, innovative methods like *Biodiversity Contests* followed by Honeybee network, IIM Ahmedabad and *Contests on Kitchen Garden Diversity* conducted by *Hittalagida* Network, UAS Bangalore are worth examining.
(check if the exercise done by Erach Bharucha et.al. includes agrobiodiversity?)

Call Shomita

The UGC and ICAR New Delhi along with the State Education departments must jointly initiate the process of syllabus modification so as to include different aspects of agricultural biodiversity. *The NGOs working on agrobiodiversity must also be involved* in this process so as to sensitise the exercise in terms of equity, security, ethical and cultural dimensions of biodiversity.

A2 Initiate bio-diversity contest fund in each state agricultural and other universities to conduct contes on agrobiodiversity and give prizes regularly.

- Action: It will be a great boost to the understanding on biodiversity if all state governments take up this effort in association with the ecological NGOs. However Gujarat and Karnataka Government may be requested to take this immediately in association with Honeybee network and *Hittialgida* Network respectively in these two states.

- A part of such fund can be passed on the major media quiz contests, a format which attract huge audiences, especially from the younger generation. The fund can be used to provide attractive prizes to participants and in the process create a nationwide curiosity and interest in the subject.

Strategy

- It is important to ensure that the tastes of young people from the rural areas, which has been almost irretrievably damaged by the *status food* consciousness brought in by media propaganda, are altered in favour of sorghum and millets. Such a change will not only ensure better nutrition for them but also ensure future markets for coarse grains

Action

- ***In dryland areas, introduce sorghum and millets in the diet of the government and social welfare hostels and in the ICDS schemes.***

Full form

Strategy

- It is important to change the attitude of young people to make them value biodiversity. Especially in the rural children so that they are equipped to appreciate and take care of biodiversity in their agriculture.

Action

- ***Introduce in the school and college curriculum principles of biodiversity and teach young children its value. Influence the publishers of children's magazines and video games to bring in exciting stories, games and contests on biodiversity in their publications and products.***

* Scale
* time period
* actors/institutions and mechanisms
* financial resources

<u>In Situ conservation, Participatory Crop Improvement and Exchange</u>

The NBPGR has undertaken the largest germplasm exploration and insitu conservation in India. Based on the experience gained in this respect, an elaborate arrangement to encourage? in situ conservation in the field along with participatory crop improvment for direct exchange of plant materials among farmers temselves are very much required. Here again experiences of few NGOs like NAVA DANYA, New Delhi, dds, A D S and GREEN Foundation Bangalore are worth following.

Preparation of Action Plan for Insitu Conservation and Participatory Crop Improvement Action: NBPGR along with SAUs in each state with active involvement of NGOs and farm organisation to take initiativee.

A2. Develop Agri diversity catalogue for the crops to be conserved insitu along with their special features, consumptive use values and other non market benefits in different regions. (characterisation?)

Action by NBPGR along with SAUs/ State Agriculture and Horticulture Depts. in each state with active involvement of NGOs

A3. Training and Orientation to farmers, extension agents and NGOs on Participatory Crop Improvement and Breeding techniques. N.O. ?

Action: NBPGR to prepare the outline, ICAR to provide the fund and SAUs/ State Agriculture and Horticulture Departments to implement

A.4. S.6. Integration of dom. bd. issues into forest, environment and bd. concerns:

See AK's action point on this.

Agri diversity and the wild relatives of crops have some complimentary effects on forestry and its bio-diversity. This may be in terms of soil fertility improvements through legume crop or no or less use of chemicals and consequently less/nil harmful effects on forestry and surrounding eco-system and so on. The mutually beneficial relationship between forestry and an important form of domesticated bio diversity: the honey bees is very well established. The harmony and proximity are much more discernable if agro-ecosystem and its diversity are taken in to consideration.

Elaborate)

Other actions:

1. **Repatriation of farmers varieties from NBPGR and other gene banks to farmers, for in situ propagation**
2. **Encouraging integrated systems of crops-livestock-fish-forests-fodder**
3. **Integrating agrobiodiversity issues into EIAs**

iv) **Strategies and actions for inter-sectoral coordination and integration (at national, state, district, and village levels)** [Ashish Kothari: P. V. Satheesh]

v) **Strategies and actions for policy and legal changes and measures (strengthening implementation of existing legal/policy measures, amendments and shifts in existing laws/policies, reconciling various laws/policies, and new legal/policy measures)** [Shruti Devi]

vi) **Strategies and actions to generate additional financial resources (macro-economic and fiscal measures, generating new resources)** [MoEF?: Virinder Sharma?: Sudarshan Rodriguez? Deepa Kapoor?]

vii) **Strategies and actions related to technology (minimising destructive impacts of conventional technologies, facilitating use of ecologically sensitive technologies, blending 'traditional' and 'modern' technologies)** [Vibha Ahuja]