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Department for International Development

NRSP

RENEWABLE NATURAL RESOURCES KNOWLEDGE STRATEGY

FINAL TECHNICAL REPORT

DFID Project Number: R6744

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INDIGENOUS KNOWLEDGE & NATURAL RESOURCES  
RESEARCH: BANGLADESH FLOODPLAINS

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Socio-economic methodologies production system

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**Full Project Title**

Methodological research into the incorporation of indigenous knowledge into natural resources research on Bangladesh floodplain production systems in association with the Land/Water Interface Systems Programme

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Socio-economic methodologies

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# Indigenous knowledge and Natural Resource Research: Bangladesh Floodplains

## Executive Summary

1. **Purpose:** To develop a methodology for accessing, understanding and using local NR users' IK in order to enhance technology developments. This to be achieved through production of 3 Outputs:

- development of a methodology for incorporating IK into NR research in an LWI systems' project;
- development of a holistic model of livelihood strategies of poor NR producers with LWI project;
- establishment of an informal network in Bangladesh for exchange of IK on local NRM practices.

## 2. Research Activities

### 2.1. Scoping/ Start-up stages:

- Joint planning meeting with LWI partners to design the research process, with a focus on IDR;
- Arrangement of logistical support in-country through British Council;
- Scoping of field-sites (perennial beels and their associated NR users) with LWI partners and collaborators; and of field-houses within the community for close interaction with NR users.
- Identification and appointment of two RAs, both men (as no woman available); one a natural scientist, the other a social scientist, and both enrolled on Durham University higher degree by thesis. Staggering UK training dates achieved on-station coverage by at least one RA for most of the project;
- An in-country literature search on previous work on IK and NR research was contracted;
- A number of in-country workshops and practical sessions were held with junior staff of both projects to improve their PRA, data collection and entry techniques. UK staff evaluated and received training in the use of a CAQDAS package (QSR-NUD\*IST) to be used for analysis of qualitative data.

### 2.2. Project implementation:

- A social appraisal of the study population at the two field sites was made through an RSS. The population was stratified according to national land-ownership criteria to produce 7 strata from which a sub-sample for in-depth studies could be made.
- A participatory wealth ranking exercise was administered to validate the robustness of landholding as an indicator of wealth. Landless and near-landless were of particular importance in the study.
- The household was taken as the unit of analysis in order to that the data from both projects have greater comparative value within the Bangladesh context.
- RAs generated qualitative data on community socio-political organisation, on the NR base, and on user groups' livelihood strategies using standard ethnographic techniques. One RA focused on agriculturally-based livelihoods, the other on fishing, and analysis of these sectors form their higher degree theses. The data was structured according to a number of formal categories which were also used for logging data for QSR-NUD\*IST.
- SEM and LWI project staff held joint Project Review and Planning meetings every six months, while the UK SEM staff met regularly to discuss methodological issues, IDR, to review qualitative techniques for IK research with NR users, and to facilitate the usefulness of IK data for NR research.
- A problem census and village workshop were held at both field sites to identify stakeholders' main production constraints and to develop an inclusive process for reaching community-based NRM options. The process drew on 'soft-systems' methodology and stakeholder approaches, with data was generated in focus groups (representing the 7 social strata previously identified in the RSS subsamples), and plenary sessions. The process is detailed in a LWI Report (see publication).
- A national workshop to launch the IK network in Bangladesh through BARCIK was held in May 1998. A second national workshop was held in January 2000 immediately prior to the LWI project's Symposium. Products from the joint research were presented at both events; some are published.



- SEM/LWI staff presented joint papers to a number of Seminars and Symposia addressing IDR methodological issues and exploring how and on what terms IK might be incorporated into different NR sectors. These are listed in Section E:Publications.

### 3.Outputs

All three contracted outputs have been achieved.

**3.1. Output 1.** The methodology sets the background to using IK in NR research, lists a number of PRA tools for accessing and using IK in NR research together with recommendations and cautions as to their use, and appraises project design and management issues which Project Managers should consider when undertaking IK-informed NR research.

- The project found that NR users were willing to share their IK, but that care needs to be taken to ensure that different stakeholders' constraints and perspectives on how the NR base should be used are taken into account. Also where the researcher is the 'measuring instrument', care needs to be taken to ensure the validity and reliability of qualitative data through 'triangulation' techniques.
- Though there is evidence of considerable inter-SEM/LWI project IDR, researchers found that project design (both projects being 'characterisation' studies during stage 1), is a constraint to IDR. IDR tended to be additive rather than integrated; only in stage 2 (the 'problem-oriented' phase of research) did it become more integrated, and IK and scientific knowledge become more dynamically related.

**3.2. Output 2.** Knowledge of floodplain society was input into the model of NR users' livelihoods through RA field reports and thesis chapters, through input into the design and implementation of population sampling strategies, and through input into the design and implementation of the systems-based PLA process (problem census/village workshop exercises).

- The project found that the CAQDAS package for content analysis was expensive of staff time and extremely data hungry given the need to generate data across 7 primary stakeholder groups. As such analyses derived from its use were neither timely nor robust for NR researchers' needs.
- The design of the LWI project as a systems modelling exercise and the SEM project as a holistic understanding of floodplain livelihoods, was a constraint to the timeliness and usefulness of IK data for NR research until stage 2 of the projects.

**3.3. Output 3.** An informal network for the exchange of IK information on NRM practices was established through the establishment of a new NGO BARCIK.

- Two national BARCIK workshops sponsored by the SEM project were organised and an edited book of papers presented to the first workshop is in press with UPL, Dhaka and ITP, London.
- BARCIK has made rapid progress in establishing an IK network in Bangladesh, holding regional workshops, developing a resource centre, and having publications in English and Bengali.
- The main constraint BARCIK faces is resourcing. DFID should give careful thought to how it can support the organisation beyond the life of the time-bound SEM project and until BARCIK can move to a position of self-funding.

### 4. Contribution of Outputs to DFID' development goals

4.1. As a research project the project has not directly benefited (or had a negative impact) on any primary stakeholders. In terms of RNRKS' A-H pathway for the uptake of research products, all three research Outputs should make a contribution in the longer term through the project addressing the lack of

knowledge among development professional about NR users' IK, and about how it might be accessed and used.

- A dissemination strategy was designed prior to the research and is being implemented. Research products are being taken up by in-country collaborators and by NGOs working on DFID bilateral projects, and by further research through the LWI production system.
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- BARCIK is a critical (but cost-effective) channel for the dissemination of research products, and its consolidation should be a priority matter for DFID

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## Section B: Background to the Project

### 1. The project's purpose

1.1 The purpose of the project was to develop a methodology for accessing, understanding and using local NR users' agricultural and environmental knowledge (IK) in order to enhance actual and potential technology developments. To achieve this the project was designed to produce three main outputs. Namely:

- The development of a methodology for incorporating an IK component into RNR research through collaboration with NR scientists in an LWI project seeking a systems understanding of livelihoods strategies and their constraints on the Bangladesh floodplains.
- The development of a holistic conceptual model of livelihood strategies of marginal and landless producers on the floodplains through collaboration with NR scientists and NR users themselves.
- The establishment of an informal network in Bangladesh for the exchange of IK information on local NRM practices and socio-economic factors relating to NR production systems.

### 1.2 The project was aimed at the following developmental problems/needs

1.2.1 The demonstration of the potential and role of IK in a RNR research programme - in this case the LWI systems programme of the NRSP - through the development of a methodology for accessing and using IK in RNR research.

- The need to incorporate IK into NR research had been recognised. A review for an SEM workshop in 1996, indicated a need for moving beyond ethnographic documentation and database compilation through surveys and case studies (see Blaikie *et al* 1996 'Knowledge in Action: local knowledge as a development resource and barriers to its incorporation in NR research and development' *Agricultural Systems* Vol.55, No.2). An implicit assumption had been that IK could be captured in a database package (see eg. Sinclair *et al.* 1995). By contrast the approach here differed in recognising IK as neither static nor uniform, but subject to continual negotiation between stakeholders.
- However, a reliable methodology to facilitate the flexible incorporation of IK into NR research had not then been devised, particularly given the socio-cultural and epistemological gulf that appeared to separate local and scientific perspectives on NRM. One of the project's aims was therefore to consider the inter-disciplinary and institutional constraints to the incorporation of IK into a specific RNR research project.
- This required an iterative research strategy closely linking NR scientists researching production constraints to on-going IK investigations by social scientists (viz LWI project R6756).

1.2.2. The project also aimed to contribute significantly to the LWI project (R6756) furthering a systems understanding of livelihood strategies on the floodplains.

- Historically, positive development impact has been reduced, and has sometimes been negative, through failure to take account of the complex bio-physical and socio-cultural interactions that characterise floodplain production systems.
- The project therefore aimed to contribute to a grass-roots systems perspective of development constraints to counterbalance the commodity focused, transfer-of-technology ethic which held in

Bangladesh at that time. The contribution being an holistic conceptual model of livelihood strategies of marginal and landless producers on the floodplains.

1.2.3. Finally the project aimed to develop an informal network to facilitate the uptake of methodologies for accessing NR users' IK, and the uptake of this IK by the development community.

- Historically there has been a lack of knowledge in the development and extension services about floodplain NR users' IK and NRM practices, and about methodologies for accessing and using this knowledge, while uptake and dissemination pathways for such information were poorly developed (see next section).

### 1.3. Demand for the research

There were four sources of evidence of demand for the research in Bangladesh:

1.3.1. DFID's Country Strategy paper for Bangladesh, and GoB strategic documents, both intimated a demand for an overall systems' perspective sensitive to socio-cultural issues, and which would provide an understanding of the constraints that inform resource users decision-making and NRM strategies.

- The Country Strategy paper evidenced demand for holistic research, giving highest priority to an integrated farming system-wide approach.
- The Agricultural Support Service Project (ASSP) in GoB's Ministry of Agriculture suggested that such a systems approach required multi-disciplinary research.
- The GoB's fourth Five Year Plan, and the Bangladesh Agricultural Research Council's (BARC) strategy for sustainable floodplain agriculture (stressing documentation of farmers' strategies and responses to flooding, the monitoring of socio-economic conditions over time) placed emphasis on the need for IK to achieve sustained agricultural growth.
- The National Environmental Action Plan (NEMAP) (1995) recommended 'study on indigenous land use practices to increase efficiency of the production system', while the New Agricultural Extension Policy (NAEP) (1996) recognised that 'farmers' own Indigenous Technical Knowledge is often environmentally sustainable, and efforts should be made to support and learn from farmers...'

1.3.2. Demand was also evidenced in a pilot LWI research project into floodplain production systems (R6383).

Field teams from collaborating research and target institutions administered a PRA survey to assess farmers' needs and identify researchable constraints. The final workshop in Dhaka (May 1996) identified a number of systems-related constraints to which resource-users attributed declining productivity. These included:

1. a decline in biodiversity, and increasing dependency on a narrow and largely introduced resource base (HYV cultivars and exotic fish);
  2. a shortage of biomass and declining soil fertility;
  3. problems with water management (both natural flood and drought)
- The field teams supported the proposed systems research, and the need to incorporate IK investigations into the work. They consistently cited 'lack of knowledge' as a constraint to improving service provision by GOs.

1.3.3. Demand was also evidenced from NR users themselves requesting greater attention to their IK and NRM practices in NR research in order to make interventions more appropriate to their needs.

- This came out clearly in the above LWI preliminary survey work..

1.3.4. In development practice in general there has been a growing consensus that more regard should be paid to IK in NR research projects.

- The plenary session of the 1996 SEM workshop agreed that research into IK methodologies linking the ethnographic research tradition in anthropology to applied NR research (e.g the PTD paradigm) should be a priority (see Blaikie et al 1996).
- The workshop also identified a need to build systematically on the work that had already been done (eg. Bentley 1989, 1992; Riches *et al.* 1993; Fairhead 1993). However, methodological constraints to the communication of IK findings to NR scientists were recognised (see Okali *et al.* 1994).

## **Section B**

### **Research Activities**

#### **2. Scoping/Start-up stages**

2.1. Some scoping studies had already been carried out prior to commissioning of the project under LWI's project 'Preliminary Investigation of Floodplain Production Systems in Bangladesh' (R6383).

2.1.1. Joint planning meetings were held with LWI partners in Nov-Dec. 1996 at which outputs, activities, responsibilities, work timetables and researcher visit schedules - ie. the Research Process - as well as logistical and administrative, and collaborative, uptake and dissemination matters were agreed. Seeking interdisciplinary research (IDR), protocols for interaction between NR scientists and social scientists and with NR users were discussed. It was also agreed to use and evaluate a number of different qualitative data generation techniques besides the more formal ones traditionally used in the NR sciences.

2.1.2. While the project start date was 1 Nov 1996, little was achieved in-country until January 1997.

#### **2.2. Logistical support**

2.2.1. Arrangements were made with British Council Dhaka for the management of SEM and LWI project funds through the Council's Grants-in-Aid account, while Site Co-ordinators operated an imprest account covering monthly expenses according to agreed guidelines. Research Assistants (RAs) were also paid from these accounts while in-country.

#### **2.3. Research Partners.**

2.3.1. Senior project staff on the associated LWI project were essentially those on LWI project R6383, as were collaborating institutions in Bangladesh. Professor Zuberi of CER, Rajshahi University, and Dr Naseem of BIRRI were particularly important both for their academic input and field-site management.



## 2.4. Scoping field sites

2.4.1. Time was spent scoping two suitable sites which would fulfil LWI project requirements for *beels* to be perennial, have a gradual land-water interface, and be reasonably accessible. SEM requirements were secondary to these. Pada and Choto *beels* in Kismat Gankur union, Durgapur *thana* (near Rajshahi), and Charan *beel* in Kokdahara union, Kalihati *thana* (near Tangail) were identified as most nearly fulfilling the criteria (see map in Appendices for location) There were farming and fishing communities at both sites.

2.4.2. Previous projects in Bangladesh have tended to only employ formal research methods (surveys, questionnaires) and to have been institutionally-based. By contrast SEM/LWI researchers sought an understanding of NRM through interaction with NR users in the field. This was most effectively progressed through leasing a field house at each site where researchers (particularly the RAs) could live for extended periods.

2.4.3. Field-houses needed to be close to the centre of the community for the 'naturalistic' research employed. One field-house was perhaps better sited in this respect than the other. Neither was as central to a community as anthropologists might have liked, but are some advance on the previous Bangladesh tradition which entailed visiting research sites but not residing there.

## 2.5. Scoping Local NR users.

2.5.1 NR users proved willing to share their IK with researchers, but the design of both projects limited their opportunity for input into project design. However, identification of production constraints and means of addressing them was carried out in stage 2 of the LWI project through problem census, focus group/village and future-search workshops. Here NR user-groups sought an input and provided considerable NRM information. A problem-centred, process-oriented design to the LWI project may have facilitated greater NR user input into design, and generated greater 'ownership' of the process at an earlier stage.

## 2.6. Scoping RAs

2.6.1 The SEM project was initially designed to have one RA, although the LWI project was designed to have two field sites. The RA was also expected to spend time in UK for initial training and the later writing up of field data. To obviate the potential research gaps this might entail, a decision to employ two RAs was made at an early stage. A small increase in the overall budget by DFID, and resource savings elsewhere meant two could be employed. Staggering the dates when they had to be in UK meant at least one RA could be 'on-station' until the later part of the two projects.

2.6.2 This enabled the generation of IK data relating to NRM over every season of the year to match the LWI project's continuous plot and water monitoring data. There also enabled greater coverage of IK since one RA alone could not cover all aspects. By mid-project one RA focused on IK in fisheries, while the other focused on IK on agriculture.

2.6.3. Both RAs were men - the sole female candidate withdrawing prior to fieldwork commencing. One RA was Hindu, had a good M.Sc. in Botany from Rajshahi university, was awaiting confirmation of his M.Phil in environmental science, and had worked as a research officer for Bangladesh Unnayan Parishad The other, a Muslim, was less well qualified with a Masters in anthropology from Jahangir Nagar university, but had previously undertaken qualitative field-work assignments.

2.6.4. The RAs field-work, training and research progression plan is shown below.

Term	Jan 97	May 97	Oct 97	Jan 98	May 98	Oct 98	Jan 99	May 99	Oct 99	Jan 20	May 20	Oct 20	Jan 21
	2	3	1	2	3	1	2	3	1				
Ghosh	p/t	p/t	f/t	f/t	f/t	f/t	f/t	f/t	p/t				
	Field		---Durham---			Field			---Durham---				
	6 months		6 months			12 months			6 months				
					↑				↑				
					M.Phil								Ph.D
Alam	-	-	p/t	p/t	p/t	f/t	f/t	f/t	f/t	f/t	f/t		
			Field			---Durham---			Field		---Durham---		
			21 months			6/8 months							
								↑				↑	
								M.Phil				Ph.D ?	

2.6.5. The appointment of RAs with contrasting scientific and personal backgrounds was deliberate. A comparison of their investigative and analytical styles could be instructive given the importance attached to the individual researcher as 'the measuring instrument' in qualitative studies. Conclusions are tentative, but it may be that social or character differences are as significant in influencing data generation as intellectual background - one RA was more sympathetic to the IK of respondents, while the other was more wed to the value of scientific knowledge in development.

2.6.6. An RA of each gender would have provided more contrast and value (particularly in accessing women's IK), though the constraints placed on local women in a Muslim society may have biased data collection from men. Male researchers, equally find it difficult to access IK held by women in Muslim societies. Both RAs received training in how they might go about it, while some compensation for failings were made by having UK research students (on short visits for dissertation purposes, and all of them women) include a gender dimension in their work. However, these 'measuring instruments' had other failings (being foreign, not knowing Bengali, and being in the field for a very short time).

2.6.7. Though identified in January 1997, the two RAs were not appointed until March. Given that RAs had to come to UK for training and the later writing up of theses, this was unfortunate. From the perspective of gaining a UK higher degree, the time available for field-work, analysis and writing up might be thought too short - particularly when doing the latter in a second language. From the perspective of NR research, time spent 'off-station' means there is no data generation.

2.6.8. For RAs, as for senior staff, different criteria of the appropriateness and quality of research output are evident, difficult to resolve, and were not satisfactorily resolved by the project. If development research is the priority, then RAs might either be offered the opportunity to study for an MA/MSc. or not be offered the opportunity at all, since gaining a PhD within the 3 year period when DFID funding is available is a considerable task. However, this might reduce the choice and quality of candidates for RA positions, while reducing the opportunities for training local personnel in ethnographic and PRA techniques and who remain in-country after the end of time-bound projects.

## 2.7. In-country collaborators inception meeting.

2.7.1. SEM/LWI project staff met in January 1997 with senior collaborating researchers from CER-Rajshahi university, BRRI, FSES-BAU to agree appropriate inputs and remuneration for staff and an outline workplan for the first year. This would focus on characterising variations in resource base and use according to spatio-temporal factors and socio-economic category of NR user.

2.7.2. As field-houses and RAs were not available until 1st March, progress towards the SEM and LWI projects' outputs was limited to securing appropriate maps and planning a Reconnaissance Social Survey (RSS) of households surrounding the *beel* at each field site. These surveys generated a stratified sub-sample of resource users according to accepted in-country socio-economic categories (and consisting of about 30 households per socio-economic strata). A participatory wealth ranking exercise within the sub-sample was then planned to validate the use of land-ownership categories for stratifying households and identify other factors considered important in determining 'wealth'. The sub-sample would then form the basis for the first year's analysis of variations in resource base and use and with a view to capturing (different) user group perspectives on these. (Women and fishers were identified as specific user groups.) The two RAs, using PRA and ethnographic techniques, would then work closely with LWI researchers and NR users to generate relevant data stratified by social category.

## 2.8. In-country literature search

2.8.1. After discussions with the Directors of the Bangladesh Centre for Advanced Studies (BCAS) in Dhaka, BCAS was contracted to undertake a literature search on previous in-country work on IK and NR research - the focus to be on IK in relation to terrestrial and aquatic resources of the Bangladesh floodplains (plus any relevant Indo-Gangetic literature), the search to be restricted to literature sources in Dhaka, and the output to be a report in paper and electronic format.

## 3. Staff Training

3.1. A number of in-country workshops and practical-field sessions were held with junior research staff (including the SEM RAs) by UK senior staff. It is worth mentioning the following here:

3.1.1. Early visits made by UK staff to the field-sites to improve RAs' PRA techniques - in particular their unstructured interviewing techniques. The reason being that, while IK data generation commenced in March, one RA (the environmental scientist) did not come to Durham for training in qualitative methods until September 1997, while the other RA (the social scientist) did not come until October 1998.

3.1.2. A three day workshop on participatory research methods for junior staff on both projects in May 1997. This included discussion of project information needs, methods for data collection, participation and the rationale for using it, degrees of participation, different participatory methods, their strengths and weaknesses, and field exercises to develop expertise in their use.

3.1.3. A visit in May 1998 by the PL to the Charan field site for RA training purposes - to improve data collection and agree a programme to structure ethnographic fieldwork. The principal categories under which data was sought were Land and Soil, Cropping Practices, Homestead Production, Wild Food sources, Water Bodies, Fishing Practices, and Community Organisation. (A detailed Fieldwork schedule is attached to the Back-To-Office Report of a Visit to Bangladesh from 17 Jan - 9 Feb. 1998 by Sillitoe.)

3.1.4. The need for staff training in ethnographic techniques is emphasised here. Data quality and the analyses based on it are highly dependent on the 'measuring instruments'. Where the 'measuring instrument' is a single RA at each field site, they need to be made as sensitive as is possible given the limitations of individual personality, competence and application.

3.1.5. RA training and the monitoring of their effectiveness continued throughout the project. Both RAs received training in a range of PRA techniques - interviewing/discussion techniques, participant-observation, participatory monitoring surveys, problem censuses, village workshops, stakeholder analysis, problem analysis, impact analysis, envisioning procedures, as well as the use of data-generation tools - farm walks/ transects, social mapping, flowcharts, seasonal charts, systems diagramming and so on. They also received training on the keeping of data records, and on information technology.

3.1.6. UK staff members visited the University of Surrey in June 1997 for training in the use of a CAQDAS package (QSR-NUD\*IST) to be evaluated for its usefulness in the content analysis of qualitative data submitted from the field by RAs. There are a number of issues surrounding its use (which are referred to later), and the tool received further evaluation by a Stirling university M.Sc. (Blyth) student through the LWI project.

3.1.7. There are a number of issues around the status of the observer and potential observer bias in data generation, which is pertinent not just to RAs but other staff as well. The section on 'The Management and Design of Research Projects' in the research report deals with the different variables and trade-offs involved which research managers need to take into account.

## 4. Project implementation

### 4.1 Social Appraisal at field-sites

4.1.1. The RSS and Wealth Ranking exercises were administered at both field sites during Q1 and Q2 of FY 1997/1998 - an important step for both projects. The RSS established a baseline for the identification of NR users as individuals and as members of social strata, while the participatory wealth ranking exercise broadly validated the basis (landholding) used for the stratification. The RSS was designed to provide a quick social overview of all households in the villages around the study *beels*, and to enable an appropriate stratification to provide a sub-sample for in-depth studies. The sample was stratified according to nationally recognised land-ownership categories to provide seven social strata (after the Bangladesh Bureau of Statistics 1985 *The Bangladesh Census of Agriculture and Livestock 1983-1984*). Thus:

Group	Land owned		Socio-economic category
1.	<0.049	acres	landless - Categories I & II
2.	0.05-0.49	acres	landless - Category III
3.	0.5-0.99	acres	marginal
4.	1.0-2.49	acres	small
5.	2.5-4.99	acres	medium - I
6.	5.0-7.49	acres	medium - II
7.	>7.5	acres	large

(A detailed explanation of how the socio-economic categories were arrived at is given in Barr's Back-to Office Report for visit to Bangladesh of 16 Jan -20 February)(see also Hossain, M. (1991) *Agriculture in Bangladesh - performance, problems and prospects*. University Press Limited, Dhaka. pp 130 - 136; Barr, J.J.F. and Haylor, G.S. (*submitted*) Experiences of Applying the Sustainable Livelihoods Framework on Bangladesh Floodplains. *World Development*).

4.1.2. The reason for stratifying field-site population rests on the recognition that while all rural dwellers in Bangladesh might be classed as 'poor' according to international measures, Bangladeshis themselves recognise gradations of 'wealth' and 'poverty'. The projects accepted that communities are not homogenous, and sought to draw out the indigenous classification and capture the perspectives and objectives of different user groups. Stratification of the population for data generation purposes enabled a more detailed analysis of the livelihoods of those belonging to the different strata - including their needs, the interdependencies between them, whether national service-providers were meeting the needs of the

most vulnerable, and whether the policy and practice of service-providers had unintended consequences for some user groups. Also, since competition between user groups over NR was likely, mutually acceptable improvements here would depend upon 'systems learning' by resource users - an LWI project activity (with SEM input) which occurred in stage two of the LWI project.

4.1.3. The use of land-holding as an indicator of wealth/poverty was also justified by its use in earlier studies and by GoB departments. 'Wealth' is not determined absolutely by land-holding; rural Bangladeshi take other factors besides land-holding into account (as indicated by the participatory wealth-ranking exercise). Nevertheless land-holding is a good indicator of wealth, or better of well-being status, while landlessness/ near-landlessness is of poverty/ lack of well-being. On the one hand the method enables LWI project data obtained through formal measures to be linked to the accepted national measure of rural wealth, and thus allows a comparison of results with other published studies. On the other hand it established a platform on which to build the SEM project's qualitative data gathered by less formal means, which can then be interrogated as to its social significance (eg. via CAQDAS) and similarly compared with other studies.

4.1.4. A wealth ranking exercise was administered at both field sites to validate the robustness of land-holding as an indicator of 'wealth.' The method differed slightly at the two sites, but broadly followed the method established by Grandin (1988 *Wealth ranking in small-holder communities: a field manual*).

4.1.5. Landless and near-landless social strata were of particularly important to the two projects both because of DFID's poverty focus and because those belonging to these strata are more likely to depend on fishing for a significant proportion of their livelihoods. The categories used for the sub-sampling gave greater focus to those with little land, while only one class of large farmers was recognised in the study.

4.1.6. The household was taken as the unit of analysis. The RSS, sub-samples and wealth-ranking exercises all generate data according to (heads of) household. It was recognised that there could be intra-household disparities in well-being. However, the household has generally been taken to be the production and consumption unit in Bangladesh. Using the household as the unit of analysis meant that the data would have greater comparative value within the Bangladesh context.

#### **4.2. RAs' research tasks: Conduct field studies of IK and related socio-economic issues pertaining to floodplain livelihoods**

4.2.1 The RAs used standard ethnographic techniques (long stay, participant-observation, informal interview, 'snowballing' & everyday conversation/participation etc.). They used local Bengali categories in all work.

4.2.2. They collected basic socio-cultural information, contributing to:

- reconnaissance social survey (RSS) - social composition of the local communities.
- power base study - the institutional and informal structure of political relations at local level (para, village, union, NGOs etc.)
- wealth ranking exercises - group discussions using card sorting techniques
- village social organisation study - an overview including:- i. locale (*bari, para, village*); and ii. kinship groups (*samaj, gosti, bongsho*); relating these to the power base
- map of village, using mouza land holding map to show where persons listed in RSS have homesteads and fields (i.e. relating RSS lists to maps).
- compilation of genealogies showing the composition of *samaj, gosti and bongsho* kin groups.
- religious affiliations - especially the contrast between Hindu and Muslim, and relating these to power and wealth. Included the religious affiliation of persons listed in RSS.

4.2.3. The data generated was structured according to the following topics. (These categories are the ones according to which we logged/filed data for NUD\*IST):

COMMUNITY ORGANISATION/SOCIAL STRUCTURE:

Locality:  
*bari, para, gram, mausa*  
Kinship:  
*bongso, gosthi, shariq, shomaj*  
Religion/occupation:  
Muslim, Hindu, *jats*  
Other:  
NGOs  
Economic/wealth:  
*dhani rich, garib poor*  
Local politics:  
village level, regional level (*Union parishad, thana*) national  
level politics  
dispute resolution (*shalish*)  
leadership (*sarder, murubbi, mondol*).

4.2.4. A brief historical and geographical sketch of mouza (especially as this has affected land use and natural resources management) was compiled.

4.2.5. Detailed ethnographic enquiries were made into the NR base. This IK data was structured according to the following topics. (These categories are the ones according to which we logged/file data for QSR-NUD\*IST):

<p><u>LAND AND SOILS IK:</u> LAND CLASSES/TOPOGRAPHY <i>Chawk</i> localities SOILS Soil Type Names and Classification. Terms for soil properties/characteristics Soil Animals Soil Spirits. Soil Management. <u>CROPPING PRACTICES IK:</u> Social Issues Informing Cultivation Decisions CROPS. classification cultivation consumption Pest Management <u>HOMESTEAD PRODUCTION:</u> CROPS &amp; TREES classification cultivation consumption ANIMALS. classification husbandry. consumption <u>WILD FOOD SOURCES:</u> PLANT GATHERING classification collection consumption</p>	<p>ANIMAL HUNTING classification. hunting consumption <u>WATERBODIES IK:</u> WATERBODY CLASSES WATER Water Plants and Animals aquatic plants: classification. aquatic animals: classification. Waterbody Management. Water Spirits and Rituals. <u>FISHING PRACTICES IK:</u> SOCIAL ISSUES INFORMING FISHING Access to water and fishing rights. 1. Open water <i>beel</i> fisheries: 2. <i>Pukur &amp; pakar ponds</i>: Labour arrangements 1. Open water <i>beel</i> fisheries: 2. <i>Pukur &amp; pagar ponds</i>: THE FISH: classification management and catching consumption Technology and Fishing Methods Disease Management SEASONS AND CLIMATE IK: Calendar Seasons Climate</p>
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4.2.6. The two RAs had a number of tasks throughout project implementation:

- IK data generation for NR research, and leading to theses on a conceptual of floodplain livelihoods;
- Field-station management, and the overseeing of junior staff generating data for LWI project;
- Input into the systems-learning process (data generation for NR researchers and for CAQDAS, administration and analysis of Problem Census/Village workshop exercises with senior staff);
- Input into the generation of visual data and production of a short LWI film on floodplain livelihoods.



### 4.3 Workshops/Review and Planning meetings etc

#### 4.3.1 A two day Joint Project Review and Planning Meeting (Newcastle 13-14th June 1997)

4.3.1.1 The meeting reviewed progress on the RSS and Wealth Ranking exercises; the various scientific surveys (soil, land, water resources, cropping and fisheries) either planned or in progress and to which an IK component was being added. It was agreed research should be in two stages:

- a situation analysis during the first year, as was occurring;
- a stage for the development and testing of improved options for floodplain management;

4.3.1.2. The meeting also agreed that the situation analysis should not be interdisciplinary, but that towards the end of this stage identification of opportunities and constraints and analysis of the data could benefit from interdisciplinarity. Further, the greater participation of NR users in the action-research second stage would encourage greater interdisciplinarity then.

4.3.1.2. Integration of researchers into a team (particularly in the early stages) was sought through the planning of joint field-visits, having both RAs work together at each site when UK staff visited, and the setting up of a system for the generation, checking, collation and electronic transfer of field data, and the creation of an Access master database available to all researchers. The CAQDAS package into which the SEM qualitative data was to be entered would also be accessible by all researchers.

#### 4.3.2. A two day Joint Project Review and Planning Meeting (Institute of Aquaculture, Stirling 6-7 January 1998)

4.3.2.1 Beside forward planning for the second stage of research, there was again discussion of interdisciplinarity and evidence for synergy between modes of investigation. SEM staff had met regularly over the year to discuss 'how' IDR might be achieved. It was now time to explore what is being shared and why, and what use it might be for another researcher's investigations.

4.3.2.2. Each component of the research was reviewed. With regards the IK component one RA was now in Durham for training, and the method followed had consisted primarily of unstructured discussions on NR components with individual NR users. Comment focused on whether the IK component should be more 'topic-led' and what these topics should be. Concern was also expressed about the insufficiency of IK data on various topics. The methodology adopted, the sheer scale of the task in the time allotted, and the number of social strata (7) over which data was spread, meant statistical validity could be compromised. Other barriers to the use of IK data included the time-intensive task of data coding for the QSR-NU\*DIST and its lagging behind that for the Access database, while other researchers were unfamiliar with the use of this content-analysis package.

4.3.2.3. Both projects determined to focus down towards the end of 1998, while one RA was asked to focus on agricultural topics, the other on fisheries. Additionally, staff were encouraged to become familiar with QSR-NU\*IST and examine the IK data from their own disciplinary perspective, while two NR researchers were requested to evaluate its use more thoroughly.

4.3.2.4. There was a wide ranging debate on inter- versus mono-disciplinary analysis. The issue was at what stage and how monodisciplinary analysis (which can produce outputs suitable for university sector RAE evaluation) should be integrated to achieve the interdisciplinary analysis and outputs contracted for by DFID. Despite the difficulties in co-ordinating a multi-site team, staff agreed that IDR was a project goal and could be facilitated through the use of database tools (Microsoft Access database for socially and temporally referenced data; Arc/View GIS for spatially referenced data; QSR-NU\*IST for qualitative data) and electronic media.

4.3.2.5. There was also forward planning for the validation phase of the LWI model to which SEM staff would have an input. This was to consist of a series of collaborator and village workshops at each field-site

with representative samples of individuals drawn from each of the 7 identified social strata. A Problem Census would be used to generate potential interventions; Village workshops would be used to explore the potential impacts of a small number of hypothetical interventions worked through the model, and then to derive an actual intervention for testing the systems model.

#### **4.4. One day Workshop on Participatory Research in South and SE Asia (hosted by the Institute of Aquaculture 16 Feb 1998)**

4.4.1. Two UK staff members attended this workshop, the overall objective of which was to share experiences with regard to open-access multiple-user aquatic systems. Sessions included discussions of the nature of participatory research and levels of participation, participation and the project cycle, key steps in participatory research planning - including stakeholder analysis - lessons learned and issues requiring further work. About 20 researchers from a variety of institutions participated. A number (including the two SEM staff) gave presentations on recent field experience.

4.4.2. The workshop provided an opportunity for linking socio-economic methodologies (in particular relating to participation and IK) into a sector of NR research. The workshop was useful for broadly validating the methodology adopted by the SEM/LWI projects with their focus on community heterogeneity, the need to stratify the population for the purpose of data generation and analysis, and the need to capture user-perspectives on NR through a variety of qualitative and quantitative techniques. There was also some skills acquisition through action-learning techniques.

#### **4.5. A two day Joint Project Review and Planning Meeting (Newcastle 21-22 April 1998)**

4.5.1. In addition to the normal review and planning elements, the meeting again considered the issue of interdisciplinarity and how IK could be used by NR researchers.

4.5.2. There was also discussion of differences between scientific and participatory/ IK approaches to understanding NR users' rationale for resource exploitation, and on how to marry the two approaches. Science monitored (eg. plot monitoring), sought patterns in the data (eg. CAQDAS content analysis) and then attributed causal links, while the IK approach sought rationale directly from NR users while checking (eg. triangulation) behaviour against stated intentions. Science focused on outcomes, participatory/IK on goals, where outcomes are negotiated between NR users. Staff agreed on the need to focus on livelihoods and the interdependencies between groups within the system as opposed to taking a 'commodity focus.'

#### **4.6. BARCIK National Workshop on 'The State of Indigenous Knowledge in Bangladesh' (in Dhaka May 1998)**

4.6.1. A number of papers were presented by staff (including RAs) while the BCAS researcher gave an evaluation of the in-country literature search to date. A stakeholder analysis was held with attendees. An edited book of the papers is in press with ITP and UPD (see additional information under Section C: Outputs - BARCIK).

#### **4.7. A two day Joint Project Review and Planning Meeting (hosted by LWI at Newcastle 16-17 July 1998).**

4.7.1. The long lags in the transfer of data and queries between the field and UK, while the holistic/systems approach lacked a defined problem on which to focus, were noted as difficulties to developing IDR. NR researchers queried whether the 'free-form' approach to IK data generation could generate anything useful to them. IK researchers worried as to whether the constraints to be researched were being determined by NR scientists or by NR users. To ensure relevance, the meeting agreed that researchers should review the IK database and formulate questions to guide RAs' investigations, but that NR users' perspectives on constraints also needed to be accessed.

4.7.2. A Sterling University student (Blyth) gave a presentation from his Msc. thesis on IK in floodplain fisheries, focusing particularly on the methodology employed and the lessons for IK in NR research. His work reviewed the fisheries data generated by the RAs and interrogated it with QSR-NUD\*IST. He noted difficulties with interview quantity and content, the perceived lack of technical knowledge of fisheries' subjects by the interviewer, and difficulties with the CAQDAS package's graphics, data structuring and manipulation. He concluded that IK was currently not particularly useful to NR scientists .

4.7.3. The meeting reviewed working practices to promote IDR. Personal and professional working practices, goals and expectations, and communication difficulties, were constraints to effective IDR - particularly in a cross-cultural context. Regular meetings/workshops were a way forward, but epistemological and operational difficulties remained.

#### 4.8. **EASA Conference (Frankfurt, 4-7 September 1998)**

Papers were presented by SEM staff, and by collaborators from Bangladesh.

#### 4.9. **Project's Problem Census Exercises and Collaborators' Workshop (at Field Sites, and in Dhaka, Aug-Sept 1998)**

4.9.1 The purpose of the Problem Census exercise was to explore the different perspectives of NR users (primary stakeholder groups) in order to set priorities for workshop NRM discussions. The method differed here from its normal use in Bangladesh in encompassing the heterogeneity of the community and the diverse production constraints different NR user groups face in pursuing their livelihood strategies.

4.9.2 The process had two distinct stages:

- an initial identification of different stakeholder groups' main production constraints - The Problem Census.
- participatory systems-learning and a detailed analysis by primary stakeholder groups of options to resolve the identified priority production or NRM constraints - A Systems-based Workshop

4.9.3 The approach also recognised that local socio-political structures may privilege the 'voice' of some groups, and should seek to access those of the disadvantaged and less powerful. Such action research is deliberative, inclusive, and participatory. The approach also recognised that there are secondary stakeholders who have an interest in floodplain NR use and its potential impacts (for example on wildlife and the environment), and that these interests should also be taken into account.

4.9.4. Different primary stakeholder groups had first to be identified. Based on experience in the field, the Problem Census used a slight modification of the RSS groupings in constructing groups of NR users representing households with broadly similar livelihood strategies. The main modifications were to explicitly establish separate women's groups (from richer and poorer households) to obtain gender specific perspectives on NRM, and to overtly separate out fishermen as a distinct user group.

4.9.5. The Problem Census was administered at both sites by the projects' collaborators and RAs. The unusually high flood that year caused difficulties in implementation at one site and in assembling staff in Dhaka for round-table discussion on the process and on the results obtained from the census. The village workshops which should have followed that for collaborators had to be postponed until the flood subsided.

4.9.6. The collaborators workshop served the following purposes:

- presentation by UK staff of what had been achieved with the collation and analysis of field data into a model of floodplain production systems, and to get feedback from the Bangladesh team members;
- evaluation of the Problem Census results and the process by which they were derived;
- finalisation of a plan for the village workshops, especially the format and logistics.

4.9.7. The Problem Census, ran as a number of parallel sessions with different stakeholder groups. It reached no generic conclusions, since each group was formed according to members' commonality of livelihood and difference from those of other groups. The process lacked any feedback loop wherein the different groups could be exposed to and discuss the findings of other groups. Hence the need for systems-learning in village workshops.

4.9.8. Given the heterogeneity of stakeholder groups, it was not easy to identify a single priority problem common to all stakeholder groups. To limit the range of constraints identified in the Problem Census, a filtering or distillation process was introduced prior to the village workshops. The collaborator workshop considered various alternatives for analysing the results. The process agreed upon involved analysis of results by individual team members according to the following required criteria:

1. technically feasible (according to the team's capabilities);
2. possible in the given time and resource limits;
3. coherent with DFID's goals for poverty elimination and environmental soundness.

The process then led on to the Village workshops.

#### 4.10. Village Workshops (at Field sites, Bangladesh during September 1998)

4.10.1. The research had two aims:

- the development of a deliberative and inclusive process for stakeholders to identify and agree better NRM options on a community-wide basis.
- the identification, agreement, and implementation of an intervention to achieve more sustainable and equitable NRM at the two project sites.

4.10.2. The village workshops drew on 'soft systems methodology' as used in business management, and on stakeholder approaches in development practice (e.g. DFID, 1995; Grimble & Wellard, 1997). Soft systems methodology is based on the premise that knowledge, while grounded in reality, is socially structured - different actors having different subjective perspectives depending on their social position, goals, experiences, and values. The method provided a framework for the expression of different perspectives on livelihood issues and progress towards an accommodation - though not necessarily a consensus - in seeking solutions to these through 'systems-learning'.

4.10.3. The village workshop was a 4 to 6 day process at each site. The groups of 12-20 persons were essentially as for the Problem Census. The first and final days were plenary, the intervening days involved separate stakeholder group work. A day was needed for each group, though 2 or more sessions ran concurrently.

4.10.4. Programme outline for Systems-based Workshop

Day	Activity	Format
1	Introduction	Plenary
2	System-based evaluation of potential development actions	Groups
3	System-based evaluation of potential development actions	Groups
4	System-based evaluation of potential development actions	Groups
5	Steps to taking action	Plenary

4.10.5. Representatives from local government, NGO, community and similar groups attended the initial and final plenary sessions. Exposure to different user groups' perspectives can educate these agents about the needs of these groups, while they can make valuable contributions to operationalising any solution.

4.10.6. Generally the exercise went smoothly, though some difficulties were experienced with domination of discussion groups by vocal people, lack of time to discuss problems in full detail and to feedback to groups and to a plenary session, and a seasonal bias due to it being a one-off exercise. It was also noted that the exercise artificially extracted NR problems, and was thus reductive rather than holistic.

4.10.7. The detailed findings from the two Problem Censuses and the two Systems-based Workshops, together with a full description and discussion of the process are to be found in '*Report of a participatory, systems-based, process for identification of improved natural resources management for better floodplain livelihoods*' (Barr, Dixon et al) filed under the LWI project.

4.10.8. The workshops led on to an intervention at the Ujankhalsi field site after a Village Development Committee was formed. The intervention at the Charan *beel* site is still awaiting a broader intervention under DFID's CBFM-2 bilateral programme. Some money was set aside from the LWI budget to fund these, but after the end of the project they will need to become autofunding or supported by others.

#### 4.11. **One day Tropical Agriculture Association Seminar (Durham, 26 September 1998)**

4.11.1 Project staff presented papers at the Seminar and these have subsequently been published in the TAA Newsletter (ie '*Putting culture into agriculture.*' and '*Incorporating farmers' and fishers' knowledge into natural resources systems research on the Bangladesh floodplains.*' (see publications list). It was a useful co-learning session for natural and social scientists involved in NR research.

#### 4.12. **15th International Symposium of the Association for Farming Systems Research and Extension (AFSRE) (held In South Africa in December 1998)**

4.12.1 The Symposium ran from 29 Nov - 5 Dec, and was attended by a large number of natural and social science researchers and policy advisers from throughout the world. Two SEM/LWI staff attended, and presented papers on interdisciplinary NR research ('*Methodological Issues in Incorporating Local Knowledge into Natural Resources Research and Development*' and '*Systems Investigation of Livelihood Strategies and Resource Use Patterns on Bangladesh Floodplains.*' (see publications list). Again, a valuable meeting covering a wide range of issues in FSR & E from a variety of perspectives..

#### 4.13. **A one day Project Review and Planning Meeting (hosted by LWI at Newcastle 20 April 1999)**

4.13.1. The data analysis model agreed at Stirling (Jan 1998) was reviewed with regard to production of project outputs. The model showed progress from mono-disciplinary data acquisition, processing & preliminary analyses to interdisciplinary databases & analyses.

4.13.2 Potential IDR papers with an SEM component were also identified (viz. soils; water resources; fisheries; floodplain livelihood types, interdependencies and floodplain management; and sustainable livelihoods and users needs - the problem census/village workshop process).

4.13.3. Considerable discussion centred on the format for the LWI 'Floodplain Management Symposium' to be held in Dhaka in November 1999 at which project products would be presented. Considerable value could also be gained by having the second BARCIK national workshop in Dhaka at the same time on 'The Documentation and Application of IK.' (In the event due to logistical difficulties caused by the Muslim observance of Ramadan the two events took place in January 2000.)

#### 4.14. **American Society for Agronomy (Utah, USA, October 1999)**

4.14.1 One UK staff member attended. Poster presentation on IK in soil science '*Methodological lessons from contrasting approaches to integrating indigenous knowledge and scientific soil and land resource survey.*' (see publications list).

#### 4.15. **BARCIK 2nd National Workshop (Dhaka, Bangladesh, 16-17 January 2000)**

4.15.1 Attended by two SEM staff, and presentation of keynote address '*Some Comments on Science, Indigenous Knowledge and the Poorest of the Poor in Bangladesh*'. (see publication list) (a report on this Workshop is given in Section C: Outputs)

#### 4.16. **LWI Symposium 'Peoples' Livelihoods at the Land-Water Interface - Emerging Perspectives on Interactions between People and the Floodplain Environment' (Dhaka, Bangladesh, 18 January 2000 )**

4.16.1. Over 120 persons from GoB ministries, by NGO, Donor and university representatives attended. Presentations addressing the theme were given under four headings (Findings from recent research on floodplain livelihoods; Lessons from partnerships with floodplain communities; Future directions for achieving sustainable floodplain livelihoods, and Policy issues in relation to the NRM debate.)

4.17.2 The Symposium was attended by two SEM staff, and a paper and video clip presentation were given in the first session (viz '*Livelihood strategies and resource use patterns on the floodplains -who uses what where and when?*' and '*Mache, Bhate, Bangali: Understanding Rural Livelihoods on Bangladesh Floodplains.*') Both these contributions stress the heterogeneity of the floodplain community, the interdependencies between livelihoods and the need for indigenous perspectives and IK in achieving sustainable livelihoods. ( A report on the Symposium is available under the LWI project).

### **Section C: Outputs**

#### 5.1 **Output 1**

5.1.1. RD1 18a notes '*The development of a method that incorporates IK, traditional NR management practices and related socio-economic factors into RNR research.*'

- As indicated in the RD1, the project was designed so that Output 1 (an IK methodology) and Output 2 (an holistic conceptual model of floodplain livelihoods) would be developed together. Operating in an action research mode, the aim was to develop, test, and improve the methodology through cycles of reflective practice, in which ethnographic enquiry and methodological reflection would proceed together.

5.1.2. This output has been achieved. Section 17 (Scientific Background) of the RD1 noted the following:

- It is now accepted that NR users have a detailed knowledge of the environments from which they gain their livelihoods , and that this IK should be viewed not as a constraint on development but as a positive resource (see eg. Howes & Chambers 1979, Brokensha *et al.* 1980, Slikkerveer *et al.* 1991).
- However, while respondents may have a better awareness of causal relationships in some fields than scientists, they had more superficial knowledge of the important processes that are difficult to observe (eg. competition for water and nutrients among trees and crops).
- This general observation has suggested to some authors that there is an opportunity for NR scientists to focus research on constraints in those areas where IK is weak (see Bentley 1989, 1992; Riches *et al.* 1993; and Warburton 1994).
- The three above mentioned approaches have taken a significant step in identifying domains of knowledge and their relative value in scientific terms, so that science and IK can be brought together and the comparative advantage of each be realised (see Farrington and Martin 1987, Warren 1991).
- In consequence work has been done on the formal documentation of IK (see eg. Walker *et al.* 1995, Thapa *et al.* 1995, Thapa 1994, Sinclair *et al.* 1993).



- An issue, however, is that the interpretation made may be in our terms, dividing up local experience and knowledge according to our categories. This may be misleading as well as inimitable to empowerment (see Thrupp 1989, Long 1989, Fairhead 1993).
- Additionally, such documentation is resource intensive, while there is a danger that description may take precedence over analysis. A earlier review by project staff of IK in RNR research indicated a need to progress beyond documentation and database compilation (see Blaikie *et al.* 1996).

5.1.3. The current research recognised that IK is not static nor uniform, cannot be documented once-and-for-all, and is subject to continual negotiation between stakeholders according to their different goals. As Agrawal has pointed out (1995b) 'archiving IK reifies knowledge as existing and evolving in an objective unbiased fashion' and ignores the dimension of power which is inherent in all social encounters.

5.1.4. Thus while the methodology lists a number of PRA tools for the collection and analysis of IK (most of which have already been used in NR research), it also makes recommendations and cautions as to their use:

- the need to use a range of tools in relation to particular data requirements and in order to 'triangulate' the data;
- the need to socially stratify the population, not just because ITK may be socially structured, but because different stakeholder groups may have very different and competing NRM perspectives;
- the need for client-focus (in DFID projects, the poor) together with social impact analysis;
- the need for a livelihoods approach as well as an NR systems approach;
- the need for an ongoing participatory approach to data collection and analysis together with feedback mechanisms (eg PM&E).

5.1.5. In brief, since the project's aim was to develop a methodology facilitating a dynamic perspective, to set the tools within a methodology which is critically aware and which deals with the dynamic, holistic yet socially structured and 'negotiated' nature of IK.

5.1.6. The current project only partially built on the previous work quoted above in attempting to inform indigenous knowledge with scientific understanding, uncovering potential IK gaps as researchable constraints. Thus

- the scientific and indigenous knowledge on soils have been compared. There are some differences in the two classificatory systems but on the whole they were closely matched (see Barr J., Payton R et al 1999 in publications).
- Given the design of the two projects to focus on discrete characterisations of the biophysical and social systems over the first 18 months, together with some LWI project implementation difficulties and logistical difficulties with QSR-NUD\*IST, opportunities for comparison of scientific knowledge and IK did not occur until late in the project, and have not yet occurred in some sectors.

5.1.7. Further, the research proposal suggested a 'problem-oriented' approach to knowledge (knowledge in relation to development constraints). This demanded an iterative research strategy that linked NR scientists researching production constraints to on-going IK investigations. This was not followed (see Output 2 below). However, as regards Output 1, it is suggested that a problem-oriented approach (as in the Problem Census/ village Workshop exercises) can lead to the generation of dynamic local NRM knowledge around particular production constraints by different user groups, which contrasts with the more encyclopaedic (and static) ITK generated in resource base characterisation studies.

5.1.7. However the main thrust of the project was on developing a methodology by which natural science could be informed by an IK perspective.

- Given the socio-cultural and epistemological gulf that appeared to separate local and scientific perspectives on NRM, one of the project's aims was to consider IDR and institutional constraints to the incorporation of IK into a specific NR research project.
- The project therefore examined different modes of interaction between anthropologists and farmers and anthropologists and NR scientists (see eg Dixon, Barr and Sillitoe 1998; in publications), while

the issues and the trade-offs project managers may have to reconcile are examined in the section on 'design and management of research projects' in the research report.

## 5.2. Output 2

5.2.1 RD1 18a notes '*The input of an IK framework into a holistic conceptual model of livelihood strategies of marginal and landless producers on the floodplains of Bangladesh. These studies to inform and relate to NR scientific research [under R6756], and form part of a programme to understand the total farming system.*'

### 5.2.2. Operational

5.2.3. As indicated in the RD1 for R6744, the project was designed so that Output 1 (an IK methodology) and Output 2 were developed in concert. Operating in an action research mode, the aim was to develop, test, and improve the methodology through cycles of reflective practice, in which ethnographic enquiry and methodological reflection would proceed together. Thus, the 'action' part of the cycle (i.e the collection, analysis and dissemination of IK to NR scientists) would contribute Output 2, whilst the 'reflection' part of the cycle would contribute Output 1 (the methodology).

5.2.4. Furthermore, since the objective was to produce an IK perspective of marginal producers' livelihood strategies to fit with the NR perspective, this Output has necessarily been developed through interaction with LWI project R6756. This has been mainly achieved through sharing staff between the projects.

### 5.2.5. Achievements

5.2.6. The NR research (R6756) aimed to understand the socio-economic and bio-physical dimensions of floodplain production, to derive a conceptual model of the floodplain as an integrated system. The R6744 input to this similarly aimed to inform about two sets of factors:

- IK of floodplain society and the social and cultural factors that influence NR management
- IK of natural resources and their management

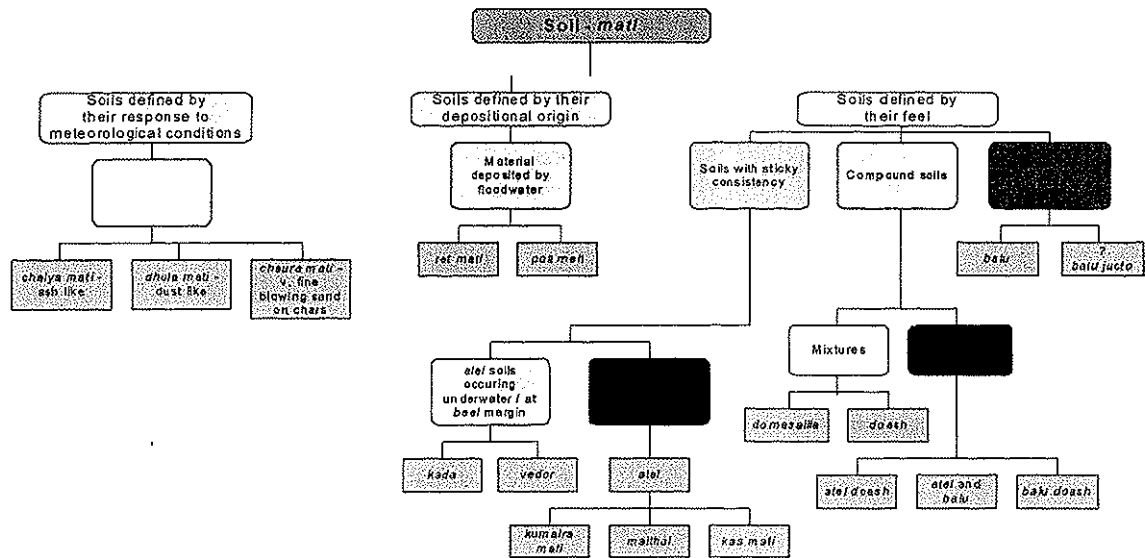
5.2.7. Knowledge of floodplain society was input into the model of floodplain livelihood strategies in three ways:

- From reports and thesis chapters by the RAs on the organization of floodplain society and *de facto* power structures within floodplain communities (see field reports and draft Mphil/PhD chapters from Alam and Ghosh).
- Through inputs into design and implementation of the R6756 procedure for social stratification of the floodplain community into stakeholder groups (see final research report of R6756; Barr *et al*, 2000).
- Through inputs into the design, management and interpretation of the R6756 problem census and systems-based village workshops (see 'Report on Problem Census and Village Workshops', Barr, Dixon, *et al*, 2000 under the LWI project).

5.2.8. IK of NRM was collected by RAs through unstructured interview and PRA techniques with local respondents, loosely following a 'snow-balling' method. Data generated was made available to NR scientists for input into the model of floodplain livelihood strategies in three ways:

- Through dissemination of reports and thesis chapters from the anthropology RAs (see field reports and draft MPhil/PhD chapters).

- Though interrogation of coded IK interview transcripts using QSR NUD\*IST©. The original intention had been that RAs would use NUD\*IST to code, structure and interrogate their 'own' IK data. However, for a number of reasons, including prolonged periods spent in the field, some deficiencies in computer literacy, and the requirements for MPhil matriculation, a computer-aided approach to data analysis and interpretation was not pursued by them. NUD\*IST therefore became a tool by which the NR scientists could access and explore the RAs' near-verbatim IK transcripts. This approach yielded two dissemination outputs: Blyth, a fisheries scientist, made an evaluation of the IK on fish and fisheries (Blyth, 1998). Barr explored the IK on soils and land use to produce a model of IK on soils (Figure 1.) as a component of a combined scientific and IK study of soils in Bangladesh and East Africa (Barr *et al*, 1999).
- By using the cadastral map base from the R6756 GIS, and plotting IK of soil types on to the map (Figure 1.). The spatial distribution of soil types as mapped by scientific analysis was then compared with those from the IK enquiry (see Soil Science Society of America conference presentation: Barr *et al*, 1999).



5.2.9. In addition to the RAs collection of IK, parts of the IK on NRM data were entirely generated and analysed by NR team members. Soil survey is normally a hybrid technique relying partly on direct observation by the expert, partly on measurement, and partly on discussion with farmers and other land users. Some IK of NRM resulted from this process. However, specific studies of IK on NRM were made by NR scientists undertaking MSc projects at one of the project's partner institutions (University of Newcastle). One such study was a hybrid scientific / IK soil survey (see Cannon, 1997). The other was an investigation of fuel use and nutrient cycling, which also employed a combination of quantitative and qualitative data collection processes, including one-to-one interviews on NRM (see Harvey, 1998).

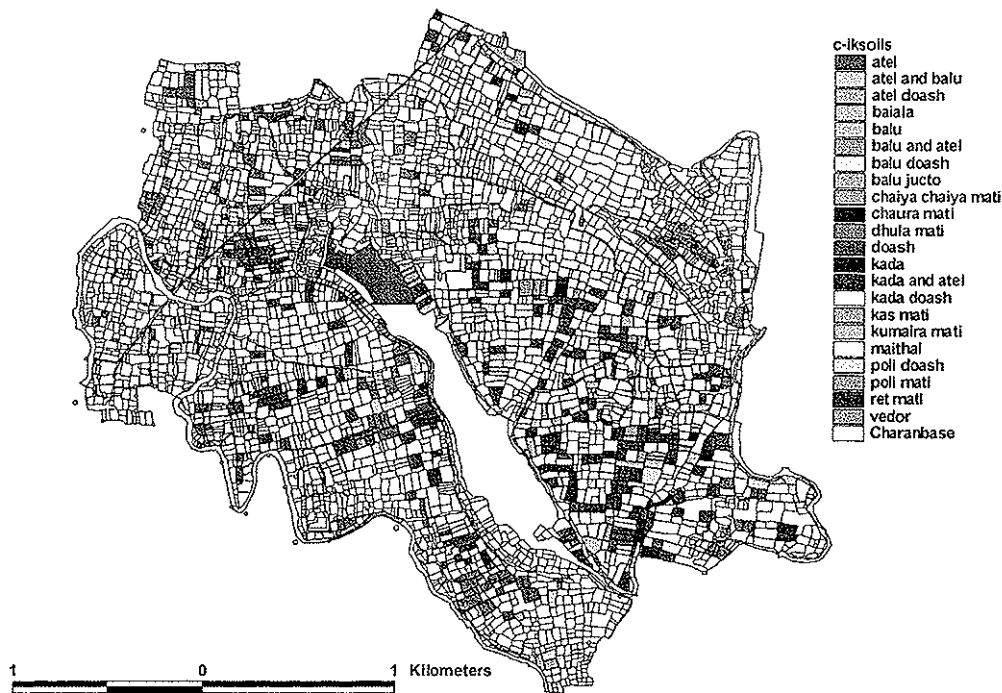


Figure 1. IK soil map of Charan Beel based on cadastral plots.

#### 5.2.10 Variation from plan/design

5.2.11. R6744 had originally planned to undertake “problem-focused IK studies (ITK), centred on topics of concern to NR scientists” (RD1, 19a). This route was not followed for two reasons:

- the LWI project R6756 did not follow an issue-based or problem-based approach. Rather, it sought a systems understanding of the relationship between aquatic and terrestrial floodplain NR, and between these and those people depending upon them for their livelihoods
- it was appreciated early on that an ITK approach risked extracting ‘nuggets’ of IK practice from their socio-cultural context and thereby ignoring who holds particular information. Thus masking key social, political and power dimensions of the knowledge which may influence its used.

### 5.3. Output 3: THE INDIGENOUS KNOWLEDGE NETWORK

#### 5.3.1 Output Statement

5.3.2. *'The establishment of an informal network in Bangladesh for the exchange of IK information on local NRM practices and socio-economic factors relating to NR production systems.'*

#### 5.3.3. Introduction

5.3.4. The 'Bangladesh Resource Centre for Indigenous Knowledge' (BARCIK) was established with SEM project R6744 support in April 1997, under the NGO 'Integrated Action Research and Development'(IARD), as a resource centre for IK and a focal point for an IK network.

5.3.5. The primary objectives of BARCIK are:

- to raise awareness through of IK as a dynamic development resource;
- to make IK more accessible to agencies and professionals in GOs, NGOs and CBOs;
- to facilitate participatory and sustainable development and environmental conservation through the inclusion of IK and thus empowering its users; and
- to promote the transition of IK from marginal to mainstream knowledge.

5.3.6. The BARCIK network for IK has been organised in part to meet the demands of a stakeholders' analysis conducted at the first national workshop held in May 1998 to launch the network. The network has three main activities:

- lobbying Government and development agencies over the need for IK in development;
- collecting, documenting and disseminating IK; and
- facilitating communication between individuals and organisations working in similar areas so that shared strategies can be adopted for the promotion of IK in development.

5.3.7. BARCIK acts as a clearing-house for the network. The network consists of an executive committee of seven, with a web of other members spreading out from it in different regions of the country. The aim is to develop regional subcommittees in all districts of Bangladesh through a series of regional workshops, the first four of which were held in September-December 1999 (see below).

#### 5.3.8. BARCIK's Progress

5.3.9. Since its inception BARCIK has consolidated its role as an IK centre both nationally and internationally. It has forged links with South Asian and Southeast Asian IK networks. It is affiliated to the international IK and development network and is listed on the bulletin board of the *Indigenous Knowledge and Development Monitor* published by CIRAN. One member of BARCIK's management committee, and collaborator on project 6744 (Professor M.I. Zuberi), is on the international editorial board of the *Monitor*.

5.3.10. On a national level, in an important step, it has established formal links with the University of Dhaka (one of Bangladesh's foremost academic institutions) through the university's Social Science Faculty. The agreement will involve:

- the exchange of academic information, research materials and data;
- mutual assistance in the promotion and organisation of symposia and research conferences;
- collaboration in the production of joint publications; and
- provision of research opportunities for students and research fellows.

5.3.11. BARCIK is establishing a resource library with items in both Bengali and English, from both research and development agencies. Together with the notice board displaying news of events in the fields of IK research, development and environmental conservation, the library should become a central point for the collection and dissemination of current information on IK related activities and research.

5.3.12. In 1998 we were able to expand the infant resource library with support from the Voluntary Service Overseas' (VSO) small-scale initiatives fund. The VSO's Overseas Training Programme also funded two students from the University of Durham, UK to assist with BARCIK's operations. Their responsibilities were subsequently taken over in July 1999 by two further volunteers from the University of Durham.

5.3.13. BARCIK has organised a number of successful meetings since its foundation, sponsored by SEM project R6744. The two largest have been national conferences. The first held in May 1998 to launch the network entitled 'The State of Indigenous Knowledge in Bangladesh', and the second in January 2000 entitled 'Documentation and Application of Indigenous Knowledge' to consolidate it.

5.3.14. A book of papers presented to the 1998 national conference is currently in press with Dhaka University Press Limited (UPL), and is to be co-published by Intermediate Technology Publications as part of its Indigenous Knowledge Series. (A set of proofs of the book entitled *Indigenous Knowledge Development In Bangladesh: Present And Future* are included with this report.) The papers presented to the 2000 conference are likely to be serialised in *Grassroots Voice*.

5.3.15. BARCIK has also organised a series of regional workshops (during September-December 1999) at Rajshahi, Khulna, Barisal, Gopalganj, Thakurgaon and Mymensingh. The aim was threefold:

- to assess the status of IK research in Bangladesh;
- to strengthen local-level team activities; and
- to identify individuals/organisations who are keen to be involved in the network.

5.3.16. Participation at the workshops has been encouraging and demonstrates the growing recognition of the value of IK and the need for the network. Reports are currently being compiled to include recommendations, suggestions and general points raised at each workshop. Papers presented at the workshops are being reviewed for publication in *Grassroots Voice*.

#### 5.3.17. Publications

5.3.18. *Grassroots Voice* (ISSN 1560-358X): a four-monthly journal, published in English to reflect its international audience, focusing on IK related research and development, and containing information on organisations working in the field from Bangladesh and South Asia. It includes reviews of IK related materials and gives listings of forthcoming events with an IK component, both in Bangladesh and internationally. Two volumes, each of three issues, have been published since May 1998. (Copies are included with this report).

5.3.19. *Trinamul Uddyog* ('Grassroots Initiatives'): a newsletter in Bengali, to be of practical use to field workers, NGOs, and CBOs. Articles relate to IK, biodiversity and NRM and include field reports, case studies and operative examples of indigenous practices. Copies, first published in November 1999, have been distributed among NGOs, local government institutions, and agricultural colleges.

5.3.20. *Amader Paribesh* ('Our Environment'): a monthly bulletin in Bengali, is targeted at the country's neo-literate to further environmental awareness through stories, rhymes and illustrations describing traditional environmentally-friendly practices relating to NRM and healthcare. Copies are distributed to NGOs and CBOs working at village level.

5.3.21. *Open File*: a monthly compilation of articles and features published in national newspapers, workshop reports and research papers, providing researchers, academics and libraries with writings concerning environmental issues, particularly those with an IK component. (Copies for October-November 1999 are available on request at BARCIK).



### 5.3.22 The Future of the BARCIK Network

5.3.23. In the future BARCIK and its network will principally focus on the following:

- the strengthening of regional networks and committees through the establishment of six regional focal points with BARCIK acting as central co-ordinator.
- the production of a training manual on IK data collection and documentation to distribute through network members on IK. BARCIK also hopes to publish two annotated bibliographies relating to IK research and practices in Bangladesh written in English and Bengali respectively.
- information booklets on IK in specific NR sectors for GOs, NGOs, and CBOs.
- the continued publication of *Grassroots Voice*, *Trinamul Uddog* and *Amader Paribesh*
- the establishment of a BARCIK Web Site to participate in IK discourse internationally.
- further cementing of partnerships with local NGOs, academic institutions and international bodies.

5.3.24. The main constraint BARCIK faces is securing adequate funding to finance its activities. This will be critical to the network's continuance with the end of SEM project R6744's support. Despite project staff's best efforts we have been unable to secure regular funding for the continuation of BARCIK's activities, while it will be some considerable time before it can achieve autofunding.

## Section D: Contribution of Outputs

### 6. The project's contribution to DFID's developmental goals.

6.1.1 The project has contributed to DFID's development goals by addressing constraints to the livelihoods of poor NR users caused by a lack of knowledge among development professionals about the IK NR users have and how it might be accessed and used. It has done this by working on three broad interrelated fronts by:

- the advancement of a methodology to further incorporation of an IK perspective into RNR r&d;
- the achievement of this within the context of a particular NRSP project (LWI project R6756); and
- the establishment an IK network in Bangladesh for the dissemination of IK within the NR r&d sector.

6.1.2 SEM/LWI projects' outputs aimed to further understanding of the livelihood system and NRM in two representative floodplain sites in Bangladesh within project lifetime. However, it is recognised by the RNRKS in terms of the A-H uptake pathway that developmental impact normally lies at a point beyond individual project lifetime. Hence the importance of formulating a dissemination strategy for research outputs at project design stage. This strategy is detailed in the RD1. The dissemination strategy developed during the course of the project in response to collaboration with LWI and its in-country partners, and to opportunities presented by the development community's growing interest in IK in NR r&d.

### 6.2. Target institutions

6.2.1. At the highest level, project outputs should make a contribution across a range of institutions to the debate over the role of IK in the development process. More specifically in the longer term (A-H uptake pathway) it is targeted at DFID's research programmes in the RNRKS.

6.2.2. The value of user groups' IK in RNR research has been recognised by officers within the NRSP, as evidenced by DFID's commissioning the LWI research project R7562 (*Methods for consensus building for management of common property resources*) commencing in February 2000. This project will take forward some of the participatory action-learning tools developed in current SEM and LWI projects. The in-country partners on R7562 include a range of NGOs and ICLARM which, as a CGIAR centre, is likely to promote these tools on a global basis should they prove effective.

6.2.3. In Bangladesh, the immediate target institutions are those of the SEM and LWI projects' principal research collaborators: the Centre for Environmental Research (CER) at Rajshahi University, BRRI, and the Centre for Natural Resources Studies (CNRS). Professor Zuberi of CER has moved from Rajshahi University to the University of Gonobishwabadalayal, Dhaka, but it is envisaged that all three institutions will disseminate the research products to end-users through their community level programmes. CNRS - who took over the management of the Charan beel site in 1998 - is linked to a number of community NR development initiatives, including the second phase of CBFM, and has already taken up some of the methodological tools developed in the current research.

6.2.4. Other target institutions include BRRI, ITDG, CARE, ASSP, ICLARM, BCAS, the first three being involved in the LWI project (R6383) Phase 1 pilot survey studies and the other four attending that project's final workshop. Two other bodies targeted as uptake institutions are BARC (Bangladesh Agricultural Research Council) and FPCO (Floodplain Plan Co-ordinating Organisation).

6.2.5. Finally, and importantly, the developing IK network managed by BARCIK, is and will disseminate research products from the project and from the LWI R6756 project. BARCIK provides a developing link between a range of researchers in GOs and the private sector and NGOs, CBOs and poor NR users who are keen to have an input into the design of service-provision.

6.2.6. Outputs have and are being made available in several formats:

- As a knowledge-based project, many of the outputs comprise written material including journal papers, research reports, reviews, and conference and workshop papers (see publications: Section E)
- BARCIK will disseminate outputs from the research of the SEM and LWI projects through its publications and network. Papers were presented to the first national workshop, and are in press in the form of an edited volume, papers presented to the second workshop will be disseminated through BARCIK periodicals. (see Section C for further details of BARCIK activities and outputs).
- Our partner LWI project has also had a series of workshops programmed throughout it, culminating in a Symposium (Jan 2000) attended by officers from GoB departments NGOs and Donor bodies, at which integrated biophysical and socio-economic perspectives on floodplain livelihoods were presented in a number of formats (presentations, posters, papers and film), some of which will be given wider circulation through GoB and NGO networks (For further details see R6756 Final Technical Report).

6.2.7. Further stages needed to develop outputs.

- Within Bangladesh further stages may be appropriate to validate conclusions on Output 2 in other floodplain contexts and over longer time frames. It is suggested for example that the *char* areas in the delta represent more complex and fluid biophysical and socio-economic environments, and that a holistic conceptual model of livelihood strategies here may require more flexible interdisciplinary research than that required for *beel* environments where the land/water interface is seasonal but generally regular.
- More generically, the IK methodology (Output 1) requires testing/fine tuning in at least one other geographical region and NRSP research production system which are distinct from those represented in the present research (ie. beyond Bangladesh).
- Such a validation exercise should also lead to the development of 'Best Practice Guidelines' for wider distribution (These are a feature of the SEM production system). As a first step the methodology could be disseminated to PSLs and PLs within RNRKS for comment and feedback.
- Project design recognised that uptake of Output 1 and 2 is partly dependent upon achievement of Output 3. A considerable amount of staff effort and some project funding has gone into establishing

BARCIK as an organisation for the promotion of IK in NR research and development on a number of levels within Bangladesh. The organisation is viable and has a developing management structure with representation on its board from a range of institutions. However, there is a danger that without further external resourcing, it will not fulfil its promise. BARCIK is seeking to broaden its funding sources, and would wish to become autofunding eventually. However, DFID should give thought as to how it can best support such an output beyond the life of a timebound research project.

#### 6.2.8. How further stages will be carried out and paid for:

- The methodology (Output 1), with its toolbox of data-collection methods and the design and management of research projects is a 'stand alone' product. It is appropriate for the context in which it was developed. Further development as a generic product (validation elsewhere, and the development of 'Best Practice Guidelines') require researching by others, possibly PSLs, within the NRSP - as it happening with LWI project R7562 - or beyond through RNRKS or ESCOR.
- The holistic conceptual model of livelihood strategies on the floodplains (Output 2), developed through the use of the methodology (and captured in RAs theses and in the outputs of LWI project R6756) is also geographically and time bound. Further development here will also depend upon and require resourcing by others.
- Within Bangladesh, there are opportunities for promoting closer links between the NRSP and the bilateral development programme (see DFID Country Strategy Paper 1998, and Dutton, R., and Dixon, P-J. 1999 *Research Linkages Paper: Bangladesh* Programme Development Report NRSP:LWI)
- It is envisaged that as Bangladesh moves nationally towards more responsive demand-led research (e.g. the DFID-funded ASSP and ARMP), Bangladeshi researchers in universities, NARS and NGOs will take up this work. As this happens demand for the services which BARCIK provides should grow and should assist in addressing the organisation's current resourcing constraints.

#### 6.2.9. Dissemination mechanisms.

- The potential target users of Output 1 and 2 range from the international and academic community and officers in DFID RNR production systems, to researchers from GOs, NGOs, and NARS. studying livelihood on the Bangladesh/ Indo-Gangetic floodplain.
- BARCIK is seen as a prime vehicle not only for stimulating further work on IK in the RNR sector in Bangladesh, but also for disseminating some of the outputs from the SEM and LWI projects since the network links personnel from a range of institutions.

### 6.3. Lessons

- Being twinned with a NR systems project made the IK task more difficult, and might even be said to have sent it down a more traditional ethnographic route. The LWI project R6756 sought to produce a generic systems model of the relationship between aquatic and terrestrial floodplain NR, and between these and those people depending upon them for their livelihoods. It did not follow an issue-based or problem-based approach. A similarly encyclopaedic approach was taken with the IK for the greater part of the research resulting in the balance between breadth and depth on knowledge tending towards breadth for most of the project.
- The project became located at the ethnographic end of the PRA-ethnographic spectrum of data collection methods. RRA and PRA provide local information for NR scientists very quickly, albeit with a compromise on 'quality' of understanding. Ethnographic methods provide useful

information more slowly. Thus NR data collection had almost been completed by the time IK was made available to NR scientists. Reciprocally, the NR data was analysed only late in the LWI. Thus less exchange of fully analysed results occurred than had been planned. This suggests careful thought needs to be given to project design and implementation in order to achieve IDR relevant to project goals and DFID's focus on client need (eg. through more informal exchange over combined periods in the field early in the project.)

- There is an inherent asynchrony between NR and IK projects, they possibly should not start at the same time. There are arguments for one or other starting first (each wanting data from the other to achieve focus), depending on the desired outcome/output. However, a difficulty is that separate start times may lock researchers into a mono-disciplinary mode immediately. This suggests that the main difficulty may arise from initial project purpose (ie. in the current two project's case generic-modelling rather than problem-focused.), and that there needs to be greater focus on a researchable constraint.
- The project benefited from having two full-time RAs on the project. They were able to spend significant periods in the field and fully engage with the subject. This was better than the LWI scenario of employing many people on a part-time basis.
- However, having RAs registered for higher degrees created an internal tension in the project. On the positive side, this provided an additional incentive to the RA, and ensures a certain level of gold-standard in the research. On the down side, degree regulations (and university calendrical requirements) present difficulties, and these can be in tension with the goals of the project.
- Additionally, more time needs to be given to the identification and selection of staff for IDR time-bound projects. The start-up phase can take some time (eg. project start date was Nov 1996, field-houses were not available until March 1997), yet RAs are expected to have been identified and to achieve a higher degree, while fees are expected to be disbursed, within the 3 year limit allotted the project - a near impossibility when RAs are overseas students and writing up theses in a second language.
- The project explored the use of CAQDAS for analysis of qualitative data. This is potentially a very powerful research tool, but the full potential was not realised in the project. It is resource and time intensive and needs reasonably standardized data to enter. It was too complicated for the RAs to learn, and needed too much of a time investment for the NR scientists to get into. Greater thought needs to be given at the project design stage as to whether and how to use such a tool, and use this as a framework to guide other data collection.
- The ethos and methodology of anthropology is not easily imbued by NR scientists in a 3 year project. Taking a local NR scientist 'off-the-shelf' can be problematic. Greater thought needs to be given at project design stage as to how integration of a research team can be achieved, and to how beneficial IDR to achieve DFID goals can be progressed when researchers operate in a multi-institutional setting.

## Section E: Publications

### Published Outputs:

- 607 Barr, J. & Dixon, P. 1999a Incorporating farmers' and fishers' knowledge into natural resources systems research on the Bangladesh floodplains. *Tropical Agricultural Association Newsletter* 19 (1): 32-35
- Barr, J., Dutton, R., & Dixon, P. 1999b Knowledge generation for improved floodplain management and better floodplain livelihoods *Fisheries in Bangladesh*: Volume 3. Issue theme: Sustainable Rural Livelihoods

- Barr, J. & Sillitoe, P. (in press) Databases, indigenous knowledge and interdisciplinary research. In P. Sillitoe (ed.) *Indigenous knowledge development in Bangladesh: Present and future*. London:Intermediate Technology Publications & Dhaka:University Press
- Dixon, P., Barr, J. & Sillitoe, P. 1998e Methodological issues in incorporating local knowledge into natural resources research and development. *Proceedings of the Association for Farming Systems Research and Extension 15th International Symposium Vol 4*
- Dixon, P., Sillitoe, P. & Barr, J. (in press) Actors and rural livelihoods: interdisciplinary research, integrating local knowledge. (in P. Sillitoe (ed.) *Indigenous knowledge development in Bangladesh: Present and future*. London:Intermediate Technology Publications & Dhaka:University Press) Sillitoe, P. 1997 Preserving Indigenous knowledge. *DFID Fisheries in Bangladesh Issue 2:12*
- Sillitoe, P. 1998a Putting culture into agriculture. *Tropical Agriculture Association Newsletter* 18 (1): 34-35
- Sillitoe, P. 1998b The development of indigenous knowledge: a new applied anthropology *Current Anthropology* 39 (2): 223-252.
- Sillitoe, P. 1998c Indigenous knowledge research on the floodplains of Bangladesh: the search for a methodology. *Grassroots Voice* 1 (1): 5-15
- Sillitoe, P. 1998d What know natives?: Local knowledge in development. *Social Anthropology* 6 (2): 203-220.
- Sillitoe, P. 1998f Local knowledge in tropical agricultural research and development. Edited Seminar Report, convened Durham Sept. 1998, Part 1. *Tropical Agricultural Association Newsletter* 18 (4): 5-27
- Sillitoe, P. (ed.) (in press) *Indigenous knowledge development in Bangladesh: Present and future*. London:Intermediate Technology Publications & Dhaka:University Press
- Sillitoe, P. (in press) Introduction: the state of indigenous knowledge in Bangladesh. In P. Sillitoe (ed.) *Indigenous knowledge development in Bangladesh: Present and future*. London:Intermediate Technology Publications & Dhaka:University Press
- Sillitoe, P. (in press) Cultivating indigenous knowledge on Bangladeshi soil: an essay in definition. In P. Sillitoe (ed.) *Indigenous knowledge development in Bangladesh: Present and future*. London:Intermediate Technology Publications & Dhaka:University Press

#### Internal Reports and 'Grey' Outputs:

- Md M., Alam 1999 *Indigenous knowledge of fishing on Charan Beel*. Thesis draft submitted for Ph.D. up-grading purposes .Durham University
- Barr, J.J.F., Dixon, P.-J., M.M. Rahman, A. Islam, M.I. Zuberi, McGlynn, A.A. and G.P. Ghosh. (2000). *Report on a participatory, systems-based, process for identification of improved natural resources management for better floodplain livelihoods*. Project report - R6756. Centre for Land Use & Water Resources Research, University of Newcastle.
- Barr, J.J.F., Payton, R.W., Sillitoe, P., Martin, A., Gowing, J.W. and McGlynn, A.A. (1999). Methodological Lessons from Contrasting Approaches to Integrating Indigenous Knowledge and Scientific Resource Survey. Presentation and poster at the "Agroecology and Soil/Crop Management Among Indigenous Cultures" Symposium at "Science Serving Agriculture and Natural Resources: Present and Future". The 1999 Annual Meetings of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America; Salt Lake City, Utah. 31st October - 4th November 1999.
- Barr et al (2000). *Livelihood Strategies and Resource Use Patterns on Bangladesh Floodplains*. Project research report - R6756. Centre for Land Use & Water Resources Research, University of Newcastle.
- Blyth, R.E. (1998). *An Ethnographical Description of the Fish and Fisheries of Two Floodplain Sites in Rural Bangladesh*. Unpublished MSc thesis. Institute of Aquaculture, University of Stirling.

- Cannon, D. (1997). *Scientific and Indigenous Assessment of Soil / Land Resources: a Case Study from the Floodplains of Bangladesh*. Unpublished MSc thesis. Department of Agricultural & Environmental Science, University of Newcastle.
- Ghosh, G.P. (1998) *Indigenous knowledge of land resources at Ujankhalsi, Rajshahi District*. Thesis draft submitted for Ph.D. up-grading purposes ().Durham University
- Harvey, D. (1998). *Fuel Use, Biomass Cycling and Sustainability Issues in a Bengali Village*. Unpublished MSc thesis. Department of Agricultural & Environmental
- Mallick, D., Mukta, M. Sillitoe, P. Stokoe, J. & McLennan, M. in prep. *Bangladeshi IK and Natural Resources. Draft literature review*
- Sillitoe, P., Dixon, P. & Barr, J. ms. Researching an indigenous knowledge methodology on the floodplains of Bangladesh. Submitted to *Indigenous Knowledge and Development Monitor*
- J.Stokoe\_1998 *Gender, the Homestead and Indigenous Networks in Development*. B.A. Undergraduate Dissertation and Review Essay, University of Durham ().
- J.Stokoe\_1998 *Rural Women of Bangladesh* B.A.Dissertation, University of Durham .
- Report on Workshop to Launch Bangladesh Indigenous Knowledge Network (BARCIK) May 1998.*

### **Input into Workshops/Symposia/Conferences**

- Barr, J. 'Methodological issues in incorporating indigenous knowledge in development'. Paper presented at European Association of Social Anthropologists Biennial Conference on 'Development's demand for Indigenous Knowledge', Frankfurt Sept 4-6 1998. (Abstract in EASA 1999 *Book of Abstracts: 5th Biennial EASA Conference* Frankfurt: EASA)
- Barr, J. & Dixon, P. A stakeholders' analysis of indigenous knowledge at the conference "The State of Indigenous Knowledge in Bangladesh" to launch national indigenous knowledge network, Dhaka May 7th 1998. Sillitoe, P. 'Opening introduction' European Association of Social Anthropologists Biennial Conference (EASA), sessions on 'Development's demand for Indigenous Knowledge', Frankfurt Sept 4-6 1998. (Abstract in EASA 1999 *Book of Abstracts: 5th Biennial EASA Conference* Frankfurt: EASA)
- Sillitoe, P., Barr, J. & Dixon, P. One day seminar under the auspices of the Tropical Agriculture Association in Durham 26th September 1998 on 'Local knowledge in tropical agricultural research and development'. 2 papers presented from project.
- Sillitoe, P. 'What is indigenous knowledge?: the definition of an emerging field in development'. Keynote address presented at Bangladesh Resource Centre for Indigenous Knowledge conference "The State of Indigenous Knowledge in Bangladesh" to launch national indigenous knowledge network (BARCIK), Dhaka May 6th 1998.
- Sillitoe, P. 'Indigenous knowledge: putting anthropology to work'. Seminar paper presented at Oxford University and School of Oriental and African Studies London, October & November 1998
- Zuberi, M. 'The demand for action research to facilitate participation in Bangladesh'. Paper presented at European Association of Social Anthropologists Biennial Conference, Frankfurt Sept 4-6 1998. (Abstract in EASA 1999 *Book of Abstracts: 5th Biennial EASA Conference* Frankfurt: EASA)
- Payton R., Barr, J., Sillitoe, P. & McGlynn, A. 'Methodological lessons from contrasting approaches to integrating indigenous knowledge and scientific soil and land resource survey.' Invited lecture and poster presentation at American Society for Agronomy (Soil Science Section), Salt Lake City October 1999. Sillitoe, P. 'Give 'em more cake: Science and the poorest of the poor' Invited lecture at British Association for Science Annual Meeting, Sheffield Sept 13 1999, in session entitled 'Beyond Indigenous Knowledge and Science'.
- Sillitoe, P. Interview broadcast on the BBC World Service Sept 13 1999 about IK research in Bangladesh.
- Sillitoe, P. 'Some Comments on Science, Indigenous Knowledge and the Poorest of the Poor in Bangladesh'. Keynote address presented at Bangladesh Resource Centre for Indigenous Knowledge (BARCIK) conference "Documentation and Application of Indigenous Knowledge in Bangladesh", Dhaka January 15th 2000

Feb 1998 Socio-economic methodologies for NR research workshop(DFID, London, UK)  
Jan 2000 Second national conference of BARCIK (Dhaka, Bangladesh)

**Other Outputs** (in association with Land Water Interface partners under project R 6756)

Sep 1998 Project workshop - Problem census analysis (Dhaka, Bangladesh)  
Nov 1998 Project workshops - Envisioning change (field-sites, Bangladesh)

(A combined report on these activities and their methodology is available under project R6756)

Barr,J, Dixon, P., Rose, D. Jan 2000 Documentary video 'Mache, Bhate, Bangali: Understanding rural livelihoods on Bangladesh floodplains' (draft presentation at R6756 project Symposium 'Peoples' Livelihoods at the Land Water Interface - emerging perspectives' (The video will be available under project R6756, and will be distributed both in Bangladesh and wider afield)

Barr, J., Dixon, P., Chadwick, N. due Apr 2000 paper to be presented to British Hydrological Society 7<sup>th</sup> National Hydrology Symposium ('Integrated floodplain management in Bangladesh - managing land and water resources from a people-centred perspective.')

Dixon P., Rahman, M., Islam, A. March 2000 'Report on a survey of households coping strategies in response to the 1998 flood in Bangladesh'

#### **Back-to-Office Reports**

A number of Back-to-Office Reports by Barr, Dixon and Sillitoe have previously been deposited with SYMO, as have Quarterly and Annual Reports.

#### **Glossary of Acronyms and Bengali Terms:**

ASSP	Agricultural Support Service Project
ARMP	Agricultural Research Management Project
BCAS	Bangladesh Centre for Academic Research
BARC	Bangladesh Agricultural Research Council
BARI	Bangladesh Agricultural Research Institute
BAU	Bangladesh Agricultural University at Mymensingh
<i>Beel</i>	Natural depression in the floodplain, perennially, or nearly perennially flooded
BRI	Bangladesh Rice Research Institute
CARE	Co-operative for Assistance Relief Everywhere
CAQDAS	Computer Assisted Qualitative Data Analysis System
CBFM-2	Community-Based Fisheries Management Stage 2
CBO	Community-Based Organisation
CER	Centre for Environmental Research
CGIAR	Consultative Group on International Agricultural Research
CIKARD	Centre for Indigenous Knowledge for Agriculture and Rural Development
CIRAN	Centre for International Research and Development
CNRS	Centre for Natural Resources Studies
DAE	Department of Agricultural Extension
DFID	Department for International Development
ESCOR	Economic and Social Research Programme (of DFID)
FCD/I	Flood Control & Drainage and/or Irrigation

FPCO	Flood Plan Co-ordination Organisation
FPR	Farmer Participatory Research
FSES	Farming Systems and Environmental Studies unit (at BAU)
FSR&E	Farming Systems Research
GO	Governmental Organisation
GoB	Government of Bangladesh
HYV	High Yield Varieties
ICLARM	International Centre for Living Aquatic Resources Management
IDR	Inter-Disciplinary Studies
IK	Indigenous Knowledge
IARD	Integrated Action Research and Development
IRRI	International Rice Research Institute
ITDG	Intermediate Technology Development Group
ITK	Indigenous Technical Knowledge
LWI	Land / Water Interface
NAEP	The New Agricultural Extension Policy (of GoB)
NARC	National Agricultural Research Centre
NARS	National Agricultural Research System
NGO	Non-Governmental Organisation
NEMAP	National Environmental Action Plan (of GoB)
NR	Natural Resources
NRD	Natural Resources Dept. of ODA
NRM	Natural Resources Management
NRSP	Natural Resources Systems Programme
PL	Project Leader
PLA	Participatory Learning and Action
PM&E	Participatory Monitoring and Evaluation
PRA	Participatory Rural Appraisal
PSL	Production Systems Leader
PTD	Participatory Technology Development
QSR-NUD*IST	Qualitative Solutions and Research data software
RA	Research Assistant
RRA	Rapid Rural Appraisal
RNR	Renewable Natural Resources
RNRKS	Renewable Natural Resources Knowledge Strategy (of DFID)
RSS	Reconnaissance Social Survey
RTG	Research Task Group of ODA
SEM	Socio-Economic Methodologies Component of NRSP
UK	United Kingdom
UPL	University Press Ltd, Dhaka
VSO	Voluntary Service Overseas



## **Equipment Inventory 29 Feb 2000**

**Computer:** Dual-scan FMA9500  
Serial No. F538NDBO

**Printer :** Hewlett Packard Deskjet 340  
Serial No: C2655-40025

**Camera:** Samsung Fino 70  
Serial No: 9750 1328

**Flatbed Scanner:** Mustek 1200P  
Serial No: IA813 A000476

**Zip Drive:** Iomega 100  
Seial No: PREJ 174AV9

**Cassette Recorder:** Aiwa ICE.JIS.AA  
Serial No: TP-460

# MAP OF BANGLADESH

