NATURAL RESOURCES SYSTEMS PROGRAMME

PROJECT REPORT[1]

DFID Project Number

R8084

Report Title

Enhancing livelihoods and NR management in peri-urban villages near Hubli-Dharwad. Scientific report.

Annex A of the Final Technical Report of project R8084.

Report Authors

Brook, R. and Allen, A

Organisation

School of Agricultural and Forest Sciences, University of Wales

Date

2005

NRSP Production System

Peri-Urban Interface

[1] This document is an output from projects funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

Annex A

Research report

Robert Brook with Adriana Allen

Contents

1. Introduction

The main report addressed to what extent the project purpose and outputs had been met, in prescribed DFID format. Where relevant, findings from the research were presented. This research report presents a consolidated review of the research assignment, drawing together the main findings from the annexes which follow, and setting the research in the context of current understanding and debate.

2. The project report

This consists of five volumes. The first contains the final technical report in DFID stipulated format. This Annex A consists of an account of the research findings. The final annex in this volume, Annex B, provides some geographical and administrative structure background and a section of colour plates to illustrate some of the plans of action and other project activities, nearly all taken by the project manger.

The second volume consists entirely of Annex C, the process documentation, written by Best Practices Foundation. This is a comprehensive account of project activities insights and analysis, and contains numerous testimonies and opinions from project participants and many other stakeholders.

The other annexes are as listed below. Volume 3 contains Annex D (Participatory monitoring and evaluation), Annex E (Livelihoods), Annex F (Self help group financial analysis) and Annex G (Self help groups: livelihood strategy study). Volume 4 contains Annex H (MOVE), Annex I (Institutions and administration), Annex J (Political capacity study), Annex K (Agroforestry), Annex L (Crop demonstrations) and Annex M (Soil and water conservation). The final volume consists of Annex N (Vermicomposting), Annex O (Motivation study: agroforestry), Annex P (Motivation study: markets), Annex R (Nutrition study), Annex S (Sewage irrigation), Annex T (Stone quarry study), Annex U (Household fuel study) and Annex V (In-migration study). There is no Annex Q; somehow this was missed out when allocating reference letters to each annex. The only action plan that was not written up as an annex of its own was livestock, although this is covered in sections of Annexes C and D.

Annexes C and onwards are written by other team members, and as it was considered too large a task to closely edit them and format them in a consistent style, this will be found to vary from annex to annex. This preserves the insights that each author wished to contribute to the knowledge generated by the project. Several of the annexes describe small studies undertaken by team members on particular aspects of interest to them. These include the studies on the effects of social organisation on livelihoods (Annex G), political capacity of the poor in Mugad and Keligeri (Annex J), motivation of some primary beneficiary groups (Annexes O and P), nutrition of poor households in Kotur (Annex R), sewage irrigated farming systems (Annex S), workers in stone quarries in Mandihal (Annex T), fuel consumption in Daddikamalapur (Annex U) and in-migration of Muslim groups in Kotur (Annex V). Although these were not strictly part of the original action plans, they add a valuable additional richness to the knowledge generated by this project, demonstrate the enthusiasm for research by academic team members and display their creativity.

The research approach is described in section 5 of the FTR main report. As will be evident from the number and length of the annexes, the quantity of data and other information is very large, and much remains to be analysed in detail. In the time available, this report represents the first run through the data. Further and deeper analyses will follow, to emerge as locally published articles, academic papers and briefing documents. Three databases are included on the CD with this report, FIS1, FIS2 and the SHG database.

3. Methodology

3.1. Research team

The research team was multi-disciplinary, consisting of natural resource and social scientists. Most of the team had worked on previous projects, and participants are listed in Table A1.

The UK team was responsible for overall project management (Robert Brook), and specific research inputs (Fiona Nunan, policy analysis, Adriana Allen, institutional analysis; Bianca Ambrose-Oji, livelihoods analysis; Karen Hillyer, participatory monitoring and evaluation). Visits to the research site were made by UK team members once or twice a year, as funds and circumstances allowed. Fiona Nunan left the project after a year due to leaving the University of Birmingham to take up a position in Uganda. Three other members of the UK team also had official leaves of absence for periods during the project.

The UAS team provided technical input, suggested or modified interventions and collected data. Initially, the UAS team leader, Dr C. S.. Hunshal, managed the project within India and acted as the contact point for the UK team until he was transferred by UAS to Bijapur, a distant campus, creating a significant hiatus in management. The role of Best Practices Foundation was to document the processes and undertake specific aspects of the research, such as development of participatory monitoring and evaluation, helping to establish MOVE and institutional analysis. Following the transfer away of Dr Hunshal in 2002, Dr S. Purushothaman managed the project within India. Due to excessively difficult administrative procedures within the UAS Finance Office, only salaries and honoraria were paid through there and all operating expenses (communications, transport, materials) were managed by Best Practices Foundation. The two development NGOs, BAIF and IDS, were responsible for community level development. Their *modus operandi* was to allocate community organisers (CO) to each village and require them to live there.

Table A1 R8084 Research team

Dr Robert M Brook, Project leader, School of Agricultural and Forest Sciences, University of Wales, Bangor
Bianca Ambrose-Oji, Karen Hillyer,
Centre for Arid Zone Studies, University of Wales, Bangor
Dr Fiona Nunan, International Development Dept., School of Public Policy, University of Birmingham, Birmingham (2001-2)
Adriana Allen, Development Planning Unit, University College London, University of London.
Dr Sangeetha Purushothaman, India project co-ordinator (2002-5), Best Practices Foundation, Bangalore
Dr C.S. Hunshal, India project co-ordinator (2001-2), Dharwad local co-ordinator (2002-5), Dept. of Agronomy, University of Agricultural Sciences, Dharwad (2001-2002), Bijapur, (2002-5)
Dr Anasuya Patil, Dept. of Extension, University of Agricultural Sciences, Dharwad
Dr J. A. Mulla, Dept. of Livestock Husbandry, University of Agricultural Sciences, Dharwad
Dr B. Basavraj, Dept. of Soil Science, University of Agricultural Sciences, Dharwad
K. Shinde, SDM College of Engineering and Technology, Dharwad
Dr M. S. Subhas, Kousali Institute of Management Studies, Karnatak University, Dharwad

Research assistants (UAS)
Dr. P. T. Goroji, Dr. G. Bhuvaneshwari, Dr S. M. Patil, G. H. Yogesh

Research assistants (Best Practices)
Simone Purohit (2001-5) with Vasant Rao, Sudha Menon, Uma Choukimath, Anitha Pailoor, Gururaj Kulkarni, Sadashiv Kamble and Nirmala Kulkarni at various times.

BAIF
Dr Prakash Bhat, Director, BAIF Development Research Foundation, Dharwad
A. M. Nitturkar (Project Officer), Mr Bulla, Mr Kulkarni (2001-4) (field workers)

IDS
Mrs M. Halkatti, Chief Executive Officer
R. B. Hiremath (2001-2), S. N. Sanu (2002-5), Project Co-ordinators
V. S. Pawadshetty, Project Officer
T. S. Jyothi, B. G. Sali, B. D. Billal, S. V. Hallalli, N. A. Kammar, B. S. Padmavathi, Community Officers (field workers), S. Mulimani, V. Kolhar (temporary assistants)

Other contributors
P. Gregory, K. Thoday, M. Lamond, K. Hails, M.Sc. students, School of Agricultural and Forest Sciences and Centre for Arid Zone Studies, University of Wales, Bangor
Paul Smith, Centre for Arid Zone Studies, University of Wales, Bangor
M. Nagreecha, S. Sebastian (short term interns with best Practices Foundation)

During the course of the project, two members were incorporated due to particular professional expertise. Dr M. Subhas, Karnatak University, Head of Management Studies Dept., joined the team to establish the MOVE income generating training programme. Sudha Menon was engaged by Best Practices Foundation initially to develop a contacts database for institutions in Bangalore and Delhi for distribution of project dissemination products (initially the book 'Changing Frontiers'). She also cleaned up and corrected the FIS1 database (on CD), as described in the FTR, section 3, Research Activities, and shot and edited the two videos 'Living on the Edge' and 'MOVE'.

3.2. Research site

Hubli-Dharwad is a twin city with a population of approximately 800,000 in 2005, lying between Mumbai and Bangalore, in the north of Karnataka State. The economy is predominantly agrarian, although heavier industry has moved into the region in recent years, such as the Tata truck factory that is located near Kotur, one of the project villages. Further details about project villages are presented in Annex B, along with a schematic map and rainfall data. In this Annex, newly available satellite scenes are presented, acquired from the Google Earth site. Plate A1 shows a scene taken in mid 2005, on which the locations of Hubli and Dharwad, the six project villages, and important reservoirs (tanks) have been marked. The contrast in water bodies between mid 2005 (in the middle of a heavy monsoon) and the scenes of Dharwad and Hubli taken in the post-monsoon (*rabi*) season in 2002 and 2003 (Plate A2) in the middle of the five year drought are very evident. Plate A1 also shows the contrast between the vertisol ('black cotton' soils of the Deccan Plateau) to the east of Hubli-Dharwad, the less water retentive soils (mostly inceptisols, suitable for rice paddies) to the west, and the natural forests on the far west (the eastern margins of the Western Ghats forest).

3.3. Enhancing participation: community mobilization

The project worked in six villages. IDS was responsible for the villages near Dharwad: Mugad, Mandihal, Daddikamalapur and Kotur; whilst BAIF was responsible for villages near Hubli, Gabbur and Channapur, as they were already working on an EU funded programme in that vicinity (Annex B, map 1). The NGOs rented a house in the villages where they work and their community officers lived in the community to build up trust and the convey commitment. The larger villages, Kotur and Mugad, had two COs each.

The NGOs established SHGs, male and female (Annex C, Chapter 5). This approach was core to the project. Often these were established after taking interested villagers on exposure visits to meet members of established SHGs in other villages where the NGOs are working. A number of NGOs were started during R7959 and continued during R8084. Thus, by the end of the project in March 2005, the oldest SHGs were almost four years old. The first activities were to start up savings and credit schemes within each SHG, along with training on how to run and manage the SHG and simple book-keeping. Each NGO was properly constituted so that they could open a group bank account and deposit their savings there. Once established. SHG members were taken on further exposure visits, to government offices to learn what their roles are and

what services the SHG members could call upon, and to small scale enterprise groups to give them ideas about alternative livelihood strategies.

The lengthiest and most demanding training programme was MOVE (Annex H). This arose out of a realization that some women who were either landless or illiterate, or both, were virtually housebound, and had no idea what alternative income generating activities they could engage in. Dr Subhas, head of the business school at Karnatak University in Dharwad, was asked as an experiment if he could devise a training programme. He accepted this challenge, expecting it to take six months. In the event, it took 18 months, as everything had to be developed from scratch. During the uptake promotion phase, the MOVE training was extended to all six project villages to prove the concept of replicability.

In general, action plans were implemented via SHGs, but not exclusively. A number of action plans called for rehabilitation at the catchment level, which obviously cross boundaries of poverty and wealth. On these occasions, as many stakeholders as could be persuaded (which often entailed repeated and prolonged negotiations) were asked to contribute labour, funds or machinery (tractors and trailers) in the spirit of *shramadan* (communal labour). In this way, tanks and feeder channels in four villages were restored, and communal tree planting was undertaken in Channapur.

3.4. Measuring change

Three approaches were utilized to measuring change:
1. Largely quantitative: questionnaire surveys at start and end (FIS1 and FIS2, on CD)
2. Qualitative and quantitative: formulation of participatory indicators (Annex D)
3. Qualitative: process documentation (Annex C).

1. Quantitative: Formal monitoring commenced with the comprehensive Family Information Survey 1 (FIS1), in November and December 2001 (Annex C, Chapter 3, section 3.3). These used a survey format traditionally employed by the NGOs (Annex C, Appendix 3.1) when they first start to work in a new village. Data were entered into MS Excel, which was later converted into MS Access. Additionally, during a participatory wealth ranking exercise (Annex C, Chapter 3, section 3.4), it was found that village participants were ranking households that had not appeared in the first survey. These turned out to be approximately 25% of households in the four project villages near to Dharwad, mostly the poor and marginal, as these household members are rarely present during the day due to the necessity of sending out all members to earn an income. These omissions were corrected by a supplementary survey, conducted at times of day most convenient to the households (usually evenings), albeit one year later than the original. In the end, 2,114 households were surveyed in six villages. Examination of the entered data revealed numerous discrepancies and entry errors. Considerable effort was expended in trying to render the database useable. A local consultant was hired to go through the database with the data collectors to correct the errors and convert it to Access and to code qualitative responses, and advised by UK research staff. This was largely achieved, albeit after considerable effort, although some sections of the database were beyond retrieval due to changes in the original survey staff, which is why the Kotur section of the database contains only household

information and omits data on resource endowments. This database (FIS1) is on the CD with this report, and has been corrected as far as possible (Annex E, page E2).

A final survey was also conducted, in December 2004 and January 2005, consisting of 10% of households, stratified according to wealth rank. Sample sizes were proportional to numbers in each wealth class, and households were then selected randomly from within each class. These data were entered into MS Access.

2. Quantitative and qualitative: Monitoring and evaluation was conducted within the SHGs, using participatory tools to measure change. The community officer for that village along with one or more of the research assistants would hold these exercises at a pre-arranged time with the SHG, usually in the evenings when most people were available. Events were tape recorded by Best Practices and transcribed for the process documentation (Annex C).

In January 2003, a participatory wealth ranking exercise was conducted in all six villages, ranking all households. This was done in village focus groups; in the larger villages, several were run in different parts of each village. Ranks were added to household data in FIS1.

3. Qualitative: More 'formal' methods were employed to capture knowledge about institutions and the way they operate and their awareness of the concepts of urbanization as a process rather than being a location on a map. This component was managed by Best Practices Foundation. Interviews with officials were usually in free format or a semi-structured questionnaire, as appropriate for the occasion. All these events were tape recorded (where prior permission had been granted), and transcribed for the process documentation (Annex C, Chapter 13).

Other actions were also undertaken, and the methods used were specific to each study and described in the relevant Annex.

4. Results and discussion

In the Background (section 2, Main FTR), it was stated that this project was looking for improvements to poor livelihoods arising from implementation of the strategies of the plans, this pilot project has two other main research assignments: to test (1) the effectiveness of the participatory process that produced the action plans and (2) the validity of the new knowledge about natural resources based production and livelihoods, from earlier research, that was used in making these plans. This section will draw together findings from the results in the following sections.

4.1. Livelihood strategies and opportunities for the poor in the PUI

The first question to ask is what is the nature of poverty in the peri-urban interface. Out of 2,114 households in the six project villages, participatory wealth ranking exercises conducted in January 2003 revealed that the villagers themselves assigned 1,379 households (55%) in the very poor category (Annex C, Chapter 10, sections 10.1 and 10.2.). The proportion varied between villages (Figure 1, main FTR), the two

villages with significant dairying-based livelihoods activity and also closest to the cities (Daddikamalapur and Gabbur) having the least in the very poor category.

Factors that the respondents used when assigning families to different wealth ranks (Table A2) show that they were largely based on material and measurable aspects of poverty, but did include more subjective aspects such as 'bad habits' and low social standing. There was a poor correspondence between the five wealth categories and recorded household income levels in FIS1. This further demonstrates that the participatory wealth rankings had taken into account more of the 'multi-dimensional' facets of poverty.

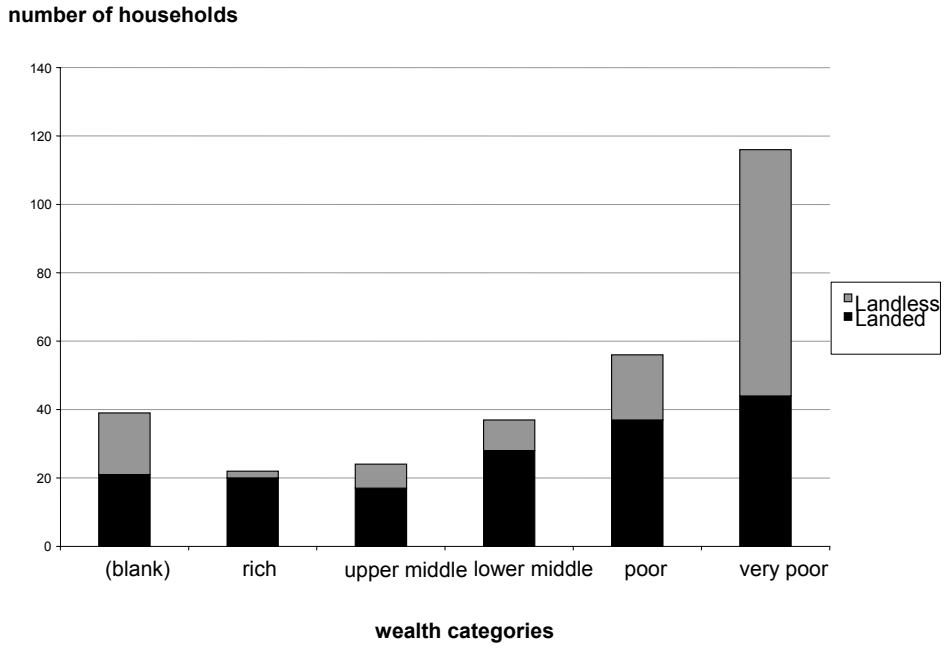
1. Rich	Small family size Landholding 8-24 acres with bore wells. Dairy animals Own their houses Own farm and other vehicles Engage in highly paid salaried employment
2. Upper medium	Fewer dependants Landholding 4-16 acres of fertile land with bore wells Dairy animals Own their houses Engage in SMEs and semi-skilled jobs such as drivers, conductors, teachers, and factory workers
3. Lower medium	Larger number of dependants Landholding 1-4 acres rainfed, may lease additional land Own their houses Engage in SMEs and petty trading, and poorly paid work semi-skilled work Men and women both working Alcoholic habits
4. Poor	Larger number of dependants Landholding 1-3 acres rainfed, may lease additional land, 1-2 dairy animals, 6-8 sheep and goat Janata (government provided) house Engage in low paid daily labour as agricultural and contract labourers Men and women both working Alcoholic habits
5. Very poor	Greater number of dependants Land less or part of extended family sharing up to 5 acres of rained land 4-5 goats Janata plot or rented house, Engage in low paid daily labour as agricultural and cooli labourers Men and women both working Alcoholic habits Lack assets

Table A2. Typical characteristics of the five wealth categories

These characteristics are summarised for all six villages, but do not appear to vary materially between the villages. For instance, characteristics for Channapur (see Annex O, Appendix 1, page O23) correspond well to the characteristics presented above, except maybe that area of land holding was somewhat smaller in Channapur for the wealthier classes, as the village as a whole is poorly endowed with land. However, as Figure A2 below demonstrates (taken from Annex E, Figure 2, page E6), landlessness occurred in all five wealth classes, albeit far more predominantly amongst the very poor. It could be concluded that land is perhaps a less important indicator of wealth rank in the peri-urban than in more rural areas, although to prove

this it would be necessary to conduct similar exercises in more distant rural areas. As shown in the breakdown of wealth ranks by village, and also in Figure 3 in Annex E (page E6), the proportion of poverty in greater in more distant villages, indicating that very close proximity gives the very poor opportunities not available to those living only a few more kilometres away from the city. Two examples of products that the poor can market directly in urban areas are fuel wood (Annex U) and milk (e.g. Figures 3.2 and 3.3, Annex D).

Figure A1. The pattern of wealth and landlessness across 6 villages



The second question is, what is different about livelihoods in the PUI, particularly for the poor? Project R7867 showed that the near-urban poor had a more varied portfolio of livelihood strategies, and that they changed their occupations more frequently than the wealthier and than those who lived in more distant villages.

Table A3. Classification of different occupation types

Agriculture	Agriculture and horticulture, agricultural labour, sheep and goat rearing, dairying and poultry
NR based	Potter, basket maker, fisher, stone cutters, leaf plate making, NTFP collection, milk and vegetable vending, brick making, firewood selling
Non NR based	Goundi (mason), carpenter, blacksmith, private and government service, kirana (small grocery) stores, drivers, pipe line workers, tailoring, hotel workers
Unemployed	No wages work
Others	Students, school drop-outs and retired

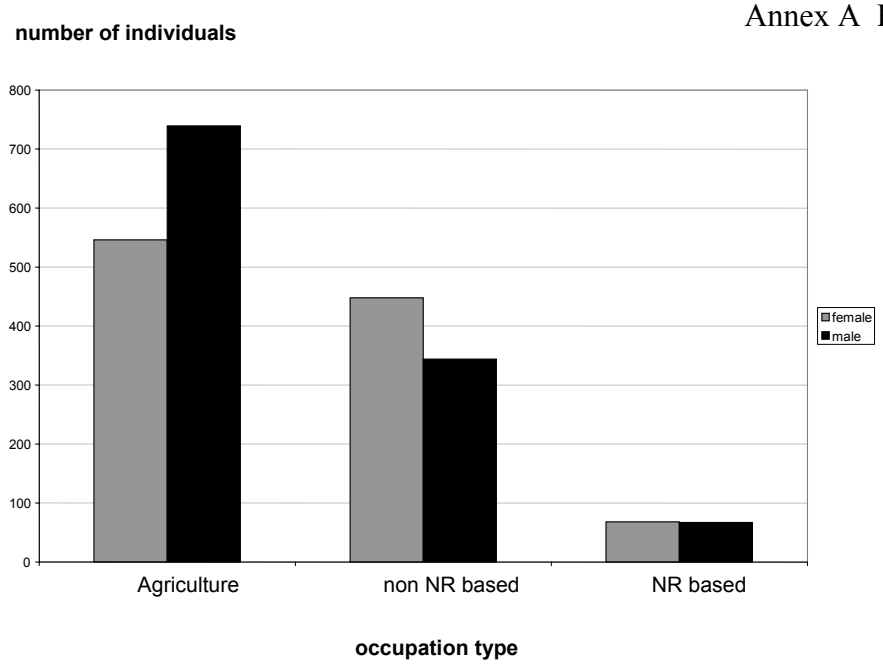


Figure A3. Primary occupation type across all villages showing differences by males and females (n=2212). From Annex E, Figure 3.

Figure A3 above indicates that most peri-urban respondents regard themselves as having agriculture as their dominant livelihood activity. Table A3 above indicates what occupations fit into the agriculture, NR and non-NR categories in Figure A3. The ratio of agriculture, NR and non-NR categories varied little between wealth classes (Figure A4).

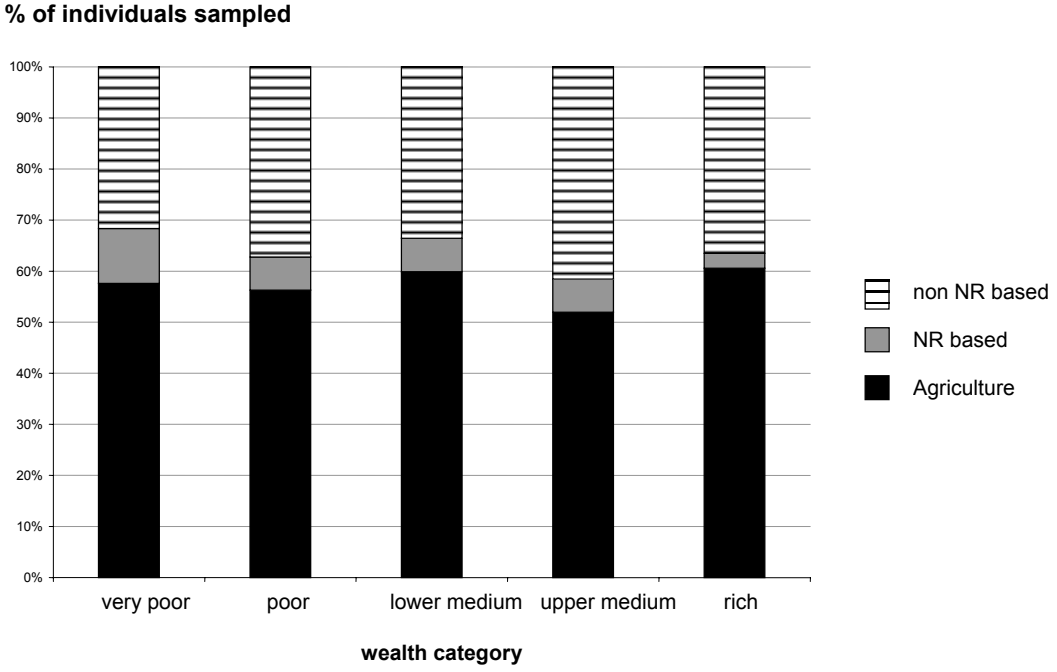


Figure A4. Differences in wealth categorisation and the primary occupation of both male and female members (n=1775) From Annex E, Figure 9.

It would be useful to be able to compare data on livelihoods from the peri-urban area with those from rural areas. This was beyond the scope of this project, but IDS did provide reports on two of their development projects in rural areas in mid-Karnataka. These are only progress reports, not research, and leave many questions unanswered. However, data on income generating activities for which loans were taken out provide an interesting contrast with R8084. In one project in Shikaripu Taluka, started in 1999, 45 SHGs had formed across six villages, 31 being female and 14 male (not dissimilar from R8084; after four years there were 16 male and 28 female SHGs). This project was in Shimoga District, 35 km from Shimoga, the District HQ. 22 SHGs were linked to a bank, and over the reporting period (April 2004 - March 2005), 20 bank loans had been taken out. 10 were for 'petty business' (a catch-all category including vermi-composting, setting up vegetable selling, leaf plate making, tailoring, buying a sprayer), seven were for dairying and cattle enterprises, two were for agriculture (unspecified) and one for a vessel (cooking pot) renting business. Although some vermin-compost was sold, mostly it was applied to farmers' own cotton crops. In another project in Savanur Taluka, Haveri District, 75 km north of Hubli, 59 SHGs had been established (14 male, 45 female) across eight villages, since 2000. From April 2004 to March 2005, 35 bank loans had been taken, 19 of which were for sheep/goat rearing, 10 for dairying/cattle and six for petty business.

Activities	Proportion of people (%)	Proportion of funds utilized (%)	PP+PFU
Dairy	40.7	48.06	88.75
Business	9.3	16.47	25.77
Goat & Sheep rearing	12.79	4.76	17.55
Trade business	11.63	1.07	12.7
Bangle Business	2.33	9.48	11.81
Grocery shop	6.98	3.06	10.03
Tailoring	4.65	2.86	7.51
Fruit business	1.16	5.95	7.12
Poultry	3.49	0.95	4.44
Fodder business	1.16	2.78	3.94
Brick making	1.16	1.59	2.75
Flower business	1.16	0.99	2.15
Petty shop	1.16	0.79	1.96
Vegetable business	1.16	0.79	1.96
Carpentry	1.16	0.4	1.56

Table A4. Purpose of income generating loans, proportion of loans and funds lent for each purpose, and sum of these (from Annex F, page F34)**.**

In R8084, the breakdown of use of loans granted for income generating activities over the period October 2001 to December 2004 is presented in Table A4. It is clear that dairying was by far the most popular reason for taking out loans, with the remainder being fairly evenly distributed between NR based and non-NR livelihoods activities. It was mentioned that confidence in dairying as a livelihood activity had increased due to the vaccination campaign, as more animals were surviving (survival rate of calves increased three-fold). The pattern in Hubli-Dharwad was not that different from Shikaripu Taluka, albeit that petty businesses as a group were ranked higher than

dairy/cattle, and that the petty businesses were more NR-based than in Hubli-Dharwad. In the remoter Savanur Taluka, small livestock were much more prominent, and petty businesses were but a minor recipient of loans. This contrast suggests (subject to verification by formal research) that farmers were seeking to invest in non-dairy livestock because of remoteness from urban areas, and that there was little free money in the villages to make petty businesses a remunerative occupation.

Trends over the project cycle were deduced from comparisons of FIS1 and FIS2 surveys. Generally speaking, there was a reduction in the number of unemployed, a significant move into the agricultural sector for women and a slight reduction amongst men. This is attributed to more men taking up occupations in the town or in the stone quarries. The very poor are less likely to be involved in non-NR, but better waged work in extraction industries such as stone quarries and brick kilns. Presumably they are very poor because they cannot even manage this work for some reason (e.g. illness, incapacity, widowhood). There is a distinct difference in pattern of occupational class between the two villages closest to Hubli-Dharwad (Gabbur and Daddikamalapur) and the four villages further away, in that the poor and very poor do not have agriculture as their primary occupation. In both these villages, the proportion of very poor is lower than the further villages, and dairying is major occupation, which is quite remunerative. Figure A5 presents responses to a question about the positive effects upon livelihoods of living close to an urban area. By far the biggest response, across all wealth classes, was additional household income and diversity of income sources. For the poor and very poor, there appears to be in increased diversity in labour markets, and for those who keep dairying animals, increased sales of milk and curds. The number of negative effects (reduced income and increased spending on household goods) was very small (1%).

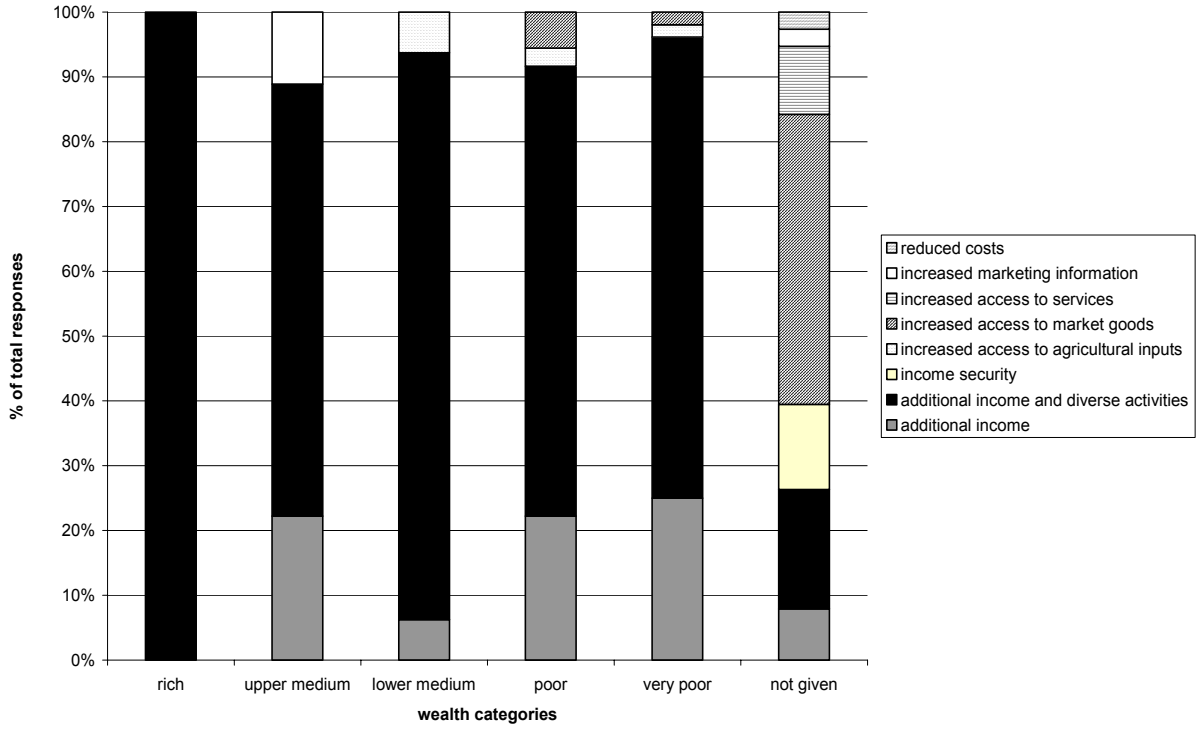


Figure A5. Direct positive livelihood impacts of living close to the city disaggregated by wealth categories (n=209 households) (from Annex E, Figure 20)

The largest cited negative effects of living near the city (Figure A6) was the reduced supply of agricultural labour (58% of respondents), whilst conversely the most numerous positive effects cited (Figure A7) were increased opportunities for marketing agricultural produce (54% of respondents), aided by better transport services (29%). This could be creating a squeeze point, where there are opportunities for increasing income through marketing agricultural produce, but there is insufficient labour to hire to grow the produce. This means that growers will be restricted to using their own labour, which inevitably creates a ceiling to the area of land which they can cultivate, unless they mechanize. It is for this reason that many farmers are either planting mango orchards or a selling land to investors who then plant orchards. As was discussed in the FTR of the Baseline Study (R6825), mangoes require considerably less labour than an annual crop, and there is a ready market for the 'Alfonso' variety which grows so well west of Dharwad. Project R7867 presented data showing the extent of mango cultivation on the transect running west of Dharwad.

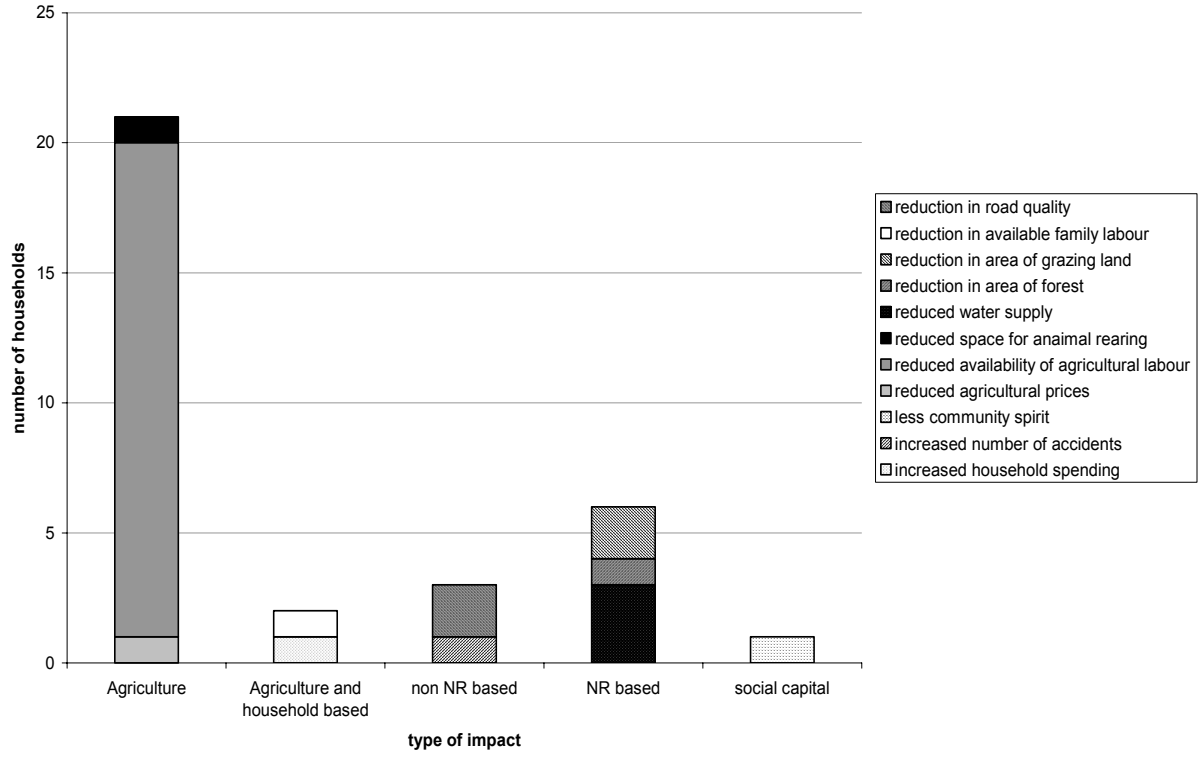


Figure A6. Respondents' perception of the negative impacts living close to the city over the project period (from Annex E, figure 19).

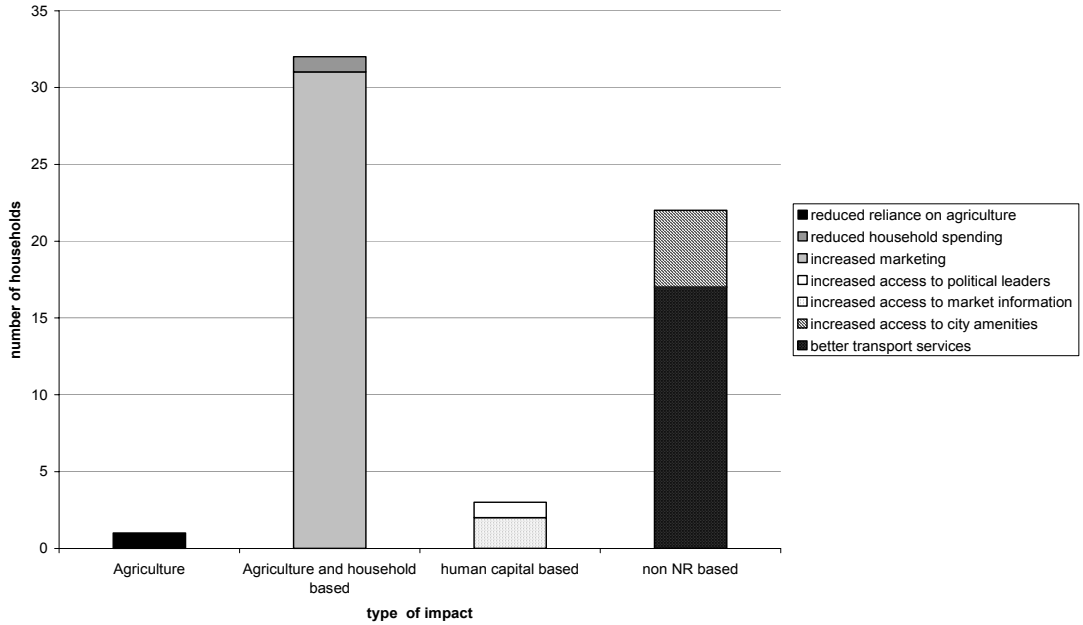


Figure A7. Respondents' perceptions of the positive impacts living close to the city over the project period (from Annex E, Figure 18).

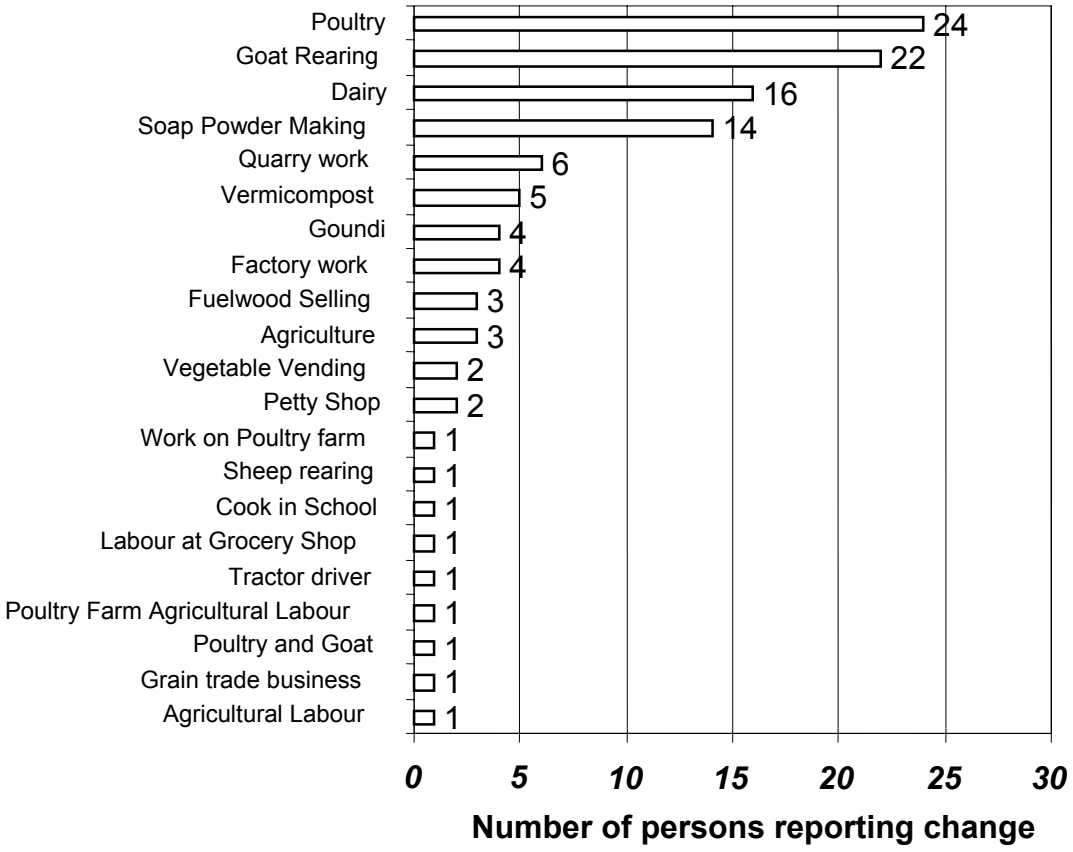


Figure A8. New occupations added by SHG members as a direct consequence of the project (from Annex C, Figure 14.5).

New occupations were also added as a consequence of the project. Figure A8 indicates that 114 new occupations were added, which is addition to existing livelihood activities being enhanced (e.g. increasing the size of a buffalo herd). In particular, poultry and goats were popular amongst the landless (Annex B, Plates B29, B30) as they require little space to house them and they can be sold at a significant profit (21% of new occupations). Fourteen percent of new enterprises were dairying 9Annex B, Plate B 48). Soap powder making is a reference to the MOVE initiative (Annex B, Plates 43-B47). Not included in the above data is the recent expansion of the agarbatti making enterprise in Kotur (Annex B, Plates B23, B24, B58), which by September 2005 was occupying 15 SHG members (earning Rs 1,800 to Rs 2,000 each per month clear profit; approximately £27 - £30, a five-fold increase since the start of the enterprise and before IDS adopted the group). They were renting a workshop (pictured) and employing seven additional women from outside the group; a good example of employment generation in the non-NR sector. Besides selling in Hubli-Dharwad, they also take a 50 kg consignment of half-prepared incense sticks to Bangalore each week, an example of out-sourcing from a higher cost urban centre to a lower cost area. This group has won several awards for their enterprise; an indicator of recognition by the Government sector.

Special studies were conducted in Mandihal (Annex T), Daddikamalapur (Annex U) and among Muslim in-migrants in Kotur (Annex V), which add more detail to what is known about livelihoods. Mandihal has 22 stone quarries, supplying building stone and gravel for road building and construction. It is a good example of a peri-urban extractive industry, along with brick making (reported in FTR of R7867). In Mandihal, 26% of the village workforce work in the quarries, 45% of these being full time and 55% being part time. Annex T gives a breakdown of the occupations of the sample surveyed for this study (Figures 6 to 10; note that legends for male and female are incorrect). It can be seen that the diversity of occupations among the poor and very poor is much greater than for the rich, corroborating findings of earlier projects. No rich people work in the stone quarries, but almost 50% of the poor do. There are some child labourers (< 14 years) who work in the quarries; one started at 8 years of age. Wages for the manual jobs are Rs 25 per day for women and Rs 50 per day for men. Testimonies from a range of workers are given on pages T19 – T24, where it is evident that people take the work because it is fairly remunerative, and the work is dependable as distinct from agricultural labour, the availability of which is subject to vagaries such as drought, although quarry work is dangerous and hazardous to health (Annex B, plate B42). For many, the quarries are an economic lifeline and a route out of the deepest poverty. Many who work there are uneducated because they had to earn a living as soon as they could, and this trend continues. It is also interesting to note than there is a greater supply of labour now compared to previously (although dates are not given); this could be an effect of the prolonged drought upon the supply of work for agricultural labourers[1] or that planting large areas to mangoes (as has occurred around Mandihal) may have reduced the requirement for labour.

Daddikamalapur is closer to Dharwad than Mandihal, is comprised of one caste (Gowlies) who migrated there some time in the 19th century and who speak their own language, a north Indian dialect. Annex U presents data for occupations in the village.

[1] Reported to the author several time; R. Brook, field notes.

There are two items of interest in terms of rural-urban interactions. The first is that out of an estimated working population of 400, 180 (45%) derive their living from commuting to Dharwad (almost two workers per household). Nearly half of these commuters are involved in selling natural resource products in the city, the number of milk sellers (a speciality of Gowlies) and fuelwood vendors being almost equal. The collection of fuelwood is contributing to deforestation and degradation of the NR base. Wood has to be carried from 5 to 7 km away, and takes 3 to 4 hours. Annex U, table 5 shows that the village of 89 households consumes 1490 bundles (head loads of approximately 40 kg) per month. There are 43 sellers of fuelwood (i.e. every other household is involved in this trade) who travel to Dharwad (presumably most days), which equates to about 745 bundles per month. Fuel wood extraction for household use and sale equates to almost 90 tonnes per month. In Daddikamalapur, only three houses do not use wood as a fuel, so presumably no pressure is being felt to switch to alternative cooking fuel sources. It is not known how prevalent this trade in fuelwood to the city is, as this is the first time this series of project has collected data like this, but clearly the presence of a large market for fuelwood is exacerbating forest depletion in peri-urban areas.

There is quite a significant Muslim sector around Hubli-Dharwad; they represent a sizable minority amongst the majority Hindu population. Of the 260 families interviewed for the study in Kotur (Annex V), 25% were in-migrants and the rest were long standing residents of Kotur. Of the in-migrants, 24% have arrived within the last 30 years, and 48% arrived between 30 and 150 years ago, the reminder having migrated over 150 years ago. This tells us that migration has been taking place as a fairly regular occurrence for a long time (e.g. the Gowlies in Dadikamalapur), and that the numbers involved are not large. The cited reasons for migration were not a pull factor exerted by the urban area, but rather the push factor of drought in their home area. The occupation profile was fairly similar to other sections of the population: 69% were occupied in agriculture as labourers, or cultivators or graziers. 22% worked in factories at the nearby Belur industrial estate. 38% of the second members of the household (usually wives of heads of household) did not have a formal occupation: they were classified as housewives; another 41% were agricultural workers and 11% worked in the nearby factories. This pattern is not noticeably divergent from the surrounding non-Muslim population, although there appears to be a section of the housewives who believe that custom prevents them from going far outside the home. However, once a remunerative occupation is developed (as in the case of making incense sticks (Annex B, Plates B23, B24. B58)), such customs seem to no longer matter. One can surmise that the barrier to social interaction is in fact linguistic, many Muslims still using Urdu for everyday communication. Lack of education of even the household heads is very high (71%).

Few own land, average land holding per household being a mere 0.27 ha. 52% lived in houses of baked mud construction (the poorest type of housing), which is typical of agricultural labourers (or ‘coolies’ as they are commonly called). Thus, this is a very poor sector of the population. This pattern was also evident amongst Muslims in Mugad and Gabbur. When asked whether their economic status had improved in recent times, only 16% agreed. 84% said that their economic status had not improved, and cited the drought being the reason, due to lack of agricultural work. Thus, this is a very vulnerable sector of society, and has not shown itself able to take advantage of opportunities presented by urbanization in any major way. Other studies have shown

that chronic poverty may be linked to ethnicity: in urban Ethipiopia, the Gurage group was found to be much more likely to experience poverty than the dominant Amhara and Tigre groups (Kedir, 2005). Another study undertaken in Kotur (Annex R) shows that another manifestation of poverty is chronic malnutrition. It is not known (although the data and records will have the information) how many women took part in the in-migration study (Annex V) and the nutrition study (Annex R).

The Kotur and Mandihal case studies in particular indicate that chronic poverty is still a widespread condition in the PUI, despite the opportunities for enhancing livelihoods portfolios presented by living near an urban area. The data have not been analysed to determine how many of the very poor and poor in these two villages were involved in SHGs or experienced benefits from other project action plans, although this could be done. It would be revealing to do this, as it may confirm an uneasy feeling in the project team that there is a sector of the population for whom SHGs are not perceived as being a solution to their poverty. Anecdotally, some who have not joined SHGs have cited the inability to save even a few rupees a week as the reason. The matter of lack of time to engage in such interactions is also cited as a reason for not participating, or having sick relatives or young children to look after. The NGOs have considered these issues and are prepared the waive subscriptions for the very poor, but this does not solve the social stigma of being a 'non-contributory' member of the group.

Maybe another model of social mobilization which does not revolve around informal credit schemes needs to be evaluated. As discussed above, it is known that microfinance made available in the absence of facilitating agencies excludes the poor and vulnerable (Shaw, 2004; Amin, 2003). The current project (and Premchander, 2003; Holvoet, 2005) showed that NGO agency and formation of SHGs was a distinct advance over microfinance corporations in a number of respects, but the question of whether the really poor can be engaged remains. At this stage it is not certain what a model to reach this group might look like, and if it requires significant external input, then it would almost certainly not be sustainable. MOVE was developed to try to develop an income generating programme relevant to groups of women with multiple social disadvantages, and was certainly successful as far as it went. However, the expenditure in terms of time was enormous: a senior academic plus assistant and IDS COs met with the group once per week over 18 months (although initially only six months were envisaged). The uptake promotion phase demonstrated that this training may be shortened to six months, and a training toolkit has been produced to enable this to be replicated, although it is now outside the scope of the project to test the effectiveness of the toolkit (consisting of a manual and CD). However, external input may still be needed to facilitate such programmes, and if so, its sustainability may be in question.

4.2. Testing the effectiveness of the participation process

This sub-section discusses the effectiveness of the participatory process. Two means of participation were tested:
1) participation mediated through self-help groups; and
2) community action, or *shramadan*.

Community mobilization through the establishment of self-help groups, or *sanghas*, is the first activity customarily undertaken by the NGOs which worked with this project when they first enter a village to undertake development work. This approach is not unique to NGOs; as it is now being emulated by Government and semi-autonomous agencies and other development programmes (see Annex F, page F1), 200,000 having been started in Karnataka alone. Many fail due to lack of continuing external input (most NGOs estimate that it takes five years to ensure that SHG will endure the vagaries of joining and leaving members, internal conflicts, etc.), but many also do survive (e.g. MSK). However, most NGOs have a very high success rate in ensuring that SHGs prosper and multiply by means of careful training of members and establishment of SHG overseer groups in each locality or village, called variously *mahasangha*, Village Development Societies or sangha federations. This was certainly true of IDS and BAIF in R8084. By the project end 45 SHGs existed, with a membership of over 600, with only one SHG closing during the project (Annex C Appendices, table 4.1).

Such self help groups are a global phenomenon, and go by various names, such as community based organizations, grass roots organizations, and so on; furthermore, they have become a whole field of study in themselves. As a consequence, it is unsatisfactory to leave the description of the groups which formed under the aegis of this project as 'self help groups'; it is necessary to briefly characterize them in order that it can be understood where they fit into the movement known as collective action.

The formation of the SHGs is more fully described in Annex C, chapter 5, and in Annex F, section 1.2. In essence, IDS and BAIF enter a village usually with an activity that many will understand or appreciate, such as livestock vaccination 'camps' (illustrated in 'Participation' video, on enclosed CD), thus stimulating interest in what the NGO has to offer. Typically this is followed up by an exposure visit to show what the NGO has done in other villages, such as establishing craft-type or natural resource based income generating activities, or to visit self-help groups. Then interested people are asked to attend a meeting where establishment of self-help groups is explained, particularly the concept of savings and informal credit schemes. Community officers are posted to the villages to support SHGs and train members in group interactions, keeping accounts, conflict resolution and other important skills. This is in contrast to Government established SHGs, which are often set up and after a short period of support are then left to either sink or swim.

The Government SHGs do not specifically target the poor. On the other hand, NGOs are specific in their targeting, aiming to mobilize only the poor into SHGs, mainly people below the poverty line, which includes the small and marginal farmers, landless labourers and artisans, with particular emphasis upon women and scheduled castes. The rationale is that the richer sectors have knowledge and connections (influence) which enables them to adapt to circumstances. In fact, as Figure A9 shows, although the very poor and poor made up 61% of SHG membership, rich and higher medium classes made up 16%. There may be two reasons for this. Firstly, both IDS and BAIF hitherto had only worked in rural areas where the wealth classes are more easily distinguished by generally accepted criteria (particularly size of land holding, but also house type, number of dependents, number of possessions). In the PUI, these criteria may no longer be entirely valid. As can be seen from Table A2 above, besides the usual norms of size of landholding, the kind of job held is also

important, many of which are only available with access to an urban area. Also, bad habits blamed on easy access to urban vices such as alcohol contribute to poverty. It is known that in near-urban villages, dairying activities which require little or no land are a means of escaping poverty (Bhat *et al.*, 2003; Brook *et al*., 2005). Thus, the initial categorization of potential SHG members may not be as clear cut as in remoter rural area. Secondly, in smaller villages such as Gabbur, where take up of SHG membership was very high, it was difficult to exclude better-off people; particularly so because the proportion of very poor in the population was low compared to larger and more distant villages (FTR main report, figure 1). However, the inclusion of the wealthier ranks may not be an entirely bad thing. Discussing social capital in community groups, McCarthy *et al.* (2004) state that, "Heterogeneity in wealth, ethnicity and employment actually increase network capacity, but generally lead to lower organizational capacity", although they also argue that great heterogeneity in wealth may diminish the capacity to establish common goals, as also reported by Agrawal (2001) and Place *et al*. (2004)

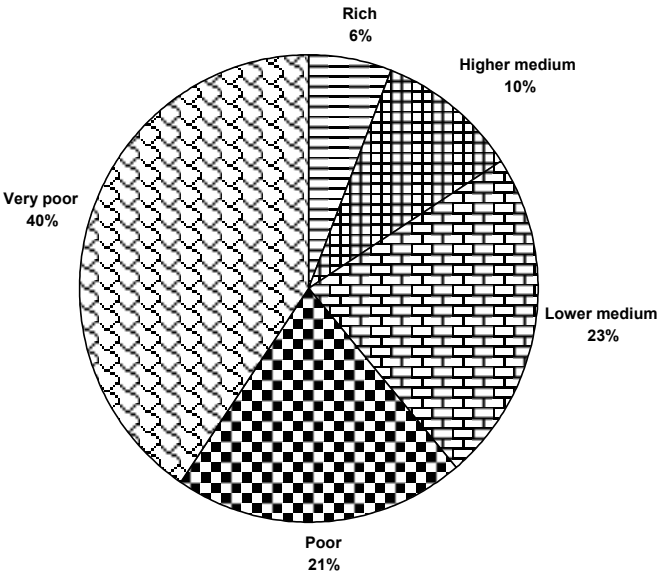


Figure A9. Wealth classes of SHG member families (derived from participatory wealth ranking exercises (from Annex F)**.**

Figure A10 shows that 82% of SHG members were either landless or marginal farmers (<0.8 ha), and whilst many of these were undoubtedly poor, a comparison with Figure 1 suggests that some of the wealthier groups also owned little land (Annex E, figure 2). Despite the generally low area of land held, the great majority of SHG members still classified their main occupation as being agriculture and agricultural labour Figure A11).

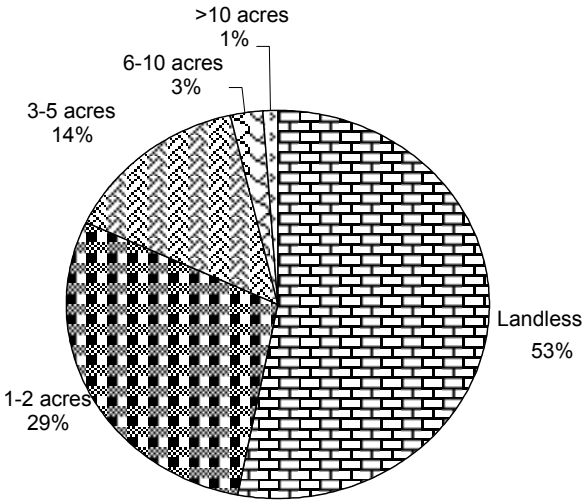


Figure A10. Categories of land holding sizes by members of SHG groups (from Annex F)**.**

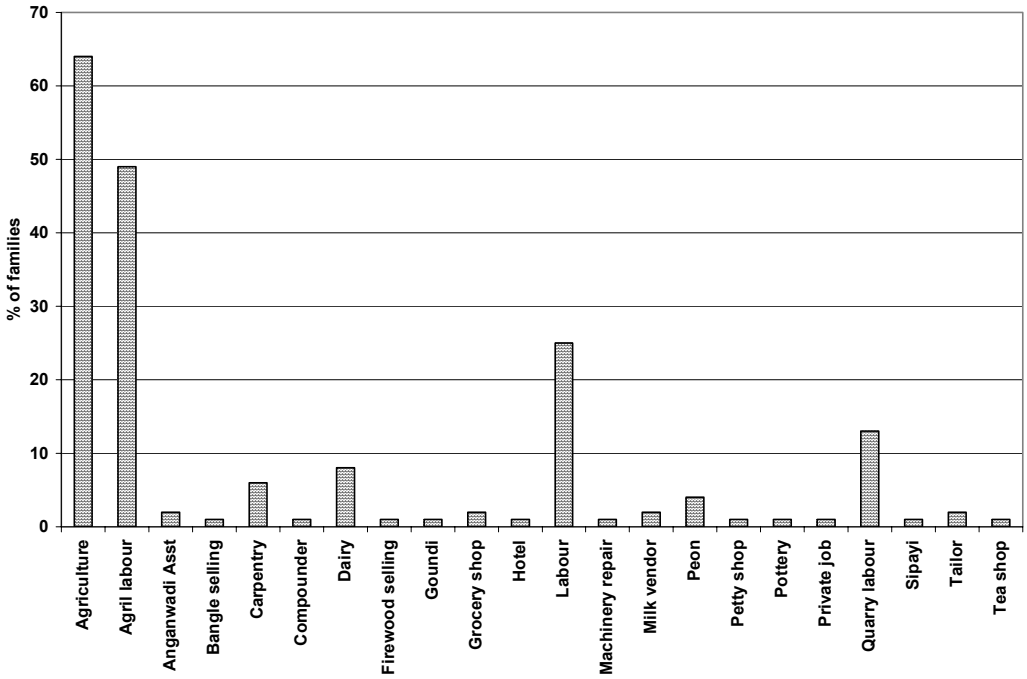


Figure A11. Declared primary occupations of SHG members (from Annex F)

The literature describes a wide range of facilitation groups in the NR sector and those which focus upon management of common property resources (CPR), such as watershed, irrigation or on some specific action or intervention; e.g. integrated pest management (IPM) or agroforestry, appear to be predominant (Meinzen-Dick et al., 2004). Place *et al*. (2004) described groups involved with credit, dairying, household goods and asset building, enterprise and marketing in the highlands of Central Kenya.

There is a very good reason for the interest of the academic development community in such collective action groups: they can be very effective agents of change, such as dramatically increasing household incomes (Place *et al*., 2004), and Uphoff (1993) cites numerous instances of far reaching achievements through the agency of collective action organizations.

A number of criteria for the success of groups (in terms of sustaining themselves and achieving their objectives) have been identified , and seem to hold across a wide range of domains. Agrawal (2001) catalogued some of these, which included having well defined natural resource target domain, small group size with clear and shared objectives, culturally appropriate leadership and heterogeneity of endowments. Place *et al*. (2004) found that in Kenya, most groups described themselves as being highly heterogeneous. They were mostly considerably formalized, having by-laws, bank accounts, a constitution and were registered. Opinions vary concerning the optimum size of group. Hobley and Shah (1996) reported that group agreements are more likely to be broken once there are more than 30-40 members. However, Place *et al*. (2004) found that in central Kenya, average group size at inception was 36, and increased thereafter. On the other hand, Meinzen-Dick et al. (2004) report that micro-finance programmes use group sizes between 10-20. Numbers were 10-19 in the current project (Annex F page F7).

Agency may also be important, such as NGOs (Premchander, 2003; Thorp *et al*., 2005). Meinzen-Dick *et al*. (2004) defined agency as occurring when an *individual* (my emphasis) enters into a contract to provide services for the group (presumably this may also include NGOs). Active local leaders were found to be important in organizing collective action in northern India (Krishna, 2004), although he did not study small groups as such, but collective action at the whole rural village level.

Collective action groups also increase social capital, but from a reading of the literature one rapidly concludes that there is a wide range of views as to what constitutes social capital. A definition which fits in with the objectives of this project is given by Krishna (2004) as, “the common property of a group that facilitates and promotes collective action for the mutual benefit of group members.” This objective form of social capital which facilitates community development is referred to by Sultana and Thompson (2004) as structural social capital. Meinzen-Dick *et al*. (2004) expand the definition to include inter-group interactions, thus: “This (social capital) includes both horizontal ties within a group (sometimes referred to as “bonding social capital”) as well as vertical ties between different groups (referred to as “bridging social capital”)”. Sultana and Thompson (2004) also discriminate between structural and cognitive social capital, the latter being defined as, “values, beliefs, attitudes and social norms that predispose people and communities towards collective action”. In the current research, social capital was not measured formally, but it was evident from a number of indicators that it had increased (examples from Annex D include demands for training and ideas for IGA (Figure 4.14, also Table A5 below), courage to visit the bank and officials (Figure 4.15, also Figure A12 below), attendances at the Taluka and Zilla Panchayats (Figure 4.16, also Figure A13 below), participation in decision making (Figure 4.17; Table 4.14, also Figure A14 below)) and new IGAs commenced (Figure 4.18). Some training was deliberately aimed at increasing social capital (see Annex P on motivation training, and its effects upon motivation scores, Table 1, Figure 1). Annex P, Box 1 certainly indicates that this form of social capital

could be classified as cognitive, according to Sultana and Thompson's definition. Also see anecdotal evidence; for example, Balamma's story in Annex C, page C31 ff. It is clear that 'bonding social capital' has increased, and 'bridging' (between groups), but the evidence for increased cognitive social capital (Sultana and Thompson, 2004) is not so clear; to an extent it must have pre-existed for the groups to establish in the first instance.

Village	Total demand	Mean demand	Change in level of demand	
Daddikamalapur	3	3	+3	Increase
Mandihal	3	1	+1	Increase
Mugad	11	4	+5	Increase
Kotur	5	2	-3	decrease
Channapur	4	2	-4	decrease
Gabbur	0	0	0	n/a

Table A5. Means and differences between 2003 and 2004 for demand for training

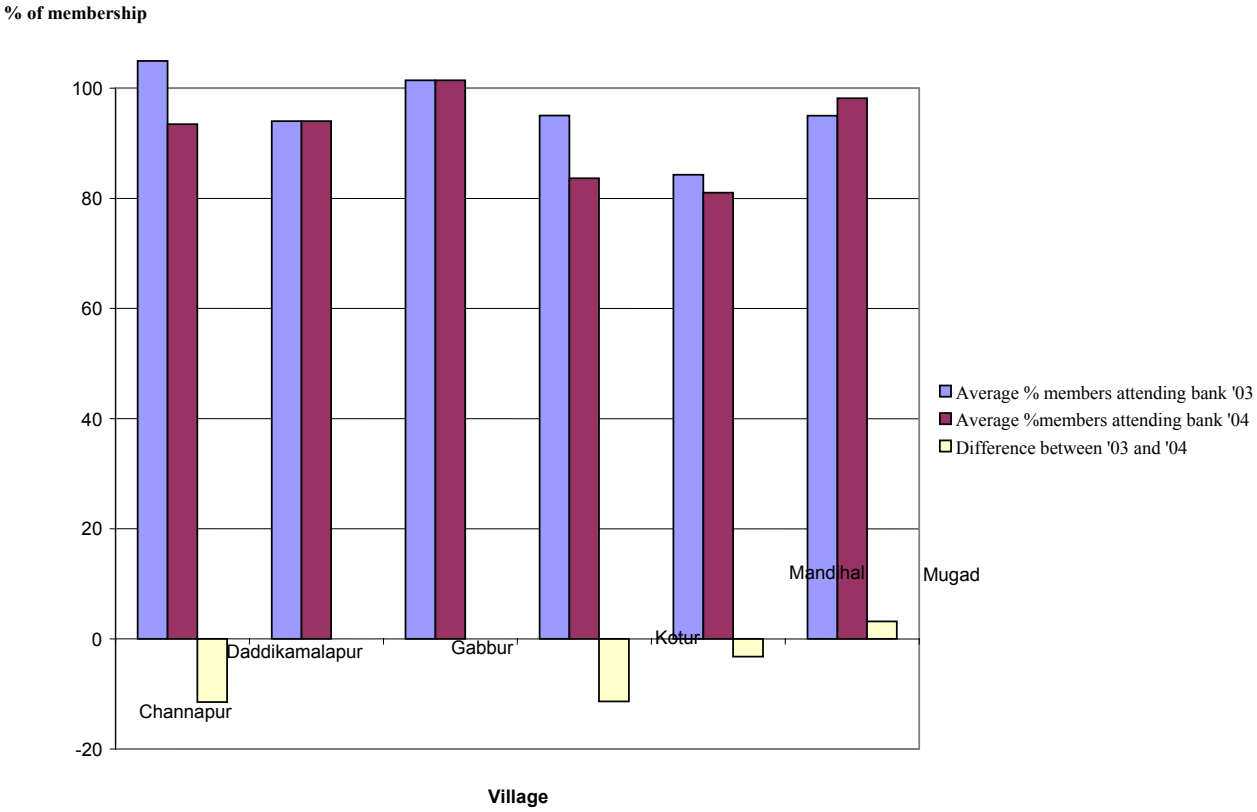


Figure A12. Proportion of SHG membership who visited the bank in 2003 and 2004, and trends

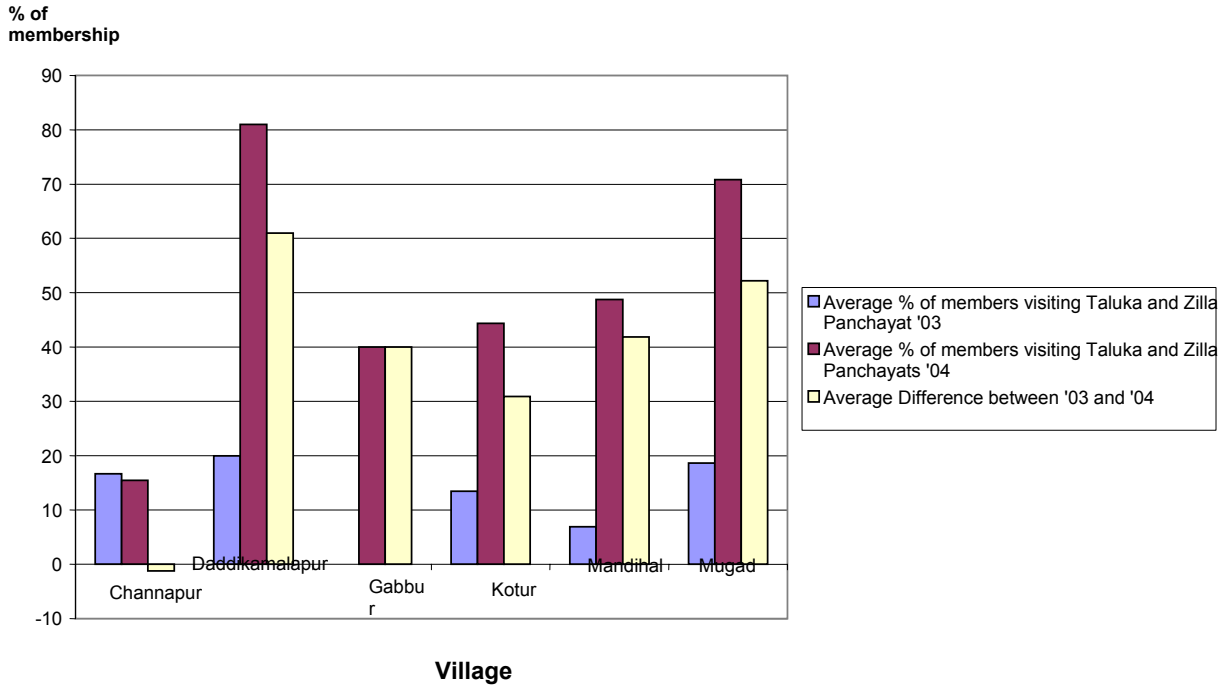


Figure A13. Change in the proportion of members attending the Taluka and Zilla Panchayats

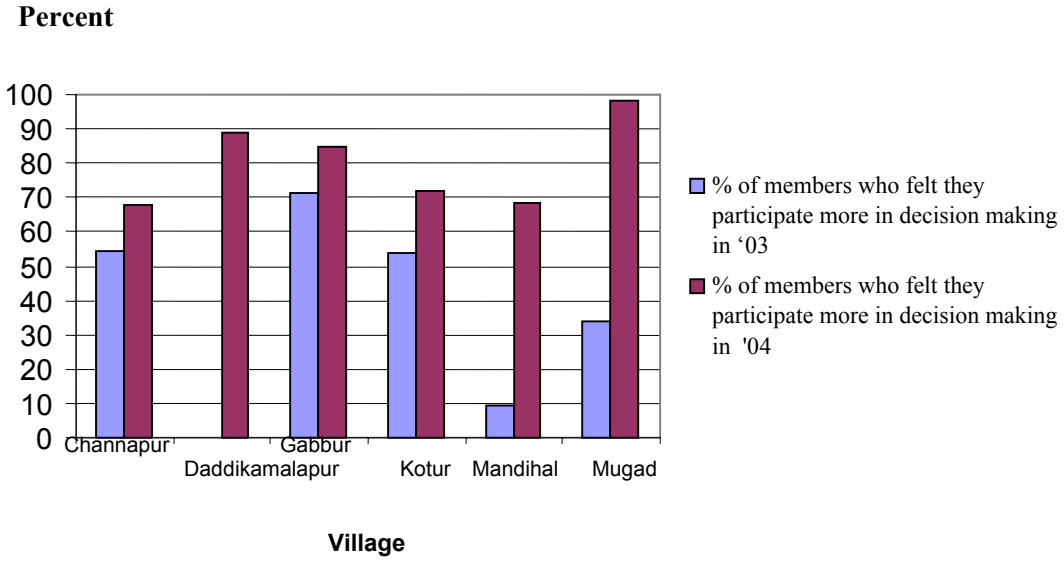


Figure A14. Changes in participation in decision making

It is interesting to note that none of the definitions of social capital encompass what has been described as 'political capital' or 'political capacity' (Annex J). For the

purposes of the study described in Annex J, political capacity is defined as the scope that an individual or group possesses to exert influence on decision making that affects them (both formally and informally) and so improve their livelihoods (Devas, 1997). A distinction is made between structural and instrumental capacity. Structural political capital is defined in the public perspective and refers to, "variables of the political system which influence the possibilities of diverse actors to accumulate instrumental political capital and condition the effectiveness of different types of instrumental political capital." (Birner and Wittmer, 2000, p.6) It refers to formal and informal institutions of governance; different levels of decision making and the nature of civil society. In this annex, this matter is addressed in Section 4.4 onwards, and more fully in Annex I.

Instrumental political capital is defined from the actors' perspective and consists of the resources which, "actors, i.e. an individual or a group, can dispose of and use to influence policy formation processes and realise outcomes which are in their perceived interest." (ibid, p.6) This involves examining the role of education, money, status and social capital.

It is quite clear that political capacity also increased within the SHGs, as members were more courageous in meeting with Government officials to raise issues with them (e.g. Annex C, Section 5.7 and Chapter 14, Table 14.6, with anecdotal evidence on pages C156-157). These are summarized in Table A6 below, where absolute number of visits in 2004 are presented.

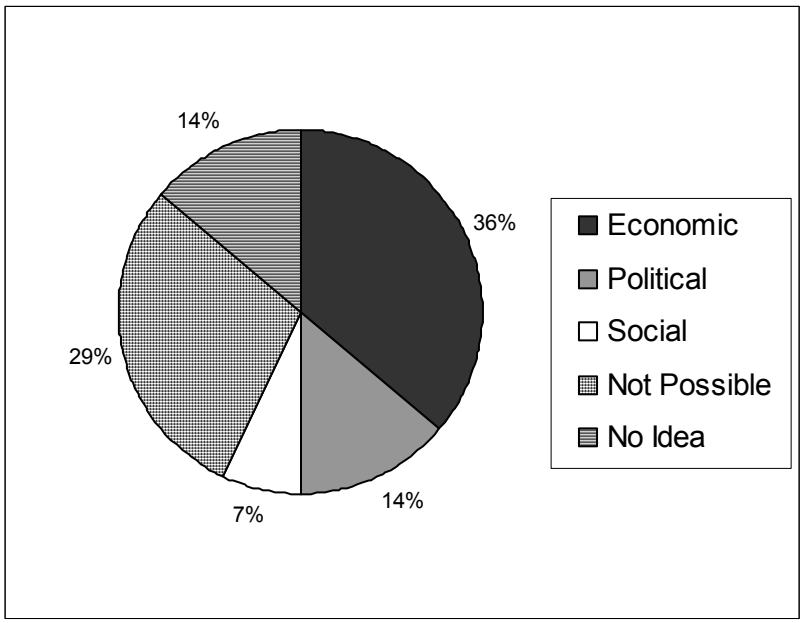
Village	Bank	Gram Panchayat	Taluk Panchayat	Zilla Panchayat	Gram Sabha
Kotur	60	35	20	0	60
Mandihal	100	30	10	4	50
Daddikamalapur	46	24	4	3	20
Mugad	120	50	10	10	30

Table A6. **Number of Institutional Visits made by Sangha Members**
(From Annex C, Chapter 14, Table 14.6).

It is noticeable that institutions higher up the administrative hierarchy are visit least often, but even the relatively few visits to the Taluk and Zilla Panchayats is more than would have been attempted before the project started. Examples of reasons given for visiting the Zilla Panchayat were for desilting of the tank and restarting fish rearing in the tank, and for maintenance of a mini water tank. It is interesting to observe that these reasons reinforce the validity of the action plans that involved improving access to water resources (Table A7 below).

The contrast with the results of Thoday's survey in Mugad in 2002 (in the early stages of implementing the action plans) is very revealing (Figure A15 below), where 29% of respondents (see Annex J, Tables 2.1 and 2.2 for sampling frame) did not believe that change was possible. More specifically, all scheduled caste villagers focussed on economic change while those who felt change was out of their control or had no idea about how to make changes were uneducated women. This high level of fatalism amongst uneducated women was not unusual – it was also noted by the research team in Kotur. The most desired changes in Mugad were improvements in livelihoods and

property (Annex J, Figure 5.2). These findings reinforced the conviction that the project should specifically address the aspirations of uneducated women; hence the establishment of MOVE (Annex H).



A15. Perceptions of how change can be brought about in Mugad, July – August 2002 (from Fig 5.1, Annex J)

Means of Change		
Economic Bank loan / save Borrow from friends Bribe Start own business Through Government scheme	**Political** Make Government aware Responsibility of elected members Change policy	**Social** Form/Work through SHG Through Self Help scheme

Table A7. Means of change suggested by respondents in Mugad and Kelageri

Many of the means of change suggested by respondents in Table A7 were achieved through the agency of self help groups, demonstrating that SHGs were far more than simple informal savings and credit groups, but acted across the economic, political and social spectrum.

The formation of SHGs originally commenced during R7959, to facilitate development of participatory action plans. This was the approach described by Sultana and Thompson (2004) for another NRSP funded research project, R7562, based in Bangladesh. During R7959, groups came together initially to diagnose NR management issues. Once these had been diagnosed, and solutions proposed by the primary beneficiaries, plans of action to tackle the identified issues were formulated. These activities naturally fostered internal cohesion, and following exposure visits to see how other SHGs operated, participants realized that they could emulate these groups. Consequently, the first SHGs were formed in mid to late 2001.

Initially, SHGs formed along caste and gender lines (Annex F, pages F6-7), and this was not discouraged in order to foster social cohesiveness. This commonly occurs in the formation of SHGs in India, as also described by Kumaran (1997). NGOs maintained group size to between 10 – 19; if more members wished to join, a new group was formed. Each SHG has a head or chair, and a secretary, elected by SHG members. These had to be literate. Groups meet weekly as a norm, and at least monthly. The role of the leaders was to convene the meetings, collect weekly subscriptions (savings), maintain the accounts book, and deposit saving in the bank. Each group set bye-laws (guided strongly by the facilitating NGO).

The principal means of maintaining group cohesion was establishment of savings and loans schemes. Members paid their weekly deposits (typically Rs 10), and once the capital had built up sufficiently, members could then take out loans at low interest (set by the group, but usually 2% per month). These had to be repaid before a new loan can be taken. Consequently, and also due to internal group social pressure, defaulting was rare (Figure A16). The difference between amount utilized and amount repaid is mostly due to extant loans. Although SHG members were keen to improve their earning capacity, many of these loans were for 'non-productive' purposes (health or school fees, weddings, paying off moneylenders), which is necessary to regularize household affairs and reduce obligations to others. Over time, members gained the confidence to take out loans from banks, which had the advantage of flexibility, the lender not having to repay the SHG loan before taking out another. This pattern of development and activity was also observed for other SHGs in India by Kumaran (1997), Premchander (2003) and Holvoet (2005). This kind of group-based microfinance system is sometimes known as ROSCA (Rotating Savings and Credit Associations) in the microfinance literature (Snow & Buss, 2001; Thorp *et al*,, 2005).

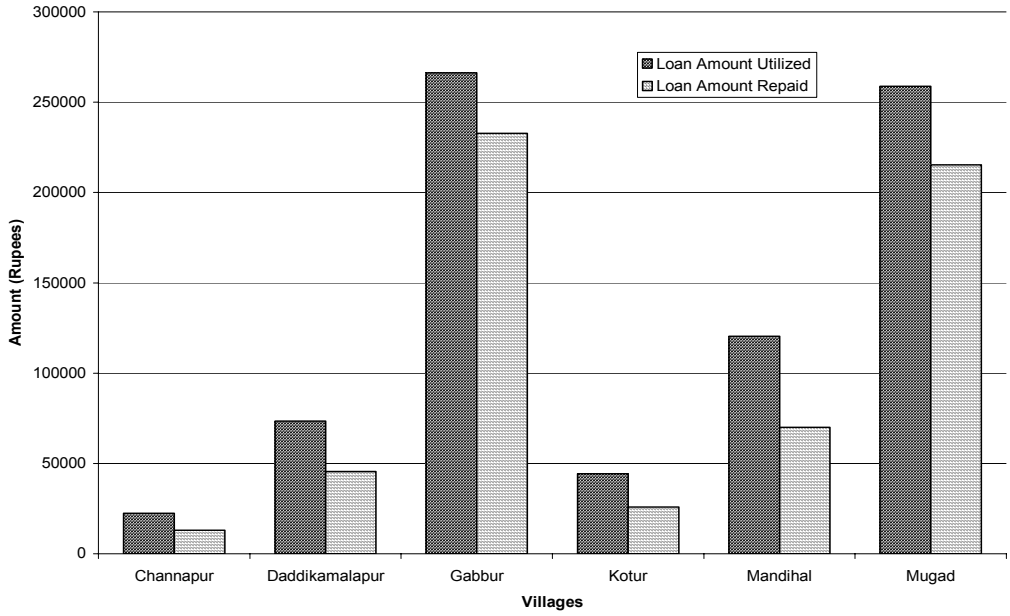


Figure A16. Total SHG funds utilized and repaid in six villages (from Annex F, Figure 19).

Once revolving funds were established (FTR main report, section 4, output 1 and table 2), another source of loans became accessible . Many took loans for non-NR based IGAs (Annex C, figure 14.2), as well as NR-based livelihoods (Main FTR,

Table 2; Annex B Plates B26, B48). The relative proportions of categories of loans are summarized in Figure A17 below. Gregory found in her study (Annex G), which took place 18 months into the project, that belonging to a self help group had a significant effect on women's income generating activity although the type of self help group did not appear to be of any consequence. Similar findings were reported by Holvoet (2005). It is interesting to note the absence of any particular trends in the ratio of loans taken for agricultural, income generating and non-income generating purposes. It might be expected that early loans would be taken for non-IGA purposes to regularize household affairs before taking out loans to increase earning ability. Also see Figure 4.21 in Annex D, which present the same data in another way.

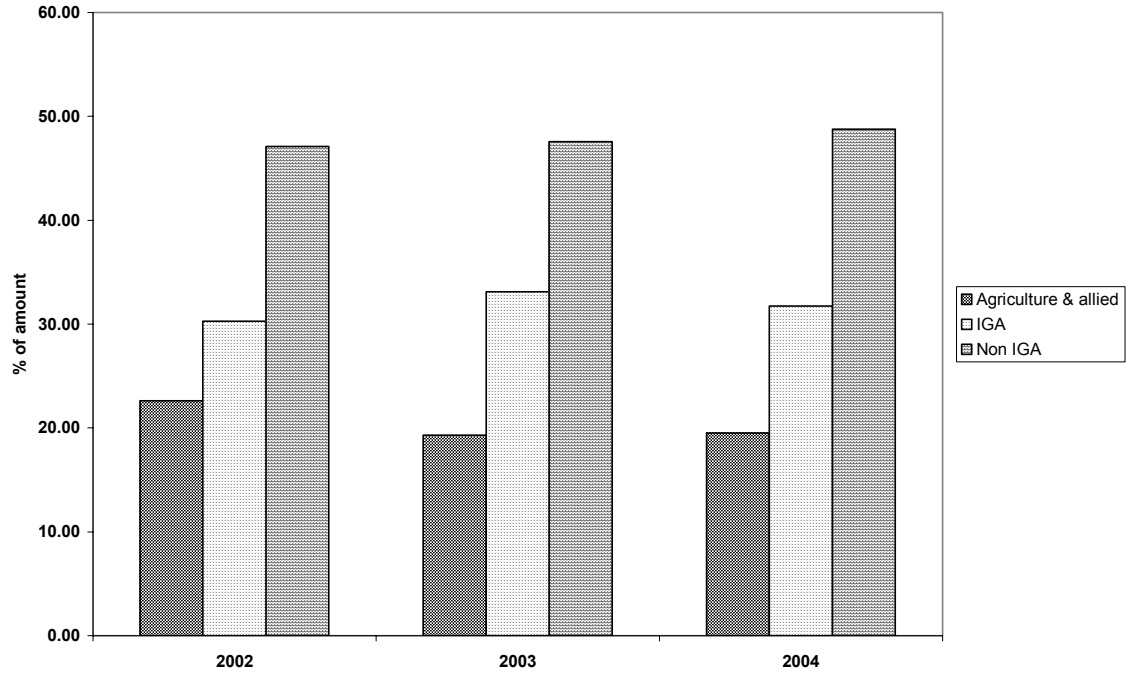


Figure A17. Trends over time for proportion of SHG funds utilized for agriculture, IGAs and non-IGAs (from Annex F, Figure 17)

Although microfinance was the main activity of the SHGs, many groups developed distinct 'themes', such as development of particular IGAs, examples being MOVE (Annex H) which involved three women's SHGs in Mugad, and vermicomposting, chicken and goat rearing, for example. However, none functioned as campaigning groups or users' committees, *per se*.

This pattern of establishment and function of SHGs is fairly typical for India. Holvoet (2005) described similarly NGO-mediated groups in Tamil Nadu, south India. Holvoet reported that 76% of microfinance clients globally are women; in the current project, 64% of groups were women's and they took out 74% of the value of loans from SHGs and 82% from the revolving funds. Premchander (2003) also described a similar pattern of establishment and development of SHGs in southern Karnataka State in India.

However, in many countries with frequently reported microfinance programmes (the most famous examples being the Grameen Bank in Bangladesh and the Bank Rakyat Indonesia, along with many others), the microfinance organization of often large and

granting credit is their sole purpose. Shaw (2004) and Amin *et al.* (2003) examine some aspects of such microfinance institutions which operate without the agency inputs which NGOs provide. Amin *et al*. (2003) concluded that the poor were more likely to seek loans from a microfinance institutions than the non-poor (in their study, these were Grameen Bank, Bangladesh Rural Advancement Committee [BRAC] and the Association for Social Advancement [ASA]), but they were less successful at reaching the vulnerable (and particularly not the vulnerable *and* poor), whom they defined as being households which were unable to perfectly insure themselves in the event of a household-specific shock.[2] In a study of BRAC's Income Generation for Vulnerable Group Development (IGVGD) programme and its effects upon the poorest, Matin and Hulme (2003) found that initial food aid followed by formation of informal savings groups increased poor women's incomes significantly. However, access to sufficient credit was a persistent problem which hindered the development of microenterprises (as also found in many areas of sub-Saharan Africa, for example; Snow and Buss, 2001). To their programme, BRAC added external microcredit provision, where recipients were identified by a locally elected council officials. It was concluded that, "While the IGVGD goes 'deeper' than many other poverty-reduction programs the design of the program does not make it accessible to all types of very poor household" (Matin and Hulme, 2003). In particular, the 'not going anywhere' group of very poor households proved to be very recalcitrant, indicating that even a powerful and well-resources agency such as BRAC finds it difficult to help this group (characterized as lone widows, aged couples, households where the head is chronically ill, the socially outcast).

In the current project, vulnerability as such was not measured directly, but as the peri-urban interface is characterized, *inter alia*, as being a zone of change brought about by the process of urbanization, it is likely that many of the population could be classified as vulnerable. In R7867, some characteristics of the very poor identified were high dependency ratios, ill health and low resource endowments, preventing them from taking advantage of the opportunities presented by living in the peri-urban interface. These indicators correlate well with the study on chronic poverty by Hulme and Shepherd, conducted in Bangladesh (Hulme & Shepherd, 2003), who found that landlessness, few material assets, poor health or premature death (especially of the head of the household) and a continuation of vulnerability all contributed to households being locked into poverty or only making marginal progress out of that state.

Initiating the MOVE programme (Annex C, Chapter 11; Annex H, 'MOVE' video on enclosed CD) was an attempt to reach some of these disadvantaged (specifically landless, illiterate women), but their degree of vulnerability was not determined. However, given that 40% of the poor or very poor benefited economically in some way from the project (Annex C, figure 14.14), it could be concluded that 60% did not benefit. Given the time available, the project set itself an indicator of 30% of the primary beneficiary group benefiting (FTR main report, OVI 1.2), so that indicator of success was surpassed, and more may have been reached if there had been more time, but it still leaves a worryingly high proportion apparently untouched. It could be that many members of this untouched sector are very the poor and vulnerable.

[2] Or as the World Development Report on Poverty and Development (World Bank, 2001) puts it, "vulnerability measures… the likelihood that the shock will result in a decline in well-being".

Further evidence of the difficulty is reaching this sector is provided by Shaw (2004), who concluded from a study in Sri Lanka that microenterprise credit alone was not an effective solution to poverty, although it worked better for clients not too far below the official poverty line or who lived in peri-urban areas (which she referred to as 'semi-urban', in common with a number of authors writing about the south Asian region). Reasons were often that the microfinance institutions were inflexible in their approach to granting loans, which discriminated against the very poor. She concluded that, "Development strategies based on self-reliance are unlikely to have much effect in the absence of an enabling environment which supports the efforts of the poor to develop their productive capacity."

The foregoing studies point to the importance of NGOs as facilitating agencies, as mentioned previously. Their systems of microcredit were initially group-based and informal (although quickly formalized through bank accounts and constitutions), groups were kept to a size where few would feel inhibited from interacting, and because groups were not 'issue' or 'cause' based (e.g. management of a common property resource such as irrigation), benefits were favoured by being small scale. Such small groups engendered empowerment, as already demonstrated. Holvoet (2005) found the same in her study in Tamil Nadu, in that direct bank borrowing did not challenge existing within-household or intra-group power structures and decision making, whereas group membership and borrowing resulted in major shifts in decision making from norm-following and the men making decisions, towards women deciding alone or by mutual agreement. Furthermore, this emanated in women's groups engaging in extra-household bargaining with decision making bodies such as the Gram Panchayat, dairy cooperatives and watershed and forestry committees; phenomena also reported in the current project. Another example of improved connectedness of women to the outside world is language. In the PUI, many Muslim women still speak only Urdu; whilst the *lingua franca* in Karnataka is Kannada, and this clearly reinforces the isolation that they experience because of their culture. At the closing workshop in Hubli-Dharwad, a number of such women were at ease reporting to the large group assembled (Annex B, plate B50) *in Kannada*, having learned this within the duration of the project.

Much thought was also given to sustaining the benefits of the project beyond its duration. The usual model used by the NGOs is to establish a SHG federation in each village (or maybe cluster of villages if the individual villages have few SHGs). This process is described in Annex C, chapter 15. The SHG federation also manages the revolving fund, which if managed properly, should be available in perpetuity. As is pointed out in Annex C, section 15.8, withdrawal strategies have not received much attention in the literature, despite the importance of getting it right for the sustaining of project benefits. Measuring the success or otherwise of the withdrawal strategy might well be the topic of follow up research.

In conclusion, it can be said that the formation of SHGs, primarily for the purpose of establishing informal microcredit systems and mutual support and encouragement, was a great success for those who became members. This was undoubtedly aided by the peri-urban location of the project villages, which significantly assisted in the identification and establishment of alternative enterprises or expansion of existing ones (such as dairying), as also found by Shaw (2004) in Sri Lanka. It is very doubtful

that the development outputs of the project could have been achieved without the agency of the NGO partners. As was found during R7959, the partners specializing in research are not equipped to facilitate such community mobilization. The partnership of research and development organizations was particularly fruitful, although relationships (because of differing objectives and perspectives) were strained at times. The best example of this was the development of the MOVE programme by Dr M. Subhas, a senior academic from Karnatak University, working with IDS in Mugad village (Annex B, plates B43 – B47), and subsequently in all six villages during the uptake promotion phase, March to September 2005 (Annex C, Chapter 11).

The other form of participation tested by this project was collective action. Unlike action mediated through SHGs, collective action was not restricted to SHG members, and consequently required considerable patient negotiation with stakeholders. Examples were the repairing of channels to tanks and rehabilitation of tank bunds (Annex B, plates B19, B20, B31-B35, B37, B39, B40, B59, B60). The first example of such collective action within this project was actually a tree planting activity, and is described in Box 1 below. This is a prime example of NGO agency in action, in a culturally sensitive fashion (appealing to the culturally important religious sensibilities of the population), yet willing to push the boundaries of norms outwards (using a cemetery as a site for planting trees). The other example we wish to highlight in this FTR is channel and tank rehabilitation in Kotur (described in Annex M). The agency involved here was UAS Dharwad. A series of 16 meetings with 22 farmers were held over two years were held to negotiate who would contribute in terms of labour and finance. Effects were apparent in 2004 (Section 4.3, this annex; Annex M, Tables 3 to 5), and even more so in 2005, when heavy monsoon rains were received (Main FTR, Table 3; Annex B, Figure B1, Plates B59 & B60).

Some collective action was spontaneous, such as the banning of alcohol sales in Channapur (described in FTR R7959). It is concluded that collective action aimed at enhancing management of NRs is possible in the PUI, despite concerns that one effect of urbanization might be to render such actions more difficult. However, many people in the Hubli-Dharwad PUI still regard themselves as being agriculturalists, and so value their NR endowments, and it grieves them to see the NR base degraded. Whether this would be the case where urbanization is a stronger force for change, such as around Bangalore, only future research will reveal.

Box 1
HASIRU HABBA
FESTIVAL OF PLANTATING TREE

15th July 2002 was a special day in the history of Channapur village in Hubli taluka of Dharwad district. An innovative festival ***"Hasiru Habba"*** was celebrated with community participation.

The rising sun of the day brought in guests, relatives, friends, and people form neighboring villages and dignitaries, to the village all in celebration mood.

The site of celebration, the **village graveyard** was uniqueness of this function. This graveyard is special in the sense that it represents the communal harmony of the village. All communities, religions, casts- casts & lower, rich & poor live in harmony in the village till they are alive and share this common graveyard for resting to peace after death.

The graveyard, which usually remained deserted, neglected and scared of, had a different look. It was decorated like a bride, with mango leaves, flowers and rangoli. It was full of people. Villagers- men & women, young & old, rich & poor, upper cast & lower casts, relatives, friends, guests and invitees had assembled there in new cloths with full of enthusiasm. The streets leading to the graveyard were also full of people who were late and rushing to the site.

In the graveyard men with pick axe, spades, crow bars etc. were busy in digging pits (Not a grave to mark end of life but for planting trees to mark beginning of new). About 4000 seedlings of different species (Some timber, some fruit and some of flowering verities) were stored in one corner. Children were carrying these seedlings to the pits dug by the men for planting. Women were ready for planting trees were waiting for formal inauguration of the function by the chief guest. From a nearby house was coming the fragrance of spices igniting hunger, where some men and women were busy in cooking food for lunch of the guests and invitees.

The villagers had cleaned the site, entry to that was impossible due to bushes and weeds of about 6-8 feet growing there. They had arranged for a tractor and got the open space between graves ploughed and formed furrows for planting the trees.

After completing these preparations all were eagerly waiting for the arrival of the chief guest of the function Sri Sri Chidrupanand Saraswati Swamiji of Sri Dayanand Vidyaranya Bharati Ashram of Hubli, to inaugurate the programme.

Swamiji on his arrival at the village entrance received a ceremonial welcome of washing feet, garlanding, offering pooja, performing aarti and was taken to dais in a procession led by a band of folk instrumentalists, villagers and school children. The procession went through all streets of the villages with villagers and children singing songs and shouting slogans about importance of tree and need to conserve nature.

At the dais the villagers were briefed of the purpose and method of celebrating the festival.

“We Indians have a culture of celebration. Any event (good or bad) is an occasion for us to celebrate. Birth, death or marriage, Mondays or Sunday, full moon day or new moon day, arrival or departure of guests and many more events, any day or any thins is an occasion for us to celebrate. But all these celebrations do not serve any productive purpose except making us happy. If we incorporate tree planting as part of culture and make it an occasion to celebrate it will give us happiness of celebration as well serve the purpose of conserving and improving of nature.” Were the words of BAIF officers who had motivated people for this celebration.

Swamiji formally inaugurated the programme by lighting lamp. In his inaugural blessing address swamiji explained the importance of trees in human life and need of planting and protecting trees. He stressed the point that we generally celebrate regular festivals limiting it to our own families and relatives. All festivals we celebrate have in them hidden purpose of conserving nature and environment. But we have forgotten this purpose and the festivals have become only rituals for us. This is an innovative festival, which requires celebration involving whole community and is special because it stresses on tree plantation and protection. He stressed that this festival should not become a ritual and it is not sufficient to stop by celebrating this festival for one day in a year. For us it should be out mission of life and every day for us should be a day of Hasiru Habba. At the end he administered oath to all present

that they will celebrate Hasiru Habba every year by planting and protecting atleast 10 plants through out their life.

Swamiji was requested to plant at least 2 trees with his hands to bless the occasion. Swamiji to this replied that as he has administered and taken oath of planting and protecting 10 plants he will plant 10 plants and will also celebrate the festival by planting 10 trees every year through out his life.

Swamis performed bhoomi pooja at the site of plantation and also performed pooja of the trees and instruments. Then he planted 10 trees with his own hands. After the pooja people stated planting trees. It continued till 2.00PM.

About 400 people from Channapur, 30 people from Inam Veerapur and Bomsamudra, about 30 people for surrounding villages like Ramapur, Katnoor, Giriyal participated in the programme and about 4000 seedlings of 15 different species were planted on about 3 acres land.

At the end, the participants had common lunch prepared and served commonly for all forgetting all barriers of cast, creed, gender, status and economic level.

The occasion was celebrated as a festival. It to a great extent has served its purpose of incorporating the tree planting as part of culture in the villages and of giving it a spiritual dimension. One more special thing about this programme was the site selected for planting trees which was a community cemetery that is used by all casts and communities both for burial and cremation. Celebrating this festival and commonly sharing food also served the purpose of bringing communal harmony among the villagers.

[Extracted *verbatim* from BAIF Annual Report 2002-3 to project R8084]

A function imposed upon the SHGs by the requirements of the project was to identify and use participatory indicators of change, and if possible, to establish a participatory monitoring and evaluation system. As already described in the FTR main report, outputs 1 and 2.3, this was far from straightforward. However, the project has this experience in common with many other that have attempted the same thing. Some projects do not progress beyond using participatory tools (e.g. social mapping, wealth ranking, matrix ranking, Venn diagrams) with primary beneficiaries to learn about a particular issue from their perspective. An example of this from the recent literature is Cramb *et al*. (2004), where the researchers controlled the monitoring process, even though participatory tools were being employed. There was no suggestion of handing over the monitoring process to the primary beneficiaries. Others have tried to go further, but have met similar obstacles as did the current project. For example, in Bolivia and Laos, Lawrence *et al*. (2000) reflected upon the experience of setting up PM&E systems. They concluded, "…participatory methods involving farmers in documenting change (even in using a shared, visual method such as matrices) may be of more value in facilitating communication between farmers and *researchers* (my italics), than in enabling themselves to arrive at dramatic new insights." They raised the question of who is benefiting from the PM&E process, and conclude that farmers may not value the tools used by researchers, albeit part of the 'participatory toolkit', because they already have informal ways of assessing their own experiments. Other authors in the same volume (Sidersky and Guijt, 2000) gained the impression that the primary beneficiaries (farmers, farmers' organization, NGOs) were not using data from the PM&E process independently of project activities (in Brazil).

In the current project, many of the participants were illiterate. Although this is not necessarily a constraint to PM&E (the team have been using participatory tools such as matrix ranking, and even graphs, with such groups for many years), it did impose constraints on what methods could be left behind with the villagers to use. For example, filling in a table using letters or numerals might be problematic without external help, such as the NGO's COs. Where there are literates within the group, the issue is considerably eased (see Annex B, plate B5: in Channapur, such a sight would be quite rare, as according to the census data, there are only 28 literate women in that village, Table B1). Therefore, the project had to use diagramming which illiterates could understand.

Examples of such diagrams are presented in Figure 3.2 to 3.6 and Box 1, in Annex D, and in Figures A18 and A19 below, and Figures 2 and 3 in the main FTR. The project facilitators were careful to allow the SHG members to decide what aspects to monitor and by what means. In Channapur, the monitoring and evaluation consisted of field visits to each of the wadi plots (Figure A17) and scoring them (Annex D, table 4.5). In Mugad, the Laxmi SHG (one of the SHGs involved with the MOVE programme) elected to use a ladder scale to indicate what they were interested in measuring, which were regularity and attendance at SHG meetings, courage for going to the bank and negotiating with officials, and the performance of their new detergent making enterprise (Figure A18 below, Annex D, Box 2). They decided on the number of rungs on the ladder (16, based on an old unit of currency), which gave them a fine resolution for measuring their progress and was culturally relevant to them.

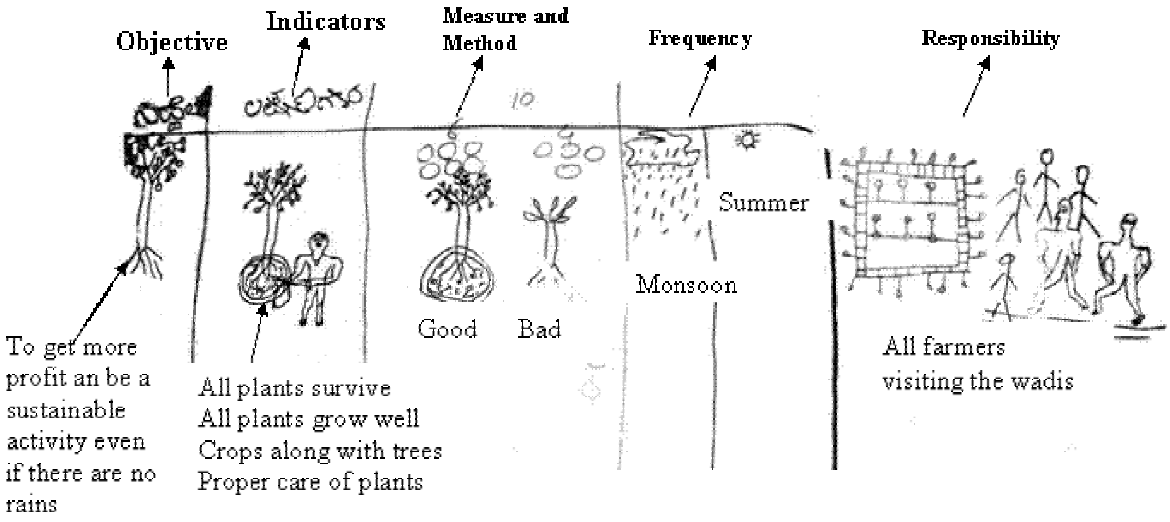


Figure A18 Participatory monitoring diagram about wadis, Channapur

The issue of resolution of measurement emerged during the wealth ranking exercise (FTR main report, figure 1). Initially, villagers wanted to use eight categories for wealth. The team quickly realised that each exercise would take an inordinate amount of time, so they negotiated it down to five categories. When the results were plotted, it showed large numbers in the very poor category, but the resolution was too coarse to be able to detect any movement between wealth ranks due to implementation of plans of action. The villagers were right after all!

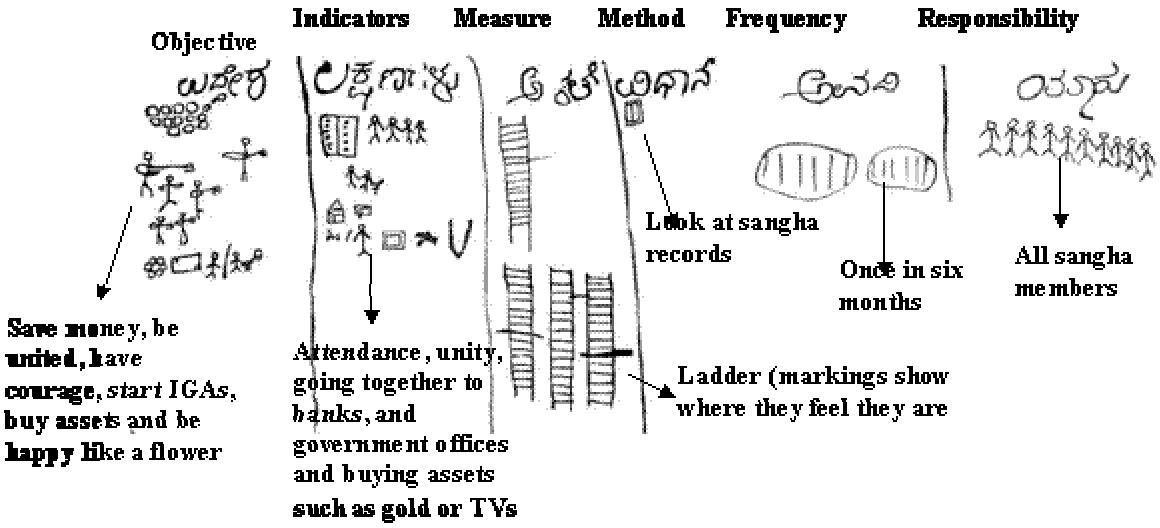


Figure A19. Participatory monitoring diagram about SHG functioning, Mugad.

SHGs were very keen to monitor themselves (Figure A19; Annex B, Plate B25), identifying seven indicators concerning their development (Annex D, section 4.6). In this research report, attention will be drawn to just one aspect, regularity of meetings. Ten out of the 18 monitored SHGs met at all their planned times. Figure A20 below presents data for meetings missed by season, which shows up an interesting peri-urban effect. Most of the missed meetings were in the summer months (in Hubli-Dharwad this is the hot and dry season, from February to May), when no crops grow and there is little agricultural work. From the more distant villages, particularly Channapur and Kotur, members go to the city for manual work. In the case of Mandihal, summer is when the stone quarries operate (Annex T). In the case of Gabbur and Daddikamalapur, on the other hand, livelihoods are largely dependent upon dairying, which is a year round activity. Also in Gabbur, the availability of irrigation in the summer from the waste water stream (Annex S) ensures availability of agricultural work during the summer.

Given the time and unfamiliarity of the team members with PM&E systems, by the end of the project a remarkably useful system had emerged (from the researchers' points of view!), yielding very useful quantitative data. There is no doubt that the high level of trust and mutual respect that had built up between the research team and the SHG members contributed to this rapid 'take-off' once the concept was understood. Also, by the end of year 2 of the project, primary beneficiaries were beginning to see changes they could measure, which would not have been possible nearer the start of the project. At the end of Annex D (section 5.3), Karen Hillyer and Simone Purohit assessed which of the indicators might be sustainable and transferable. At the stage of the end of the project, only conjecture is possible, but it would be interesting to visit the project villages after a year to what was still being used.

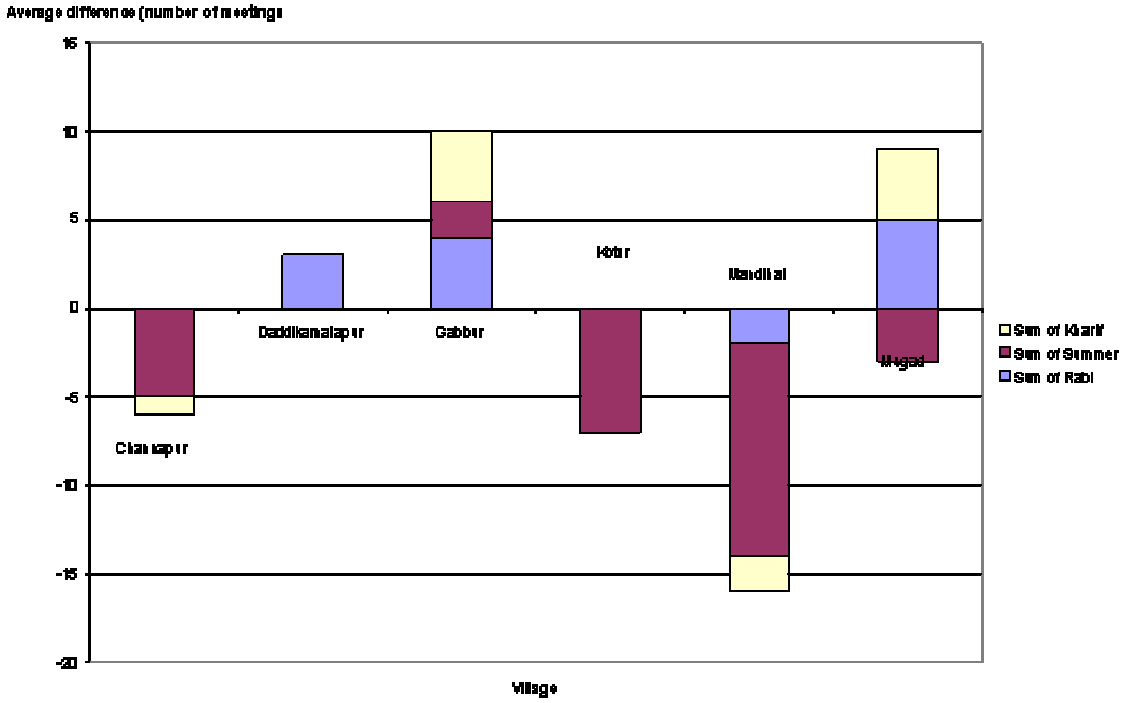


Figure A20. Influence of season on regularity of meetings in project different villages (from Annex D, Figure 11)**.**

At the start of the project, IDS and BAIF both expressed reservations about working in the PUI, having eschewed it in the past, not being sure that SHGs would form easily, and that urban distractions might be an obstacle to social mobilization. In the event, both NGOs found that formation of SHGs was, if anything, easier than in rural areas. IDS reported that formation of federal groups (VDS) was initially easier in the PUI than in remoter rural areas, but that due to numerous other commitments, members were ess committed to them in the peri-urban. People were generally more attuned to hearing about new ideas, were more used to a highly monetized society and could see numerous opportunities for generating income, but affordable credit was the constraint. At the end of the project, both NGOs report that they are no longer afraid about working in the PUI and would readily do so again in future.

4.3. Validity of the new knowledge about natural resources based production and livelihoods

New knowledge about natural resources in the PUI around Hubli-Dharwad was generated during project R7867 (also see Brook *et al*., 2003). In summary, it revealed the great diversity in farming systems to be found around the twin cities, drivers of diversity being proximity to markets, soil type and rainfall regime, all of which varied spatially in the Hubli-Dharwad hinterland. Farming was still regarded as being the main occupation for the majority of peri-urban dwellers. Livelihood strategies also varied greatly, and the poor appeared to change their livelihood 'portfolios' more frequently nearer to the city than did the wealthier and the poor who were more distant. There was evidence from prices being obtained in urban markets for produce, transport costs to market and from land sales that Hubli was a greater force for change

than Dharwad. Water was a significant resource issue. Along sewage polluted water courses, farmers pumped water to irrigate dry season crops, so obtaining premium prices for horticultural produce in the urban markets, although the produce was contaminated with faecal bacteria and insecticides. There was an inflow of water into the city from the surrounding rural areas via the water reticulation infrastructure. Leakage within the city from both the water and sewerage systems was significant. This resulted in measurable rises in boreholes within the urban area, which may be contaminated with sewage, and there was evidence that this was seeping along fractures in the aquifer to peri-urban villages.

During R7959, it became apparent that although NR within the peri-urban interface had been characterized during project R7867, it had not identified needs of the local population for managing NR. In project R7959, stakeholders were asked to identify and develop plans of action for managing NR in the PUI, in such a way that they would benefit the poor when implemented. The plans of action developed during that project as listed in Table 1 of the main FTR for the current project. Bianca Ambrose-Oji and Karen Hillyer (Annex E) grouped these into two categories, presented in Table A8 below. It became apparent that the priorities of the poor were improved access to water, forests and forest products, improved catchment and livestock (especially dairying) management, and new components that could be added to their livelihood strategies.

NR management **(community wide, pro-poor)**	**Livelihoods** **(household and individual, poverty focused)**
• Increase or maintain tree cover • Improve water storage • Better livestock management • Improved soil management (erosion, water holding, pollution, fertility)	• Improved management of household's own natural resources • Improved access to NRs for poor groups of people • Building capacity of the poor • Develop alternative livelihoods (or income generating activities - IGAs)

Table A8 The livelihoods and NR based strategies planned during R7959 and being tested by R8084

This sub-section will consider implementation of natural management aspects of the project. The findings from implementing these plans of action for the NR management category and for improving NR management and access to NR for households, are presented in Annexes K to V of this report. Regarding the technologies implemented, there was nothing particularly novel used in this project. However, it was of interest to determine which of these techniques and approaches were applicable in the peri-urban context, particularly considering the competition for time and labour that could arise from proximity to the city. Additionally, the project wished to determine if there was anything different about managing NR which benefit the poor, in the context of the PUI.

4.3.1. Sewage irrigation

One NR issue where the peri-urban perspective is clear is irrigation with sewage waste water. Annex S presents the findings from an exhaustive survey conducted largely by G. H. Yogesh on farming systems in these sewage irrigated areas, which line the banks of the Chaul Halla stream flowing east from Dharwad, and the Hire Halla stream flowing predominantly south from Hubli. An earlier characterization of these systems is presented by Bradford *et al.* (2003), but the current survey was more extensive than Bradford's. In total, over 600 farmers around Hubli-Dharwad utilize sewage waste water on 1470 ha of farmland, so it is a significant practice. The reason for adopting the practice is that Hubli-Dharwad lies in a semi-arid area and is prone to periodic droughts, and the availability of irrigation water removes that constraint (many farmers away from the sewage waste streams who can afford it utilize borewells for the same reason: see Table 8.1 in Hollingham and Joshi, 2003). The crops grown are listed in Table A9 below, and their spatial variation along the waste streams are presented in Figures A21 and A22.

Annual vegetables:	**Leafy vegetables:**	**Fruit trees:**	**Rain fed crops:**
Cauliflower	Amaranthus	Guava	Cereals
Cabbage	Spinach beet	Mango	Oilseeds
Aubergine (brinjal)	Khol rabi	Sapota	Pulses
Beetroot			
Tomato			
Onion			
Chillies			
Cucumber			

Table A9 Crops grown on farms utilizing sewage waste water
Note: rain fed crops are grown in the kharif season and are not irrigated, unless a drought threatens

What is noticeable is both variations with distance away from the cities, and also the difference between the cities. Around Dharwad, irrigation with sewage waste water is confined to annual and leafy vegetables, as the cereals (wheat and sorghum), oilseeds (usually groundnuts, some safflower) and pulses (usually greengram or chickpea) are rainfed, or only receive supplemental irrigation if necessary. Around Hubli, annual and leafy vegetables are much less dominant, whereas fruit tree orchards rise to dominance by 8 km distance from the city. Some fodder is also irrigated (Annex B, plates B27 and B28), maize being classified under cereals. Fodder grasses (Napier grass) were introduced by the project, but are so minor that they do not register in the data.

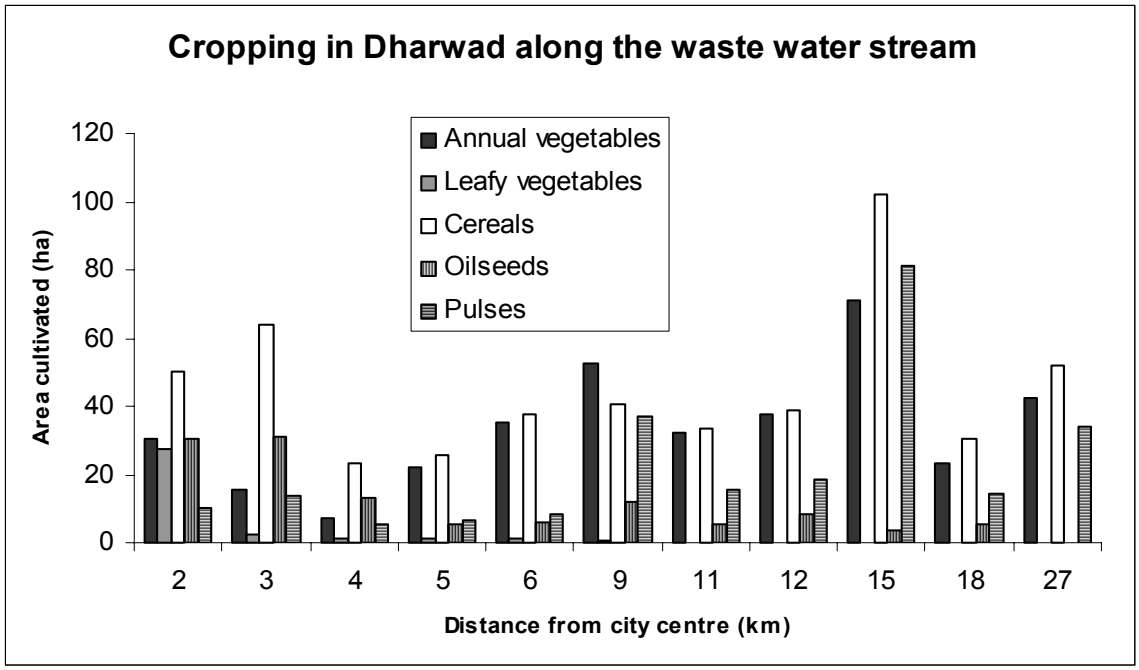


Figure A21 Spatial distribution of categories of crops along the Dharwad waste water stream

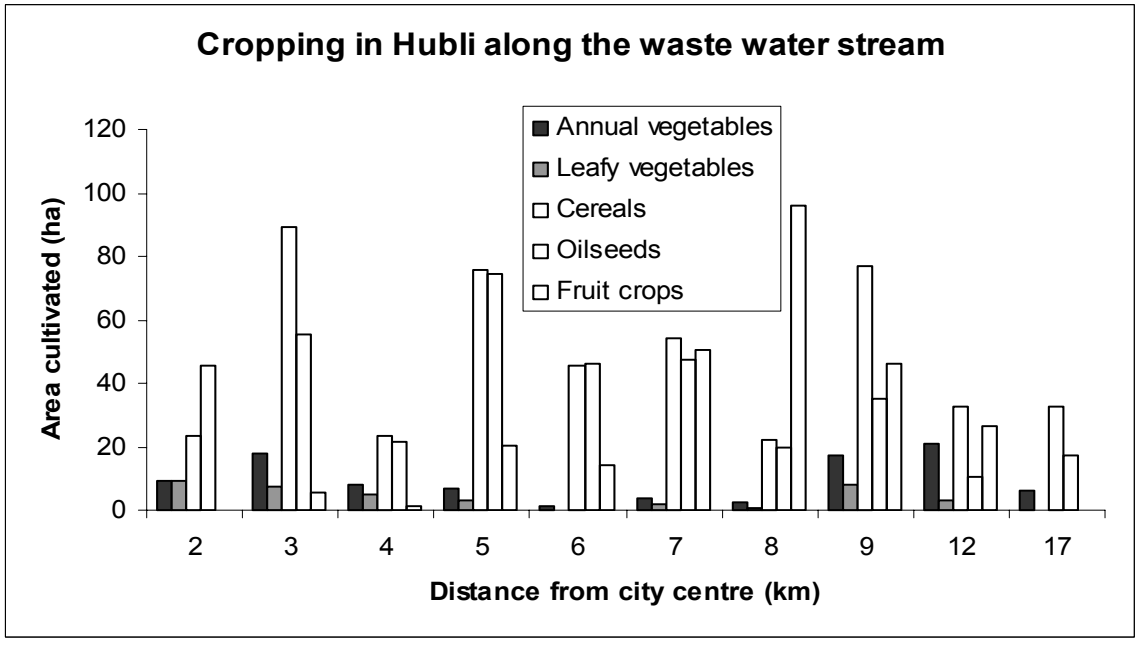


Figure A22 Spatial distribution of categories of crops along the Dharwad waste water stream

The project helped with management of this system in two ways in Gabbur, the only project village with this practice. The sewage waste water carries a significant nutrient load (mostly in the solid organic matter fraction, rather than as soluble N), and the UAS team analyzed the soils to advise the farmers on how they could reduce their fertilizer inputs accordingly (Annex C, sections 6.3.1 to 6.3.3). 15 to 20 farmers participated in this component, the potential saving in fertilizer being Rs 700 to Rs 1000 each.

It is, of course, of some considerable concern that farmers are using sewage contaminated water to grow food crops. As these are subject to a high incidence of pest attack, organo-chlorine and organo-phosphate insecticides are sprayed frequently (Bradford *et al*., 2003). The vegetables are sold in the market, so for the consumer there is a risk of faecal contamination and ingestion of pesticide residues. To the farmer there is also the risk of pesticide poisoning, as no personal protection is worn when spraying. In response, the project sought to identify crops not for human consumption. Initially, mulberry for silk worm production was considered, but there was little interest. As Gabbur has a significant level of dairy enterprises, fodder was suggested instead. Fodder in the dry season is a constant constraint to livestock farming in this semi-arid area. To this end, Napier grass was introduced, and expansion of maize was encouraged (Annex B, Plates B27, B28). Maize grain does not feature significantly in human diet locally (occasionally some green cobs may be eaten as vegetables), so this is sold to factories for manufacture of starch or to livestock feed compounders. The stover is fed to livestock.

4.3.2. Agroforestry

Agroforestry is an approach to land use that combines several potential services: provision of fruit, fodder, medicines, fuelwood and building poles, control of soil erosion and rainfall run-off, and adds organic matter to the soil thus increasing rainfall infiltration and nutrient retention. It is possible to design agroforestry systems that combine all these attributes, and the 'wadi' systems implemented in Channapur are examples of such (see Annex B, plates B7 – B9, B12, B55 – B57; Annex C, Chapter 7, Annex K, Annex O). A number of action plans emanating from R7959 included enhancement of tree cover, control of soil erosion and rainfall run-off, and the systems implemented addressed these concerns. Figure 1 in Annex K present a diagram to conceptualize these issues and how agroforestry addresses them.

In Channapur, BAIF established the 'wadi' plots of its own design (BAIF use 'wadi', a Gujarati term for orchard, wherever they establish this technique), initially supplementing funds from R8084 with using resources from a nearby EU funded project for the first 15 farmers, and later using resources solely from R0804. The approach in BAIF villages is that the project supplied planting material while farmers donated their labour, whilst in IDS villages, farmers contributed up to 50% of the cost of planting material where they were not supplied from another source). In the villages where IDS operated, Mugad, Daddikamalapur, Mandihal and Kotur, the agroforestry work took advantage of a link with a UAS project led by Dr H B Bablad, "Resource Conservation, Development and Utilization of Waste Lands on Watershed Basis" funded by the Government of India. Under this latter project, horticultural trees such as mango, sapota and curry leaf and timber species such as casuarina, acacia and teak were established in farmers' fields. The Government sector was involved in other ways; for example, in farmers in Mugad were trained by the Senior Assistant Director of Horticulture in grafting, nursery management and pest and disease control of fruit trees, and other more junior officers were engaged to train in other aspects of horticulture. Farmers from all six villages were taken on an exposure visit for three days to Maharashtra State to see examples of agroforestry there, amongst other training and exposure visit events (Annex K, page K6). Agroforestry plantings were adopted by 27 farmers in Mugad, 7 in Mandihal, and 16 in Kotur. Due to familiarity and known markets, mango was by far the most preferred species.

Channapur was selected for inclusion in projects R7959 and R8084 as being a noticeably poor village with low natural resource endowments (an average of 1.1 ha per land-holding family, mean annual rainfall only 620 mm and heavily eroded soils). In all, 47 farmers were selected for training (criteria for selection are set out in Appendix 1 of Annex K). Participation was not restricted to poor farmers nor to SHG members, as BAIF considered agroforestry to be an intervention to be encouraged as widely as possible in the catchment). 26 interested farmers were taken to BAIF's main campus in Karnataka, in Tiptur, to see agroforestry demonstrations there, and also to the nearby EU funded project at Surashettykoppa. Initially, in 2002, 15 agreed to try out agroforestry plots. By February 2005, 36 farmers (out of 153 land-holding families, 24%) had adopted 'wadi' plots, covering more than 10% of the cropping land of Channapur, with a total of 15,154 trees (mean of 420 trees per farmer, 66 being fruit trees and 355 boundary timber and fodder trees. See Annex K, Appendix 1, Figure 1 for layout). Before the promotion of agroforestry technology, the mean number of trees per participating farmer was 14 horticultural and 10 forestry species, so this intervention resulted in a 17-fold increase in population of surviving trees. Most farmers did not convert all their land to agroforestry, but as benefits became apparent, by February 2005 20 farmers had subsequently extended their original plots. The fewest trees planted per plot were 105 and the maximum was over 500 (Annex D, Figure 4.6, section 4.2). These statistics indicate confidence in the technology. Specifically, amongst the 25 farmers involved in the PM & E of the 'wadi' plots, 23 said they would recommend it to others. Out of the initial 47 farmers selected by BAIF, by the time Annex O was written, 14 had not adopted agroforestry plots. When asked about reasons for non-adoption (Table 12, Annex O), 100% replied that they only had small plots of land or there were tenure or ownership issues (in other words, limited access to the NR base), and 86% replied that in addition, family members were engaged in working in Hubli (low natural capital probably forcing them to commute – an opportunity made available by proximity to the city).

The financial returns have not yet been measured, as agroforestry tends to take a few years to realise tangible effects. BAIF's projections for gross income from these plots were that it takes about five years for income to be realised from the trees, rising to Rs 40,000 p.a. by the tenth season from the tree component alone (leaving aside the crop component), based on their experiences at more mature sites (Tables 2 and 3, Appendix 1, Annex K). During a visit in September 2005, the farmer in Plate B57 reported that from their wadi plot of approximately 1 ha, which had been established for three years, his wife had been selling vegetables from the plot in Hubli market.[3] She does this daily, for three months of the year, yielding a clear profit of Rs70 to Rs80 per day. This is a striking example of how a farmer has used the opportunities presented by improved NR management (agroforestry in this case) and proximity to urban markets to generate a new income stream. The Plate B57 depicts the farmer holding dry fruits of cucumber and ridge gourd to produce seed, so the intention to repeat this enterprise in 2006 is clear. When asked how they wished to monitor their 'wadi' plots during the PM & E exercises, in the absence of clear economic indicators, farmers chose good husbandry, and elected to visit each others' plots to assess them (Figure A17 above; Annex D, Figure 3.4.). Tree survival was one

[3] R. Brook field notes, Sept. 2005.

indicator used, and 29% achieved and 31% exceeded the planned surviving trees per acre of 350-500, despite the drought conditions.

In a study of nearby Surashettikoppa, conducted in 2003, Hails (2005) interviewed farmers with wadi plots established from 1997 onwards. When asked what the main benefits are, 80% responded that they increase soil fertility, 60% replied that wadi plots give a good supply of fuel wood, poles and compost and 60% indicated improved household benefits such as health and livelihoods (multiple responses per farmer). One man with a five year old plot 1 ha in area, calculated that his increased annual income from sales of additional livestock (that he could now feed), poles, fruits and vermin-compost amounted to Rs 48,000 (approximately £700 p.a.). His story is typical and indicates the scale of future benefits likely to accrue to adopters of agroforestry in Channapur.

Benefits of the 'wadi' technique in terms of reversing soil fertility decline and water loss were strikingly evident by September 2005. Plates B55 and B56 show adjacent fields, planted with the same local variety of sorghum on the same day, the only difference being presence or absence of agroforestry. The effects could scarcely be any clearer. When farmers were asked about the effects of such boundary planting, intercropping with fruit trees and soil and water conservation techniques, they reported that in the current season with heavy rainfall, only excess rainfall and no soil flowed from the field, and the fertilizing effects of applied pit compost do not fade, unlike in conventional fields. In scientific terms, the likely explanation is that organic matter accumulation in the top-soil due to retention of tree leaf litter has increased rainfall infiltration, water holding capacity and porosity of the soil, and nutrient holding properties via increased cation exchange capacity. Even in a year with sufficient rainfall, crops grown in the prevailing thin and infertile soil (Plate B56) do not thrive, which is typical of conditions in Channapur before BAIF introduced improved NR management techniques. It is no wonder that many farmers have abandoned agriculture and sold their land to absentee landowners from Hubli and that most inhabitants were in the grip of persistent poverty. It is also a striking demonstration that improved NR management has a major role to play in reversing environmental decline, enhancing livelihoods and slowing, halting or even reversing migration to urban areas.

4.3.3. Village Forest Committees

Village Forest Committees (VFCs) are the instrument whereby the Karnataka Forest Dept. implements its Joint Forest Planning and Management objectives, which are associated with forest protection, development and management for all stages from planning to harvest and beyond, to distribution of produce (Hails, 2005). Through the agency of the project, VFCs were established in Mandihal and Daddikamalapur (Annex K, pages K21 – K24). IDS made contact with the Forestry Dept., and the VFCs were established in March 2002. Some of the action plans developed during R7959 emphasised the need to improved access to natural resources and a desire to increase or maintain tree cover (Table A8 above). Deforestation in these two villages were exacerbated by cutting for fuel wood. In Section 4.1 above it was reported that Daddikamalapur extracts almost 90 tonnes of fuel wood per month. From Mandihal, over 40 tonnes per month of fuel wood are transported to Dharwad by train. In response to such degradation, the Forest Department handed over control of large

tracts of forest to the Karnataka Forest Development Corporation which cleared the land and planted *Eucapyptus degulpta*, thus depriving local people of a valuable source of non-timber forest products and grazing land, besides fuel wood.

After an initially promising start, with a number of exposure visit to successful VFCs elsewhere in the State, and the Forest Department donated thousands of tree seedlings and Rs 35,000 to each village (used by both VFCs to improve access to water, another action plan identified during R7959 (Table A8). However, since 2002, progress has been very slow. This was attributed to the prolonged drought inhibiting the planting of tree seedlings, and lack of regular attendance of the VFC meeting by the forestry officer responsible. With an instrument such as the VFC which depends so heavily on government facilitation, inevitably success or failure hinges upon the motivation of individual officials.

4.3.4. Crop demonstrations

The account of these is presented in Annex C, Chapter 9, and Annex L, and consisted of crop demonstrations and implementation of Integrated Pest Management in cotton. Crop demonstrations were implemented by the scientists of the University of Agricultural Sciences in conjunction with the appropriate NGOs in the six project villages. In 2002, 2003 and 2004, 77, 95 and 38 crop demonstrations were conducted respectively on sorghum, soybean, groundnut, little millet, cotton, greengram, cowpea and rice. Some of these were linked to various All-India Co-ordinated Crop Improvement Projects which had kits for crop demonstrations. Thus, the project was able to take advantage of the links that UAS had with such central Government programmes. Farmers were introduced to the best varieties for their conditions (NB this caveat: these had been bred for local agro-climatic conditions, but by professional plan breeders on research stations. This ignores the recent emphasis upon participatory plant breeding championed amongst others by the DFID RNRRS Plant Sciences Programme). Emphasis was made upon selection of farmers with small land holdings. After the initial (2002) season, in which the demonstration were arranged in a great hurry, from 2003 onwards farmers were taken to UAS to collect seed, any seed dressings and other inputs, and to be trained in their use. Then farmers were allowed to arrange the demonstrations in their own fields in any way that suited them, and the appropriate experts from UAS visited the sites and interacted with farmers.

Unfortunately, the trials were dogged by the prolonged drought. Even so, in general farmers were favourably disposed to the demonstrations. Most reported that the quality of the seeds they were given were good, and in many cases what yield they obtained they saved for sowing the next season, an indicator of confidence in the new varieties.

Integrated Pest Management was implemented by BAIF in Channapur. Mr Bulla, the BAIF community organiser for Channapur and Gabbur, attended a Training of Facilitators IPM programme funded by the Food and Agriculture Organization and European Union (FAO-EU) programme for cotton in Asia, during 2002. BAIF held a farmers' field school for 25 farmers (Annex C, section 9.6). These trials, too, were dogged by drought, and evidence of benefits is anecdotal (e.g. account by Channapa, a farmer in Channapur, page C92, Annex C). A farmer interviewed by the author in September 2005 reported that in 2004, he sprayed his IPM treated hybrid cotton only

once (after coercion by his doubting wife, he explained!), compared to the norm of six times. By the time of the interview, the cotton was flowering, and normally he would have sprayed twice, but had not yet sprayed. Interestingly however, all commercially sold hybrid cotton seed is now dressed with the systemic insecticide Imidacloprid, a constituent part of the IPM programme. This protects young plants at their most vulnerable stage from insect attack for about six weeks, so the requirements for spraying will universally decrease. The treated seed costs about 40% more than the untreated seed previously available, but this is less than costs of spraying (labour as well as pesticide costs). In addition to this measure, the farmer grew maize and pigeonpea trap crops around the perimeter of his field (to attract pests away from the cotton), and had erected perches for insectivorous birds in the crop (Annex B, Plates B17 & B18).

4.3.5. Soil and water conservation

As indicated in Table A8, one of the objectives of the action plans that were developed during R7959 was improved water storage and improved soil management (erosion, water holding, pollution, fertility). Plates B2 and B4 in Annex B, and Plate A2 in this Annex graphically illustrate the dire state of water and soil resources when shocks such as prolonged drought strike.

As explained in Section 4.2. above, one approach to development tested was community action. In the PUI the degree of social fragmentation is thought to be greater than in rural areas, as is often mentioned in conversations with peri-urban dwellers (although the hard evidence to support this assertion is not strong: Annex E, figure 19 shows that of the 33 households who responded to this question (out of 209), only one household mentioned ‘less community spirit’ as a negative feature of living in the PUI), and certainly agricultural labour is scarcer (or it least, it was until the drought). Thus, organizing and motivating people to participate in landscape level schemes was difficult; maybe more difficult than in a rural area, although again the project does not have evidence to support this theory. Annex M (and Annex C, chapter 6) gives an account of the soil and water conservation works, nearly all of which required community-wide support. There were nine specific instances of such activities (in Daddikamalapur, tank desilted, bund repaired and feeder channel constructed: Mandihal, one tank desilted, another bund repaired and feeder channel constructed; Mugad, tank desilted; Kotur, channel restoration, one tank desilted and another tank bund breach repaired; Channapur, the *Hasiru habba* green festival).

As mentioned above in Section 4.3, and in Annex M, in Kotur the UAS Dharwad team worked with 22 villages who owned land on either side of a feeder channel for the Uppagatti and Dasanakatti tanks. Mean area of land irrigated per farmer adjacent to the channels was 0.6 ha (Table 3, Annex M), a total of 13.2 ha (Annex B, Plate B37). This does not include those areas which lie within the tank ‘command area’, which are rice fields below the level of the check dam and irrigated by gravity. The tank was also desilted, 616 tractor loads (at approximately 2 t per load, totalling 1,232 t) of ‘silt’ (actually the clay fraction of eroded soil washed into the tank over decades, thus having a high cation exchange capacity and presumably nutrient content – see Annex B, Plates B4, B31 – B34) being removed and deposited on farmers’ fields. Fourteen farmers benefited from silt, this being deposited on 41.5 ha of land at a rate of approximately 30 t/ha (Table 4, Annex M).

In terms of equitability of distribution of benefits accruing from this action according to wealth class (Table A10), this was greater for farmers with land alongside the channel, 32% being classified as poor or very poor in the project wealth ranking exercise conducted in January 2003. On the other hand recipients of silt were overwhelmingly rich or upper medium, probably because these either owned or had access to tractors. One farmer alone deposited 300 loads of silt on 4 ha of land, growing maize and chilli. He is a lawyer and owns a hotel (local usage which can also mean a café or restaurant). It is not known how the two poor and very poor farmers managed to benefit from silt loads, but they may have benefited from altruistic acts, or they may have been part of payment for labour on larger farmers' fields.

Wealth rank	Adjacent to channel: number of farmers	Receiving silt: number of farmers
1 (wealthiest)	2	6
2	8	5
3	5	1
4	3	1
5 (very poor)	4	1
Total	22	14

Table A10. Wealth status of farmers benefiting from channel and tank rehabilitation, Kotur.

Farmers alongside the channel claimed that they benefited in monetary terms by an average of Rs 3,722 each (about £55) due to increased crop yields. Nearly all these crops were *rabi* (post-monsoon) crops which could not be grown successfully before (Annex B, Plate B38), and were rice (7.9 ha), field bean (*Dolichos lablab*) 2.2 ha, wheat (1.2 ha), and smaller areas of safflower, peas and green gram. This was probably a reasonably accurate estimate of increased monetary returns in that this was mostly new cropping area (although Table 3 in Annex M suggests that some crops were grown 'previously', but what this means precisely is not clear).

Application of silt was estimated to have resulted in an increase in income of Rs 32,280 (about £35 per farmer) in terms of increased crop production (37% increase, but note that there was more than three times the quantity of rainfall in 2004 compared to 2003), and reduction in other external inputs. Fertilizer application was 84% of previous, and organic manure application was 53% of previous. It could be that when comparing 'after intervention' with 'before intervention', they were recalling productivity and inputs from a normal year, as there was almost total failure of annual crops in 2003.

Benefits in 2005 were clearly evident (Annex B; Plates B59 – B60), due the restoration of normal rainfall. The Uppagatti Tank spillway overflowed for the first time in decades, feeding the Dasanakatti tank. When farmers alongside the channel were asked if the heavy rain had eroded their soil into the tank, they replied that due to bund restoration, there was very little sediment load in the run-off water entering the channel. Bunds had been planted with *Stylosanthes hamata* (stylo), *Panicum maximum* (Guinea grass) and the fodder bearing tree *Gliricidia sepium* to improve bund integrity and to provide livestock fodder, as can be seen in Plate B59.

In terms of cost:benefits, the total cost of repairing 1.8 km of channel and desilting the Uppagatti tank was Rs 80,586 (about £1,200), of which 44% was directly contributed by the project (plant hire), 32% contributed in kind by farmers (tractors and trailers), 23% as labour by beneficiaries and 1% as cash from farmers (finances were very tight because of the prolonged drought) (Table 2, Annex M). Financial benefits from the first season were estimated to be Rs 114,000 (about £1,600), which exceeded the one-off rehabilitation cost, and such benefits can be expected to continue with each new season. This is, of course, a rather crude calculation, and does not take into account the cost of UAS staff time inputs, which were considerable over the two year negotiation period. Also, because the funding was routed through the project, the cost of plant hire was considerably less than if the Gram Panchayat had undertaken this work due to 'leakages' at every point along the financial chain. Most of the recipients of tank silt were wealthy farmers, and such large farmers (e.g. Mr Dawalsab Nannesabanavar, who took 300 loads of silt) employ labour, and although it was not recorded, it is a reasonable assumption that rehabilitated, productive farmland will employ more labourers than severely degraded land. In Mugad, for example, landless people complained that due to the drought they no longer had any agricultural labour employment.[4]

4.3.6. Vermi-composting

Vermi-composting (Annex N; Annex B, Plates B15, B16, B21) was extended as an activity to SHGs in Gabbur, Channapur, Mandihal and Kotur (Table A11).
The objectives were:

1. To improve soil fertility and increase moisture retention capacity of soil by producing vermin-compost since traditional composting requires more time and is laborious.
2. To reduce expenditure on external chemical fertilizers and to reduce the harmful effects of it on the soil as farmers had begun to experience the ill effects of chemical fertilizers and pesticides in rainfed agriculture.
3. To utilize the income generation potential of vermin-composting especially for the landless. It is practically a zero-cost activity and apart from the initial stock of worms, requires no external investment since worm farmers need not pay anything for the substrate or waste.

Early in the project BAIF took interested farmers from Channapur and Gabbur to observe successful vermin-composting in other villages where they were working. At a later stage interested SHG members from Kotur were taken on an exposure village to Channapur, along with three men from Mandihal who had seen the technique for themselves in a relative's village 40 km from Dharwad.

[4] Field notes, R. M. Brook, July 2003.

Village	No. of farmers	Vermi-compost (quintal)		Worms sold (kg)
		Produced	Sold	
Channapur	15	140.60	35.00	33.5
Gabbur	20	67.70	24.25	0
Kotur	8	11.85	2.90	2.0
Mandihal	3	6.00	0	0
Total	46	226.15	62.15	35.5

Table A11 Vermi-compost production in project villages
1 quintal = 100 kg

The total income generated from vermicompost in all four villages was Rs. 20,250 (about £300), gained by selling the compost and also worms to others who wished to start the activity.

Village	Use of fertiliser (bags)		Saving on external fertilisers (Rs.)	No. of farmers who reduced fertiliser use
	Before	Now		
Channapur	32.0	16.0	6800	10
Kotur	12.0	1.0	5200	5
Gabbur	24.5	10.2	5600	7
Mandihal	9.0	7.0	700	1
Total	77.5	34.2	18300	23

Table A12 Nutrient saving benefits of using vermin-compost

Some farmers who had land chose to us the vermi-compost on their fields, particularly on cotton, an important cash crop (Table A12). This enabled farmers to cut down on applications of bought, mineral fertilizers. The savings from this means across the four villages amounted to Rs18,300 (about £270), totalling £570 when sales and savings were added; approximately £13 per household on average. This may not be considered significant, but it still represents another income stream for little input of time and effort.

4.3.7. Livestock

Also see Annex C, Chapter 8. During R7959, one component of the action plans identified was improvement of dairying productivity. It was known that dairying was a major activity in Gabbur and Daddikamalapur, and was present in all six project villages. As a typical entry activity into villages, livestock vaccination camps were held, where villagers were invited to have buffalo and cattle vaccinates against endemic diseases such as foot and mouth disease and haemorrhagic septicaemia. These were continued throughout the project, but had varying levels of success (Annex C, Section 8.6). However, where vaccination and dosing of calves with worming compounds were adopted in Channapur and Gabbur, mortality of buffalo calves fell dramatically from 75% to 10%. In 2004, 72 buffalo calves in Gabbur survived, this intervention alone bringing financial returns worth Rs 350,000 (almost £5,000). In Gabbur, due to project agency the Government veterinarian now visits every Monday to maintain livestock health.

Other than vaccination camps, other interventions offered were improving the supply of fodder, training of paravets (Annex B, Plate B53) and making available improved breeds of goats and chickens for SHG members. Fodder supply was addressed by planting of stylo on bunds (Abbex B, Plate B14), Napier grass (Annex B, Plate B28) and Guinea grass. Also, feed trials were conducted by UAS to address the issue of low milk yields. Fodder fed to buffalo and cows is often of low quality, and supplements are required to improve productivity. However, despite experiencing increases in milk yield of 1 litre per day and improved creaminess (Annex C, Section 8.10), once the project input ceased, the owners did not continue despite acknowledging its advantages.

One sangha in Gabbur purchased a fodder cutter machine. This was made available to them at 50% subsidy from the government. The cost of the machine was Rs. 4500. The SHG paid Rs.2250 and the project assisted with Rs 2250 for the electric connections. All SHG members use the machine and plan to charge a nominal price to users, which would include cost of electricity used for a set time to each user.

Improved Giri Rani poultry from UAS were sold to SHG members, particularly in Mandihal and Mugad, with a 50% subsidy from the project. Owners were trained in husbandry of these more productive fowls, which lay twice as many eggs as local poultry which are sold for Rs 3.50 each instead of Rs 2.50 for local eggs, and grow to a larger size. However, they require housing to protect them from dogs and cats (Annex B, Plate B30). Section 8.9 of Annex C presents the various experiences of adopters, most of whom intended to continue now that the link with UAS been made, from where they buy chicks. Those that did not wish to continue after trying either did not have enough space to keep them or had no one at home during the day to look after them.

Goats were also offered and adopted by some SHG members (Annex C, Section 8.12). In one case a sangha bought 22 female goats (Annex B, Plate B29), which at the time of reporting had already given birth to six or seven kids. They are much less fastidious about quality of fodder and can be taken to fields with the women when they go to work. In general they are considered easy to look after. When ready for slaughter they are sold in the cattle markets in Dharwad and Hubli.

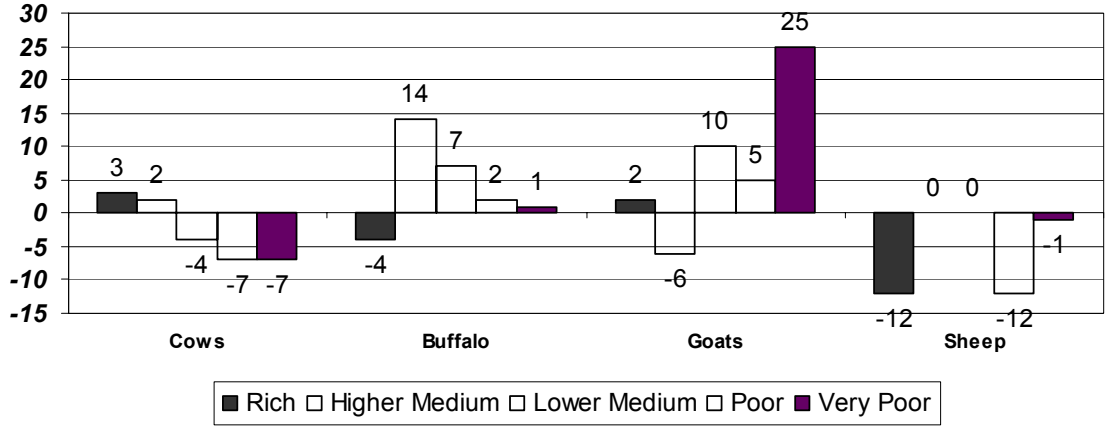


Figure A23. Total change (%) in livestock by wealth categories

In a survey of 18 SHGs, 43 families had expanded their livestock holdings and 55 had begun new livestock enterprises, equivalent to one-third of all households within the project (see Figure A8 above). However, it is the distribution of changes in livestock numbers by wealth class that indicates benefits to the poor, very poor and the landless accruing from the introduction of goats (Figures A23, A25) and poultry (Figures A24, A25), whereas the larger stock were bought by wealthier classes (Figure A23), particularly buffalo. Overall, cows and sheep declined in numbers, whilst buffaloes, goats and poultry increased. For poultry, the greatest uptake was in Mandihal and Mugad. By February 2005, 24 chickens had been sold in Mandihal and 37 in Mugad (Annex D, Table 4.8).

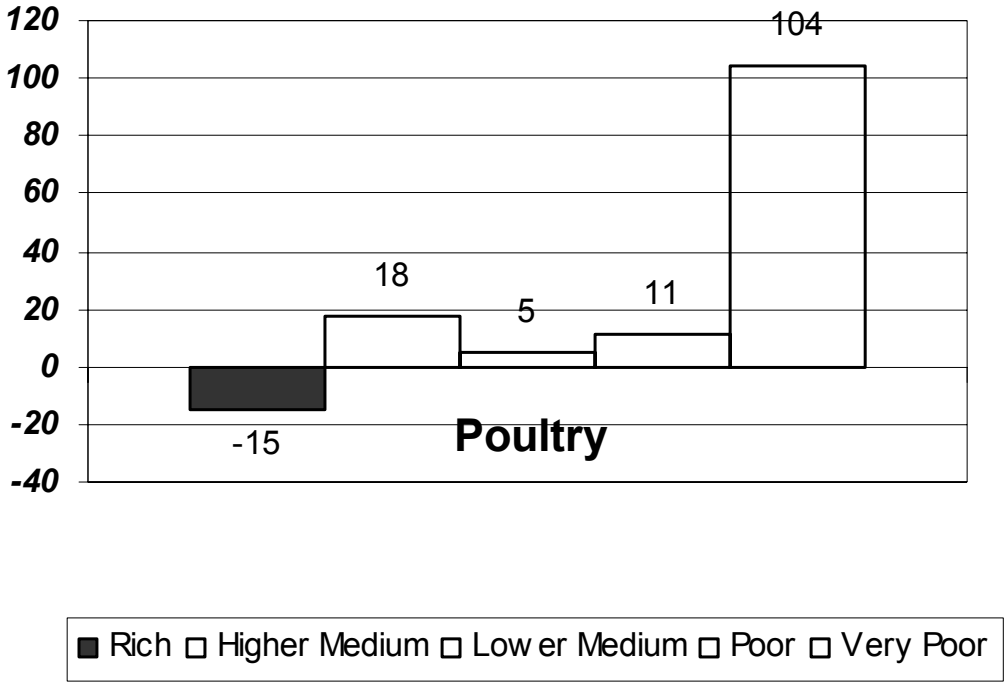


Figure A24. Change in poultry by wealth category (%)

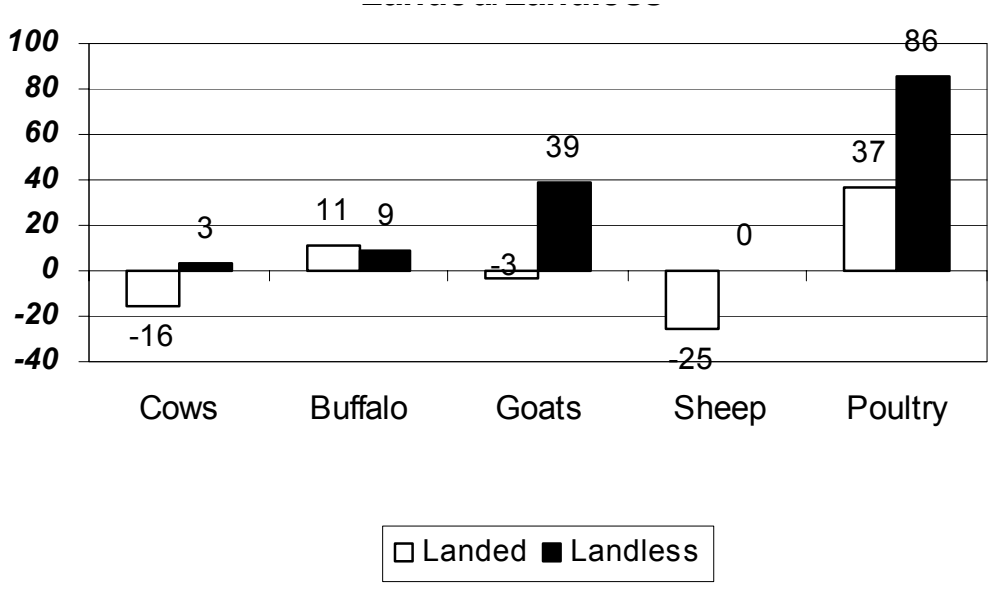


Figure A25. Changes in numbers of livestock by landed and landless (%)

4.3.8. Concluding comments about role of natural resources

In conclusion the project showed that numerous options exist for management of NR which benefit the poor exist in the PUI, and that despite the proximity of the urban area, the majority of project participants were eager to take up ideas extended by the project, once they were convinced of their effectiveness. Many of these ideas were above and beyond what participants had envisaged during action plan development in R7959, largely because participants were completely unaware of recent advances in NR management. Doubtless, the security and mutual support of the SHG helped their confidence and reduced risks associated with adoption. Particularly the fear of long term indebtedness to moneylenders was removed, which gave the freedom to try out new ideas. So for example, initially when improved breeds of chickens failed in the villages (they were bulkier and slower than the village fowls, so were easy prey for dogs), participants were prepared to give the project the benefit of the doubt, construct low cost chicken housing, and accept that these chickens would have to be managed differently (Annex B, plate B30), as the financial benefits were deemed to be worth it. Other NR-based interventions which showed a significant multiplier effects in terms of costs to benefits were the channel and tank rehabilitation activities in Kotur, wadi agroforestry plots in Channapur, and calf vaccination and de-worming in Gabbur and Channapur. On a smaller scale, vermin-composting was very popular and remunerative, and goats show great potential. Although there are instances of abandonment of land and a desire to move out of a NR-based livelihood strategy, the evidence of this project is that when offered the opportunity to improve the management of their existing NR-based livelihood strategies, participants were glad to accept it. Of course, such adopters are self-selecting, and those who were not interested in what the project was perceived as having to offer steered clear of it. Nevertheless, it can be concluded that NR-based livelihoods remain a viable option for the poor in the PUI as manifested around Hubli-Dharwad, and that distinct improvements to their management can be made and are adoptable.

The project showed that for successful uptake of improved NR management by the poor in the PUI, appropriate agency is a pre-requisite in the form of NGOs to help establish SHGs or to organize community wide activities and exposure visits, and technical input from an agricultural university (UAS Dharwad in this case) to introduce innovations. The project proved that this undoubtedly works even in the PUI where there had been a concern that community mobilization might be problematic, but a lower cost model needs to be developed, which is the next challenge.

In conclusion, implementation of the plans of action indicated that the knowledge about NR in the PUI generated during R7867 was still valid, but it was added to significantly during project R8084 just finished. In particular, the project demonstrated that the knowledge of primary beneficiaries, although valid as far as their experience allowed, could be added to via technical input from specialists such as those from BAIF and UAS, who had a wider experience of recent technical advances. The triumph of the project was the way in which these advances were presented to primary beneficiaries (via social and community mobilization, in a ‘bottom-up, you decide which is appropriate and how you adapt new knowledge to your circumstances’ manner), and how the advances were selected to be appropriate

for a location where urbanization was driving change in farming practises (particularly knowledge that would be useful for income generation to take advantage of urban markets).

4.4. Summary of Findings on Governance and Institutional Change (by Adriana Allen)

This section presents a summary of the main outcomes and findings of the project in relation to the institutional context within which it took place. A detail analysis backing and expanding this summary can be found in Annex I, which examines the changes in institutional attitudes and perspectives in relation to the enhancement of livelihoods and NR management in peri-urban villages in the city-region of Hubli-Dharwad, as addressed by and examined under the R8084 research action project.

Specifically, this area of work contributes to Outputs 2 and 3 of the project:

Output 2: Village stakeholders, researchers and target institutions gain new insights from the process of implementing action plans in peri-urban areas into:

- Factors which facilitate cooperation between different stakeholders;
- Which solutions to identified issues are both effective and sustainable;
- What are the most appropriate ways of measuring change by all stakeholders.

Output 3: Acceptance of processes that have led to effective NR management strategies which benefit the poor, what interventions work, how changes can be measured and what constitutes an enabling environment, amongst interest groups in non-project localities.

The institutional context of the so-called peri-urban interface (PUI) is characterized by the convergence of sectoral and overlapping institutions with different spatial and physical remits. This is related to the changing geographical location of the PUI, where institutional arrangements, or areas of responsibility tend to be either too small or too large, too urban or too rural in their orientation to effectively address sustainability and poverty concerns. In addition, private sector bodies as well as non-governmental and community based organisations also intervene in the management of peri-urban areas, but often without clear articulation or leadership from government structures. The problem of institutional fragmentation is particularly relevant for understanding the constraints faced in the environmental planning and management of the PUI.

In the context of natural resources, institutions refer to the rules that define endowment, entitlement, access and control over resources, duties and responsibility. These rules may be derived from government legislation, regulation, customs, norms and various other formal and informal arrangements. There are operational rules that govern day-to-day decisions, collective rules that decide how to change operational rules and who can change them, and constitutional choice rules that are used to craft collective rules. The rules are usually nested, as one set of rules define how other sets of rules can be changed. Formal institutions include government organizations (including local self governments like PRIs) and regulatory authorities, non-

government organizations and users' associations (water user's associations, village forest committees, fishermen's associations and cooperatives). Formal institutions are mostly legal entities, registered under law. Whereas informal institutions are enforced endogenously and are embedded in the local customs, behaviour patterns, norms and traditions. Both the formal and informal institutions could exist together and influence the use and management of natural resources in the PUI.

In the light of the above, the institutional component of the project focused on understanding the opportunities and constraints encountered in the current Indian institutional framework, and more specifically in the context of Hubli-Dharwad and the State of Karnataka, to bridge the divide between rural and urban and statutory and customary institutions. Thus, reference is made to the institutional structures and arrangements that currently deal with the management of natural resources (NRs) and livelihoods in the peri-urban context of Hubli-Dharwad and also to the evaluation of alternative arrangements explored throughout the life of the R8084 project. The institutional analysis focuses on two levels of interface. The first makes reference to the interface between rural or agrarian government institutions with urban government institutions, whilst the second is concerned with the interface between statutory and non-statutory institutions, the latter comprising different forms of social organisation and social relationships, as well as customary law.

4.4.1. History of Involvement of Key Institutions

Previous research in Hubli-Dharwad identified the lack of co-ordinated governance in peri-urban areas as a constraint to effective policy and development support. Whilst there are defined boundaries around the city, villages within the boundary may experience more 'rural' livelihoods (in R8084, Gabbur is an example of this), whilst others in villages outside the boundaries may be strongly influenced by the urban area (e.g. Daddikamalapur).

One of the first systematic attempts to involve target institutions (TIs) in participatory planning processes in the PUI of Hubli-Dharwad was through workshops held with government in the context of project entitled 'Strategic Environmental Planning and Management (EPM) of the Peri-Urban Interface, initiated in 1998 with the support of DFID. This project opened the discussion on EPM guidelines for the PUI, which were designed to include a multi faceted strategy aimed at disseminating information on natural resource management and livelihood issues for villages in the peri urban areas. Various activities within this project brought together government, NGO and community representatives to raise awareness on natural resource management in the peri-urban interface.

Overall the concept of peri-urban areas and its associated problems were found to be illuminating for all constituencies. It put into context many of the problems being experienced by practitioners and the community as well as those living and working in peri-urban areas. The guidelines provided an initial platform for discussion among government officials about the issues related to natural resource management in the PUI and the overall concept of the PUI itself was found to be valid and useful by government.

Useful recommendations from TI officials included the need to made more explicit gender differences to ensure that women's perspectives are taken into account, the need to clarify the definition of who are the poor and also to indicate clear ways to involve the poor in planning, developing solutions and in defining indicators.

The second major attempt to involve local government institutions was through an initiative called the Participatory Action Planning Project (PAPP, R7959)) in 2000. Here local government officials were involved first in a diagnostic workshop where peri-urban community representatives presented their issues and prioritized them and working groups jointly examined problem and solution trees which led to the creation of action plans. The communities then refined these action plans, which were again presented to the government at different stages of PAPP. This was followed up with interviews with government to understand their perspectives on participatory planning and participatory processes. Separate meetings were indeed held with women to engender the process and wealth ranking techniques were used to identify who are the poor in the PUI. Furthermore a range of methods were used to involve the poor and a clear pro poor, pro women perspective directed the initiatives thereafter.

Building up on PAPP, the R8084 project worked with both urban and rural authorities, reflecting the need for a more co-ordinated approach, so that the needs of the peri-urban poor are more effectively met. The main target institutions engaged throughout the project were:

- the University of Agricultural Sciences, particularly the members of the joint committee with the district level Departments of Agriculture, Horticulture and Livestock, who disseminate findings to farmers through extension workers and training.
- State-level institutions, such as the Karnataka Watershed Development Department – the recipient of World Bank funding for the rehabilitation of watersheds, including villages in this project, Mugad and Mandihal; JSYS, who is managing a World Bank funded programme on tank desilting; State-level Departments of Agriculture, Horticulture and Livestock.
- Panchayati Raj Institutions (PRIs): there are several layers of institutions with different responsibilities, which are still going through a process of change. These are explained more fully below.
- Municipal authorities: Hubli-Dharwad Municipal Corporation (HDMC) is responsible for the provision of services such as education, drinking water supply and waste collection; Karnataka State Water and Sewerage Board is responsible for the reservoirs supplying water to Hubli-Dharwad and for the sewage system; Hubli-Dharwad Urban Development Authority (HDUDA), which is responsible for the physical, land use planning of the area, which goes beyond the HDMC boundary.

The team held meetings with government officials in state departments such as Watershed Development, Rural Development and Panchayati Raj, Industries and Commerce, National Bank for Agriculture and Rural Development (NABARD), and Forestry to facilitate state interest in the planning initiative, which turned out to be useful for the implementation phases of the action plans that followed. This interest was demonstrated by an official state visit of the Watershed Department to Mugad where village representatives presented the action plan to a team of state and district

officials, exposing officials to the participatory planning process and techniques used. State interest was also reflected in directives from state departments to district agencies towards the support of the institutional mechanisms created within the district led by district government officials such as a District Steering Committee and an Urban Rural Task force described in more detail later on in this section. As a result of this process of interaction, issues have been raised with both state government agencies and NGOs to provide visibility and support to the process initiated by the project and to fill in gaps in the capacity of government officials with respect to livelihood issues and enterprise development, as well as NRs management and, in particular, techniques and strategies to support rural-urban collaboration.

4.4.2. Methodology for the Research on Institutional Change

The institutional analysis was based on both primary and secondary data sources. The former included: (a) semi-structured and open-ended interviews with officials at the local, district and state levels and with key informants in the villages covered by the R8084 project and the preceding Participatory Action Planning Project (R7059), (b) structured discussions conducted with the team members and (c) focus group discussions (FGDs) with different social groups in the villages, comprising different socio-economic backgrounds, occupations and gender. Venn diagrams were conducted with the team and the villages to examine their views on the importance of certain institutions at different stages of the project.

The interviews and focus groups discussions were conducted at different stages of the R8084 project, as one of the aims was to examine changes in understanding, attitudes and perceptions about the peri-urban interface and the significance of rural-urban collaboration and participatory processes.

The study also included the use of participant observation during multiple meetings between team members, government officials and peri-urban villagers. Secondary data was collected from the Planning Department (Zilla Panchayat, Dharwad), the Hubli-Dharwad Urban Development Authority (HDUDA) and the Hubli-Dharwad Municipal Corporation (HDMC), as well as from several other District and State level departments.

A number of indicators were identified in the course of the project, with the aim of assessing the quality of existing institutional mechanisms to address the issues and concerns faced by peri-urban dwellers and also to capture people's perceptions and awareness about various government institutions (state, district and local level). These indicators were defined through focus group discussions and Venn diagrams at the settlement level and through interviews with various functionaries within the institutions studied and included: quality of linkages among institutions and with communities and stakeholders' groups; efficiency in implementation and execution; accountability to beneficiaries or stakeholders; mechanisms and efforts to sustain interventions; efficiency of monitoring mechanisms; feedback mechanisms and grievance redress mechanisms; capability of institutions to respond to changes occurring in the PUI and accessibility to these by peri-urban dwellers, in particular the poor.

The constraints and opportunities of the various institutions examined to address effectively the challenges that characterize the peri-urban context were analysed through the use of the 'web of institutionalisation', a tool developed by the DPU that helps to identify and assess the room for institutional change with regards to four spheres: the people's sphere, the policy sphere, the organizational or bureaucratic sphere and the knowledge production and delivery sphere.

In addition to the above, in several occasions the team engaged in systematic exchanges with other research projects and researchers focused on the institutional challenges of the PUI, including the following:

- EU-TERI-IRMA network focused on 'Sustainable Settlements in Peri-urban Areas with Special Reference to Impact of Transport and Energy on Natural Resource Management'.
- DFID Research Project on the 'Governance of Service Provision in the Peri-urban Interface of Metropolitan Areas'.
- Comparative analysis of the political capability of peri-urban dwellers to deal with water-related problems in two villages in Hubli-Dharwad (Annex J)

4.4.3. Overview of the Institutions for Planning and Natural Resource Management

As already mentioned in the introduction there is no institution at the ground level that integrates rural and urban concerns. Therefore in the context of peri-urban settlements in India the most significant government institutions are either the Panchayati Raj Institutions or the Municipal Corporations. For planning purpose, the city urban development authority is mandated to develop the areas in and around the fringe of the city. The existing institutional mechanisms studied for natural resource management include formal local level institutions (Gram Panchayat, Karnataka Urban Water Supply and Sanitation Board, HDMC and HDUDA), district level institutions (Zilla Panchayat and its various line departments, District Watershed Department, Fisheries Department, Taluka Panchayat, District Planning Committee) and state level institutions (Forest Department, Karnataka Forest Development Corporation Ltd. and the Minor Irrigation Department). All these institutions are either directly or indirectly linked with natural resource management in rural and urban areas. Besides, local level people's institutions such as Village Forest Committee, Water User's Committee/Association, Potters' Association, Fishermen's Association and various self help groups (SHGs) have also been studied.

4.4.3.1 Existing Mechanisms for Rural-Urban Collaboration

Two institutional mechanisms were considered appropriate for rural urban collaboration at the inception of the process which are also mentioned in the 73rd and 74th constitutional amendments: the Nagar Panchayat and the District Planning Committee (DPC).

The Nagar Panchayat as interpreted by government is simply a mechanism by which a village once it reaches a certain population is declared to be a Nagar Panchayat. A

serious reinterpretation of this concept is required at all levels of government for such a mechanism to be used to its full potential.

The District Planning Committee is the constitutionally mandated body for rural urban collaboration. However, like many government mechanisms this one too has been designed with no real power. It has only advisory status and no budget, therefore at best it is able to provide a platform for dialogue.

Both mechanisms, while currently only on paper, still need to be operationalised. For those that have been constituted the need is to make them more effective. Just like at the national level, there are two separate bodies for planning and legislation such as the National Planning Commission and the Parliament, likewise at the district level too, planning cannot be done only by elected officials who have enough work in just their roles of governance and administration. These functions need be separated and institutionally distinguished between. However the District Planning Committee as currently constituted in some districts and states brings together both elected representatives and the administration with all the respective line departments thus creating what has been often referred to as an unwieldy 'political body' instead of a 'planning body'.

4.4.3.2 Instances of Cooperative Governance: Informal Mechanisms

As existing institutional mechanisms did not address the issues faced by the peri-urban communities in the project, new institutional mechanisms were devised to respond to the action plans and problems prioritized, namely the District Steering Committee and (DSC) a Task force for Rural Urban Collaboration. These mechanisms being outside the existing institutional arrangements represent instances of participatory governance wherein a group of relevant institutions come together for a particular purpose towards solving a particular problem.

Typical examples of this type of mechanisms include thematic task forces and action networks, aimed at the creation of interim governance arrangements which respond to the situation, needs and problems of the populations. This approach is relevant to the peri-urban interface because it encompasses a more fluid and dynamic concept of governance unlike earlier understandings of governance mechanisms which are permanent and universally applied to all situations, be it applicable or not. By contrast, mechanisms for cooperative governance allow flexible means for communication, interaction and joint action which can change over time.

District Steering Committee: Headed by the then chief executive officer (CEO) of Dharwad district, Mr. Vastrad, the District Steering Committee (DSC) was created by the project as a mechanism by which existing programmes and schemes could be converged onto action plans created by peri-urban communities in select villages. Meetings were held on a monthly basis with district department heads led by the CEO wherein community representatives presented their problems and action plans and schemes were converged onto those action plans towards their implementation. This mechanism helped in the initial stages of the project to spear head the implementation of the community based action plans.

The action plans consisted of water and soil conservation methods such as tank de-siltation, bund repairs, agro forestry and improved dairy management practices. Towards implementing these action plans, departments of Forestry and Horticulture provided seedlings and plants requested by the communities, which were used for agro-forestry initiatives. Second, several government agencies provided funds for tank de-siltation and repair activities in many of the villages which had planned for water conservation measures. The department of animal husbandry conducted vaccination camps for animals in all villages despite one of them not falling under the jurisdiction of the Zilla Parishad. The UAS, a government agricultural university and a project partner was able to provide livestock rearing programmes, training on animal rearing practices, on fodder management, nutrition programmes, field demonstration of improved technologies in these villages towards improved natural resource management by the communities.

Rural-Urban Taskforces: Additionally after the action plans were well underway in terms of implementation the DSC was dismantled after The CEO was posted away and a less cooperative incumbent was appointed. However, discussions started to set up a task force to take on urban rural collaboration. The Rural-Urban Taskforce represents a second instance of cooperative governance through which government agencies could plan to work on scale in the PUI to deal with problems specific to peri-urban communities. Some of the issues identified by the task force which is still to be implemented included:

- Creating mechanisms to treat the urban side of a watershed.
- Providing training on the comprehensive development plan (CDP) from the HDUDA to the Zilla Parishad, which is unprecedented thus far in planning practices of the government.
- Improving the linkages to urban markets through the farmers markets in a decentralized manner for the peri-urban producers to facilitate direct sale to urban consumers.

Both these mechanisms were set up outside existing institutional mechanisms for a variety of reasons. For one the DSC was set up to respond to action plans created by communities, which was a bottom up participatory action planning process, which regular government mechanisms could not respond to. The DSC also represented a mechanism which required that urban and rural agencies worked across their set geographical jurisdictions and required that rural agencies provided resources to areas like Gabbur village that come under urban jurisdiction. This geographical base for programmes was found to be a major barrier in the PUI that required both urban and rural responses to issues that the communities in the PUI face which is a combination of urban and rural facets.

4.4.4. Summary of Main Findings

In those villages that fall under the rural jurisdiction, there exist strong communication linkages across all stakeholders with the Gram Panchayat, whereas, in the case of those officially linked with the HDMC through the ward corporator, the linkage is weak. This is primarily due to the fact that the settlements are physically away from the Corporation office. Besides, the ward corporator has not been able to

create an environment where people could depend on him/her to voice requirements or grievances. The HDUDA, which covers a larger area of which large tracts are rural, has not much interaction with the population of either rural and urban settlements. Similarly the Zilla Panchayat with a number of line departments is not closely linked with the stakeholders because of their top down approach.

There are several programmes initiated by the line departments of the Zilla Panchayat relevant to NR issues. However, the sustainability of these programmes in the long run appears to be weak. For example, the World Bank is now closely working with the watershed department to get certain systems in place, but so far they have not been successful. Similarly VFC which is a people's institution created by the forest department for the purpose of joint forest management, has also not been successful so far because of the indifferent attitude of the state.

Considering the linkages between rural and urban institutions, these are almost non existent, with the exception of the DPC, which in reality is often dysfunctional. The DPC is formally linked with the HDMC and the ZP (all line departments) but it is not effective, as plans that are sent to the DPC from ZP are essentially for rural areas and those for peri-urban settlements get subsumed within them. Lack of technical expertise may be one reason why the DPC finds it difficult to interact with the HDMC or the HDUDA. There is some scope for technical expertise within the DPC because 20% can be appointed whereas the remaining 80% are elected. But in reality what is found is that 20% is also allotted to bureaucrats and administrative staff. The DPC has the potential to coordinate between the gram panchayats and the HDUDA so as to bring in synergy in combining together democracy and technical expertise in addressing PU problems. Vertical linkages among sectoral departments are also weak. For example in the case of forestry, there is a forest department at the state level and a social forestry department at the zilla panchayat level, engaged in forest development and management. However, there is no integration of the two and they operate as two separate entities.

The case of water tanks exemplifies the lack of coordination and linkage among the multiple institutions responsible for their management. Such institutions include the revenue department for land rights, minor irrigation for water rights, watershed department for the watershed area and fisheries department for the fishing rights, whilst the Gram Panchayat is responsible for the maintenance of water tanks. In addition, there are several stakeholder user groups (some organized under different associations) involved in the use and management of tanks. However, at the ground level there is no integration or linkage among these different institutions. Earlier all tanks were connected and water flowed through them into a common tank in Dharwad. There was a 'water manager' elected from the local area responsible for the distribution and regulation of water use of the tank. This arrangement has disappeared and the current institutions are not interested in reviving them.

Similarly institutions such as the HDMC and HDUDA can come together and create synergy for some positive implementable actions. But ground reality indicates that there is no effective coordination among the three. Areas developed by the HDUDA are handed over to the HDMC for administration and that is enough reason for them to come together for coordinated development. Whatever informal linkages exist among institutions is because of the pro-active role of the functionaries and leaders

due to some pressing needs. However, once the functionaries are transferred to another department or district, the situation does not remain the same.

Government attitudes towards solving any PUI problems was found to be a major constraint. Urban and rural agencies and department heads are positioned in the bureaucracy and line departments in such a way that neither want to be answerable to the other. Many have what can be described as historically hostile relationships wherein stopping one agency's agenda can be seen to be another's agencies raison d'etre. Thus, it becomes difficult for agencies who traditionally historically work on either side of an administrative divide to of a sudden start collaborating. Likewise the classic urban rural divide extends to the attitudes of urban and rural agency heads. The urban department heads see all problems in the PUI as a consequence of the lack of urbanization and believe that these problems will indeed vanish with urbanization. The rural department heads see urbanization and its spread as a cause of their problems and the degradation and depletion of natural resources are perceived to be as a result of the refusal of urban departments to prioritize anything but the needs of cities. Another major barrier was seen in the orientation of departments to solve all problems through the provision of hardware namely infrastructure with no training or software to accompany the provision of infrastructure.

Peri-urban dwellers interviewed in most of the project villages appeared to be aware of the existence of the line departments of the Zilla Panchayat, which are responsible for the maintenance of different natural resources. However, among women's groups this awareness was apparent in only a few. Furthermore, both peri-urban women and men were unaware about their rights and also about the responsibilities, duties of personnel and their mode of operation. Regarding sense of ownership, it was found that with the exception of the Gram Panchayat, peri-urban dwellers found that most government institutions are remote from their concerns and not easily accessible. In many cases, they expressed that these institutions would be more approachable if they had adequate information about their functions and duties of the functionaries concerned.

People living in peri-urban settlements now falling under the jurisdiction of urban authorities were of the opinion that they were better off in terms of coordinating with local bodies like the Panchayat and before when they were subsumed within the municipal boundary. At present, the urban institutions are very remotely linked with these settlements and people also do not seem to be interested in depending on them for any sort of institutional support and intervention. However, it was found that in the purely urban situation, HDMC linkage with the people might be strong. This is because the corporation has much influence over decisions relating to land, water, electricity and several other services and amenities where the interaction with people is mandatory on a regular basis. Such a situation indicates strong urban orientation of the HDMC. Grievance redress too was observed to be relatively better by the Gram Panchayat as compared with the HDMC.

Regarding the existence of feedback mechanisms, on paper there is a public feedback mechanism for the Comprehensive Development Plans (CDPs) developed by HDUDA. Such plans make decisions and establish provisions for future land use changes affecting most peri-urban villages. However, in practice peri-urban dwellers are unaware of the existence of CDPs and feedback system. Another shortcoming

identified in the current institutional set up, refers to the interface between statutory and customary institutions. Although the Gram Panchayat is physically close to those peri-urban dwellers still falling within the jurisdiction of the Zilla Panchayat, it does not provide the people's institutions such as water, potter, forest and fishermen's associations, enough space for feedback or participation in different activities. In addition, there is no platform for these institutions to come together and play a role in the development of the settlement.

The analysis also revealed some positive changes in community attitudes towards government, including the fact that the range of government institutions identified as being relevant to them was significantly expanded throughout the life of the project. In this sense, the Venn diagrams built by different groups in the peri-urban villages covered by the R8084 project show a shift from an initial concern on immediate and short term inputs from government institutions to one in which a longer perspective emerged valuing the inputs of educational institutions. This can be interpreted as a realisation on the side of peri-urban dwellers of the need to and value of reinforcing their own capacity for effective change through the development and consolidation of new skills, such as those developed in the area of marketing, which in turn could enhance their capacity to react to the rapid changes taking place in the peri-urban context. The analysis of the communities' perceptions towards other organisations also reveals new links developed with the project partner institutions such as NGOs and UAS through relations of cooperation.

On the other hand, an examination of the views of government officers towards community involvement, revealed general awareness of the need for the participation of peri-urban dwellers in the implementation of specific initiatives but also a top down view of what 'participation' entails. This is exemplified for instance in the paternalistic language used by many officers who see participation as a means to 'educate', 'inform' and even 'convince' peri-urban dwellers. Rarely participation is described as a means to empower peri-urban dwellers and communities and to bring their views and knowledge into the decision making process. Furthermore, the role of reaching peri-urban dwellers is seen by the officers interviewed almost without exception as an activity that should be performed by non-government organisations. In this sense, NGOs are seen as a vital vehicle to reach grassroots groups, but often this is portrayed as a one direction role, in which NGOs simply cover gaps in government capacities and activities. Nor is there a forum whereby NGOs can report back to local government to address issues identified.

4.4.5. Concluding Remarks

The above observations indicate that both rural and urban institutions tend to neglect the PUI. The existing institutions engaged in natural resource management do not have the flexibility to address peri-urban issues particularly changes in the state of natural resources that has an impact on people's livelihoods and the environment in general.

Limitations of the existing urban and rural institutions such as the HDMC, HDUDA and the Panchayati Raj institutions are that, much like the 73rd and 74th constitutional amendments, these institutions as constituted have deepened the urban-rural divide. For the PUI, this has meant that the Zilla Panchayat has been unable to respond to the

urban characteristics of the PUI and similarly the Municipal Corporation with the rural needs of the PUI. Further, neither of these institutions are equipped to deal with what are specifically peri-urban features such as the health and environmental effects of sewage irrigation (Annex S), soil erosion due to intensified brick making spurred on by urban development (described in R7867 FTR), land use and consequent livelihood changes that result from spurts of public infrastructure expansion catering to urban needs such as the by-pass road (described in R7867 FTR), depletion of forests to supply fuel wood to the urban area (Annex U), and so on. Having outlined these constraints it is imperative to redefine existing institutional arrangements such as the DPC or Nagar Panchayat and build capacities to integrate rural and urban planning needs.

Under such institutional provisions, the implications for management of natural resources and for livelihoods of peri-urban populations are several. The poor and women both tend to feel the impact of the PUI the most as they lose access to public resources such as common lands, forests, grazing land. The peri-urban poor are unique in that they derive much of their livelihoods from both urban and rural activities. What distinguishes the poor from the very poor in the PUI in fact is the ability to make use of urban opportunities. What can limit the very poor are various factors such as lack of skills, mobility, poor health, lack of education and high dependency ratios.

While urban opportunities exist these communities are often unable to compete with urban populations for those opportunities. Hence a constitutional body as defined by the Nagar Panchayat in the constitutional amendments is needed to help communities in transition. Therefore as more and more settlements are absorbed into municipal boundaries and overnight experience the loss of rural services and programmes, there is a need for institutions to be in place which can facilitate the phasing out of rural needs and build the capacities of peri-urban populations to take advantage of urban opportunities in the form of special programmes and schemes.

Furthermore, since the peri urban interface is a dynamic area with rapidly changing needs and the area itself does not remain peri-urban but becomes urban while surrounding rural areas turn peri-urban, the type of governance structures required also need to be dynamic and responsive. Therefore, there is a need to create mechanisms tailored to the particular needs of the PUI in different cities, as the nature of cities, too differ. For instance, small and medium sized cities would require different types of institutional arrangements compared to big cities. The ‘one size fits all’ type of policy or governance mechanism has been shown to fail over and over again and is symptomatic of top down governance which needs to be rethought and reformed.

There is also a need to plan in a manner that balances urban expansion and natural resource management. Cities do not always have to grow horizontally. In fact in many developing countries where this has happened there are measures being taken by government to reverse the process and to try to concentrate urbanization. This is particularly important in light of the ability of government for better provision of infrastructure and services to a more concentrated population rather than a dispersed one. Finally peri urban populations today have no say in whether or not they want to become a part of the urban environment and this points to the need for participatory

planning where communities can be informed and have a say in the planning of their neighborhoods.

The previous discussion has highlighted many of the challenges faced by any attempt to bring a new perspective into the understanding and action of different institutions and organisations to address the problems and opportunities encountered in the peri-urban interface. Given that this perspective challenges the rural-urban dichotomy deeply engrained in the way in which the decision making process is pursued by government institutions, it is not surprising that the project found a significant number of barriers or constraints to institutionalise a new way of looking and acting upon the PUI. These included the lack of differentiation between urban and rural areas, inability to share funds and resources, attitudes in terms of unwillingness to share responsibilities or to work across jurisdictions, staff skills and capacities, lack of constant up gradation of skills and knowledge, inability to coordinate, and lack of awareness of the peri urban concept and lack of a vision for the PUI. Other constraints observed by the team during their interactions with government included the frequent transfers of officials, the inability or lack of will of replacement officials to continue with the interventions of previous officials and the inability of district governments to make decisions at the policy level.

The extent to which the peri-urban poor are negatively or positively affected by the changes affecting the PUI depends on their livelihood sources, which are usually more heavily reliant on natural resources than wealthier, more urban-based groups. But it is not just the absolute availability of natural resources in relation to population and density that helps to explain the emergence of environmental problems and opportunities for the peri-urban poor but the conditions regulating their access to and control over such resources. This demands a detailed consideration of land tenure systems and of the regulatory framework which might safeguard or threaten their needs and interests, as well as of their social and political capital to act individually and collectively and its effects on the management of natural resources and services. Common barriers identified or perceived in the formation of social capital in urban and peri-urban areas in comparison to rural areas include: the heterogeneity and high mobility of the population, the breakdown of traditional networks, relative poverty and therefore a lower drive to resist collectively common struggles, adversity and exploitation. Whilst some of these assumptions can be verified in reality, they can also help to perpetuate the idealisation of rural characteristics against urban features often negatively typified.

Thus, understanding the reality of the peri-urban poor demands not only a disaggregate analysis of their living conditions and livelihood strategies, but should include the consideration of their existing patterns of community interaction with government institutions and perceptions of how change could be brought about. Whilst focusing on strengthening the collective organisation of the peri-urban poor, it is essential to make their needs and aspirations ‘visible’ to the different agencies intervening in this context. However, an isolationist approach might fail to articulate their demands with those of other interests groups and therefore prevent the emergence of interdependent coalitions between the poor and the non-poor as well as between internal and external political processes.

Working towards the articulation of rural and urban concerns inevitably means that development and environmental policy-making need to be nurtured by participatory and social experimentation processes, which must involve people and localities in real change. Building collective knowledge of this new way of understanding and acting upon development should not be seen as an academic concern. It is a necessary and urgent exercise to consolidate the initiatives under way, to clarify their scope, to identify the structural barriers faced and the possible strategies to address them. Thus, the critical reflection on what is being done, why is it being done, where, by whom and with what resources and results has very practical implications for local communities, pressure groups, governments and donors. In a context where the traditional distinction between urban and rural is becoming increasingly blurred, this knowledge is not just relevant for those who are specifically concerned with the sustainability of cities and rural areas, but for everybody involved in making development work.

5. References

Agrawal, A. (2001) Common property institutions and sustainable governance of resources. *World Development* **29**: 1649 – 1672.

Amin, S., Rai, A. S. and Topa, G. (2003) Does microcredit reach the poor and vulnerable? Evidence from northern Bangladesh. *Journal of Development Economics* **70**: 59 – 82.

Bhat, P., Nitturkar, A. and Mulla, J. A. (2003) Livestock: Promising livelihood opportunities for the peri-urban poor. In: *Changing Frontiers –the Peri-Urban Interface, Hubli-Dharwad, India*, pp 97 - 120. (Eds. Brook, R. M., Purushothaman, S. and Hunshal, C. S.) Bangalore, India, Books for Change.

Birner, R. and Wittmer,H. (2000). Converting Social Capital into Political Capital: How do Local Communities Gain Political Influence? A Theoretical Approach and Empirical Evidence from Thailand and Columbia. Paper submitted to: 8th Biennial Conference of International Association for Study of Common Property (IASCP) *"Constituting Commons: Crafting Sustainable Commons in the New Millennium."*

Bradford, A., Brook, R. and Hunshal, C. S. (2003) Wastewater irrigation in Hubli-Dharwad, India: implications for health and livelihoods. *Environment and Urbanization*, **15 (2)**: 157 - 170.

Brook, R. M., Bhat, P., and Nitturkar, A. (2005). Livelihoods from dairying enterprises for the landless in the peri-urban interface around Hubli-Dharwad, India. In: *The Peri-Urban Interface in Developing Areas: Approaches to sustainable natural and human resource use*, pp 94 - 103 McGregor, D. F. M., Simon, D. and Thompson, D. A. (eds) Earthscan, London.

Brook, R. M., Purushothaman, S. and Hunshal, C. S., editors. (2003) *Changing Frontiers –the Peri-Urban Interface, Hubli-Dharwad, India.* Bangalore, India, Books for Change.

Cramb, R. A., Purcell, T. and Ho, T. C. S. (2004) Participatory assessment of rural livelihoods in the Central Highlands of Vietnam. *Agricultural Systems* **81**: 255 – 272.

Devas, N. (2002). Urban Livelihoods: Issues for Urban Governance and Management in C. Rakodi (ed.) *Urban Livelihoods: A People Centred Approach to Reducing Poverty.* Earthscan

Hails, K. (2005) Increasing livelihood sustainability for the poorest farmers living in arid areas using innovative agroforestry techniques. MSc dissertation, University of Wales, Bangor.

Hobley, M. and Shah, K. (1996) *What makes a local organisation robust? Evidence from India and Nepal.* Natural Resource Perspectives 11, Overseas Development Institute, London.

Hollingham, M. and Joshi, S. C. Water resources around Hubli and Dharwad. In: *Changing Frontiers –the Peri-Urban Interface, Hubli-Dharwad, India*, pp 121 - 133. (Eds. Brook, R. M., Purushothaman, S. and Hunshal, C. S.) Bangalore, India, Books for Change.

Holvoet, N. (2005) The impact of microfinance on decision-making agency: evidence from south India. *Development and Change* **36**: 75 – 102.

Hulme, D. and Shepherd, A. (2003). Conceptualizing chronic poverty. *World Development*, **31**: 403-423.

Kedir, A. M. (2005) Understanding urban chronic poverty: crossing the qualitative and quantitative divide. *Environment and Urbanization* **17** (2): 43 – 54.

Krishna, A. (2004) Understanding, measuring and utilizing social capital: clarifying concepts and presenting a field application from India. *Agricultural Systems*, **82**:291-305.

Kumaran, K. (1997) Self-help groups: an alternative to institutional credit to the poor: a case study in Andhra Pradesh. *Journal of Rural Development* (Hyderabad, India), **16**: 515 – 530.

Lawrence, A., Haylor, G., Barahona, C. and Meusch, E. (2000) Adapting participatory methods to meet different stakeholder needs: farmers' experiment in Bolivia and Laos, pp 50 - 67. In: *Learning from change: Issues and experience in participatory monitoring and evaluation* (Ed. Estrella, M.). London: Intermediate Technology Publications.

Matin, I. and Hulme, D. (2003) Programs for the poorest: Learning from the IGVGD programme in Bangladesh. *World Development* **31**: 647 – 665.

McCarthy, N., Dutilly-Diané, C and Drabo, B. (2004) Cooperation, collective action and natural resources management in Burkina Faso. *Agricultural Systems*, **82**: 233-255.

Meinzen-Dick, R., DiGregorio, M. and McCarthy, N. (2004) Methods for studying collective action in rural development. *Agricultural Systems*, **82**: 197 -214.

Place, F., Kariuki, G., Wangila, J., Kristjanson, P., Makauki, A. and Ndubi, J. (2004) Assessing the factors underlying differences in achievements of farmer groups: methodological issues and empirical findings from the highlands of Central Kenya. *Agricultural Systems*, **82**: 257-272.

Premchander, S. (2003) NGOs and local MFIs – how to increase poverty reduction through women's small and micro-enterprise. *Futures* **35**: 361 – 378.

Shaw, J. (2004) Microenterprise occupation and poverty reduction in microfinance programs: evidence from Sri Lanks. *World Development* **32**: 1247-1264.

Sidersky, P. and Guijt, I. (2000) Experimenting with participatory monitoring in North-east Brazil: The case of AS-PTA's Projeto Paraíba, pp 68 – 82. In: *Learning from change: Issues and experience in participatory monitoring and evaluation* (Ed. Estrella, M.). London: Intermediate Technology Publications.

Snow, D. R. and Buss, T. F. (2001) Development and the role of microcredit. *Policy Studies Journal* **29**: 296 – 307.

Sultana, P. and Thompson, P. (2004) Methods of consensus building for community-based fisheries management in Bangladesh and the Mekong Delta. *Agricultural Systems* **82**: 327-353.

Thorp, R.; Stewart, F. and Heyer, A. (2005) When and how far is group formation a route out of chronic poverty? *World Development* **33**: 907 – 920.

Uphoff, N. (1993) Grassroots organizations and NGOs in rural development: opportunities with diminishing states and expanding markets. *World Development* **21**: 607-622.