Natural Resources Systems Programme

Workshop

Common Pool Resources —
Developing management strategies that can benefit the poor

2-3 October 2001

in collaboration with the
Centre for Ecology, Law and Policy,
University of York

Venue

Heslington Campus,
University of York

Contents

Annexes

Section 1: About this document

This document provides important materials for NRSP's Workshop on Common Pool Resources (CPRs). **Please could you find time to look through the document prior to the workshop**.

The programme for the Workshop is in **Section 2** and you may find it useful to refresh your memory of the programme structure before studying this document.

An overview of the posters to be displayed at the Workshop is provided in **Section 3**.

There are 4 **annexes**.

Copies of individual posters are provided in **Annexes A and B**. Those in **Annex A** will each be reviewed by a Working Group in Session 2 of the Workshop. The order of the posters corresponds to the listing provided in Section 3, poster references P01 to P10.

The posters in **Annex B** are additional resource materials for the workshop. They will be displayed in both the lecture room of Derwent College and the lobby area of the Environment Department, for browsing during lunch and refreshment breaks.

Annex C contains five case studies. On Day 2 of the Workshop, each of the eight Working Groups will work on an individual case study drawn from those in Annex C. The information provided on CPRs will be the basis for the development of the main features of research on pro-poor CPR management strategies that is needed in the specified situation of each case study, (broadly defined in terms of production system and geographic location).

As background material for the workshop, **Annex D** reports on NRSP's past and current CPR research.

The report is in two parts. **Annex D-i** provides an overview of the research. **Annex D-ii** provides a review of individual projects. The review as a whole was undertaken within the framework of certain main fields of enquiry. These fields were defined in the context of DFID's policy priorities and guiding principles, and NRSP's research strategy. Key features of the structure of this framework are evident in the sub-headings of the overview report and the individual project reports.

Whilst the management team realises that all workshop participants have tremendous demands on their time, we do hope that you will be able to make time for the preparatory reading. This will assist us all to achieve the workshop's aims and mutually take forward our thinking on how natural resources systems research can contribute to the further development of pro-poor CPR management strategies.

Section 2: Workshop draft Programme

Natural Resources Systems Programme

Common Pool Resources – Developing management strategies that can benefit the poor

Workshop: 2-3 October 2001, Venue – Heslington Campus, University of York

Aims of the Workshop

The workshop's aims are:

1. To facilitate the development ,amongst NRSP's constituents, of a better understanding of:
   (a) The outputs that NRSP is contracted to achieve for CPR management;
   (b) The current status of NRSP's CPR research, in terms of scope and achievements of past projects, progress in current projects and forward plans; and
   (c) How these are positioned in respect of wider considerations of CPR management and poverty.
2. To carry forward the expert knowledge of CPRs assembled through the workshop, to address strategic issues in CPR management especially with respect to the poor.
3. To develop indicative research plans that define the main features of research for CPR management strategies that aim to benefit specific groups of the poor.

Activities

The workshop has 4 main parts:

The pre-workshop phase. By the target date of 24 September 2001, participants should receive key background materials for the workshop: an album of posters for review in Session 2 of Day 1 plus others that are additional resource materials; a dossier of case studies that will be the basis of the Working Group sessions of Day 2; and an overview report of past and current CPR-related projects in the NRSP portfolio.

The plenary introduction session on (Session 1) on Day 1. There will be two presentations, one on NRSP's CPR research and one on wider considerations of CPR management and poverty. Interdisciplinary groups formed in the lecture hall of the plenary session will be asked to debate briefly on the content of the two presentations. Key findings will be summarised and taken forward into Session 2.

A review of some CPR research through a poster session (Day 1, Session 2). Participants will be requested to form inter-disciplinary groups and undertake reviews of posters on CPR research. The posters include NRSP's CPR projects and the research of others on CPRs. The reviews will use a framework of some key questions, some that NRSP will put forward and some that will be drawn from Session 1 discussions. Each working group will report their findings. The aim will be to draw out the main achievements, findings, gaps, problem areas and positive experiences of each project. The relative contribution of different areas of research specialisation can also be considered, broadly covering economic, socio-cultural and biophysical fields with governance and institutions woven in.

Interdisciplinary working group meetings on case studies (Day 2, Sessions 3 and 4). The working groups will aim to develop indicative designs for research on CPR management strategies for given CPRs in the production systems and target countries that NRSP covers. After presentations of the working group findings, and cross cutting assessments of the research designs, it is hoped that the main features of research for CPR management strategies that aim to benefit specific groups of the poor will be defined.

The schedule for the workshop follows.

Time	Activity	Person
October 1 pm:	Registration. Setting up of posters in Environment Dept. and D16	C Quinn, H Mackay
October 2:	**Workshop Day 1**	
0900-1000	Registration. Setting up of posters in Environment Dept. & D16	C Quinn, H Mackay
1000-1300	**Session 1 – Introduction (Plenary in D16, Derwent College)** **Chairperson**: Kate Young **Rapporteurs**: JR Beeching and CC Mees	
1000-1005	Welcome	M Mortimore
1005-1035	NRSP's CPR research including SWOT of progress to date	FM Quin
1035-1120	Keynote address on CPRs	R Behnke
1120-1150	**Refreshments. Derwent College**	
1150-1235	Interdisciplinary buzz group discussion on NRSP and keynote speech (15 mins). Brief reporting of main findings (30 mins)	Facilitator (J Hancock) & buzz group spokespersons
1235-1300	Poster tactics: poster layout, use of a framework of some key questions including those arising from the morning's presentations and buzz group findings	J Lovett
1300-1430	**Lunch. Derwent College** Some free time to browse posters in Derwent College	
1430-1800	**Session 2 – Poster review by inter-disciplinary Working Groups (Environment Department)** **Chairperson**: FM Quin **Rapporteurs**: E Aberra and R Grahn	
1430-1515	Working Group inspection of posters and review against the guideline questions (8 Working Groups)	Poster presenters and facilitators
1515-1530	***Walk over to D16, Derwent College (10 min walk actually)***	
1530-1735	***Working Group reports on posters (5 mins per report, 15 mins discussion)***	
1530-1600	Three WG reports (theme 1 – R7887 and R7857; theme 3 – comparative pair, R7973 and R7868)	WG nominees
1600-1630	**Refreshments (Derwent College)**	
1630-1720	Five WG reports (theme 2 – R7304 and R7559; theme 4 – comparative pair, PUI and parkland micro-catchments; theme 5 – institutional arrangements for CPR management – experiences in Latin America	WG nominees
1720-1735	Comments on WG findings – key elements to take forward to Day 2	Chairperson
1735-1755	Tasks for Day 2 – Interdisciplinary Working Groups, use case studies for specific production systems to elaborate the main features of research for CPR management strategies that aim to benefit specific groups of the poor	Chairperson
1755-1800	Chairperson's concluding remarks on Session 2	

October 2:	**Workshop Day 1 – evening**	
1800-1845	**Environment Department**	
1800-1845	Refreshments (non-alcoholic). Posters revisited if wished	Poster presenters
1845 sharp	Depart for workshop dinner	
1905-1930	Walkabout in York city centre, including a visit to York Minster for those that wish	
1930-2015	**Pre-dinner drinks served at St William's College**	
2015-2300	**Workshop dinner at St William's College**	
2300	Return to University of York campus	

Time	**Activity**	**Person**
October 3:	**Workshop Day 2**	
0900-1230	**Session 3 – Working Group session on Case Studies (Environment Dept.)**	
0900-1100	Working Groups work on their respective case studies	Facilitators
1100-1130	**Refreshments available** [Note: not a break, best if taken in case study rooms]	
1130-1230	Working Groups work on their respective case studies	Facilitators
1230-1400	**Lunch. Derwent College** Meeting of persons to report on WG session and facilitators to assess similarities and differences in case study outcomes	
1400-1700	**Session 4 – Working Group reports (Plenary, D16 Derwent College)** ***10 mins per presentation split in 3 sessions by production system (SA, FA, LW)*** ***WG reports will present:*** The main features of research for CPR management strategies that can benefit specific groups of the poor ***Rapporteurs throughout:*** E Aberra and R Grahn	
	Semi-arid production system	
	Chairperson: MKV Carr — **Facilitator**: MA Stocking	
1400-1430	Case studies for SA-India [2] and SA-Tanzania [1]	3 WG nominees
1430-1445	Questions for clarification. Main strengths, weaknesses etc	Facilitator
	Forest agriculture interface	
	Chairperson: G Yaron — **Facilitator**: JL Gaunt	
1445-1505	Case studies for FA-West Africa [2]	2 WG nominees
1505-1515	Questions for clarification. Main strengths, weaknesses etc	Facilitator
1515-1530	**Quick refreshment break (Derwent College)** Brief synthesis session for WG presenters thus far, and other resource persons	
	Land water interface	
	Chairperson: CC Mees — **Facilitator**: J Hancock	
1530-1600	Case studies for LW-South Asia floodplains [2] and Caribbean [1]	3 WG nominees
1600-1615	Questions for clarification. Main strengths, weaknesses etc	Facilitator
1615-1630	General discussion, **chaired by** J Lovett	Facilitators
1630-1700	**Session 5 – Wrap up**	
	Chairperson: Dr JS Samra — **Rapporteur**: H Mackay	
1630-1645	Summary of main findings	R Behnke
1645-1700	Conclusion	M Mortimore

Section 3 Workshop Poster Session Day 1, Session 2

Theme 1: Semi-arid production system – Understanding the relative dependence of poor communities on wildlife, livestock and crops and their interactions, as a means to identify opportunities for improving livelihood strategies based on the sustainable use of CPRs

Room 1 – Poster 01: Findings for theme 1 in India (NRSP project SA-R7877)

Room 2 – Poster 02: Findings for theme 1 in Tanzania (NRSP project SA-R7857)

The theme 1 projects were wide ranging assignments. Key areas covered in the posters are:

- An overview of the main CPR features in each country including the main ways in which poor people depend on access to them for their livelihoods
- A summary of the main opportunities identified for improving livelihoods of specific groups of the poor, and
- An explanation of how these opportunities were identified from this research.

Theme 2: Evaluating management options for improving livelihoods that depend on CPRs in specific target sites

Room 3 – Poster 03: Strengthening community capacity for management of communal water and other resources, and its contribution to poverty alleviation (NRSP project SA-R7304)

Room 4 – Poster 04: Use of participatory processes in natural resource management – opportunities for improving livelihoods through improved coral reef management (NRSP project LW-R7559)

These presentations on NRSP projects focus on the transaction of changes in CPR management with specific communities and the development of indicators for assessing the effects of these changes on livelihoods and the natural resource base. Both the costs of, and benefits derived from, CPR management arrangements are considered.

Theme 3: Enabling pro-poor policy decision-making for CPR management regimes – ways to achieve effective communication with policy actors

Room 5 – Poster pair: Posters 05 and 06

Poster 05: Developing and communicating a common framework for the analysis of CPR issues (NRSP project SA-R7973)

Poster 06: Using simulation modelling to identify optimal seasonal floodplain management strategies for multiple-use floodplain habitats and communicating the outputs to policy makers (NRSP project LW-R7868)

Both projects are intended to build towards the development and promotion of integrated sustainable resource management strategies that can benefit the poor. Each project aims to deliver analytical tools that can allow resource managers at various levels to make informed decisions on management regimes. The need for effective consultation with key stakeholders and policy actors is integral to both projects.

Theme 4: Non-CPR and CPR land management regimes and their interactions, in micro-catchments in peri-urban and parkland environments

Room 6 – Poster pair: Posters 07 and 08

Poster 07: Impacts of tenure regimes on the degradation of the Save River catchment area in Zimbabwe (presenter: C Marunda, DPhil student, University of York)

Poster 08: Framework for sustainable management of CPRs at the watershed level in Kumasi peri-urban area in Ghana (presenter: Dr K Nsiah-Gyabaah, Sunyani Polytechnic, Ghana)

Water resources are central to these posters. In both, the effects of human activity, including types of land use, on water resources are described.

For the PUI, the way in which improvements in water resource management were introduced to PUI communities is explained. **For the parklands**, the understanding of the effects of tenure regimes on hydrology will be used to predict the outcomes of changes in these regimes and to recommend policy options.

Theme 5: Institutional arrangements for CPR management

Room 7 – Poster 09: Co-management and cooperation in CPR's: heterogeneity, government incentives and forest conservation in La Sierra Tarahumara, Mexico (presenter: V Perez-Cirera, DPhil student, University of York)

Room 8 – Poster 10: Impossible but necessary: an institutional model for landscape management (presenter: Dr D Reece, UEA/ODG)

These posters explore institutional dynamics and the incentives for various actors to participate and maintain co-management arrangements. One poster debates the appropriateness of Game Theory for assessing interactions between CPR stakeholders.

ADDITIONAL POSTERS

A group of posters will be displayed on **participatory methodologies** that are relevant to CPR management, and can enable the poor to have a voice in decision-making on CPR management strategies.

These are:

Trade off analysis for participatory coastal-zone decision-making (NRSP projects LW-R6919 & R7408, K Brown, DEV/UEA, E Tompkins and WN Adger, CSERGE/UEA)

Methods for consensus building for management of common pool resources (NRSP project LW-R7562, JFF Barr, University of Newcastle and Anisul Islam, CNRS)

Participatory micro-action planning: a tool for improving FUG decision-making and forest management (NRSP project FA-R7889, O Springate-Baginski, University of Leeds)

Land degradation – field assessment from the perspective of the land user (NRSP project HS-R6525 & PD097, MA Stocking and Niamh Murnaghan, ODG-DEV/UEA)

Two additional posters on **other CPR research topics** are presented:

- Participation in CPR management and biodiversity conservation. The case of the Chobe enclave, Botswana (CK Kerapeletswe, Dphil student, University of York)
- Spatial interactions in communal forest plantations (JT Montero, University of York)

A poster on 'People, land management and environmental change (PLEC)' is also presented. This is a **global project on agrodiversity** implemented jointly by UNEP, the Global Environment Facility and the United Nations University.

Annex A

Workshop Session 2

Posters' Review

(for details refer to main text, Section 2)

Posters are not included in this document

Annex B

Additional Posters

- **Participatory methods**
- **Other CPR topics**

Posters are not included in this document

Annex C

CASE STUDIES

(for Workshop day 2)

Semi-arid

- Case Study 1: ILSA
- Case Study 2: EASA

Land Water Interface

- Case Study 3: FLOSA
- Case Study 4: HICA

Forest Agriculture Interface

- Case Study 5: WAFAZ

Case Study 1

A Landlocked Semi-Arid Area in India

ILSA

This outline is intended to 'set the scene' for Ilsa, the fictional name for an existing landlocked semi-arid region in India. The information is not inclusive of all aspects of CPR management in Ilsa and only provides important points that are pertinent to the development of CPR management strategies that can benefit the poor.

1. Key Features of CPRs in Ilsa

Common pool resources (CPRs) such as pasturelands, forests, water and wastelands contribute significantly to livelihoods in India.

The semi-arid states of the country have been particularly affected by a decline in both the quantity and quality of CPRs. This has significant implications for households that depend on these resources for their livelihoods. Ilsa is a semi-arid state located in south-east India where CPRs play an important role in the lives of the inhabitants. With some 75 million inhabitants, Ilsa is India's fifth largest state covering an area of 275,000 km^2.

Three main types of CPRs are found in Ilsa- ***forest resources***, ***water resources*** and the ***village common lands.***

1) Forest Resources

- ***Types of Forest Resources*** (a) **Reserve** and (b) **Village forests** with the former being under the vigilance and control of the state Forest Department and the latter being more accessible to the community.
- ***Uses:***
  - Timber varieties are used for house construction, agricultural implements and other industrial purposes.
  - Non-timber forest products are used for domestic consumption and market sale.
- ***Status of Resources Prior to 1970*:**
  - Forest resources were mainly used for subsistence rather than for commercial purposes.
  - The forest was dense and spread over wide areas. The quality and quantity of timber and non-timber species and wild life was varied and rich in biodiversity.
  - Forest resources contributed significantly to the livelihoods of the poor and marginalized communities.
- ***Current Status of Resource (2001)*:**
  - Increased commercial exploitation leading to severe deterioration of quality and quantity of resources.
  - Loss of fauna and flora, reducing biodiversity.
  - Excessive illegal and legal felling of trees and use of non-timber resources.
  - Severe deterioration in village forest resources which are more readily accessible to the community than reserve forest resources.

2) Water Resources

- ***Types of water resources*** Tanks, ponds, dug wells, streams, rivers and rivulets.
- ***Uses***
  - Domestic consumption, irrigated agriculture and watering livestock.
- ***Status of Resources Prior to 1970*:**
  - High availability of water and easy access to resources by local people.
  - Traditional institutional structures used to manage resources and maintenance of resources undertaken by local people.
  - No significant pressure on water resources from human or livestock consumption.
- ***Current Status of Resources (2001):***
  - Increased private ownership of water resources such as bore holes and dug wells in private fields.
  - Over-exploitation of water resources and depletion of groundwater tables.
  - Tanks and ponds have become depleted or dysfunctional because of siltation, breaches, and encroachment.
  - Recent changes to state irrigation policy making the establishment of water user associations compulsory has improved situation for some tanks.

3) Village Common Lands (VCLs)

- ***Types of Resources*** Community grazing pastures, wastelands and common lands.

- ***Uses*** Livestock grazing, firewood collection, dumping wastes, thrashing, drainage channels, recreational and religious functions and burial grounds.
- ***Status of VCLs prior to 1970***
- Informal and formal institutional arrangements were used to manage resources.
- All villages had substantial portions of common lands.
- Common pastures had high productivity and different grass species.
- Trees were used as firewood.
- **Current status of VCLs (2001):**
- Rapid decline in quality and quantity of VCLs. Common lands have declined from 60% to 20 % of land area in Ilsa.
- Changing vegetation composition and reduced numbers of grass species are evidence of a decline in the quality of grazing lands and the loss of vegetation means VCLs are unable to meet grazing requirements of certain animals.

2. Local Governance Arrangements and Policy Environment

- ***19th Century*** The Rytwari system was introduced by the Madras government granting legal ownership of all common lands to the state making land an exchangeable and tradable resource.
- ***British Colonial Administration*** all forest-land under state ownership. Post-independence government maintained colonial declarations and retained ownership of resources.
- ***1990s*** Change in government attitude towards the management of CPRs. State became more open to participation and pursued decentralisation of CPR management.
- As a result the following NR management institutions have been established:
  a) ***Joint Forest Management Programmes*** involve co-management between the state (Forest Department) and communities (user groups). The government and community share revenues from sale of forest resources and members of the community are granted usufruct rights over some forest resources.
  b) ***Local community ownership and control of CPRs*** Some resources are owned and controlled by the community. For example, Community Forest Management involves a community using and protecting a specific forest area. It often lacks legal recognition however, creating difficulties of enforcement. Several different types of arrangements exist with varying degrees of village-level empowerment and participation.
- Post-independence efforts at **land reform** are conventionally held to have failed to get land to the poor apart from some notable exceptions. In most cases village lands were redistributed rather than land from wealthier individuals. Land reforms are a major focus of the Government of India's Ninth Plan (1997-2002).
- ***1997 Establishment of Sector Specific*** **Community-based Organisations (*CBOs)*** These are responsible for specific sectors defined by the government of Ilsa. The aim is to eliminate the contracting programme and involve village communities directly. CBOs relevant to CPR management include Joint Forest Management committees, Water User Associations for irrigation works, and Watershed Development committees.

3. Factors influencing change in CPRs in Ilsa

The following factors have had a direct or indirect bearing on the decline of CPRs in Ilsa:

(1) ***Demographic Pressures*** Between 1991 and 2001 population increased by 14% in Ilsa.
(2) ***Failure of Public Policies and Programmes***
- Inappropriate land tenure laws, forest policies and wasteland development programmes and weaknesses in their enforcement.

- The introduction of the Panchayati Raj system which has failed to fully take control of the management of CPRs.
- Private commercial exploitation of forest resources authorised by the government, as well as privatisation of village common lands.
- Land Ceiling Act led to distribution of land among the poor but failed to address the core issue. The redistributed land was taken from village common lands and rather than from richer farmers. In addition, local self-government and electoral politics have undermined traditional management systems.

(3) ***Market Forces*** Industrialisation and commercialisation have increased market demand for both timber and non-timber forest products, leading to over-exploitation of forest resources.

(4) ***Environmental Factors*** Drought and other natural calamities have further contributed to the decline of CPRs.

(5) ***Technological Changes*** The construction of bore wells, increased availability of electricity and new transportation modes have facilitated the exploitation of CPRs at previously unprecedented levels.

(6) ***Agricultural Intensification*** Cultivation of more dryland areas has increased the need for irrigation water and has led to the decline of ground water resources.

4. Constraints to Access and Use of Resources: Concerns of the Poor

Poorer people in Ilsa are highly dependent on CPRs, unlike wealthier farmers. They depend on CPRs for both their domestic consumption and market sale. Numerous constraints exist to the access and use of these resources by the poorest, including:

- ***Shift from common property systems to open access systems in village common lands*** This has meant that there is no sense of communal ownership of resources resulting in a ' tragedy of the commons' scenario.
- ***Increased privatisation*** Private ownership of CPRs has lead to the exclusion of non-owners from access to and use of resources. Privatisation has taken place at three levels (1) Ownership by community groups (2) Ownership by private individuals (3) Ownership by private companies. Privatisation was intended to promote better management of resources but has failed to address the issue of access to CPRs for the poor.
- ***Decline of traditional resource management institutions*** Reduced accountability over use of resources encouraging misuse of CPRs.
- ***Increased commercial use of forest resources*** has been authorised by the government, limiting access to resources by local people and contributing to a wider decline in the quality and quantity of forest resources since 1970.
- ***Decline in the number of water points available for cattle*** Due to lack of maintenance, increased private ownership of water resources and severe depletion of water resources through increased bore holes, access to and use of water for livestock has become limited.
- ***Decline in the availability of water for domestic use and irrigation***
- ***Decline in the quality of grazing resources and number of grass species***.

Policy and Institutional Constraints to CPR Management

- ***Failed government land redistribution policy*** Government distribution of land aiming to address the issue of equity has been ineffective because the state redistributed the village common lands, often unsuitable for farming, instead of surplus land owned by a few individuals.
- ***Transfer of rights over forest resources to Forest Department*** After the British colonial rulers set up a Forest Department, forests ceased to be common resources.

- ***Creation of 'user communities'*** These groups have been granted ownership and use rights over CPRs. Although members may have access to CPRs, non-members are excluded.
- ***Inadequacy of new resource management institutions*** These limit access to resources to certain groups while excluding others, and are insensitive to the needs of multiple users.
- ***Negative attitudes of forest bureaucracy*** due to history of conflict, dilution of state authority, increased accountability and reduced scope for corruption, and alliances with local elite.
- ***Other conflicting/contradictory state policies and programmes***
- ***Compartmentalisation of co-management schemes according to natural resources*** leads to duplication of effort.

5. Impact of Constraints on Livelihoods and Assets

In India as a whole, the contribution of CPRs to the incomes of the rural poor is estimated to be about US $5 billion a year. The decline in the availability and quality of CPRs has had serious implications on the livelihoods and assets of the poor rural households. Impacts include:

Immediate Implications

1) Shortage of water for domestic consumption, irrigated agriculture and livestock.
2) Reduced availability of adequate grazing resources for maintenance of livestock: grazing lands are no longer able to provide marginal level of subsistence to the dependent livestock.
3) Reduced availability of timber and non-timber forest resources for domestic use and market sale.
4) Reduced area of village common lands available for recreational and religious purposes.
5) Reduced opportunities to supplement income from sale of marketable products from CPRs (e.g. forest resources).

Broader Implications

1) ***Diversification of Livelihood Strategies*** Declining CPRs contribute less to the livelihood of the poor forcing them to seek alternative means to eke out a living. In particular, tribal communities, who were once primarily dependent on forest resources, have been forced to search for other sources of income.
2) ***Continued Over-exploitation of Resources*** Over-exploitation of CPRs leads to further exploitation as households become desperate to make use of what is available.
3) ***Lack of Food Security*** Decline of CPRs (for example, the depletion of ground water levels) has reduced productivity of agriculture and other production systems. Forests provide less fruit and other products previously used for subsistence.
4) ***Increased Destitution and Poverty*** The poor are losing a major source of income with the decline in CPRs aggravating their poverty. Many people are also becoming increasingly vulnerable to impoverishment.

6. Perceived Natural Resource Management Issues

- ***Deforestation of reserve and village forest resources*** is taking place, mainly as a result of legal and illegal felling, increased impoverishment and consequent over-exploitation. The weakening of traditional resource management institutions, increased market demand for timber and non-timber products, and increases in population resulting in pressure on forest resources, and clearing for agricultural purposes are also all taking place.

- ***Loss of biodiversity of forest resources*** Forest resources are not allowed to regenerate causing biodiversity loss.
- ***Lowering of ground water table*** Construction of bore holes using tractors has allowed excessive use of water for irrigation and domestic consumption. Increased population size has aggravated the situation.
- ***Siltation of tanks and ponds*** Decline of traditional water management institutions has led to the mismanagement of these resources. Poor maintenance of tanks and ponds leads to siltation eventually making them unusable.
- ***Loss of palatable grasses*** Pressures of overgrazing have reduced the productivity of grazing lands and led to the loss of certain grass species.
- ***Loss of soil fertility and accelerated rate of soil erosion*** and reduced water-holding capacity of soil.

Key Constraints to CPR Management

- ***Policy*** Post-independence policies have encouraged privatisation. Recent policies aimed at encouraging the participation of communities still encourage privatisation. Privatisation does not address the question of equity.
- ***Attitudes*** A shift from a considering the interests of the community to one of 'maximising ones own benefits' causes over-exploitation. Poorer households with limited access to resources are likely to further over-exploit resources. This is compounded by the indifference of richer individuals who depend on their own private resources.
- ***Resources*** There is a lack of resources to invest in the management of CPRs. Existing government allocation of funds is limited, time-bound and dependant on external funding. Question of long term self-sufficiency of resource management institutions currently being funded by the government is dubious. There is little appetite for the reversal of the encroachments that have led to the effective privatisation of some CPRs.
- ***Institutional Aspects*** Erosion of traditional mechanisms and ineffectiveness of new arrangements.

7. Target Groups

In Ilsa, poorer groups are often more dependent on CPRs and have less access to them than other groups. However, it is to be noted that the poor are a heterogeneous group. Considerable conflicts and rivalries take place between sub-caste groups and gender-based inequalities are widespread.

- ***Tribal communities dependent on forest resources*** Subsistence depends primarily on forest resources but their access to reserve and village forest resources is becoming increasingly limited. Economically marginal tribal households obtain 35-36 % of their income from forest products.
- ***Women seeking access to fuelwood*** Women are the primary providers of fuel in the household and must now travel longer distances to collect fuelwood. They often get into skirmishes with government-employed workers or other locally-appointed care-takers of forest resources. In Ilsa, the poor obtain 84% of their fuel supplies from CPRs.
- ***Women who depend on minor forest produce*** In most households, women are responsible for the collection of non-timber forest produce. Income from the sale of non-timber forest products in Ilsa constitutes anywhere from 10-55% of total household income
- ***Women in search of access to cleaner water*** Women are responsible for supplying water for household use. Water-availability has declined, as has the quality of water, placing household health at risk.
- ***Small scale, poor and marginal farmers seeking access to water tanks and ponds*** The poor and marginalised often cultivate the drier less fertile areas and are

heavily dependent on irrigation. In order to ensure productivity, these farmers require regular access to irrigation.

- ***Groups who depend on CPR-generated employment*** The poor are employed for one-third of the year to collect products from CPRs. For example, members of certain caste groups work as tank-watchers to make a living. Water tanks are being sealed off, limiting employment opportunities related to these resources.
- ***Farmers seeking water for their livestock*** Water is also important for farmers who keep livestock. With increased private ownership of resources and a decline in those that are still available, water for livestock is becoming more and more scarce.
- ***Landless labourers*** Those without any land depend on employment generated by CPRs but such opportunities have been reduced.

8. Key Interactions

- ***Multiple Stakeholders*** CPRs are used by multiple persons/groups for multiple purposes often creating antagonistic relations between different groups. These conflictual relations take place within and are influenced by a traditionally divided social environment.
- ***Local Arrangement for Mutual Use of Resources*** Arrangements are sometimes made at the local level between different user groups allowing each to have access to the resources of the other.
- ***Increased Competition over Resources*** Decline in the availability of resources within the context of increased population growth has led to disputes between different groups over the use and ownership of resources. For instance, there have been conflicts between upstream and downstream stakeholders in water development projects along rivers.
- ***Owners of Surplus Land*** Government land redistribution policy failed to redistribute surplus land and instead redistributed parts of village common lands.
- ***Interaction between local community and Forest Department*** Antagonistic and distrustful relationship between Forest Department and local people.

9. Improving CPR Management Strategies: Opportunities and Constraints

Opportunities

- ***Strengthening collaboration between Ilsa government and villages for better co-management of resources*** Some of the problems with existing arrangements include the following:
  - ***Lack of real devolution of power to Local Communities*** Government continues to control CPRs.
  - ***Decentralisation in CPR management is not inclusive of all types of CPRs*** Co-management is considered for forestry and irrigation water only because the success of managing these resources is related to and dependant upon other resources e.g. grazing resources.
  - ***Community participation limited to execution and not planning***
- ***Strengthening capacity of local CPR management institutions*** Although local mechanisms for resource control have managed to reduce degradation of CPRs on occasion, many are faced with the following problems:
  - ***Need for legal recognition*** Many local-level CPR management mechanisms lack legal recognition, reducing their capacity to enforce their rules and regulations and hence their effectiveness.
  - ***Need for financial resources to facilitate their activities***.
- ***Ensuring CPR management mechanisms are sensitive to the needs of the poor.*** Greater representation of the needs of poor and marginalised groups is needed.
- ***Further integration of management institutions for different CPRs*** is needed to avoid duplication of efforts.

Constraints

- ***Antagonistic relations between villagers and the government of Ilsa*** are already leading to mistrust. Changes in CPR management strategies should be cautious so as not to exacerbate already sensitive relations between the two.
- ***Transaction costs for the poor*** New and Improved CPR management initiatives are likely to involve input from the poor in terms of time and in some cases finance. The poor have limited time and finance to spare for activities other than those from which they make a living.
- ***Corruption*** is widespread among employees of the state and local villagers.
- ***Political Interference*** There is bound to be interference from the concerned offices of the government of Ilsa.
- ***Caste system*** Access to and use of resources is dictated by caste denominations and there have been instances of caste based conflict with regards to access to and use of resources.
- ***Resource-based conflict*** Instances of resource-based conflict have occurred, particularly in situations where there are multiple stakeholders and users of CPRs.
- ***Cultural and religious values attached to CPRs*** may have implications for improved management strategies.
- ***Population pressures*** Ilsa already has a high population (over 75 million), which is expected to rise in the future. This has serious implications for the management of CPRs.

Case Study 2

An Eastern Africa Semi-Arid Area

EASA

The following sets the scene for an existing semi-arid production system in an eastern African country, which we have renamed Easa. It is not intended to cover all aspects of CPR management in the system, but to provide information that is salient to the development of CPR management strategies to benefit the poor.

1. Key Features of CPRs in Easa

- **Most of Easa is semi-arid** (80% or some 830,000 km^2 according to the DFID definition). The use of a broad definition of semi-arid is appropriate because areas with different ecologies are linked in Easa. For example, people and livestock move between different ecological zones depending on the level of drought, and forest-clad mountains with high rainfall provide sources of water within the semi-arid area. These factors favour an inclusive definition of semi-arid when discussing CPR management;
- **Population of 33.5 million in 2000,** average per capita GDP of US $200. Semi-arid areas contain half of the cattle population and one fifth of the human population of Easa and the country has the third-largest cattle population in Africa. Population densities are generally low and areas of relatively high population density are located around the fringes of the country, along the coast and around a large lake. The rural population of Easa is mobile with high levels of movement of pastoralists and of migration to towns;
- **Rural poverty** was estimated at 60% in 1991/2, and the incidence of food poverty at one third using local measures;
- **Local economies** within the semi-arid area have remained mainly subsistence-oriented and predominantly dependent on agro-pastoralism. These overlap with areas of transhumant pastoralism towards the drier fringe, and with rain-fed agriculture towards the wetter, more settled edge;
- **The Village Council** is the basic unit of local governance with 25 members. These are elected by all members of the village every five years. The Village Council has a quota for the representation of women. It is accountable to the district government which is in turn linked to the central government through the Ministry of Regional Administration and Local Government.

Types of CPR in Easa

Multiple uses of water and land are the major CPRs in Easa. Particularly crucial are pastoral uses of land within agrarian, agro-pastoral and pure pastoral communities in the semi-arid areas. CPRs may lie on village lands or public lands. Public lands, other than those within village boundaries, are theoretically regulated by state agencies. Many CPRs lie on public land defined as national parks or forest catchment reserves which are also state-controlled. In practice, adjacent settled as well as mobile communities are invariably likely to have claims over lands that appear to the state to be unoccupied.

1. Pastoral uses of land

- **Low rainfall.** A large part of Easa's northern plateau receives an average of less than 800 mm of rain. Nevertheless some crop production does take place, but savannah grasslands, the common vegetation of the area can only support agro-pastoral and pastoral production systems. Transhumant pastoralism is practised in some areas;
- **Protected areas.** Large amounts of the estimated 44,000,000 ha of rough grazing land is designated as protected (either for wildlife conservation or as forest catchments) and cannot therefore be inhabited or grazed. Conservation and commercial interventions have also interrupted ancient transhumance routes leading to persistent conflict.

2. Cultivation

- **Crop production and animal husbandry** are practised by the majority of the rural population for subsistence and marketing. So for small-scale farmers access to good quality land and water for irrigation are vital. Average household land-holding is less than 1.5 ha. In semi-arid areas, no good land remains to be allocated under customary procedures;
- **Large-scale agricultural production** is thought to occupy 1-1.5 % of land area. However it takes some of the best and highly populated land on the edges of the plateau further increasing pressure on resources. The alienation of large tracts of land

to mining companies has also taken place. Gemstones, gold and diamonds are all present in significant quantities and exports have risen sharply from the early 1990s.

3. Water

- **Forest resources.** 10 million ha of forest are protected as water catchment areas;
- **Irrigation.** Some villages have their own irrigation schemes and manage the schemes through water committees. During dry months and severe droughts, charging for access to water resources provides income for the villagers but may cause hardship to other users;
- **Water resources,** needed by multiple users for livestock, irrigated farming and human consumption, are contested in many villages in semi-arid areas.

4. Forest resources

- **Commercial uses.** Timber is an important export. Secondary exports include wattle extract, wattle bark, beeswax honey, palm nuts and gum arabic.
- **Subsistence uses.** Construction materials, traditional medicines, wild fruits, honey and crucially firewood and charcoal (92% of energy consumption);
- **Reserves.** 34% of the land area of Easa is forested. Of this around 12.5 million ha are gazetted as reserves and therefore fall within government control;
- **National parks.** Another 2 million ha of forest lie within the boundaries of national parks but the remaining 19 million ha would fall within village lands or land accessible to villages.

5. Wildlife resources

- **Protected areas for conservation.** Important for wildlife and for large mammals including black rhino and elephants. Game viewing and hunting is crucial to the national economy;
- **Subsistence hunting.** A few small traditional communities depend on hunting and gathering but subsistence hunting of wildlife by other communities is fairly restricted and breaches result in severe sanctions. 20% of the land area of Easa, most of which is in the semi-arid area, cannot legally be settled because of its protected status.

2. Local Governance Arrangements and Policy Environment

- **Colonial and socialist administration.** Land was nationalised under British rule in 1923. The Governor had power to grant rights of occupancy, including to 'natives' using or occupying the land in accordance with 'native law and custom.' Nevertheless the colonial and the subsequent socialist state retained power and control over customary lands because customary laws were recognised but not secured in law;
- **'Villagisation.'** Under the socialist regime, the forcible relocation of up to 9 million rural people took place to facilitate economic development. While some devolution of power to the regions took place following independence, during the 1970s and 1980s control over natural resources was recentralised;
- **The 'village'** was seen as a unit for development rather than as a unit of governance: to some commentators 'local government seems to stop at the district level';
- **1990s: review of land tenure policy begun.** The Land Act and the Village Land Act were passed in 1999. The two pieces of legislation entered into force in May 2001 but left the radical title of land vested in the President, albeit in trust. Districts are being given greater authority and power as part of this process. More time is needed to establish the depth of these changes and to assess the adequacy of local institutions' response to them;
- **Conservation policy** although evolving, continues to have huge affect on CPRs. Criticism of conservation policy has taken place (technically unsound soil conservation efforts, de-stocking exercises, sequestration of land for game reserves). Although the state retains control over national parks and catchment forest reserves, districts and villages now have a much greater role in planning and decisions related

to land tenure. In addition, since 1983, the National Environment Management Council has evolved into an environmental protection body and has gradually strengthened its reach capacity, meaning that improvements in land management policy resourcing have taken place;
- **Structural adjustment policies** were introduced from the late 1980s accompanied by a liberalisation of the economy, a programme of privatisation and abandonment of loss-making parastatals. These policies have impacted on poverty and land-holdings, as well as the increase in tourism and exports.

3. Factors influencing change in CPRs in Easa

Population growth
- **Population growth** (estimated at 3% per year in the semi-arid zones) is thought to accelerate poverty by leading to increased demand from multiple stakeholders for natural resources such as land for grazing, farming, mining and housing. It also increases demand for firewood and water for farming and animals;
- **A large population of rural-to-rural migrants** is to be found within the semi-arid zones. They are occasionally on the move looking for pasture for livestock and/or land suitable for farming;
- **Literacy rates** have declined over the last ten years, adding to the number of people with no marketable skills, thereby limiting opportunities for livelihood diversification;

Land pressure
- **Large scale plantation/farming** uses less than one and a half percent of the land area. The alienation of people from land has most often occurred for mining purposes. Donor policy has supported liberalisation which has increased these trends;
- **Scarcity of land** for cultivation as well as for agro-pastoralism leads people to create extra land by clearing wooded areas. This increases susceptibility to erosion and interferes with the hydrological cycle. It has also created a market in land which many people resent;

Changes in policy environment
- Trends include **increases in private sector involvement** in previously state-led activities such as farming and exports, the **increase in the influence of donor governments** and international organisations through funding programmes, and the local-level changes due to the **regionalisation programme**;
- **The responsiveness and adaptability of village level CPR management structures** (both traditional and socialist-era) to this changing environment remains largely unanalysed.

4. Constraints to Access and Use of Resources: Concerns of the Poor

Poorer households in semi-arid Easa will typically be highly dependent on CPRs for grazing, water, firewood and charcoal and for cultivating food. They are also more likely than other households to sell firewood, or to depend on foraging for wild foods and fishing making them particularly dependent on CPRs. No matter which livelihood strategies they practice, households are likely to find their access to CPRs competes with the access of other stakeholders.

- **Reduction of pasture.** The creation of protected areas for conservation and commercial activities has reduced the availability of land and forests for use by rural people;
- **Availability of land for cultivation.** Irrigated land provides the main source of income for people through farming or renting. Villagers can find it hard to produce enough food from cultivation. This leads to the migration of young people who cannot afford to rent land;

- **Charges for water-use** (usually at village level) for irrigation, for livestock or human consumption are found in some villages, constraining access for poorer households, especially during drought periods;
- **Charges for forest-use.** Villages, districts and even central government levy charges on harvesting of forest products on the land in their charge. This reduces their access to poorer households. Further, licensing large numbers of people to gain extra revenue intensive destruction;

5. Impact of Constraints on Livelihoods and Assets

The constraints on livelihoods constitute important impacts on their livelihoods and may lead to migration or changes in household livelihood strategy.

- **Shortages of water** for irrigation and for livestock are likely to follow from the privatisation of land. Likewise **reduced availability of pasture** is likely to lead to increases in distances to pasture and possible conflict. These will have impacts on household food security, especially during dry seasons;
- **Other shortages** likely to reduce access of the poor include land for irrigated and rain-fed farming, drinking water, firewood and building materials;
- **Increased migration to more populous areas** such as those at the edges of the semi-arid zone is leading to increasing competition over natural resources in those areas;

6. Perceived Natural Resource Management Issues

- **Land alienation to conservation, the state and private investors.** In some areas ranches and national parks have reduced the amount of land available for pasture and interrupted transhumance routes, thereby increasing conflict;
- **Inequitable nature of CPR-sharing.** The increasing pressure on resources means that current owners/controllers are unwilling to give up control. In Maasai communities, for example, customary laws deny women and the younger generation the right to own resources like livestock. So despite policies since the post-independence regime that aimed at equality (such as a quota for 25% female representatives on village councils), women and other poorer groups have often failed to benefit from improved local-level CPR management;
- **Inter-community conflict over access to CPRs.** Rivalry between communities over CPR access such as forests and water for irrigation takes place, particularly between pastoralists and those engaged in cultivation;
- **Limited benefit-sharing from hunting and tourism revenues.** While benefit-sharing is becoming increasingly common in Easa, in line with global changes in conservation policy, such systems are not omnipresent, as inclusive nor as well-administered as they might be.

7. Target Groups

- **Pastoralists seeking pasture and water for cattle** penetrate into village and state CPRs. As their spatial migration patterns are very extensive, pastoralists have not always been included in the development of management strategies. Pastoralists' transhumance routes have also been interrupted by conservation and development interventions;
- **Cultivators seeking water and land for irrigated agriculture.** Households growing crops in the peripheral areas where population density is higher, as well as

those growing crops in areas in semi-arid areas where soil quality is better often have to pay for water or purchase better land at considerable cost. In addition, common land is being fenced-off in forests, rangelands or other areas where soil quality is slightly better;
- **Firewood collectors.** Among the poorest households, collecting wood products for sale in urban areas can be as lucrative and more accessible than cultivation or herding, further increasing deforestation rates.

8. Key Interactions

- **Interaction between 'traditional' and current (state) management systems**. In many traditionals management systems transhumance was much more widely practised because traditional leaders controlled varied ecosystems and could allow adaptive access dependent on climate and need. Another example is Maasai villages where traditional leaders generally tackle conflict in the village rather than using governmental structures;
- **Multiple stakeholders at local level.** As is clear from the other sections, transhumant pastoralists, cultivators, conservationists and agro-pastoralists all make complex and often competing needs of CPRs. While recent changes in land tenure policy have recognised traditional claims, they have perhaps tended to formalise ownership of land by traditional social units, rather to recognise that different communities access resources at different times;
- **Interactions between donor, national and local-level policy.** Previous CPR-related interventions have often taken the form of state-level interventions been driven by state, donor or conservation interests, for example in the creation of vast protected areas. With the recent, as yet largely untested, changes in land policy, it is the interaction between local and national level policy that will determine the success of new approaches to CPR management.

9. Improving CPR Management Strategies: Opportunities and Constraints

Opportunities
- **1999 legislation.** Provided for greater legal recognition for CPRs and pastoralists creating a more positive policy interface. The Village Land Act provides for the possibility of adjudication and titling of village lands or interests within village lands under the overall supervision and ultimate power and control of the Commissioner for Lands who administers land. Pastoral communities are now able to form ranching associations to hold their lands jointly;
- **Improving village-level governance**. Technical improvements, particularly in irrigation have provided benefits for some villages. However, others have increased conflict between villages over access to irrigation water, demonstrating that governance at the micro-level is crucial;
- **Benefit-sharing arrangements.** In areas where state-controlled CPRs dominate, the sustainability of CPR management is likely to be enhanced by benefit-sharing schemes such as those whereby villagers receive revenue from the CPR, the aim being to encourage wildlife protection;
- **Demand for new approaches to CPR management.** The changes that have been made to CPR policy will impact mainly at village level. Changes in benefit-sharing, the development of village forest reserves and village control over grazing are likely to necessitate a larger role for village-level structures. There is therefore a need to understand and perhaps enhance village-level capacity to respond to these changes.

Constraints

- **Capacity of village-level governance structures.** In many villages traditional laws have been incorporated into formal structures and form the basis for village bye-laws. Nevertheless, **inadequate enforcement** of the law means that the likelihood of offenders being punished is low. Many of the law enforcers are related to the offenders and so unlikely to fine their kin. When the case goes to court many offenders are released unpunished by the district.
- More widely, **district and village-level institutions** may lack sufficient capacity to respond to the rapidly-changing policy environment. As the influence of the new land policy grows, villages are having to take on **the transaction costs of CPR** management leading to problems of institutional sustainability;
- **Changes in land tenure arrangements** may have defined CPR boundaries more clearly, but the extensive use of CPRs by pastoralists who move long distances mean that the de facto boundaries are very large, and may mean that they are not involved in drawing up the rules over access. In addition, land alienation for conservation or farming may break up desirable spatial arrangements of CPRs.

Case Study 3

A South-Asian Floodplain Land Water Interface

FLOSA

This outline is intended to 'set the scene' for a floodplain production system in South Asia. In this country, renamed Flosa for this study, livelihoods depend on both terrestrial and aquatic resources. The information is not inclusive of all aspects of CPR management in the concerned production system and only highlights points that are pertinent to the development of CPR management strategies that can benefit the poor.

1. Key Features of CPRs in the Land Water Interface in Flosa

The land water interface production system dominates Flosa. With an estimated area of 104,000 km^2, floodplains and delta areas account for 80% of the country's total area. The aquatic and terrestrial environments co-exist and interact in time and space.

The floodplains are relatively well endowed resources for farmers and fishers alike, and many people's livelihoods depend on both the aquatic and terrestrial components.

Flosa is densely populated, with over 100 million inhabitants and has an extensive fishing sector which employs 1.5 million full time professional fishermen. In addition, there are about 11 million part-time, mainly subsistence fishermen whose numbers peak in the June-October flood season. Altogether these fishermen and their families represent 50% of Flosa's population. The status of fisheries as CPRs is crucial because while most agricultural land is privately owned, fishing depends on communally owned resources.

50 million people are landless and are not self-sufficient in food. Their main livelihood strategies include sharecropping, waged labour and fishing. Fishing is the primary use of aquatic CPRs in Flosa. About 70% of households fish for food or income in the floodplains. Improvements in the management and distribution of benefits from CPRs will therefore benefit the poor in Flosa.

The single most important feature of floodplain systems in Flosa is the existence of **competing commodity production systems – agricultural production and open-water fisheries.**

1) Terrestrial resources

- ***Land use*** Mainly arable crop production, with rice as the dominant crop contributing about 95% of total national production.
- ***Current status of resources (2001)*:**
  - Largely privately owned resources.
  - Owned mainly by wealthier households.
  - Agricultural production is dominant for about 8 months of the year.
  - Access to land by the poor is increased through sharecropping.

2) Water Resources

- ***Types of resources*** Rivers, channels, saucer-like wetlands such as ox-bow lakes, internal drainage basins and perennial and seasonally flooded depressions.
- ***Use*** Inland fishing.
- ***Current status of resources (2001):***
  - Access regulated by leasing system whereby the government leases rights to individuals or co-operatives who then sub-lease them to individuals.
  - Fishing is dominant for 4 months of the year.
  - Declining productivity of floodplain fisheries over the past three decades.
  - Increasingly limited access to wetlands for poorer people.
  - Inappropriate state intervention policies have further marginalised access to wetlands.

2. Local Governance Arrangements and Policy Environment

- ***1950*** The fisheries of Flosa became state property under the jurisdiction of the Ministry of Land (MOL). The tendency to administer state fisheries by leasing out fishing rights in water bodies to the highest bidder usually for 1-3 years was continued.
- ***1986*** The government introduced a New Fisheries Management Policy (NFMP) through which responsibility for 300 water bodies was transferred to the Department of Fisheries (DOF). This was done to enable DOF to license individual fishers whose livelihoods depended on catching and selling fish, as middlemen often exploited these groups. In practice, however, fishermen have been unable to exclude outsiders and have continued to depend on middlemen. DOF also prefers to deal with few 'leaders' of these fishers rather than many individual farmers.
- ***1995 onwards*** Fisheries have become open access resources since the government ended tax collection from fishers. Implementation of the NFMP has also ended, although it was restored in certain estates.
- ***Current arrangement*** Floodplains have been divided into 12,000 water estates for fishery administration and government taxation purposes. Current resource management strategies include the following:
- Leasing to individuals or fishing co-operatives, granting exclusive fishing rights for designated water bodies. The state prefers to lease water bodies to the highest bidders or to co-operatives.
- In some cases, the state licenses individual fishing units to individual farmers.
- Group management is also one means of accessing resources whereby co-operative groups lease out water bodies from either the state or middlemen.
- Open access resources are available in some areas.

3. Factors influencing change in CPRs in Flosa

The following factors have had either a direct or indirect bearing on the status of CPRs:

1) ***Landlessness*** 50% of the country's population are 'functionally landless' owning less than 0.2 ha while just 10% of rural households possess more than 50% of the arable land
2) ***Demographic pressures*** Flosa is one of the most densely populated countries in the world (about 700 persons per km^2). Its current population (120 million) is estimated to double in 35 years at its current growth rate of 2%.
3) ***Inappropriate state intervention policies*** Past policies have favoured agriculture over other livelihood strategies such as fishing on which the poor depend to a large extent or entirely.
4) ***Increased agricultural production*** Flosa has achieved considerable increases in agricultural production over recent decades but these have implications for fishing. The demand for agricultural production, particularly cereals, encourages attempts to dry out the wetlands. This reduces open water areas and the fisheries resources on which the poor are highly dependent. Farming impacts on aquatic resources e.g., the increased use of agricultural chemicals can adversely effect water quality.
5) ***Increased irrigation*** has meant that more land is allocated to agricultural production at the expense of other livelihood strategies, mainly fishing.
6) ***Environmental factors*** Flosa is highly vulnerable to cyclones and floods and and also to droughts, all of which reduce access to and use of floodplain resources.
7) ***Infrastructural changes*** Construction to facilitate water control has interfered with alluviation and necessary water exchanges between rivers and floodplains.
8) ***Land inheritance*** Parcelling of land among inheritors further reduces the land resources available to each individual and eventually increases landlessness.

4. Constraints to Access and Use of Resources: Concerns of the Poor

52% of rural households in Flosa subsist below the poverty line while another 23% are likely to move into poverty soon. The poorest members of floodplain production systems are heavily dependent upon fishing. Fishing in turn depends on water resources which are common property resources.

For the rural poor then, CPRs are either an important livelihood safety net or (for professional fishing households who fish for 10-12 months of the year) the mainstay of their livelihood portfolio. Hence poorer people disproportionately depend on CPRs but their access to and use of CPRs is restricted by a number of factors:

- ***Shift from rainfed monsoon season rice crops to irrigated dry season rice crops*** The massive growth in small scale irrigation has diminished the significance of the traditional January-May lean season. Importantly, **landless households supplement their income by paid farm employment** that is unavailable during the monsoon period.
- ***Increased agricultural production*** means more land is allocated for agriculture. Landless people therefore become more marginalised in terms of their access and use of resources. Unrestricted use of pesticides and agro-chemicals into the water system is also causing harm to the fisheries.
- ***Disproportionate ownership of resources/inequalities in quality of resources*** Poorer households hold the lowland areas which are more prone to flooding. Medium and upper-income households own less flood-prone land and have a wider range of cropping options.
- ***Increased infrastructural development*** In recent years the construction of roads, sluice gates and culverts under state-led floodplain control programmes has taken place without considering their wider impacts. This has reduced the size of wetland areas on which the poor are so dependent.
- ***State-led flood control interventions*** have had positive impacts on agricultural production (increased crop productivity, reduced crop damage and loss, improved dry season cropping through irrigation etc.). They have also damaged inland open-water fisheries. Flood controls have been implemented to increase rice production, at the expense of inland open-water fisheries
- ***Local institutions and social norms*** limit access to and use of resources. For example, large dowries require the sale of assets and parcelling of inherited land further reducing access to and use of resources.
- ***The role of local power-brokers*** The state leases control of access to inland fisheries to individual power brokers who sub-contract these rights to individual fishers. In the process, poor fishers and farmers are often subjected to unfair treatment and financial exploitation.

Policy-related and institutional constraints to CPR management

- ***Focus of research and intervention on agriculture*** Previous research and interventions have targeted agriculture at the expense of the fisheries. The aim has been to increase food self sufficiency through increased crop production by increased irrigation and dry season production.
- ***Limited or no participation by local communities in resource use decision-making***
- ***Lack of sensitivity of state interventions to complexities of floodplain production systems*** The needs of small-scale and marginal Flosa farmers and fishers have been poorly addressed by interventions that fail to take account of the complex interactions in floodplain production systems.

5. Impact of Constraints on Livelihoods and Assets

The decline in the availability and quality of CPRs has had serious implications for the livelihoods and assets of the rural poor in Flosa many of whom already subsist below the poverty line. Some of the important ones are outlined below:

Immediate Implications

1) **Reduced availability of aquatic and terrestrial products** for domestic use and market sale.
2) **Increased dependence on sharecropping** by poor and marginalised farmers to make ends meet.
3) **Increased dependence on paid agricultural and urban employment** due to reduced access to resources.
4) **Reduced income from fishing** due to reduced fish production as a result of infrastructural developments impeding fish migration.
5) **Increased landlessness** due to the combined effect of expanding agriculture and social and cultural norms and values (parcelling of land). This has increased the number of people depending on fishing at least part time.

Broader Implications

1) **Lack of food self sufficiency** Poor farmers and fishers are increasingly unable to meet their basic subsistence requirements in terms of food due to reduced fish and crop production.
2) **Diversification of livelihoods** Poor farmers and the landless need to seek alternative means of subsistence as fishing and farming no longer able provide them with the minimum amount of products for survival.
3) **Increased destitution and poverty** The poor are losing a major source of income with reduced access to floodplain resources aggravating their poverty.
4) **Increased vulnerability** Persons dependent on floodplain resources for their livelihood become increasingly vulnerable to seasonal variations in availability of floodplain resources and changes in market forces leading to further impoverishment.
5) **Increased social conflict and antagonism between different stakeholders** There have been cases of acute social conflict between stakeholders with different interests and priorities, for example, between farmers and fishers.

6. Perceived Natural Resource Management Issues

- ***Overfishing*** Fish stocks in the floodplains have been declining sharply because of overfishing.
- ***Loss of biodiversity of aquatic resources*** Diversity of fish species and fish catch has decreased drastically. For instance the availability of major carps, the most important fish species in southern Asia, has dropped from 50% of the catch to 5% and completely disappeared in some areas.
- ***Loss of biodiversity of terrestrial resources*** occurs through the conversion of fallow wetland into agricultural land. The abandonment of many indigenous crop varieties in favour of High Yield Varieties (HYV) of rice is also leading to irreversible loss of genetic resources and exacerbates the need for good management of soil nutrients and soil organic matter.
- ***Loss of dry-season perennial water bodies*** Rapid expansion of dry season irrigation for rice cultivation has resulted in the loss of over 50% of dry season perennial water body areas of the country. Wealthier farmers favour draining shallow floodplain depressions but poorer farmers consider this would be detrimental to fishing.
- ***Increased siltation*** Accumulated silt in the floodplain depressions and canals connecting it to the river create problems for fishing. The (perennial) wetland habitats and ecosystems have lost connections with larger waterbodies (rivers and

canals) due to siltation and landfilling for agricultural production and construction of homesteads.
- ***Soil erosion*** Rivers in flood continually erode shorelines and undermine earthen embankments, literally breaking up communities.
- ***Increased pollution of surface and ground water*** More widespread use of fertilisers and other chemicals in agriculture has increased water pollution with implication for fish production.

7. Target Groups

Poorer households are often more dependent on floodplain resources in Flosa. Target groups include:

- ***Landless seeking access to land for farming*** Those who do not own land are increasingly affected by lack of access to terrestrial and aquatic resources. While they are unable to engage in agricultural production other than as labourers, fishing has also become a less reliable source of income.
- ***Small-scale farmers seeking to compete with commercial rice production*** There are still many marginalised farmers who own small plots of land. Their crop production and hence their livelihood is threatened by commercial farming and the changes brought about by increased dry season rice production.
- ***Professional fishermen seeking access to fishing resources*** These fishers are amongst the poorest dwellers on the floodplains and depend almost entirely on fishing for their livelihood. However, both past and current interventions undermine fishing at the expense of rice production with the aim of insuring 'food security'. This fails to take into account the millions who depend entirely on fishing as a source of income
- ***Poor women seeking access to 'non marketable' fish varieties*** These groups are dependent on fishing 'non-marketable' fish species, mainly for domestic consumption. However, programmes stocking floodplain fisheries with 'marketable' fish species have taken place with serious implications for the nutrition and well-being of disadvantaged members of communities, particularly women and children.

8. Key Interactions

Interactions within the community

- ***Multiple stakeholders***
  - Resources are used for different purposes by different groups or individuals. For instance, farmers and fishermen make different use of the floodplain resources. Fishers complain of encroachment on their resources by farmers/agriculturalists.
- ***Increased competition over resources***
  - Decline in the availability of resources due to increased population growth has led to disputes between different groups over the use and ownership of resources. For instance, there have been conflicts between upstream and downstream stakeholders in water development projects along rivers.
- ***Interactions between middlemen and fishermen***
  - Local fishermen gain access to floodplain resource through by letting land from middlemen who sublet land. Middlemen are mostly the wealthier members of the community and their relations with poor fishermen and farmers is often exploitative.

Interaction with the state

- ***Local-government Interactions***
  - Special relations exist between relevant government offices and local fishermen and farmers. For instance the Department for Fisheries has been criticised for favouritism when it comes to leasing out rights over floodplain resources.

9. Improving Floodplain Resource Management Strategies: Opportunities and Constraints

Opportunities

- ***Integrated flood control interventions and fisheries management*** Past state-led flood control interventions have failed to take the complex interactions between terrestrial and aquatic resources into account. There has been more emphasis on improving agriculture at the expense of fishing but there are opportunities to redress this.
- ***Understanding the differential use of land and water resources in floodplain depressions*** can lead to better-informed decisions for natural resource management and lead to improved floodplain livelihoods, particularly of the landless and fishers.
- ***Designing a strategy for farmers and fishers to lease rights of access to resources directly from the State*** Studies show that leasing floodplain resources to 'middlemen' impedes access to and use of resources by disadvantaged members of the community who lack both the finances and appropriate networks to influence 'middlemen'.
- ***Strengthening capacity of local floodplain resource management institutions*** Where the community has developed institutions, norms and rules, for the management of resources, there is a need for external support and capacity building.
- ***Poverty-focused floodplain development vs. commercially focused floodplain development*** Future management strategies for floodplain resources should not undermine the needs of the poor and marginalised by promoting commercial production which often benefits those who are already well-off.
- ***Targeting groups marginalised from access to and use of resources*** There is a need for greater representation of the needs of the poor and marginalised groups.

Constraints

- ***Sensitive relations with village middlemen*** There are already established networks and relations between individual fishers and farmers, co-operatives, middlemen and the government***.*** Improved resource management strategies will have to take these interactions into consideration as they are often competitive and at times conflictual.
- ***Transaction costs for the poor*** Improved resource management initiatives are likely to involve input from the poor in terms of time and in some cases finance. The poor have limited time to spare for activities other than those from which they make a living. The limited financial capacity of the poor should be considered.
- ***Corruption*** Relations between middlemen, individual farmers and the state are often corrupt and characterised by favouritism.
- ***Political interference*** There is bound to be interference from the concerned offices of the government as both rice and fish production contribute significantly the country's GDP.
- ***Social norms and values*** Existing social norms, particularly laws on inheritance have implications for resource management strategies.
- ***Multiple stakeholders*** The interplay between terrestrial (private) and aquatic (common-pool) resources results in floodplain stakeholders (landed elite, farmers, sharecroppers, fishers, landless labourers, etc.) having interdependent livelihood strategies that may conflict with or complement each other.

- ***Over population*** Current population pressure on resources and future population growth must be taken into account when considering different resource management strategies.

Case Study 4

A High Island Land Water Interface

HICA

The following describes CPRs in an existing Land Water Interface, on a high island in the Caribbean. The island has been renamed Hica for the purposes of this case study. It is not intended to cover all aspects of CPR management in the system, but to provide information that is salient to the development of CPR management strategies to benefit the poor.

1. Key Features of CPRs in Hica

Resources in the land water interface (LWI) are characterised by their complexity, patchwork nature and interconnectedness. The linkages, such as those between downstream and upstream ecosystems are often difficult to quantify:

- **Coral reefs:** severe degradation over the last 20-30 years, both natural, such as storms and bleaching, and man-made causes (dynamiting, siltation).
- **Shorelines, beaches and bays:** are under increased multi-purpose use and occupation.
- **Mangroves and coastal swamps (morass):** threatened due to cutting and development.
- **Inshore marine areas:** most fish species have been over-fished, with other key species such as turtles and manatees severely threatened. Some areas are heavily polluted by sedimentation and eutrophication, with loss of seagrasses.
- **Rivers/estuaries flowing into coastal area**: bringing pollution and sedimentation from urban areas.
- **Watersheds with agricultural land or forest lands** of various kinds (high biodiversity rainforest, dry coastal scrub), many issues: land development, decline in agriculture, deforestation.

2. Local Governance Arrangements and Policy Environment

Local governance initiatives, where communities can engage in the local development process and assist in guiding wider issues relating to CPRs in the Land Water interface are only just emerging as a result of new legislation and programmes:

- **New local government development planning initiatives** are being tested in several parishes, under new legislation.
- **Parish councils** cover very large areas of several communities and towns. In addition, at the community level there is still very little experience of local democratic processes and a legacy of colonial history and structures. There are few mandated structures at the community level.
- **Practically no real devolution of resources** or powers of implementation has taken place up to now.
- **The fiscal situation** of Hica also threatens further implementation. There also questions as to the degree of higher-level political will for real devolution.
- **Very little engagement of civil society** has taken place, especially of local user groups in politics, again a legacy of history.

3. Constraints to Access and Use of Resources: Concerns of the Poor

A wide variety of uses means there is a considerable spectrum of issues relating to use of CPRs, ranging from vulnerability to the effects of weather, to access and competition over specific resources:

- **Coral reefs/inshore marine areas**: noted decline in quality of fishery resources. High competition for resources. In resort areas also issues of access to certain reef areas.
- **Emerging concerns about external competition** for fishery resources, especially from large scale fishing vessels.
- In specific areas with **prime shorelines and coastal agricultural areas**: there are conflicts over access to shores by fishers, wider displacement of habitation and land-use due to competition with urban or tourist development (especially 'all-inclusive' resorts).
- Communities are also **concerned about pollution (water and littering)** resulting from developed areas, especially in tourist areas.

- The **best coastal agricultural lands** are owned by plantations, with controlled labour and declining productivity. These areas also use key water resources, and often there is concern about agricultural pollution.
- **Pressures and deforestation in upland areas**, compounded by climate change and pressures to occupy more marginal lands, have increased the threat of flooding in exposed and low-lying coastal areas.

4. Impact of Constraints on Livelihoods and Assets

With the LWI interface at the downstream end of many systems, such as watersheds, and bearing the direct effects of storms, coastal communities have to deal with a complex array of effects on their livelihoods.

- With already few alternative livelihood opportunities, the **decline in resources** causes a greater sense of vulnerability, especially among fishers.
- **Resource decline** (fish) also means a rise in prices to wider community. This is also seen as positive in some cases.
- **Direct conflicts arise from urban and tourist development issues**, such as displacement creating a sense of unfairness, especially since resorts are often 'outsider' or foreign-owned and limit access to tourists by communities. Cultural changes to community, not least due to urbanisation and influx of new settlers also shifts family structures.
- **Increased pollution is caused by rapid development.** Some direct health effects are felt as a threat to industry in tourist areas with knock on effects.

5. Perceived Natural Resource Management Issues

Management issues have to address the complexity indicated above:

- **Pressing resource degradation** is taking place: both in terms of quantity e.g. fish, and quality, e.g. water
- Like many Caribbean islands there are **fragile, unique and closely inter-linked marine and terrestrial ecosystems** are under threat.
- **Many interconnected uses and issues exist,** often linking widely separated upstream and downstream groups and concerns.

The primary NR management issues:

- **Managing and agreeing access:** while there are some well understood and respected laws with regards to lobster catch limitations, for example wider allocation issues have not been addressed with regards to prioritising beneficiary sectors.
- **Enforcement is a major issue:** while many laws exist, awareness, resources, and political will are low to actually implement and police these laws.
- **Understanding and awareness of linkages** between different ecosystems, especially human impacts, is low, especially in the wider public.

6. Target Groups

The coastal areas and their communities are characterised by complex communities, with both specific resource-users as well as high populations in urban and other settlements often situated in bays, river mouths and coastal plains. The main groups, from more directly coast dependent to more general area residents, are:

- **Fisher families and related groups** (vendors, menders etc.): often among poorer and vulnerable groups in the community. Some owners with more varied livelihoods also form key networkers in the community.
- **Ancillaries to tourist industry**: cleaners, vendors, bar operators, transport workers.
- **Coastal farmers, coal burners** (often part time fishers), often older men, living alone.
- **Low skilled labourers,** often related to marine transport, and unemployed people, in coastal community, both men and women.
- **Shop keeping, market vending and other small scale-industries**.
- **Land-owners, local politicians and entrepreneurs,** while better off and not necessarily potential primary beneficiaries, need to be targeted to build support and influence.

7. Key Interactions

The context in which CPRs in the Land Water interface function is a complex one:

- Despite a seemingly functional electoral system, there is a perception of a **politically corrupt bureaucratic system**. The public has little faith in being listened or responded to in terms of the provision of many key services such as water and sanitation and protection of resources and communities.
- **Land ownership is not discussed** extensively in the public arena, but the legacy of plantation estates still exist in terms of concentrated ownership of best agricultural lands and best areas for urban and tourist development.
- **The relationship between political forces and development corporations** controlling land-use development process limits the scope for influence by more scattered rural communities.
- **Increased unemployment and consequent urbanisation** is putting more pressure on marginal areas, both coastal and in watersheds, and in coastal towns and cities, leading to increased pressure and pollution.

There are also other wider interactions with livelihoods in coastal communities that need to be taken into account:

- **The fiscal situation of the country:** it is heavily indebted resulting in declining resources for government function. This has affected, for example, direct resources to devolved NGO management of protected forests areas.
- **There is a strong underground economy**, leading to uncertainties in planning and development processes.
- **Both political violence and crime in the community** create a climate of threat and deter long-term and external investment.
- **Globalisation** and the effects of trade agreements will especially affect banana and sugar cane agriculture, which are predicted to decline heavily over the coming years, resulting in further unemployment.
- **Tourism industry** liable to severe fluctuations due to global recession and uncertainties.

8. Improving CPR Management Strategies: Opportunities and Constraints

Opportunities

- **Emerging management initiatives** exist in the country and the region covering marine protected areas, coastal and watershed management approaches. These often involve civil society both environmentally-oriented NGOs and community groups.
- **Experienced and technically skilled human resources** are present, with relatively good access to research findings and support new technologies and ideas.
- **Tourism**, despite the issues of control and ownership of its development, is perceived as being one of the main potential sources for generating pro-poor supplementary livelihoods, to complement and build added-value to coastal CPR use.
- **Pro-poor development programmes** with a strong local sustainable development components are emphasised by many donor-supported development programmes of the national government.

Constraints

- **A severe decline in government allocations** to resource management and overall sustainable development planning and implementation is taking place.
- **An overly sectoral focus** of many key government departments and policies hinder linkages in policies covering key LWI CPRs. There is a lack of an overarching sustainable development policy addressing linkages between integrated resource management and livelihoods.
- **Rural agriculture and tourism policies** still overly focused on large-scale markets to the detriment of opportunities for small-scale community initiatives.
- There is a need to understand the **complex interaction** between the concerns around coastal zone, watersheds and fisheries management, and local livelihood development issues - especially how to foster rural livelihoods and enterprises.
- **Research for natural resource management and coastal zone management** is often externally driven, local research resources not being adequately supported nationally.
- **Research tends to be piecemeal** and not closely enough linked into locally specific development issues or decision-making through policies and implementation.
- **Research and management staff** are often over-stretched with different initiatives.

Case Study 5

Forest Agriculture Interface

WAFAZ

This outline is intended to 'set the scene' for a 'Forest Agriculture Interface' production system in West Africa. The information provided is for a country in which there is a distinct zone in which forested lands and land converted for agricultural use co-exist. The name given to this zone is Wafaz. The information is not inclusive of all aspects of natural resource management in Wafaz, but an overview of the important points that are pertinent to the identification of natural resource management strategies that can benefit the poor.

1. Key Features of Natural Resources in Wafaz

The target country covers an area of 475,000 km^2, of which 22 million ha are covered by Wafaz. The forests and bio-diversity of Wafaz constitute a significant portion of the a major river basin which accounts for about 80 percent of the remaining moist forests in Africa and 20% of the world's tropical moist forest. Since ancient times, shifting agriculture has co-existed with other uses of forest resources. Shifting cultivation is an important subsistence and income earning strategy that particularly responds to the needs of poor farmers.

There are three main types of land cover in Wafaz – ***forest, fallow and farmed land***:

3) Climax Forests Resources

- Dense humid forest characterised by an equatorial climate with high precipitation and temperatures that rarely fall below 20^0C.
- ***Uses***
  - Some timber varieties used locally for construction of houses and making agricultural implements
  - Major source of timber for industrial purposes and export.
  - Non-timber forest products are for domestic consumption and medicinal use and for market sale.
  - Hunting of bush-meat is a source of food for many individuals and groups.
- ***Status of resources in the past***
  - Resources were found in abundance, as traditional methods of resource utilisation were well adapted to conservation.
- ***Current status of resources (2001)***
  - The forest of Wafaz is very rich in species diversity and genetic variety.
  - Forest industries of Wafaz represent 9% of the country's total industrial production, making it the sixth largest exporter of tropical wood in the world.
  - Deforestation activities are estimated to erode forest land at an estimated 90,000 ha to 150,000 ha per year.

4) Cropped Land and Natural Fallows

- ***Cropped land*** refers to forestland cleared by shifting cultivators for the purpose of arable farming.
- ***Uses***
  - Crop production for domestic consumption and market sale.
  - Shifting cultivation and natural bush fallow are central to the overall system of agricultural production
  - The fallow in varying ways also provides natural products.

5) Status of Resources

- ***In the past,*** traditional institutional structures were used to manage resources and maintenance of resources was undertaken by local people.
  - No significant pressure on land resources.
- ***Currently,*** increased pressure on land and increased competition over access to forested land that is suitable for clearance and cultivation.
  - Reduced productivity of land due to changes in the fallowing cycle with attendant problems of soil degradation and evidence of build up of pests, diseases and weed problems.

2. Local Governance Arrangements and Policy Environment

- ***Pre 19th Century.*** Forest resources were managed by traditional systems of management based on communal ownership and use rights.

- ***Colonial administration.*** The colonial power declared all 'fallow land' or native land as 'crown land' as it was seen to have no owner. The only exceptions were land for which private ownership could be substantiated or land for which rights of use had been agreed upon with the colonial administration. Forests became a major source of income for the colonial administration which granted huge areas to foreign logging companies. This generated serious feelings of antipathy amongst natives towards the colonial administration. Later in the colonial period, one administration recognised customary law and the rights of natives over resources that were in accordance with native law and custom. However, tenure policies essentially maintained the governor's powers of disposition and regulation. A parallel administration allowed natives rights of use of forests and forest resources, and strictly forbade industrial or commercial exploitation.
- ***1968*** Apart from forest resources under registered ownership by individuals or groups, all other forestlands were considered as 'national land' and under the ownership and control of the State. This further strengthened State control over forest resources.
- ***1994***
  - ***State ownership.*** The State Forestry Law put all land and forest resources except those covered by certificates of title under the control of the State.
  - ***Ban on log exports.*** The State declared a ban on log exports to come into effect by 1999 with the objective of increasing domestic wood processing by 1999. In addition to failure of proper implementation, this new law has not reduced logging and exploitation of forest resources by companies.
  - ***Community forestry.*** Here the State grants village communities rights of use of certain forest plots which must be managed by the concerned community. However this simply involves the transfer of management to the communities rather than the transfer of ownership rights.
- ***Present***
  - Land and hence forest resources remain under the control and ownership of the State with the exception of those lands for which individuals or groups can provide registered ownership. Communities are entitled to usufruct rights while ownership of forests essentially remains with the State.
  - International NGOs with missions to address global conservation of bio-diversity, and supported by donors, have influenced government policy for the establishment of forest reserves in parts of Wafaz. This has often taken place without inclusion of local communities in decision-making on their location, extent and modes of management including access rights.

3. Factors Influencing Change in Forest Resources in Wafaz

Main factors contributing to the decline of forest resources and having either a direct or indirect bearing on the status of forest resources are:

1) **Demographic Pressures.** Between 1980 and 1998, the country's population grew from 8.6 million to 14.3 million, resulting in increasing demands on forest lands and resources. Current population growth rate is 2.5% with continuing pressures on forest resources of Wafaz.

2) State Policy

- Under existing forestry law, poor farmers and those who depend on non-timber forest products commonly lack ownership rights over forest resources. Their usufruct rights are inadequate for their needs.
- The State has and continues to grant large areas of forest to state-owned and foreign commercial companies.
- Forestry law undermines customary rules and regulations concerning use of forest resources.

3) **Market Forces.** Industrialisation and commercialisation have increased the market demand for both timber and non-timber forest products hence leading to over-exploitation of forest resources to meet these demands.
4) **Commercial Logging Companies.** The forestry sector is heavily dominated by a small number of foreign companies controlling about 60% of all logging and 75% of all timber exports.
5) **Technological Changes**. The construction of better transportation infrastructures mainly by commercial logging companies has facilitated exploitation of forest resources at previously unprecedented levels.

4. Constraints to Access and Use of Resources: Concerns of the Poor

Unlike the richer farmers, the poor in Wafaz are highly dependent on forest resources, as they are unable to secure their own private resources. The poor depend on products from forest resources for both their domestic needs and consumption as well as for market sale to generate income. As much as the poor depend on forest lands and forest products, they are faced with numerous constraints to access and use of these resources. The major concerns of the poor with regards to the present status of natural resources in Wafaz are:

- ***Expansion of forest industries and commercial logging.*** Commercial exportation of timber and production of cash crops have heralded competition for land and forest resources. With the demise of the country' oil reserves, timber exports are projected to constitute an increasing share of foreign exchange revenue in coming years. For example, timber production has increased by 35 percent since 1980.
- ***Lack of recognition of the importance of shifting cultivation.*** Both the State and other external actors seek to undermine farming which co-exists with the dependence on forest products in Wafaz and is important to the livelihoods of the poor. Although this traditional cultivation might have been sustainable in the past, the increased population pressure makes it less sustainable.
- ***Tenure conflicts*** Commercial logging and plantation agriculture coupled with increased agricultural production has led to claims by different groups to forest resources including the State.
- ***Exclusion of the poor in favour of 'elite groups'*** The main beneficiaries of registration as well as the exploitation of forest resources have always been the educated local elite, civil servants, politicians and town dwellers.
- ***Logging concessions*** About 76% of Wafaz has either been logged or is allocated logging concessions. Less than a fifth of the unprotected forests, mostly in central and eastern parts of Wafaz, remains free from logging and is available for use by the poor.
- ***Lack of recognition of customary forest resource management institutions.*** Local people's traditional rights of access and use are undermined by the State forestry law and preference of logging companies over local forest users.
- ***Exclusion of local communities from decision-making*** Important decisions are made by the State often at the expense of the views and interests of local communities.
- ***Social complexity*****.** Differing interests arising from varying livelihood circumstances, are a factor that influences attitudes to access and use of the natural resources of Wafaz. Local communities can be complex in respect of ethnic background (indigenes and strangers) and gender, age and skills influence people's occupations and relationship with the natural resources of the zone. This complexity can create tensions in customary management. It also can be under-estimated by external agencies leading to oversimplification of relationships and the access and use issues that revolve around these.

5. Impact of Constraints on Livelihoods and Assets

The decline in the availability and quality of forest lands and their resources has serious implications for the livelihoods and assets of the rural poor in Wafaz:

1) Immediate Implications

- Reduced access to timber and non-timer forest products for domestic consumption and market sale.
- Increased competition for forest land suitable for shifting cultivation.

2) Broader Implications

- ***Diversification of livelihood strategies.*** Declining forest resources contribute less to the livelihoods of the poor, in respect of subsistence foods and means of income generation, forcing them to seek alternative means to eke out a living and avoid destitution. Some viable alternatives have been urban paid employment and employment with the commercial logging companies.
  - ***Continued overexploitation of resources.*** Exploitation of forest resources and decline in their availability leads to further exploitation, as people become desperate to make use of what is available.
  - ***Lack of food security.*** Decline of forest resources has reduced the productivity of farming. Also, the forest provides less fruit and other products previously used for subsistence consumption.
  - ***Increased vulnerability.*** Persons dependent on forest resources for their livelihood become increasingly vulnerable to impoverishment.

6. Perceived Natural Resource Management Issues

- **Increased deforestation** In spite of the local and national perception of defprestation as a problem, reliable sources of statistical information about forest loss in Wafaz are not available. Estimates of annual deforestation are in the range of 0.4-1.0%. The main causes of deforestation are similarly uncertain. While smallholder slash and burn agriculture and fuel wood demand are widely believed to be responsible, these factors are often secondary effects of tropical timber harvesting that degrades forest cover and contributes to associated declines in bio-diversity. However, the five dynamic mechanisms that give rise to deforestation and can lead to forest degradation are shortened fallow cycles, shifting cultivation, direct conversion, logging and fuelwood demand. Whatever the primary cause, however, the current levels of deforestation and bio-diversity degradation are widely viewed as deleterious with respect to both those who derive their livelihoods from living in Wafaz, and global concerns for forest conservation.
- ***Loss of biodiversity of forest resources*** Commercial logging is causing the loss of a variety of plant species including some important species with medicinal uses.
- ***Loss of ground cover is affecting soil condition including the acceleration of soil erosion*** This is a direct result of deforestation.

Key Constraints to Resource Management in WAFAZ

- ***Policy constraints*** Post independence policies continue to maintain state ownership of forest resources and to favour logging companies at the expense of small and marginal forest users and farmers. This has had negative implications for community participation in forest management.
- ***Economic constraints*** Commercial exploitation of forest resources contributes significantly to the country's economy. It is difficult to balance the need for sustainable forest resource management with the need for revenue from commercial logging.
- ***Institutional constraints*** Erosion of customary law since colonial times has weakened the capacity of communities to be effectively involved in natural resource

management strategies. Change or even upheaval in settlement patterns and in-migration also are factors that have to be taken into account in co-management initiatives.

7. Target Groups

Although decline in forest resources affects all those who in one way or another depend on these resources, certain groups are particularly vulnerable to changes in forest resources. These groups are often more dependent on and have less access to use and ownership of forest resources. In the context of Wafaz, the following groups suffer disproportionately from declines in the quality and quantity of resources:

- ***Village communities dependent on shifting agriculture*** These are often the poorest members of communities. Forest farming is becoming increasingly difficult within the context of increasing population and state regulations prohibiting clearing of forested land***.***
- ***Women seeking access to fuelwood and NTFP's*** Women and children are the main collectors of feulwood and non-timber forest products (NTFP's). They must now travel longer distances to collect fuelwood.
- ***Women in search of access to cleaner water*** Women are responsible for supplying water for household use. In addition to a decline in the availability of water in general, whatever is available is not hygienic placing the health of women and their family at risk.

8. Key Interactions

Interactions within Community

- ***Dominance of 'elite groups'***

The educated and well off members of communities and in some cases urbanites have more decision making power than the poor, which means that the needs of the latter are less likely to be addressed.

- ***Multiple stakeholders***

Forest resources are used by multiple persons/groups for multiple purposes often creating antagonistic relations between different groups.

- ***Local arrangement for mutual use of resources***

Arrangements are sometimes made at the local level between different user groups allowing each to have access to the resources of the other.

- ***Increased competition over resources***

Decline in the availability of resources within the context of increased population growth has led to disputes between different groups over the use and ownership of resources. For instance, there have been conflicts between farmers and logging companies.

Relations with the government

- ***Interaction between local community and Forest Department***

Antagonistic and distrustful relationship between the concerned government Departments and local people.

9. Improving CPR Management Strategies: Opportunities and Constraints

Opportunities

- ***Integration of customary law in the resource tenure system*** Local people have managed forest resources through customary rules and regulations for centuries. There is case for integrating customary law with modern law because modern is more respected than customary law. Also, modern laws in their current form, fail to reflect the needs and interests of local people.
- ***Balancing use of resources by local people and commercial logging companies*** Logging companies own huge areas of forest land preventing poor farmers from having access to both timber and non-timber products.
- ***Recognition that forest management and shifting agriculture are mutually dependent processes*** It is difficult to create clear cut boundaries differentiating forest resources from shifting cultivation as the two are interdependent. Improved resource management strategies should embrace and incorporate shifting cultivators as well as other actors such as logging companies and the state. The single most important question here is how to integrate shifting cultivation as a livelihood strategy into current resource management strategies.

Constraints

- ***Local attitudes towards existing forest law*** Local populations see the state forest law as impersonal, arbitrary, oppressive and alien to their cultures.
- ***Conflict of interest between local people and commercial logging companies*** These two groups have differing interests and rights of use of forest resources with logging companies having greater access to and use of resources. Local people feel deprived of their traditional rights over the forests and may be less interested in forest management programmes.
- ***Lack of incentive for local people to participate in forest resource management*** With no registered title over land, individuals and groups are less motivated to actively contribute to improved natural resource management schemes.
- ***Political interference*** Forestry is an important sector in the country's economy and has in the past involved high level official involvement. Any future management strategies for forest resources should anticipate political interference.
- ***Corruption and fraudulent activities in the forestry sector***, The very high level of corruption and the dramatic lack of capacity in the forestry department are serious constraints for enforcement of the forestry legislation in Wafaz.
- ***Social complexity***

Annex D

Resources —
A common pool for whom and how

A review of NRSP's past and current CPR-related research projects

Annex D-i: ***Overview***

Annex D-ii: ***Reports for individual projects***

Resources – A Common Pool For Whom And How?

A review of NRSP's past and current CPR-related projects

1. Scope and Aims

The second part of this paper (Annex D-ii) contains 24 review summaries of current or recently completed research projects funded by DFID's Natural Resources Systems Programme (NRSP) concerning Common Pool Resources (CPRs). They are grouped under three systems and three regions. The systems are the **forest agriculture interface**, the **land water interface** and semi-arid lands. The regions are **Africa**, the **Caribbean** and **South Asia**.

In each case the core project documentation on which a review is based is listed. Many projects have produced additional publications, some of them numerous. However, it has not been possible in the short time available for making this review to read additional publications. The first part of this paper identifies and addresses the issues that transcend the systems and regions and are therefore of central concern to all projects. These overarching issues include: the **complex nature of the problems surrounding CPRs –** uses, users and managements; **major project findings and observable gaps** in the research to date; how research **responds to DFID's priorities**; project research designs and methodologies; and dissemination of project results and uptake of findings.

2. Natural Resources and Common Pool Resources

Some of the projects under review use the terms natural resources and common pool resources interchangeably. But it is argued here that the first is an objective name for all resources irrespective of the presence or absence of humans. The second is subjective, implying things that exist in relation to human society, which has designated only parts of all natural resources as belonging to a pool to be held and used in common by them. Natural resource management (NRM) is, again, a more embracing concept covering all forms of private, governmental and other resource managements, whereas CPR management, with all its diversity, represents only a part of NRM. The acronym CPR too stands in need of clarification, being used also to mean Common Property Regime – i.e., the management of common property – rather than the common pool resources themselves.

Two trends are identifiable in the present situation. On the one hand population growth, with an increasing percentage of poor people occurring, and on the other, loss of biodiversity and depletion or degradation of natural resources. CPRs are depicted in many research projects as the domains where these trends meet and clash with a particular intensity. It is from this situation, and sensing a potential role in its alleviation that CPR research derives its legitimacy and urgency. When Elinor Ostrom prepared her book, *Governing the Commons*, the CPR literature had grown rapidly from 1,000 to 5,000 case-studies (F. Martin 1989, cited Ostrom 1990, xv). How many does it contain today? Whatever the exponentially-expanding number in the third quarter of 2001, the case-studies of the present projects stand as an archive of data that contribute in specific, and sometimes unexpected ways, to our understanding of the issues surrounding CPRs, their sometimes idealised pasts, their troubled presents and threatened futures.

3. How Common are the Common Pool Resources? Major Findings of Project Research

Projects in all three regions and systems group themselves around the following CPR issues:

- those documenting the **diminishing CPR base** and/or identifying ways to increase it sustainably
- those concerned with **poverty and marginalisation** and the potential roles of CPRs in alleviating them
- those identifying **ways to change social attitudes**, build consensus and reduce conflict
- those studying CPR management structures in order to **improve their capacities**.

Some projects are intentionally designed to respond to more than one of these questions and, in fact, all projects implicitly relate to more than one.

Across all the systems and regions, project research shows, with some local exceptions discussed below, a decline in the extent of CPRs. In the sense that common means frequent, CPRs are less and less common. Increased desertification of the semi-arid systems is causing a contraction of the usable resource base. Unsustainable rates of logging and the encroachments of agriculture have reduced both the extent and the biodiversity of the forests, while the resulting soil erosion impoverishes agriculture on the forest margins. At the land water interface, water pollution, loss of aquatic biodiversity and degradation of reefs all point in the same direction. As these common pools of resources contract and competition for their benefits sharpens, many projects address a second meaning of "common" – shared, mutual, reciprocal. They ask, how equitably are the common pool resources shared? What can and should be done to increase the management voices and the benefit shares of the economically, geographically or socially marginalised people: the poor, the tribes, the lowest sub-castes, isolated communities and women from all those groups? These are the very people who depend most on CPRs. What can be done to mitigate the conflicts among multiple users of the same (contracting) pool of common resources?

4. Positioning with Respect to DFID's Present Policy Priorities

All of the projects reviewed have a pro-poor, pro-sustainable livelihoods and environments as their immediate or ultimate focus. To this extent they do respond to DFID's present policy priorities. Many projects have contributed something to a clearer understanding of the causes of poverty. More remains to be done, however, to explore the multiple causes of poverty, the complex nature of poverty traps and the heterogeneous nature of poverty itself. Scant acknowledgement exists in the projects so far of the fact that some of the sharpest conflicts taking place around CPR use today are not the poor against the rest, but the poor against the poor.

Because they depend most on CPRs, their conflicts are the most desperate. Only a minority of projects has distinguished ways to alleviate poverty. They have done so in several ways:

- by **exploring and validating innovations to increase the common pool** in particular locations with resources that will benefit the poor (e.g. aquaculture in Bangladesh and the Eastern Plateau of India)
- by **creating and testing procedures** that should improve the access of the poor to existing CPRs.

One of the latter projects (in Nepal) includes methods for monitoring institutional success in achieving those aims. Another in Bangladesh focuses on consensus-building to facilitate effective and inclusive CPR management, while a third in the Caribbean develops a 'trade-off' procedure to achieve the same ends. In short, many projects urge inclusivity of CPR management structures and decision-making processes as ways to reduce conflicts and improve equitability, but only a minority has demonstrated in detail how these desirable states can be achieved.

A further question yet to be addressed by the projects is: where, how and by whom are the limits of inclusivity to be drawn? In the interests of effectiveness, it seems that a fine and necessary line exists between a broadly-based but coherent CPR management assembly and an amorphous, fluctuating assemblage of users of resources open to all, managed sustainably by no-one. Management regimes have to construct rules that include some and exclude others.

5. Major Findings on Diversity among Common Pool Resources

One of the documents reviewed argues that 'Tanzania is basically a nationalised CPR … from which various bits have been appropriated by the state, companies and individuals, and by communities (only 5%).' If so, this must surely be an upper limiting case where the extent of CPRs is more or less co-terminous with the extent of the state. There is no lack of limiting cases at the lower end of the scale, where access to very modest additional CPRs (e.g. new fish stocks suited to small ephemeral ponds in eastern India) can nonetheless have a significant impact seasonally on the livelihoods of the poorest, especially women.

In all regions covered by these projects, three resources dominate the common pool: water, land and forests. Each of those resources, or production systems, contains immense diversity. Water comprises seas, lakes, rivers, ponds (perennial and seasonal), man-made reservoirs and wells and the aquatic life in them. Land is waste, pasture, arable, horticultural and fallow, and includes the land on which forests, lakes, habitations and reservoirs stand as well as the wild and domesticated animals actually or potentially dependant on it. Forests are notional as well as real, for their repertoire runs from degraded wastelands that were once wooded to dense hillside forests, and includes isolated patches of scrubby bushland as well as many vitally important non-timber forest products. A number of projects have explicitly made the point that these resources are interconnected. When studying water conditions and potential, one needs to look at the watersheds upstream and the downstream land; land assessments are meaningless without solid data on water. The actual and potential bio-physical conditions of forests can only be understood in the contexts of water and land. Thus several projects have made a plea for holistic rather than production systems research.

6. Major Findings on Diversity of Structure and Effectiveness among Management Institutions of CPRs

Apart from the seas and lakes, all three great resource groups exist under state, district, local and private ownership and as common property regimes. Many have changed their status within recent decades, some more than once. In addition to the effects of environmental diversity, two factors may directly underlie the great differences of structure and effectiveness that projects find among the management institutions of common pool resources. They are, firstly the history of common and/or codified law relating to these resources in particular societies and secondly the cultural and socio-

economic history of local peoples, whether expressed in villages and village rights, in ethnic groups of tribes, castes and sub-castes or in socio-economic classes. Both of these kinds of legal and social traditions are themselves immensely varied in time and space: none has pursued a unilinear pathway of gradual change unaffected by disruptive, sometimes violent events in the pre-colonial and colonial eras and during the radical changes of policy in post-independence history. Only rarely has attention has been paid to these underlying factors in project research (a recent exception is project R7975 in Nepal), yet their contribution may be fundamental to a secure understanding of the present institutional structures and capacities – or incapacities – of CPR management.

Records of the activities of village-based irrigation committees in Andhra Pradesh and Tamil Nadu go back to the 7th century AD, while the institutions themselves were probably much older. Members were elected for 360 days only, but in that time had considerable power: to distribute water, settle disputes, employ labour, carry out repairs and improvements, remit, collect and invest water taxes, fine and punish defaulters and even to seize and sell the lands of persistent offenders - termed 'gramakantaka - village thorns' (Stargardt 1990, 134-7, 394). Records such as these reflect, not only the details of traditional communal water arrangements but still more importantly, the historical depth and robustness of the village societies standing behind them. The recent Andhra Pradesh case-study (project R7877) has shown that a contemporary trend to private tube wells has undermined the power of the traditional water committees and seen the decline of the communal water tanks. But interestingly, some tradition of communal access to water survives in Andra Pradesh even when that resource is now privately owned.

While such evidence may have great significance for understanding CPR management institutions in Andhra Pradesh and perhaps in other parts of India, is there any reason to think that it is of over-arching significance? It is argued in a Tanzanian case study (project R7973) that 'the village has never been a meaningful unit for governance ... until recent, as yet unevaluated, legislation.' The picture given by research in Zimbabwe at the Romwe micro-catchment in Chivi District (project R7304) seems to be mixed: on the one hand, many cross-cutting rights about access to water have been found to bring about conflict or stalemate. On the other, the social capital to support negotiators through these thickets is said to exist. Both the India and African sets of evidence throw light on CPR institutions, their performances and transaction costs in particular contexts. CPR institutions are not fixed like insects in amber. Project research shows that, whether in the relatively 'new' culturally and economically mixed villages of the Caribbean, or in the 'old' village societies of Orissa, they are in a constant state of flux. Their shared commitments and activities are always either gaining or losing in strength. The examples above suggest that the underlying historical depth or weakness of village institutions are indeed relevant factors in the capacities – or lack of them – of CPR institutions. The whole picture, however, also needs to take into account contemporary factors that motivate socio-economic groups for or against cooperation in the management of common pool resources for or against common benefits.

Is there, then, a typical 'life-cycle' in CPR management institutions? A number of case-studies reviewed here show CPR management of longer-term investments to be dynamic and moderately inclusive in its early stages, at risk of being captured by internal or external elites around the mid-point of the investment cycle and gripped by internal conflicts or helpless in the face of external raiders as the investment comes to fruition.

If these are recognizable constraints, what are the features that enable some institutions to withstand this cycle? Some relevant factors emerge from the research:

- the ability of a CPR institution to find acceptable methods of including dissent
- the availability of sympathetic support when needed from outside institutions such as Land or Forestry Departments
- the robustness of underlying village institutions in the fields of patrolling CPRs and successfully punishing raiders.

One study of CPR management differs from all others under review in that it is concerned with self-initiated organizations, some of which have a very long record. Project R6787 provides a limiting case of CPR management institutions on the issues of status, institutional diversity, longevity, effectiveness, conflict and its management and environmental impact. Its subject is a sample of 43 out of the astounding total of 2,000 to 4,000 self-generated community forest management (CFMs) structures in the State of Orissa (NE India), 33 protecting and 10 non-protecting communities. These examples are untainted by the 'black box syndrome', i.e., they are not institutions set up by external agencies according to externally generated criteria, that may exhibit unsustainable transaction costs as soon as the external support is withdrawn. The data contained in the review abstract of this project (refer Annex D-ii, page 7) suggests the following key points. Clearly, in spite of the legal twilight in which the self-initiated CFMs have existed until now, Orissa has at the least officially tolerated them (in practice, attitudes of the Forestry Department vary across districts and individuals from supportive to indifferent to hostile). In turn, the numerous CFM successes have encouraged a continuing and expanding local tradition, which seems to owe most to the underlying strengths of community organizations. Some of the most interesting features of these CFMs are that they can be based on a variety of social and ethnic bases, both homogeneous and heterogeneous. There is a high incidence of conflict in the CFMs but an equally high ability to manage it given time. This is sometimes achieved by sub-dividing the protected forest and the CFM. At other times Orissa CFMs do collapse, but have demonstrated their ability to start to work effectively again, sometimes after an interval of years. In general, forest conditions in Orissa have improved under CFM management although the total volume of forest in the state is declining.

Turning to the last underlying factor affecting the management and effectiveness of CPRs: political will and policy-making at the local, district and state levels. Many projects have addressed the task of acquiring data in order to enable better-informed decisions about CPRs and social equity to be made. Such data are inherently valuable. There is nothing axiomatic, however, about their incorporation into government or NGO policies. Between the data and the political will to use them, there is scope for other agendas to interpose. One project (R7973) addresses this problem directly and in the broad comparative context of India, Zimbabwe and Tanzania. A number of projects have anticipated this problem by the ways that they have constructed their methodologies to facilitate, from an early stage of project work, communication, dissemination and uptake among all stakeholders, but especially among policy makers.

7. Key Features of Research Design

Participatory Methodology and Uptake of Project Findings

Responding to the current debate about participatory methodology, a number of projects have emphasized the importance of making this methodology part of their research design and adopting it from the outset. The implementation of participatory methods seeks to involve all stakeholders in continuous processes of shaping and assessing project activities. It provides opportunities for regular communication to exist among those involved and, in some situations, has been shown to create new channels of communication among stakeholders themselves. Project results suggest that participatory methods do enhance the chances that project findings will be taken up by policy makers in GOs and NGOs because they have seen them evolve and have had opportunities to see their views and priorities represented among project findings.

With local stakeholders, these observations also apply and there are additional implications as well: proposals to increase the inclusivity of CPR management are more likely to be appropriate if they have been shaped by inclusive research methods. Participatory interaction between projects and user-groups during research should reveal any problems likely to affect the sustainability of the programmes proposed at the end of its work, in terms of livelihoods, environmental impacts and, notably, including the transaction costs of future CPR institutions. One project (R6778, Nepal) that paid close attention to participatory action research throughout its activities, took the further step of devising a micro-action planning process to assist users' groups of forest CPRs in monitoring their own performances and recognising when they were likely to need outside help. A second project in Nepal (R7514) is currently attempting a similar approach but extending to communities that have not formed Forest User Groups.

Projects that have forged close relations with DFID's bi-lateral or regional programmes in their field from an early stage have had considerable success in having their outcomes taken up as parts of DFID policies and programmes. In several instances DFID field offices have requested project findings and/or methodologies to be written up as manuals for distribution through its networks. All these approaches are intended to bridge the gap between project findings and the will to implement them

Interdisciplinarity of Research Design

All projects reviewed had a strong socio-economic aspect, which took two main forms: the compilation of case-study data on livelihoods and surveys of CPR management institutions. A minority of projects integrated newly acquired biophysical data on specific environments into their studies of livelihood strategies in those contexts. The projects that did this showed the benefits of their interdisciplinarity through the convincing detail of their findings on livelihoods, securely anchored in the ways that the environments would permit livelihoods to be sustainably improved.

Although case-studies contain a great number of economic data, no project has so far focussed specifically on detailed economic analyses. The data have always been approached through the combined socio-economic perspective of livelihoods studies. The DFID criteria on sustainability of livelihoods, CPR managements and of the environments themselves do, however, ensure that economic issues are regularly addressed, albeit in this broader socio-economic context. Three projects integrated complex modelling into their environmental and socio-economic surveys (R6756, R7868 – both Bangladesh, and R6919 – in the Caribbean). They demonstrated that this was an effective way of

communicating with all stakeholders in the course of participatory research procedures. It lent itself particularly well to laying a variety of policy options and their implications before stakeholders. In the Bangladeshi floodplains it has shown itself also to be a tool with considerable predictive value. Any model is, however, only as good as the data put into it and the modelling procedures addressed to the data. The above projects were notably transparent in their discussions of the merits and demerits of all their research procedures including their modelling.

Relations between RD1s, MTRs and FTRs

All research is about asking questions and searching for answers. It is therefore cumulative and evolutionary in character. The RD1 application form demands as much project detail as possible, particularly in the statement of outputs and their succinct description, including some measure of quantification, in the project's logframe. It is a real test of applicants' abilities to formulate their research targets clearly and to consider, in advance, a) the steps to be taken towards reaching those targets and b) what will be the likely outcomes at the end of the project. All this is self-evident to the project leaders whose work is under review here. Less evident is what to do when either the project leader or the person/team carrying out the mid-term review becomes aware that the processes of research are not leading where it was thought they would, and that both the logframe and the planned outputs really need to be reformulated in order to reflect what the project is actually doing by this stage.

If RD1s and their contents are not to become cages imprisoning evidence-led processes of research, then project leaders need to feel confident that they can maintain a dialogue about where their research is leading and that some degree of reformulation of project targets is acceptable when well-founded evidence indicates that it is necessary.

Upscaling and Wider Applicability

The methodologies discussed above: participatory, consensus-building, trade-off techniques, surveying and modelling all have a high potential for wider and larger scale applicability, provided the same degree of rigour is maintained. Projects that have utilised these methods show considerable success in communicating their findings widely and in achieving some uptake of their proposals.

It could be a valuable research exercise to look for and, if found, to study self-initiated institutions of CPR management in southern Africa and to make comparisons of the evidence from Africa, negative or positive, with the situation in Orissa discussed above and to seek the reasons for similarities and differences.

8. Is there a Project Life-Cycle? In Lieu of a Conclusion

The components of the project cycle are considerable:

- the commissioning process – project design, negotiations and approval
- project implementation – field surveys to identify target groups, samples and localities, initial workshop, preparation of questionnaires, characterization of and interactions with households, studies of livelihood strategies, environmental surveys and modelling, submission of on-going results for participatory assessments and suggestions to all stakeholders and DFID's country or regional field office
- NRSP monitoring – inception and quarterly reports, mid-term review and responses to the MTR
- further field studies and participatory interactions with stakeholders and DFID

- final workshop and submission of findings for final participatory evaluations and suggestions; preparation and submission of draft Final Technical Report; discussions leading to revised FTR
- dissemination as widely as possible of revised findings, including creation of videos, CD Roms and presentations on local television, radio and newspapers.

Is this a recognizable description of the life cycle of CPR projects from the egg to the fully developed butterfly? It is one attempt to characterise it, based on the privileged perspective of four weeks of reading and reviewing all the current and recent NRSP CPR projects.

Many projects are impressive in the scrupulous articulation of their objectives, the continuous and rigorous re-assessments of the methods by which they intend to achieve them. The sketch above shows how many projects reconcile several levels of activity: the home-institution, partner institutions in the field, all stakeholders, data collecting, participatory critiques and modifications to project agendas, more field research, more interaction with stakeholders, more critiques right up to the preparation of the final outcomes. Most projects have moved understanding on CPR issues, like environmental and institutional constraints, forward. Most have added something to our understanding of the causes or nature of poverty. Some have distinguished ways to alleviate it.

A concluding observation is that the alleviation of poverty may appear to western researchers and aid workers to be like the labour of Sisyphus: the stone is desperately hard to set in motion and will always roll down again. Yet some project research has demonstrated that real changes can be made. Others have noted that small changes take place. Sometimes such changes are reported without much importance being attached to them by researchers. But for the poor themselves, small changes can be of immense importance to their daily levels of nourishment. If the stone moves even slightly, it may indicate the directions in which bigger movements can be made to occur.

9. References

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Dr Janice Stargardt undertook the review of NRSP's CPR projects (refer Anex D-ii) and wrote this overview paper.

Dr Janice Stargardt is Senior Research Fellow and Affiliated Lecturer in the Department of Geography, University of Cambridge. Her background is in science-based archaeology, combining the environmental with the social sciences and approaching the past via a close study of the present. She has many years' fieldwork experience of the past and present of the three major systems of this workshop: the semi-arid in south-east India, Sri Lanka and Burma, the forest agriculture interface in south-east India and South Thailand and the land-water interface in South Thailand, Bangladesh and Cambodia. Her research is supported by the Royal Society and the British Academy.

Resources – A Common Pool For Whom And How?

A review of NRSP's past and current CPR-related projects

Contents*

***** / For convenience, the projects are ordered by their project reference number. This means that they are not clustered by production system or region or main CPR theme/issue addressed (refer Annex D-i, pages 1-2, Sections 1 and 3). To assist the reader to position the project with respect to these 'identifiers', this information is provided in the opening part of each review report and the footer also indicates the main research theme.

R6386 – Review of Common Property Rights, Tenure and Access Rights in Relation to Land Use Management and Planning at the Forest/Agriculture Interface

Theme: Understanding CPR Management Structures, Tenure and Access

Production System: Forest Agriculture Interface

Region: General, Africa and South Asia

Documents reviewed: NRI Research Project Form; Final Report 1995 – Shepherd, Kiff, Robertson

Main Outcomes of Project Research:

Theoretical and practical overview of CP issues on land and tree tenure systems and access to forest resources.

Analytical discussion of CPRs and management from stakeholder perspective, including disparities between gender involvement in daily management and representation on decisive institutions, local knowledge and sustainability. Innovative table on CPR Myth and Reality. Major annotated bibliography (up to 1995) of 210pp in 4 sections: Tenure, Management, Collaborative Management and Forest-Agriculture Interface.

Distinctive/Unique Research Findings and Wider Applicability:

Tried to define (and refine from Ostrom 1990, 90) the characteristics and conditions favouring durable CPR local management institutions.

Proposed use of above to predict viability of these institutions, or need for outside intervention and institutional strengthening.

Has influenced other FA projects, especially in Nepal and India.

Interdisciplinarity of Research Design:

This project was conducted before interdisciplinary elements became a central requirement of research design, but it contains interdisciplinary elements, e.g.

- Integration of remote sensing proposed for resource monitoring.
- Search for linkages rather than clashes between conservation and development.
- Recognition of gender and generational differences in possession of knowledge on CPRs.

Positioning of Project with Respect to DFID's Present Policy Priorities:

Overall thrust of project was towards enhancement of self-help and local management institutions that would alleviate poverty. Project does point to need to address gender imbalances on CPR institutions, which would help to address female poverty/hardship in daily conditions of work; other internal differentiations within the poverty group not made.

Project argues in 'Myth and Reality' and elsewhere for need to respect and preserve social capital in forms of local, partly gender and generationally based knowledge of environments and sustainable exploitation – a good approach susceptible to further nuances. Potential research locations were not identified (an unfulfilled objective) and discussion of CPR issues at local levels was limited to illustrations of more general arguments. But this project has influenced others that have confronted micro studies of user groups.

R6756 – Investigation of Livelihood Strategies and Resource Use Patterns in Floodplain Production Systems Based on Rice and Fish in Bangladesh

Theme: Understanding CPRs
Production System: Land Water Interface (floodplain)
Country: Bangladesh
Documents reviewed: RD1; Annual Reports 1998-1999, 1999-2000 – Julian Barr; FTR – Julian Barr

Main Outcomes of Project Research:

The project conducted detailed soil, land and water resources survey in 2 research areas – one each on the Yamuna (Brahmaputra) and Padma (Ganges) Rivers respectively.

Resource users were classified into 7 socio-economic strata and involved in a participatory census of problems and discussions of project results.

The project has carried out very intensive monitoring and surveying of its sample, acquiring a large amount of valuable case-study data and converting them into well-designed models, tables, maps and diagrams.

Bio-physical and socio-economic data have been integrated with the intention of creating systems models of floodplain production. The PL concludes cautiously that, by the end of R6756, a good understanding of the functioning of the floodplain system in its parts and as a whole had been gained, but that the conceptual model is best illustrated through specific cases. He modifies with frankness one of the proposed outputs of the original logframe: "to use the systems modelling framework to develop a robust, diversified and integrated strategy for floodplain production", saying that instead specific development options have been explored with the target users that would contribute to strategies for better floodplain management.

The models have nonetheless permitted a) the precise delineation of the spaces, times and resources where the sharpest conflicts occur, b) that delineation has led to some increased awareness among users of the multiple needs and management strategies for the same resources and some increased willingness to cooperate, c) the models have been used successfully to demonstrate to all stakeholders alternative management strategies and their implications for different sets of users – e.g. delaying the timing and/or spatial spread of flooding and d) the models have had considerable predictive value.

Distinctive/Unique Research Findings and Wider Applicability:

Detailed discussions and self-critical evaluations of research methods are useful to other projects.

Farmers perceived water volumes and timing, rather than differences in soil fertility/inputs as the greatest constraint on their yields.

Enterprising small farmers owning from 1 to 2.49 acres (category 4 out of 7) played a big role in injecting dynamism into the rural sector: a) by exploiting new crops (e.g. onions) on share-cropping lands, b) by providing sources of seasonal employment to landless (categories 1, 2 out of 7) and c) by contributing rents to the top categories (6, 7 out of 7). Potentially they could impact still further on the rural economy.

The annual inundation cycle of the research areas involves some extreme levels (up to 3m flooding for 2-3 months) and drying out for 5 months, with the lands of the poorest soci-economic categories flooded longest – these levels may be specific to Bangladesh, but the finding has more general relevance. The poorest are also the most dependant on fishing.

Interdisciplinarity of Research Design:

This project is firmly and transparently established on the interdisciplinarity of its concept and design and they are germane to the results obtained: detailed work has been done on soil surveys, water audits, household ranking, production and consumption surveys, problem census and detailed studies of methods of crop cultivation and yields, efforts and catches in fishing with surveys of fish marketing and consumption by volume, species and prices.

In addition it has absorbed many of the findings of a parallel anthropological study (R6744) on indigenous knowledge and perceptions of the above subjects into the work of R6756.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

This project addresses the realities of poverty in their complexity and has developed multiple approaches to its alleviation.

Its work on aquaculture is one approach to the need for improved and sustainable livelihoods for the poorest in a sustainable environmental context.

It has met with some success in its efforts to promote the local uptake of its findings by the communities, other researchers, NGOs and bi-lateral aid donors.

R6759 – Integration of Aquaculture into the Farming Systems in the Eastern Plateau of India

Theme: CPR Management
Production System: High Potential
Country: India
Documents reviewed: RD1; Annual Reports 1998-1999 – Graham Haylor; Annual Reports 1999-2000 & 2000-01– James Muir

Major Outcomes of Project Research:

Production of systems commodities (fish) increased through optimisation of inputs and outputs.

Participatory strategies developed and promoted to introduce improved stock.

Understanding and prioritising key researchable constraints to the integration of aquaculture and agriculture in the research areas - Orissa, Bihar and West Bengal.

Identifying opportunities favouring the integration of aquaculture and agriculture.

Developing and promoting the above.

Distinctive/Unique Research Findings and Wider Applicability:

The project contributes to the wider debate on the potential of India's rainfed farming systems to make a significant contribution to the food needs of the rapidly growing population.

The project strategies aim at intensification and diversification of food production without pollution through chemical additives.

The project has identified underutilized seasonal water bodies and introduced fish species suited to these specific environmental and local market conditions.

Aquaculture not practised prior to this project now established in 57% of 231 target villages – techniques of locally suited aquaculture spreading spontaneously to other villages.

Multipurpose use of previously underutilised water resources, including fish culture, have become a dynamic part of livelihoods in project area.

Interdisciplinarity of Research Design:

The project contains a small measure of interdisciplinarity in that it studies aquaculture, agriculture, and institutional links.

Positioning of Project with respect to DFID's Present Policy Priorities:

The project's target areas are characterised by poverty, inequality, land alienation and seasonal migration. The scheduled castes and tribes of this area are among the poorest communities of India.

The project is testing the sustainability of aquaculture as an improvement to livelihoods.

Its work aims to be environmentally neutral.

R6778 – Community Forestry in Nepal: Sustainability and impacts on Common and Private Property Resource Management

R7889 – Dissemination of Research Findings (of R6778) Regarding Community Forestry in Nepal

Theme: Methodologies and management options – User-group management

Production System: Forest Agriculture Interface

Country: Nepal

Documents reviewed: R6778 – RD1; FTR; 'Impacts of Community Forestry on Farming System Sustainability in the Middle Hills of Nepal.' Dougill, Soussan et al.; Final Report – O. Springate-Baginski et al. R7889 – RD2; 5 papers based on R6778 – O. Springate-Baginski

Main Outcomes of R6778 and R7889:

Many valuable data on micro-levels of community forestry collected from a sample of 14 locations across the mid-hills of Eastern Nepal by R6778 and written up in R7889; quickly accessible in numerous tables included in Final Report and Annexes. Project R6778 developed Participatory Action Research (PAR) methodology to involve a sample of 11 communities with forest users' groups (FUGs) in evaluating their formation, how they function and their impacts. This outcome reveals much about the complexity of perceptions (including self-perceptions) and measurable realities e.g., forest conditions are mainly seen as improving since formation of FUGs, while many FUG members (especially the poor and women) and non-members have strong reservations about aspects of FUG performance.

Through the PAR consultations a list of 31 indicators for evaluating community forestry as a process emerged, of which the 4 indicators most-cited by users were: hamlet-level interaction, effective forest protection, active forest management and women included in FUG functioning.

Project R6778 also developed a Micro-Action-Planning (MAP) process as a self-help tool for FUGs in monitoring and improving their performance and helping them to recognise when they need outside support.

Project R6778 produced data on soil fertility and nutrient management, forest-agriculture interface (published separately) and on livelihoods. Main emphasis fell on institutional aspects of users' groups.

Distinctive/Unique Research Findings and Wider Applicability:

These projects have devoted a lot of attention to the practical development and extensive reporting of two important procedures: the PAR procedure and the MAP process. The first is clearly intended to help researchers involve 'the researched' in interactive roles in project formulation and assessment from an early stage and is suited to wider applicability (cf. Estrella et al., n.d.) if continually reappraised in the light of local conditions and sensibilities. The second has the stated aim of providing users' groups with a tool for progressive self-assessment, but would lend itself equally well to external assessments of FUG performance, again potentially on a wider scale. They contribute strongly to the wider debates on participatory monitoring and evaluation.

Interdisciplinarity of Research Design:

Explores forest agriculture interface effectively. Primary data extremely useful to a range of disciplines e.g. development economists, agronomists, geographers, sociologists and anthropologists.

Positioning of Project with Respect to DFID's Present Policy Priorities:

Project R7889 argues strongly for more inclusiveness of all users among FUGs and builds them into PAR and MAP. This would lead to better representation of the interests of marginalised members such as the poor and women, and of groups currently excluded from FUG membership such as seasonal workers and blacksmiths.

Outcomes like PAR and MAP should facilitate take up of project's work. PAR and MAP should enhance the viability of FUGs after the project has ended.

R6787 – Effective Local Management of Forests: Learning from Self-Initiated Management Organisations in India

Theme: Management options – User-group management

Production System: Forest Agriculture Interface

Country: India

Documents reviewed: RNRRS Project Completion Summary Sheet; FTR – Czech Conroy; Discussion Paper, Feb. 1999 – Czech Conroy, Abha Mishra, Ajay Rai

Main Outcomes of Project Research:

Against a striking background of between 2,000-4,000 self-generated community forest management (CFMs) structures in Orissa over the past 60 years, this project studied a sample of 33 protecting and 10 non-protecting communities in or adjacent to forests, spread over six districts of Orissa state. The sample was chosen to reflect different forest types, tribal and mixed caste communities, different organisational forms, motivations and periods of protection – the oldest having started in 1940, the latest in 1992. This project has amassed valuable case-study data presented in District Overviews, numerous publications, and in a series of compact tables and texts in the FTR.

Diversity exists among the socio-economic bases of the protecting organisations, which arise from single hamlets or villages and from a cluster of villages or hamlets - the most common being single villages. Protecting organisations function through village committees, special forest committees, youth or elders' clubs.

The main factors behind the initiation of forest protection have been both immediate and underlying: the most immediate being degradation of the forest and a decline in forest biodiversity. The underlying factors (which contribute notably to longevity and success) have been strong community institutions (especially to patrol and punish); low competition for the land from agriculture; lack of alternative sources or substitutes for some forest products; support from the Forest Department; and identification of the communities with the Revenue Forests of Orissa.

Equally interesting are the factors inhibiting the initiation of forest protection, most frequently identified by the surveyed communities as: lack of scarcity of forest resources, threats from nearby or bigger villages (or smugglers) and lack of consensus within the community.

Self-generated organisations have no formal legal status, but they carry out multiple activities including acquiring and managing revenues from fines and sales of forest products.

The project prepared a Framework for Partnership between Communities and the State to strengthen the status of the CFMs and achieve a co-operative sharing of rights, responsibilities and benefits.

Distinctive/Unique Research Findings and Wider Applicability:

The impressive longevity of self-initiated CFMs in Orissa and their equally remarkable ability to survive periods of conflict (usually internal to village clusters) and breakdowns of CFM activities – highly relevant to general CPR management issues and CPRs cf JFMs.

The ability of ethnically mixed communities to manage their forest resources.

The high potential for conflicts of which the majority are eventually and effectively managed by community organisations.

Membership of CFMs seen in terms of ability to contribute to protection (in cash or kind) - disadvantages women and the poorest, BUT Orissa CFMs accept joint memberships from a group of poor households.

Forest condition and biodiversity generally improves under CFMs – often strikingly.

Interdisciplinarity of Research Design:

Includes data on the diversity and condition of the sampled forests.

Provides socio-economic data on the populations studied, including percentages of tribals, scheduled castes and main livelihood enterprises.

Uses remote sensing to provide data on rates of forest regeneration from 1992-96.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

Findings contribute to knowledge on sustainable livelihoods and management, improved management of the natural environment, facilitating access of the poor to resources and the prevention and management of conflict.

R6919 – Evaluating Trade-offs between Users of Marine Protected Areas in the Caribbean

R7408 – Building Consensus amongst Stakeholders for Management of Natural Resources at the Land Water Interface

Themes: Land Water Interface (coastal zone)

Production System: Methodologies

Region: Caribbean

Documents reviewed: R6919 RD1; FTR Katrina Brown et al. R7408 RD1; FTR Katrina Brown, W.Neil Adger, Emma Tompkins

Major Outcomes of Project Research:

Moving into a situation of long-standing conflict and mutual suspicion among stakeholders over uses of the protected marine environment of the Buccoo Reef of Tobago, this project created a multi-criteria analysis of the situation to enhance decision making, planning and managing a valuable resource.

Its methods were participatory in specifying and prioritising the criteria, emphasising in the process the possibilities and advantages of "trade-offs" among stakeholders. Four development scenarios for south-west Tobago were created for a 10-year time frame. Criteria for their impacts were identified and modelled. Sustainable management options crystallised out of the consultative process with stakeholders and received priority ratings at the final consensus-building workshops.

From an initial situation of conflict among stakeholders, there was some measure of convergence in their views by the time of the final consultative workshops. This is most noticeable on the key questions of social issues and the health of the reef as an ecosystem.

Distinctive/unique Findings and their Wider Applicability:

It is striking in the work of these two projects how short the administrative distance is from the local to the national level, and how successful the projects were in involving interested members of the Tobago House of Assembly in their on-going stakeholder consultations. This point has wider applicability to projects in other small states.

The projects have developed tools of consultation and decision-making that have injected change from stasis over a key CPR to some degree of consensus and dynamism.

The second tranche of this work (R7408) is concerned with the uptake of "Trade-off Analysis" by an additional number of institutions: firstly in Tobago, secondly on a Caribbean-wide basis through links with a DFID bi-lateral project, and thirdly through the creation and dissemination in the region and elsewhere of a manual on trade-off analysis for participatory coastal zone decision-making.

Interdisciplinarity of Research Design:

R6919 collected biophysical data in some detail to make persuasive models of the marine environmental as well as other impacts of the 4 management options laid before stakeholders.

Positioning of the Projects with Respect to DFID's Present Policy Priorities:

The projects have contributed to all of DFID's goals within the RNRRS Production System.

R7150 – A Synthesis of Two Case Studies on Common Property Resource Management where Tourism, Wildlife and Pastoralism Interact in Kenya

PD099 – Southern Kenya Ecotourism Project (Follows up R7150)

Themes: CPR management in a multi-use context
Production System: Semi-arid
Country: Kenya
Documents reviewed: RD1; Annual Reports, 1998-1999 and 1999-2000 – Viv Lewis; FTR – Stuart Coupe; RD2 for PD099.

Major Outcomes of Project Research:

This project set out to make two detailed case studies in contrasting pastoralist and environmental settings, under the following headings: a categorisation of the target populations; an evaluative record of economic contribution of CPRs to livelihoods by category of population; an indication of relations between stakeholders along the spectrum of co-operation/competition/conflict; an enhancement of policy analysis skills among partner organisations.

The ultimate objective was to create a set of criteria for good practice in the development of successful social and economic interactions between tourism, pastoralism, wildlife and other CPRs.

In fact this project reached the conclusions that the case-study locations had "low tourism potential".

Also "the wildlife conservation interventions there had neither strengthened the livelihoods of local pastoralists, agro-pastoralists and farmers, nor significantly conserved wildlife," and illustrates these conclusion with 11 detailed, negative observations of local conditions and 5 recommendations of issues to which attention must be given if wildlife conservation projects are to succeed.

Distinctive/Unique Findings and Wider Applicability:

The operation of this project was tragically affected by the murder of its field director and the illness and death of one of the key field officers involved in data collection.

Some very good case-study data are briefly presented in the FTR. They serve to indicate the insights into livelihoods that might have been achieved had the database as originally conceived been accomplished.

Regardless of the negative general conclusions as to the feasibility of the original goals, such data would have been inherently valuable.

Interdisciplinarity of Research Design:

This project was designed with an interdisciplinary structure, combining bio-physical with socio-economic and institutional data and analyses.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

The basic concepts of the project were firmly and innovatively located within the parameters of DFID's policy priorities of pro-poor initiatives, management of conflicts among multiple users of the same resources, sustainably enhanced livelihoods and environments.

R7304 – Zimbabwe: Micro-Catchment Management and Common Property Resources

Themes: Understanding CPRs; Methodologies; CPR management; Policy linked research
Production system: Semi-arid
Country: Zimbabwe
Documents reviewed: RD1; NRSP mid-term review report; revised logframe; various project publications

Major Outcomes of Project Research:

The project has studied local formal and informal institutional arrangements for natural resource management. Results for water management indicate that existing arrangements are adaptive and effective. A similar situation also applies to forests, and the reasoning and arguments for this finding are the subject of a published journal paper.

The project conducted a household survey that examined the livelihood strategies of individual households in the communities of the two target micro-catchments and plans to place the database of this survey in the public domain.

In the target micro-catchments, the key linkages amongst their NR components have been analysed. As this study is based on longitudinal biophysical monitoring, a relatively complete and robust understanding of NR interactions has been developed.

The project has engaged in dialogue with some key policy actors at District level throughout the project period and achieved a good level of engagement with relevant local government organisations. It has also maintained close links with the NGO, CARE, that has projects in the area such that some of the project's findings have transferred directly to this target institution.

Distinctive/Unique Findings and Wider Applicability:

When the project began, water was perceived as a limited resource that could benefit from better management through such measures as in-field water conservation practices and controlled (restricted) water extraction. Long term monitoring of groundwater reserves in one micro-catchment and shorter term monitoring of reservoir water resources in the second established that the scope for more intensive management of these water stocks was limited. Indeed, rather than promoting conservation of water, increased use of water as long as stocks were available was a rational strategy.

The project successfully communicated this revised understanding of a more opportunistic response in water management strategies to the community of one micro-catchment. Agreement to expand gardened area (i.e., more persons with garden plots) that rely on communally managed water points was transacted with the local community through existing institutional mechanisms.

There are strong indications that the existing arrangements for the management of other CPRs in the micro-catchments e.g., forests are satisfactory or at least not susceptible to more intensive management. This 'no-change' scenario arises mainly because the transaction costs would outweigh the benefits in this marginal setting.

Interdisciplinarity of Research Design:

This is a wide ranging project that has achieved some convergence between several different disciplinary approaches.

At conception, the research was grounded in the hypothesis that productive water points in semi-arid areas could make a significant positive impact on household livelihoods and provide an entry point for the management of a broad range of CPRs. The contributions from different disciplines were built around the acceptance of this hypothesis although the contributions of other CPRs to livelihoods were also studied.

As explained above, water resources were shown to be important, but not as robust an entry point for micro-catchment management strategies as was originally envisaged.

Curiously, whilst the disciplinary contributions to the project brought forward new findings on the options for water management, they were not as instrumental as might be expected in exploring other options for improving livelihoods, based around other micro-catchment CPRs.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

The data of the livelihood survey enable identification and characterisation of specific groups of the poor in what are, in general terms, poor communities living in dry marginal areas.

These data could be a rich source of information on the dynamics of livelihood strategies in communities that are essentially marginalised in respect of livelihood circumstances and opportunities for positive change.

R7514 – Development of Monitoring Process and Indicators for Forest Management, Nepal

Theme: CPR management – User-group management
Production System: Forest Agriculture Interface
Country: Nepal
Documents reviewed: RD1; various internal reports

Major Planned Outcomes of Project Research:

A generic methodology for developing participatory forest management indicators.

A framework with a range of indicators to help monitor and assess the impact of forest management at the local level in 10-15 community forest sites in Nepal.

The project outline suggests considerable overlap with R6778 and R7889, to which it does not refer although one paper by Springate-Baginski, Soussan et al. arising from R6778 is included among the references. As R7514 is intended as a preliminary year in a longer study, differentiation from R6778 and R7889 can be expected as the results from those projects are more widely disseminated. Indications that this is already latent appear in the following points proposed in the RD1 of R7514:

An emphasis on livelihoods' systems approach, including the dynamics of change and more emphasis on non-FUG members than previously;

A participatory evaluation of biodiversity that goes beyond utilitarian criteria;

Identifying and developing silvicultural techniques and practices (esp. for Schima-Castanopsis forests) useful to forest users' groups (FUGs).

Distinctive/Unique Proposed Research Findings and Wider Applicability:

This project positions itself in the wider debates on livelihoods, silviculture and participatory evaluation and monitoring.

Interdisciplinarity of Research Design:

It is implicit in the range of activities outlined.

Positioning of Project with Respect to DFID's Present Policy Priorities:

The project aims to produce monitoring processes to assess livelihood enhancement for poor forest users.

The project is constructed so as to give priority to participatory monitoring and evaluations, which should facilitate uptake.

R7559 – Improving Coastal Livelihoods in the Caribbean: Institutional and Technical Options

Theme: CPR management (sustainable livelihoods)
Production System: Land Water Interface (coastal zone)
Region: Caribbean
Documents reviewed: RD1; NRSP mid-term review report

Major Outcomes of Project Research to Date:

This project has four planned Outputs:

- To test and document methods for participatory planning and management in small coastal communities of the eastern Caribbean by means of a series of experiments with small sample groups;
- To identify, test and refine technologies for sustainable resource use which will at the same time contribute to local economic development – again utilising an experimental methodology;
- To disseminate the methods and technologies of enhancing coastal livelihoods while reducing coral reef degradation, so as to enhance the contribution of coastal resource management to the goals of poverty elimination and environmental sustainability;
- To enhance the capacity of research institutions (in the first instance the two partner organisations IDS, Sussex and CANARI, St Lucia) involved in the participatory management of natural resources for sustainable development.

The MTR found that whereas other projects have been concerned with developing tools for participatory involvement in coastal resource management, this project is utilising existing participatory approaches and assessing their efficacy.

It commented on delays and a degree of imprecision in the design and implementation of the experiments and in project methodology generally, but finds these can to some extent be related to the participatory nature of the project and that the fourth output proposed is already being realised.

Interdisciplinarity of the Research Design:

In the sample area – Laborie Bay and 21 households selected, the project aims to provide a baseline understanding of natural marine resources, livelihoods and poverty and related institutions and organisations. Thus it intends to provide a holistic account of the biophysical, social and management aspects of the study area. It did not include economic aspects but will include an Environmental Entitlements Analysis, as developed at the Institute of Development Studies, University of Sussex.

Positioning of the Proposed Research with Respect to DFID's Present Policy Priorities:

The project was found in the MTR to address social issues in a livelihood context related to natural resources and to fit well within the DFID/NRSP context.

The central NR focus is on reduced reef degradation.

R7562 – Methods for Consensus-Building for Management of Common Property Resources

Themes: Methodology of Consensus-Building and Strengthening of Management Institutions (grows out of R6756)

Production System: Land Water Interface (floodplain)

Country: Bangladesh

Documents reviewed: RD1; NRSP mid-term review report; FTR – Julian Barr et al

Major Outcomes of Project Research:

This short-term project identified the process of consensus-building as crucial to eventual success in implementing the CPR approaches formulated in the preceding project. It therefore concentrated on how best to develop participatory action plan development of this process (PAPD) in pilot areas. Levels of consensus were surveyed before and after the PAPD process.

The methodology was developed and tested at 4 sites with an important fishing activity, funded under bi-lateral agreements by DFID-Bangladesh. It was refined through internal review, presented at community workshops. Results were studied to see whether the process was measurably building consensus (which is here seen as analogous to some forms of social capital). It emphasises the importance of arriving at lists of problem-priorities agreed by the communities as a result of transparent, inclusive processes.

The project finally developed 8 criteria for evaluating consensus-building processes.

The post-PAPD evaluation showed participants in the workshops felt that they had been relevant to them and/or to their community, that new relations of understanding had been fostered and, significantly, non-participants also knew a lot about the workshop's activities and composition (a majority of these wished to become participants).

Further NGO facilitation was seen by participants as necessary to the replication of the process.

The second objective and outcome of the project was to achieve an improved awareness at a policy-level of the issues in and methodological approaches to consensus building. Through the close involvement of this project and its predecessor with a range of NGOs, bi-lateral donors and the scholarly community, this project has received commitments to take up its methods by unofficial and official organisations in present and future projects including by the Department of Fisheries of Bangladesh.

Distinctive/Unique Research Findings and Wider Applicability:

This project has set out to develop processes of consensus building that will have a wider applicability. Its reports and publications discuss in detail the methodology adopted, alternatives and modifications and these materials are valid and relevant to other researchers. Points made in the MTR were useful to the progressive refinement of the methodology.

The project distinguishes between 'trade-off' techniques employed, for instance, in Caribbean conflicts over CPRs and consensus building and discusses them in some detail.

It aims to situate consensus-building in a potentially dynamic situation where participants are not so much engaged in exchanging slices of the pie, but in arriving at an understanding that their livelihoods are interdependent and that it may be possible to share a bigger pie.

Interdisciplinarity of Research Design:

Interdisciplinarity was a background feature of this project inasmuch as data from a variety of disciplines, including indigenous knowledge, were influential in the framing of the surveys, questionnaires and problem census.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

The ultimate objective of this project's work is to strengthen the chances of success of CPR management through the explicit recognition by all stakeholders of the importance of consensual processes. Such processes will, if successful, assist the poorest and most marginalised members of society who are most dependent on CPRs.

R7797 – Opportunities and Constraints for Coastal Livelihoods in the Caribbean

Themes: Understanding CPRs (livelihoods)
Production System: Land Water Interface (coastal zone)
Region: Caribbean
Documents reviewed: RD1; NRSP mid-term review report; FTR – N.G.Willoughby

Major Outcomes of Project Research:

This project's main focus was on creating a multi-facetted data base: a) reviewing previous studies (since 1970) on a Caribbean-wide basis - on the basis of abstracts and citation indices - and to assess their areas of strengths and weaknesses in both qualitative and quantitative terms, b) providing detailed indicator data for most of this region, and c) compiling resource data for the region - this target was not realised to the project's satisfaction.

The project created and maintained regular electronic contacts with a 'Virtual Steering Group' (VSG) consisting of a group of senior Caribbean personnel, who were asked to rank the issues emerging from the literature review in terms of regional, national and local criteria.

Case study surveys leading to stakeholder analyses were carried out at two contrasting sample areas: Portland Bight, Jamaica (big island case – 48 interviewees) and the whole island of Tobago (small island case – 32 interviewees), questionnaires devised by project/surveys conducted by two NGOs already active in each area. Data from the surveys were cross-checked at workshops in Portland Bight and Tobago.

The FTR concludes that surveys and workshops yielded a range and depth of quantitative data not frequently found in the literature on Caribbean coastal communities and suggested new indicators for comparing the needs of different livelihood groups.

Surveys and local-level workshops produced lists of issues and priorities that diverged strongly from those produced by the VSG, and the project noted the implications of this finding for management action.

Distinctive/Unique Findings and their Wider Applicability:

This project addressed the task of trying to obtain a regional perspective on an environmentally and linguistically heterogeneous region, which has been very unevenly researched.

It concludes that more attention in the past has been paid to the study of the natural resources than to the study of human resources and people's struggles to win a sustainable livelihood from those resources.

It makes a set of recommendations, based on project findings, that future Land-water interface studies should consider. They summarise as: a) blending regional, national and local projects, b) taking an holistic approach to human and natural resource issues, c) making carrying-capacity studies on both thematic and systems issues, d) developing more appropriate coastal poverty indicators, and e) paying attention to scalability.

Interdisciplinarity of Research Design:

This project set out to include bio-physical and socio-economic information in its database but decided to give main emphasis to socio-economic (livelihood) data.

There is an apparent (but perhaps not real) contradiction between the project's finding that more research attention has been paid until now to natural resources than to human and its inability to complete the resource database for lack of published source materials covering livelihoods and natural resource use.

The Positioning of Project Research with Respect to DFID's Present Policy Priorities:

This project has been planned from the outset with the policy priorities of DFID, NRSP Land-water interface in mind as they concern livelihoods. Its findings ultimately serve other issues such as better-informed and more inclusive management of CPRs.

R7805 – Understanding Household Coping Strategies in Semi-Arid Tanzania

Themes: Understanding CPRs (livelihoods)
Production System: Semi-arid
Country: Tanzania
Documents reviewed: RD1; FTR – Mike Morris

Major Outcomes of Project Research:

Surveyed the current state of knowledge on livelihoods and coping strategies in semi-arid Tanzania and identified key knowledge gaps.

It developed new knowledge relating to poverty and elucidated some poorly understood livelihood strategies, including multiple off-farm and individual activities, with repercussions on community and household traditions and traditional divisions of agrarian labour.

The project confirmed the demand for new livelihood options and assessed emerging pointers for future strategies.

Distinctive/Unique Findings and Wider Applicability:

The livelihoods' analyses of this project contain some valuable micro-study data which argue persuasively for points with macro-levels applicability: in situations of agricultural intensification and extensification, the poor are squeezed the most; they experience great difficulty in achieving subsistence levels of food production for a full year and cannot cross the threshold to the marketing of cash crops and other forms of accumulation.

The poorer households are increasingly forced into non-specialist wage labour on and off-farms and thus have decreasing time and labour to spend on their farms and food production.

There is a growing dichotomy between the coping strategies of the poor and other socio-economic groups in the same semi-arid environments.

This project emphasises the high importance of social capital for all income groups, but especially for the poor, in supporting their interactive coping strategies with other individuals and socio-economic groups.

Interdisciplinarity of Research Design:

This project accepts existing biophysical research on the semi-arid zones of Tanzania and does not contribute new research.

It is strongly socio-economic in research orientation.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

The project contributes key data and considered more general critiques to the Sustainable Livelihoods framework.

It has isolated 8 areas of key gaps in existing knowledge on coping strategies, which can be grouped as the need to establish "longitudinal livelihood data", and should be considered in future research.

R7806 – The Role of Human and Social Capital in NR Management in Tanzania

Theme: Understanding NR management
Production System: Semi-arid
Country: Tanzania
Documents reviewed: RD1

Major Planned Outputs of Project Research:

To describe current management of catchment resources.

To identify the key factors in management practices in relation to human and social capital investments.

To synthesize and disseminate assessments of improved resource management strategies, with cost-benefit analyses at the catchment level, implications for local institutions and effects on livelihoods of the poor

Note

The FTR for this project was received just at the time when this report had to go to press, hence commentary on the research findings could not be included.

The omission will be corrected when this report is posted on the NRSP web site.

R7857 – Review of Common Pool Resources Management in Tanzania

Theme: Understanding CPR management
Production System: Semi-arid
Country: Tanzania
Documents reviewed: RD1; Fieldwork Report – Village Profiles – C. Quinn (ed.); Draft Final Report – Jon Lovett et al

Major Outcomes of Project Research:

This project has carried out research on a carefully selected sample of 12 villages in the semi-arid zones of Tanzania, where 14 development programmes of significance to CPRs are taking place under the auspices of a range of GOs and NGOs. It locates the results of these surveys within the context of recent policy changes at the state level, embodied in legislation on forests (1998), wildlife (1998) and land (1999).

It has collected a body of case-study data (survey methodology and data well reported in the "Village Profiles"), showing among many other insights, that land was the first common pool resource mentioned by villagers, followed by water then forests. Yet the project also shows that there are not any/adequate land records at the national, district and local levels of authority.

The project identified sharp conflicts of interest between pastoralists, wildlife conservation, and sedentary farmers over use of the same CPRs.

It also identified the intercutting of older and more recent systems of authority at village levels and tensions between one or both of these and the district-level authorities. The realities of present land allocation, land use and increasing competition for diminishing resources suggest the absence of clear lines of authority and generally accepted rules.

Many cases were recorded where the benefits of development programmes and wildlife reserves (with associated revenues from tourism or hunting) were not being equitably shared among, or even received at all, by the local communities.

This project has identified 3 researchable constraints to the effective management of CPR resources in Tanzania. They relate to: making decisions on which land-use is preferable; on whether transaction costs prevent sustainable CPR management institutions; and on what are the socially optimal forms and levels of institutional interactions.

Distinctive/Unique Findings and Wider Applicability:

This project provides a succinct concluding overview of the constraints on improved CPR management in the Tanzanian context, measured against Ostrom's 8 general conditions.

Its frequent references to the complex administrative heritage of Tanzania as it affects CPRs, identifying elements from the pre-colonial, colonial and various phases of the independence period, provide valuable insights into a specific situation that may also prove relevant to understanding other post-colonial societies.

Interdisciplinarity of Research Design:

The case-study data collected by this project bring together the relevant biophysical with socio-economic aspects of each village surveyed. The main thrust of the project is institutional, with the ultimate aim of improving management and thereby, livelihoods.

Positioning of the Project with respect to DFID's Present Policy Priorities:

The emphasis of the project falls on sustainably improved managements of CPRs, and this affects sustainably improved livelihoods and environments.

R7868 – Maximisation of Joint Benefits from Multiple Resource use in Bangladeshi Floodplains

Theme: CPR management; Policy linked research
Production System: Land Water Interface (floodplain)
Country: Bangladesh
Documents reviewed: RD1; NRSP mid-term review report

Major Outcomes of Project Research

Guidelines for the sustainable multiple-use management of floodplain resources in Bangladesh will be produced. The guidelines are meant to guide both future action research (short and medium-term interventions) as well as floodplain planning (long-term flood control strategies).

The guidelines will be based on the project activities of: gathering information on existing land use management strategies and on how to evaluate them; undertaking a modelling exercise to determine optimal management strategies; evaluating these management strategies with local stakeholders and key policy actors; and disseminating the project findings.

Possible development of a management tool based on the models developed during the research.

Distinctive/Unique Research Findings and Wider Applicability:

Although the project site, central Tangail is well-studied, the project aims to generate more widely applicable management strategies.

The testing of strategies identified in the land-use (macro) model in the micro-level Social Accounting Matrix means that implications of decisions and events at the macro level can be modelled at the micro-level.

Interdisciplinarity of Research Design:

The project will make use of macro and micro modelling techniques and aims to bring about an iterative interaction between the two.

Links with relevant institutions and NGOs have been made.

The project brings together the research from previous interdisciplinary work in a systems framework.

Outputs of the model are evaluated by various specialists and their feedback is used to make further modifications to the model.

Positioning of Project with respect to DFID's Present Policy Priorities:

The project aims to lead to sustainable improvements in livelihoods on the Bangladesh floodplain. This will be done by influencing sectoral programmes by enabling public sector institutions to perceive interactions between sectors and between different stakeholders with the information gathered through livelihoods analysis

It also takes into account of DFID’s the poverty alleviation objective.

R7877 – Common Pool Resources in Semi-Arid India – Dynamics, Management and Livelihood Contributions

Theme: Understanding CPRs

Production System: Semi-arid

Country: India

Documents reviewed: RD1; Indian CPR Literature Review – AE1 – authors: Adolph, Conway, Dixit, Korwar, Mishra, Mishra, Morris, Osman, Rama Rao, Ramachandran; Report on Case Studies of CPRs in Gujarat – compiler: Ashok Kumar Gupta; Report on Case Studies in Andhra Pradesh – co-ordinators: Anwar, Ramachandran Rao

Main Outcomes of Project Research to Date:

Valuable review of the CPR literature for India and of the main issues surrounding CPRs in post-independence period provides strong foundation for in-depth studies in two semi-arid states.

Important data bank in preliminary state reports on Gujarat and Andhra Pradesh - compilations of work carried out by relevant NGOs, not this research group - but document the complexity of CPR preservation, exploitation and current management and underpin the project's findings.

Distinctive/Unique Research Findings of Project to Date:

In Gujarat, new religious movements can provide motivation for effective CPR creation and management.

In both Gujarat and Andhra Pradesh, the poor are heterogeneous. Destructive rivalries/conflicts take place between sub-caste groups, between them and tribals, also gender disadvantages are rife. The Andhra studies suggest concept of "conflict management" realistic and reject "conflict resolution" as unattainable - concept lost however in the conclusion of this work.

In Andhra Pradesh, encroachments on CPRL are linked to failure of government's land reform policies to take surplus land from the rich, instead distributing "waste lands" (CPRLs) to the poor for dwellings and use. Low/no demand for reversal of encroachments/privatisation of CPRL.

Though not explicitly stated, there appears often to be a "life-cycle" of successful CPR management groups, whereby the benefits of years of successful management are lost as the projects come to maturity a) because of inability to protect them against raiders, and/or b) because of conflicts within management groups.

Transition from traditional CPRW management to new structures and technologies can be beneficial to environment, productivity and livelihoods if inclusive.

Interdisciplinarity of Research Design:

Proposed biophysical studies of CPRs and innovative solutions to CPR management problems not yet available. Stakeholder involvement in progressive project assessments and findings and promotion of uptake are integrated into project structure.

Wider Relevance/Applicability of Findings:

CPRs of land, water and forest environmentally linked; need to be treated holistically not sectorally.

CPRs in general degraded and reduced in scale yet still significant in livelihoods of women and the poor.

Population pressures increasing while CPR diminishing – crises impending.

Need for stronger institutionalisation of variety of local management structures for CPRs.

R7957 – Poverty Dimensions of Public Governance and Forest Management in Ghana

Theme: Understanding CPRs with policy links
Production System: Forest Agriculture Interface
County: Ghana
Documents reviewed: RD1

Major Planned Outcomes of Project Research:

This new scoping project will address the complexity of the institutional arrangements that can control rights over natural resources, especially on the forest margins and the interface with agriculture.

It will examine ways that recent reforms in local government and innovations in forest management relate to this institutional context, in particular seeking to elucidate the institutional aspects of local livelihoods, identify gaps in the existing knowledge on the linkages between sustainable livelihoods, forest conservation and use, and poverty.

It will explore the types of changes needed to optimise the potential for simultaneous improvements in, or negotiated agreements between resource conservation, livelihood security and poverty alleviation.

It will examine conflicts of interest between different agricultural systems – the cultivators of yam vs. maize, cowpeas and vegetable crops in relation to forest use and in-field tree preservation – or different socio-economic interest groups: e.g. government agricultural extension services, the chiefs, charcoal makers, local women.

Distinctive/Unique Planned Findings and Wider Applicability:

This project aims to increase understanding of the social and institutional implications of natural resource management at the forest-agriculture interface in Ghana, and this would be of wider relevance to similar situations of dynamic change – physical, social and institutional.

It hopes to identify appropriate participatory management approaches to benefit the poor and to disseminate its findings among stakeholders.

Interdisciplinarity of Research Design:

This is a scoping project, but does plan to include botanical aspects such as the tree-conservation needs of yam farming, and an evaluation of commercial teak plantations. Its main disciplinary thrust is socio-economic.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

This project aims to address, mainly though its successor project, the priorities of poverty alleviation, sustainable livelihoods and environments and improved and sustainable environmental management strategies.

R7973 – Policy Implications of Current Knowledge about CPR Management in India, Zimbabwe and Tanzania

Theme: Policy linked research

Production System: Semi-arid

Countries: India; Tanzania; Zimbabwe

Documents reviewed: RD1; Workshop 1 Report – Bill Adams, Bhaskar Vira, Dan Brockington, Jane Dyson, Kanchan Chopra, Issa Shivji and Marshall Murphree

Major Proposed Outcomes of Project Research:

This new project aims to achieve an overview of the crucial problems affecting CPRs, their uses and their users, based on the latest findings of CPR research carried out in three distinct countries: India, Zimbabwe and Tanzania.

It will supplement these sources by both theoretical and case study literature from other geographical regions.

In the course of its work, and in particular through its interaction with numerous stakeholders, it aims to develop a network of governmental and non-governmental agencies committed to CPRs for interaction with DFID in the pursuit of its developmental goals.

Distinctive/Unique Planned Findings and their Wider Applicability:

This project aims from the outset at the wider applicability of its work.

It aims to tease out the bigger story from CPRs in the named countries that experience multiple-use of the sort generated by the competitive consumption pressures of local, regional, national and international stakeholders.

It hopes its findings will enable natural resource managers in these target countries to be better informed about the implications of their decisions when creating regimes for the exclusion from, and exploitation of CPRs so as to provide better opportunities for providing sustained livelihoods for the poorest members of the communities affected.

Interdisciplinarity of Research Design:

This project does not aim to carry out new research, but rather to draw threads together from previously isolated research findings. In this way it will draw upon interdisciplinary research to reach over-arching goals of a socio-economic character.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

This project will provide new thinking and accessibly broad findings on the following DFID policy priorities: sustainable livelihoods, sustainable environments, and the issues surrounding CRP management and its successes and failures as an instrument for the alleviation of poverty.

R7975 – Social Structure, Livelihoods and the Management of CPRs in Nepal

Theme: CPR management – new/old social & political relations
Production System: Forest Agriculture Interface
Country: Nepal
Documents reviewed: RD1

Major Planned Outcomes of Research:

To develop a framework that reveals the linkages between proposed new systems of management of CPRs and pre-existing socio-economic and political relations.

To promote the understanding arising from the framework and its uptake by target institutions.

To provide examples of how this understanding can be integrated into models for improved management.

To strengthen local management capacity and give increased livelihood security to vulnerable groups.

This new project takes account of R6778, R7889 and R7514, differentiating itself from them in the first three points above.

Distinctive/Unique Proposed Research Findings and Wider Applicability:

This project intends to delineate in detail the important social processes that underpin change, affecting in turn institutional viability and equity.

It intends to contribute to the wider debate on poor and vulnerable socio-economic groups and their marginalisation in decision-making.

It will address the broad questions of sustainability of livelihood improvements of poorer groups in a specific context – the Middle Hills of Nepal – and consider the actual and potential contributions of forests, forest products and by-products to this issue.

Interdisciplinarity of Research Design:

The project intends to involve social, economic and political studies in order to understand a context of change.

Positioning of the Project with Respect to DFID's Present Policy Priorities:

The project proposes to address issues that affect the chances for improved and sustainable livelihoods for the most vulnerable groups in a depressed region of Nepal.

It incorporates measures to promote uptake of its findings among target institutions.

R7976 – Institutional Evaluation of Caribbean MPAs and Pro-Poor Management

Themes: CPR management; policy linked research
Production System: Land Water (coastal zone)
Region: Caribbean
Document reviewed: RD1

Major Planned Outcomes of Project Research:

This new project plans to achieve outcomes in four main areas:

- To review the key institutional, social and bio-physical features of MPAs in the Caribbean as a region, leading to a better delineation of MPAs in general and an informed selection of MPA sites for more detailed analyses.
- To improve understanding of the enabling/constraining structures and processes leading to successful MPA implementation and integration into Integrated Coastal Zone Management (ICZM).
- To increase understanding of the impacts of those successfully implemented MPAs on the livelihoods of the poor and distinguish the structures/processes causing positive/negative outcomes, respectively.
- To define the means to improve the benefits to the poor and develop and promote a pro-poor methodology for MPA management, especially by means of "a living document" approach, whereby project guidelines will be constantly reviewed as research results are synthesised and consultations provide further insights.

Distinctive/Unique Planned Outcomes of Research and Wider Applicability:

This project aims at a regional level applicability from the outset.

It places both the project itself and the aspects studied in processual contexts.

It is explicitly pro-poor in orientation.

Interdisciplinarity of Research Design:

The project aims to collect data on the bio-physical aspects of MPAs as well as institutional and social data. It does not mention economic data collection, though its pro-poor orientation implies that.

Positioning of the Planned Research with Respect to DFID's Present Policy Priorities:

If realised, the project's plans form a logical sequence of steps towards the stated aim of developing and promoting pro-poor management strategies. These would fit into the context of current emphases on the alleviation of poverty, on improved and sustainable livelihoods and environments and on improved management capacities.