A STUDY OF THE LIVELIHOOD STRATEGIES OF THE POOR AND VERY POOR IN PERI-URBAN AREAS OF HUBLI-DHARWAD, AND THE IMPACT OF URBANISATION UPON THEM.

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1. Introduction

1.1 Research questions

The purpose of this study was to address the research questions shown in Table 1, set by the OVI's 2.1, 2.3 and 2.5 (Table 1), and provide examples of livelihood strategies, which might assist in the interpretation and use of other survey findings with regards to sustainable livelihoods options in the peri-urban areas.

This report presents details of the methods and results, and discusses findings for each of the research questions, bringing in and referring to information from other sources where relevant. Section 1.2 describes the approach to the research overall, with further details about methods used and their limitations in each of the sections 2 to 5, which provide general information about the study villages and directly address each of the research questions.

Table 1 Research questions as set by the OVIs in the log frame.

OVI[1]	Research Question	Research Activity
2.1	Who and where are the poor and the very poor in the PUI ?	Wealth ranking
2.3	What are the main characteristics of livelihood strategies of the poor and the very poor?	Household interviews; questions focusing on livelihood activities carried out, resources depended upon and livelihood outcomes.
2.5	How does change in the PUI affect livelihood strategies and options?	Household interviews; questions focusing on changes in assets and livelihood activities over time, and future aspirations.

[1] OVIs arranged in the order in which they are addressed in this Annex.

1.2 Approach and Methodology

This study employed nearly all of the RA's involved in the research programme (see page ii for list of names). The group leader had previous training in participatory research approaches and techniques and additional livelihoods focused training was given to the team by MYRADA (a Bangalore based NGO) and Adrienne Martin (NRI).

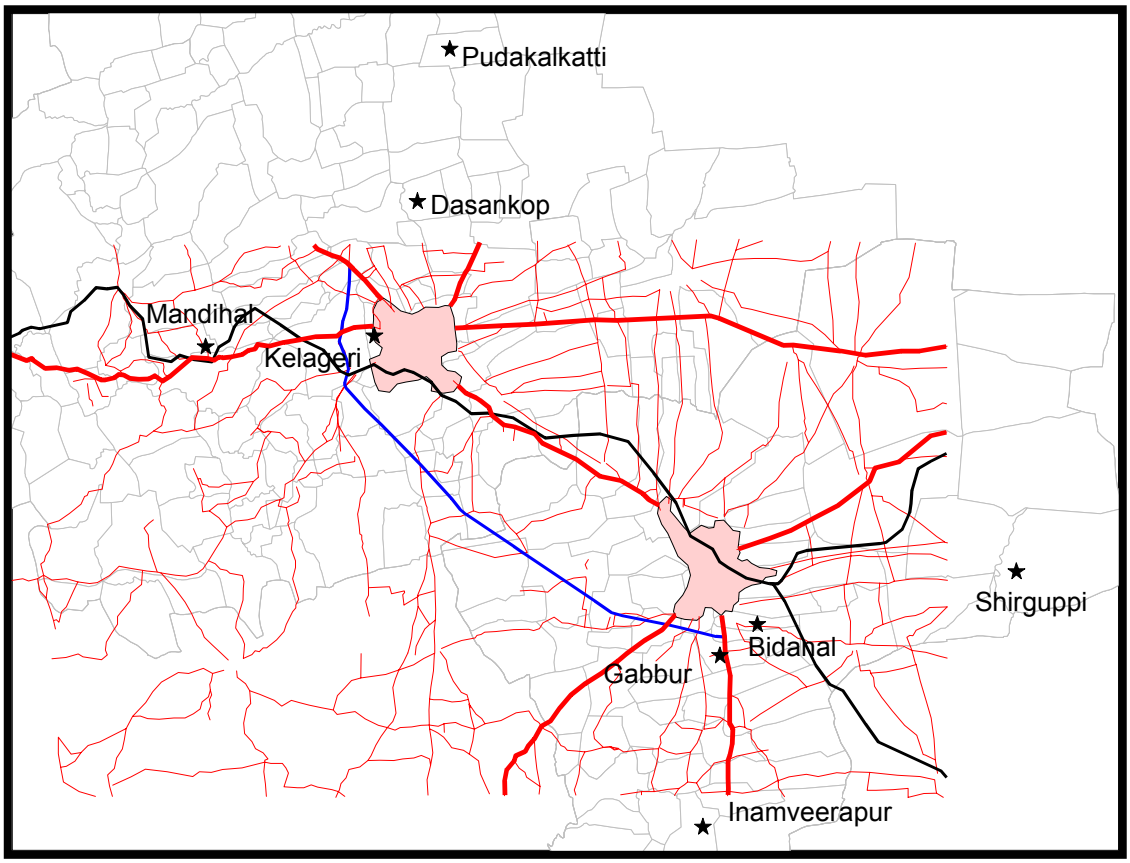
The methods and guidelines discussed with the team to answer the research questions described above are in Appendix B1. The application of the methods and associated problems have been described in detail where relevant in each of the sections 2 to 5. The overall approach is outlined below.

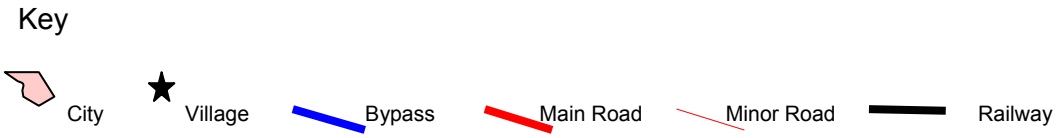
Selection of villages and households.

Eight case study villages were selected according to their distance from the cities of Hubli and Dharwad along the four transects upon which the programme of research has focused (FTR, Section 5). Some villages were selected from amongst their neighbours according to features of particular interest or impact, such as the presence of a particular industry (e.g. quarry). Otherwise, villages were selected to try to include as wide a range of variables that may affect livelihoods as possible, for example, population size, soil types and various facilities such as transport.

Within each of the eight villages, eight households were selected from different socio-economic groups determined by the wealth ranking procedure described in Appendix B1, for in depth semi structured interviews about their livelihoods strategies and options.

Figure 1 Map showing the study villages in relation to cities and roads, with a table comparing some of the main features.





Features	Kelageri	Mandihal	Bidnal	Shiraguppi	Gabbur	Inamveerapur	Pudakalkatti	Dasankop
Total area cultivatable (%)	79	75	87	96	97	93	95	96
Black soils (% of cult. Area)	25	-	75	100	80	25	88	80
Forest (% of total area)	8	16	Nil	Nil	Nil	Nil	Nil	Nil
Grazing (% of total area)	Nil		Nil	Nil	Nil	Nil	Nil	3.8
Other items of interest					50acres bypass			
Area Irrigated - Boreholes					500 acres			
- Sewerage					300 acres			
Population (yr. 2000)	6035	1247	3000	4001	800	382	2170	280
Population density (people/acre)	1.05	0.93	0.66	0.49	0.74	0.39	1.2	0.24
Literacy (% of pop.)	15	13	27	27	9	17	28	23
Principal livelihoods (ranked I to III by village groups)	Agric. Brick Dairy	Quarry Dairy Agric.	Agric. Petty Business Dairy	Gov. Labour Dairy	Agric. Dairy Agric. Labour	Agric. Factory Building	Agric. Building Dairy/Poultry	Agric. Agric.Lab. Poultry
Inadequacies of infrastructure (according to research team after consideration of information obtained.)	0	Institutions	NGOs support	0	Schools Transport Health Institutions NGOs support	Institutions Health	0	Transport Health Institutions NGO support

Comparative analysis.

With this sample a comparison of livelihoods between villages according to proximity to the cities was planned in order to determine the effects of distance, as well as other influencing factors, upon livelihood strategies, options and outcomes. It would also help to look at how the influencing factors impact differently upon the wealthier and the poorer members of the peri-urban communities, and upon levels of poverty within the communities.

Limitations of methods.

A number of problems were experienced in the implementation of this research, mostly related to the underestimation of the size of the task and the length of time it would take, combined with the inexperience of the team in carrying out qualitative information collection. In addition most of the research assistants were natural resource specialists e.g. soil scientists or agronomists, and were insufficiently aware of social issues in NR management in general, which led to further difficulties in collecting certain details about resources due to unclear understanding of terms such as access and control.

Mistakes were made in the reporting procedure from field notes up to structuring the first level of reporting of household study notes, which led to significant delays and reduced the opportunities to go back to the field and verify information after the first level of analysis (reading through the household studies). There was, however, obvious progress in terms of methodology as time went on, but RA's felt that qualitative information collection was far more complicated than the quantitative procedures to which they were accustomed, due to the depth of investigation required. It is particularly difficult to adjust to the fact that analysis must be done simultaneously, as part of data collection, adjusting methods accordingly, rather than collecting and then analysing at the end, which is more typical of quantitative approaches.

It was a learning experience for all involved, both in terms of methodology and in terms of understanding the importance of the factors affecting livelihoods, livelihoods options and levels of poverty. Some of the RA's commented on their discomfort in asking the very poor about their future livelihoods as they found that there were so few opportunities that they could take up. They also found that despite their discomfort at having people ask them questions, the poor were also happy to have been included in the research process, some saying that they'd never been consulted before and that this was "a new thing they were doing".

2. General information about the study villages.

General information about the villages has been obtained through participatory mapping and village walks as well as from other sources such as local NGOs, self help groups and key informants, including the village accountant and the Taluk Office (block level administration) both of whom held useful statistics. Summary tables compiled by the research team in Appendix B3 describe geographical, demographic details and physical infrastructure and facilities that were found in each village. Figure 1 shows the position of the villages in relation to the two cities and provides some statistics from these tables that summarise some of the features thought to be most influential in determining livelihood strategies and options.

The process of mapping, village walks and focus discussions on for example, the changes within the villages over time were not consistently carried out in all of the villages, making comparison difficult and resulting in incomplete sets of information for each village. Without time lines (or historical profiles) of a village it is difficult to report how resources or well being of the community might have changed at the village level, although some indications were given in the household studies. It is

recognised that the maps only provided "snap shot" information of the current situation.

3. Who and where are the poor and the very poor in the PUI ?

This section addresses research question 2.1 (see Table 1).

3.1 Methodology

In each village a rapid wealth ranking technique was carried out with groups of villagers in order to determine their perceptions of what characteristics define poverty. The whole approach was based upon the guidelines described in Appendix B1, which emphasise the importance of discussing poverty and well being in depth in order to obtain as broad a range of "indicators" or characteristics of the different socio-economic groups as possible. This would facilitate comparison of the results between villages, where variations in the village classification criteria would be noted and the reasons for them indicated according to general information on, for example, the differences in the availability (and therefore cost) of resources and facilities in the village.

The extent of poverty in the villages was estimated by asking village representatives to sort households into one of the four categories according to their knowledge of the families and the criteria that they had previously described.

The intention was to carry out a further exercise to determine the characteristics of the poor and very poor in terms of a set of well being indicators. These would then be used to substantiate the criteria defined for the wealth ranking. Although a descriptive assessment of these was successfully made for Mandihal (table 2e), the first village to be studied, the team found the procedure too time consuming in addition to the wealth ranking procedure and the exercise was reduced to a simple "yes/no" indication as to whether certain outcomes were achieved by the case study house-holds or not. The results of the latter have been described in Appendix B4, where the difference in quality of information arising out of the original (Table 2e, section 3.2) and then amended methods is obvious. The usefulness of these data for comparative analysis of differences between villages is limited. The problem is one of lack of representation arising from the fact that the information was derived from a small sample of individuals referring to their own situations, whereas the information from Mandihal was obtained through discussion with a group of villagers and they were asked to refer to perceptions of the village as a whole.

Finally the eight households selected from the different categories in each village were used to verify the ranking procedure. The discussion arising from this is detailed in section 3.3.

3.2 What defines poverty?

The following tables (2a-2d) completed by the village informants describe **local** perceptions of the characteristics of different socio-economic categories in each of the eight villages. The two villages at either end of each transect are paired in four tables to facilitate comparison. In addition, table 2e describes certain livelihood outcomes described by villagers in Mandihal. This information was elicited when research assistants deliberately requested information about certain livelihood outputs. This was only carried out in Mandihal, but the results are relevant to this discussion, and so they have been included here.

Tables 2 a-e Characterisation of socio-economic categories by villagers.

Table 2 a. Dharwad west transect.

Village	Perceived characteristics of different socio-economic groups			
	Rich	**Medium**	**Poor**	**Very poor**
Kelageri	People having 10-20 acres of land or more and house Brick kilns business or owning mango orchard of 10 acres or own tractor, car, motor cycles.	People having medium size land holdings (5-10 acres) with own house or having employment with Rs. 5000 / month or having skills like brick making business and dairy.	People owning a house with no lands or working as agricultural labourers or bonded labourers.	People having no lands, no house or working exclusively as agricultural labourers or bonded labourers.
Mandihal	Owners of land having more than 20 acres of dry land or employed with payment of more than 20,000 per month or business or combination of these and having own house.	Owners of land having 5-20 acres of dry land or people having their own house and 10 acres of land or skilled labourers.	Owners of land having 1-5 acres of land or peoples having no house or people having no permanent employment or people working as skilled agricultural labour.	People having no land and no house or people having no employment or people working as agricultural labours.

Table 2b. Dharwad north transect.

Village	Perceived characteristics of different socio-economic groups			
	Rich	**Medium**	**Poor**	**Very poor**
Pudakalkatti	Net profit/yr >Rs. 40,000* Land, 12 acres, Irrigation (borewells) or openwell, Houses-1-3 number.	Net profit/yr Rs. 20-30 000* Land, 4 to 12 acres, Borewell irrigation May or may not have, tractor may or may not have. Own house present.	Net profit/yr Rs.10-15,000* Land-1 to 2 acres. Plus labouring in others field in few months in a year. No tractor. Own house present.	Net annual profit Rs. 3 - 4,000 Labouring in others field is inevitable. House constructed by Govt.
Dasankoppa	Land lords (54 acres), having on assets, vehicles, poultry farm.	land 5-20 acres, 3-4 members working having earning capacity, 2 to 4 bullocks, owner of cart / tractor.	Family labour (2-3 members), less than 5 acres of land.	Land less labours, No body to look after them Only one person is working in the family.

*For reference, the official poverty line in India is an annual income of Rs24,000 (£350) p.a. per household of 5 or 6 people (personal communication; Smita Premchander, Sampark NGO, Bangalore, 13 September, 2001).

Table 2 c. Hubli south transect

Village	Perceived characteristics of different socio-economic groups			
	Rich	**Medium**	**Poor**	**Very poor**
Gabbur	More than 12 to 13 acres land holdings and own house, and land with machines and agricultural implements, tractors.	Land holdings (2 to 3 acres), own house, plus small scale business.	Own house, and basic agricultural implements Ag. labourer.	No land, no house, Labour working in other fields.
Inamveerapur	Owner of irrigated land (>4 acres), job, house, tractors,	Owner of land (2-4 acres), dry land agriculture. small house.	No land, agri. labour, Janatha plot/house	No land, no house, agriculture / bonded labours

Table 2 d. Hubli east transect

Village	Perceived characteristics of different socio-economic groups			
	Rich	**Medium**	**Poor**	**Very poor**
Bidnal	Owners of land (> 40 acres), tractor, car, deposit (Rs 300-400,000)	Owners of land (8-10 acres), Own house, motor cycle	Owners of land (1-4 acres), Own house	Land less labour, House not own.
Shiraguppi	People having monthly salary of Rs. >10,000. Owners of land having>25 acres, own house, tractor, or owner having their own business, like flour mill.	People having employment with Rs 3000-4000 per month Owners of land having 10-25 acres, own house	Peoples having monthly salary of Rs 1000-2000 Owners of land having 2-10 acres, own house or people working as labour in factories at Hubli or in the village	Landless agricultural labour or peoples working as goundies (Pipeline, tiles, building construction work). or peoples with no house (huts or renting).

Table 2 e. Mandihal villagers' descriptions of the livelihood outcomes of the different socio-economic categories according to certain aspects of well-being and security.

Livelihood out comes	Rich	Medium	Poor	Very poor
Basic needs	Able to meet out the food needs of the family they are getting three meals per day and 2 pairs of clothing for the family Once in two years able to purchase mattresses for the family able to renovate their houses able to pay the medical bills.	Able to meet out the food needs of the family. They are getting two meals and one pair of clothing for the family. Unable to renovate their old houses. Unable to pay the medical bills	Able to meet out the food needs, they are getting two meals. Unable to prepare festival foods Borrow clothes from rich people. Unable to renovate their old houses Unable to pay the medical bills.	Able to meet out the food needs but not in sufficiency. Unable to prepare festival foods. They borrow old clothes from rich people unable to buy the matrices Govt. has allotted house under 'Ashraya' Programme Unable to pay the medical bills.
Resources to protect from shocks and stresses	Mortgage their land, house and gold Small portion of the land is leased out Selling of animals Selling of lands.	Small portion of the land is leased out Women in the family are sent for labour work	No resources to protect the shocks & stresses Children are sent for labour work.	No resources to protect the shocks & stresses Children are sent for labour work. Unable to pay the medical bills.
Education	Able to educate their children up to graduation	Able to educate their female children up to primary and for male children up to Matriculation and job oriented courses.	Able to educate their children up to pre-primary (IV std)	Able to educate their children up to pre-primary (IV std) as government is providing all the facilities.
Investment on house construct-ion	Able to repair old house Unable to construct New house Unable to buy the building construction materials	Unable to repair old houses Unable to construct new house Unable to buy the wood to renovate their house	Unable to repair the house	Unable to repair the house
Depend-ence on loans	Depends on crop loan, Agric. implements loan and loan for allied activates (Dairy)	Depends on crop loan and for allied activities loan	Gifts (clothes) from rich people No asset to take loan Nobody will give loans	Gifts (Clothes) from rich people. No asset to get the loan and nobody will give loans.
Investment on Social asset	Able to feed 100-150 poor people and spend money on food preparation during harvest of crops. (Threshing yard function)	Unable to spend on social asset	Unable to spend on social asset	Unable to spend on social asset.

Overall the characteristics used in the descriptions of different socio-economic categories were based mostly on ownership or access to land, occupation, machinery and equipment, and ownership or type of house. These were the most prevalent characteristics throughout and should have allowed some comparison between the villages. In addition to these, four villages used estimated income levels.

There were very few references to the less tangible social or human capitals in the wealth ranking characteristics. In Dasankoppa, the number of people within the family able to do family labour or having earning capacity was one of the main criteria for classifying families. In the same village, the very poor included those with "no one to look after them". Apart from this the only other reference to social capital was for the bonded labourers, who are connected through a long-term arrangement with a wealthy family for whom they work and obtain a certain level of livelihood security.

Skills and education were not explicitly mentioned in the process of defining characteristics, and may be assumed inherent in the differences in people's occupations. It maybe that skills and education do not in themselves make a person better off, rather it is what is done with them that is manifested in livelihood activities, and the financial, physical and natural assets that are earned or maintained. Education was an issue discussed in Mandihal as a livelihood outcome (rather than a characteristic), as can be seen from table 2e. It is clear that poor and very poor can only guarantee to educate their children up to 4th standard as this is subsidised by the government.

3.3 Checking the validity of the wealth ranking results.

The question was posed, "Were the households selected representative of the category to which they've been assigned, according to the characteristics given in tables 2a-2d "? This was done after all the data were collected.

By cross checking the characteristics described in the above tables with the relevant details from each of the households studied it was possible to verify the ranking procedure. The following discussion shows that many of the households did not appear to comply with these characteristics. By examining the assets, livelihoods and family composition of each of the households studied and comparing amongst them in each village, it was possible in almost all cases to determine why the household had been put into a particular wealth category. In the discussion case numbers (1 to 8 for each village) have been used and the details of each case can be found in matrices in appendix 2.

In Kelageri the rich and medium families owned between 15 and 40 acres, carry out irrigated agriculture including mango orchards, and 3 in 4 have brick kilns. The medium families, although superficially appearing very similar in terms of activities, and assets, have smaller mango orchards than the wealthier families. Also the wealthier have cows for milk for their own consumption whereas the medium families sell the milk and consider the dairy as one of their main livelihood activities. Another clear difference is that the wealthier women do not work, whereas in the medium families they support agricultural activities and dairy work. In terms of land area, it appears that one of the medium families has 40 acres and should therefore have been classed in the rich category, (those having more than 10-20 acres) but on further inspection of the household study it was seen that they had sold 10 acres of land to pay off debts. The other medium family have 15 acres and could also have been classed as rich, but their land has been depleted in terms of fertility (indeed they had previously ceased to operate brick kilns when they exhausted the top-soil of the land and had to search elsewhere for supplies to continue their brick making operation). This demonstrates that when assigning families to one of the four categories, informants had considered details beyond what has been described in

the wealth ranking criteria, but that the resultant categorisation was probably more accurate as a result.

There is little difference in the criteria specified for the poor and very poor categories in Kelageri. The four poorer households studied are not very true to the wealth ranking criteria and there is little distinction between them. None of the four had land, but all had houses, three in four from the government housing scheme and the other (one from the "poor" category) had built their own. The small difference in criteria between the poor and very poor categories, apart from housing, is that the very poor were seen to be those with no alternative but agricultural labour. In contrast the poor families in the household studies still had labouring jobs and sources of income outside of agriculture. This could be a result of shortfalls in recording and/ or interviewing techniques, but is more likely a result of pre-determining the number of categories into which the population had to be classed. Perhaps there should have only been three wealth categories in this village.

In Mandihal, the two rich household studies reflected the given wealth ranking criteria as they had land and/or business or salaried employment. Except for land holdings and house ownership the distinctions between the remaining three categories are unclear, perhaps again because of the pre-determination of categories by the research team, but certainly because of the lack of definition or distinction between "skilled labour", skilled agricultural labour and just agricultural labour. Suffice it to say that land holders (whether medium or poor) need to supplement their income with labour work and these tend to be the higher skilled jobs, such as grafting for example, or the more highly skilled building construction work. The very poor are reportedly those who have no employed members in the family or who are less skilled agricultural labourers.

When cross checking the wealth ranking criteria with the case study results, the determining criteria do not become clearer, as widows with no land, dependent on doing stone quarry and agricultural labour have been classed as medium and very poor alike, regardless of the type of housing (one medium family having only a hut, one very poor having a house). One very poor household has a son who works in a photo studio. The characterisation is unclear, the ranking of the families and therefore the sampling for purposes of the case studies suspect and confusing. This was the first village to be studied by the team and the introductions given to the villagers may not have been adequate to avoid bias due to opportunism i.e., the respondents may have felt it more useful to show the team the poorer people in order to attract interventions.

In order to improve the range of information on criteria for ranking, the team drew up a table with the villagers to look at what different categories of families achieved with their livelihood strategies (Table 2e, Section 3.2), which included how the different groups varied in their abilities to meet basic needs, educate their children, invest in housing, or social events and protect themselves from shocks and stresses. These criteria would also have been born in mind by the informants during the sorting of the households in the village between the four categories. The household studies do comply with some of these details. For example, despite the fact that both of the medium families are landless, widowed labourers they also both have their children at school whereas all four of the poor and very poor families have been unable to afford for their children not to be earning. In the "livelihoods outcomes" table (Table 2e Section 3.2), sending children to work is indicated as a strategy for coping with negative trends and stresses for the two poorer groups, whereas the medium category have other means for coping (leasing out land and women going to work).

The household studies for **Dasankoppa** are representative of the given characteristics, with the minor exception of the very poor family (case 7) who contrary

to the criteria in table 2b above, have more than one person in the family working. However, two are old and less able and the others are involved only in seasonal labour (Dec-May) on construction work in a neighbouring village. They have a heavy dependency ratio (two non-working to two working members); this may be a more accurate indicator than simply the number of people working. They would not fit into the next category of "Poor", as they do not have their own land.

In **Pudakalkatti** only one of the households deviates slightly from the given characteristics, that of the poor family (case 6) which does not have any land. However, that family has a carpentry business in the village and therefore is self employed and has an independent and secure income source similar to that obtained from a small holding of land. Also, one of the medium families does not own land but leases it. Land holding in this case has therefore been considered of less relevance than the ability to produce crops from land.

In **Gabbur** it is again difficult to see the difference between the poor and very poor. They are landless but not only dependent on agricultural labour, although for two in four of the households studied, this is the main source of income. However, both of the very poor families are aged or disabled and consequently less able than the poor families in terms of ability to work.

In the information from the **Inamveerapur** case studies, it seems unlikely at first glance that a widow with two sons should be allocated to the medium category, but this is correct according to the criteria given as all three of them work their own land and earn an independent living from vegetable production. In contrast one of the very poor and one of the poor families in the village have leased out their land for the purposes of repaying debts (incurred for the payment of marriage ceremonies of three daughters and for the payment of up to Rs10,000 [£140] in medical costs, respectively) and are thus not classified in the medium category despite their land holdings. It seems that small landholders, although they would usually be in the medium category have been put in the poorer categories due to debt. Both of these families are involved in agricultural labour, but also have other income sources including brick making, fuel wood selling and work on "the pipeline", all seasonal. The other poor family also has alternatives (fruit and curds selling) to agricultural labour. The second very poor family is dependent upon the brother in law for "support for basic needs", and is the only family of the poor and very poor that is completely dependent on agricultural labour. All of the poor and very poor have their own houses (25% given by in laws and 75% are government 'Janatha' houses), which again contradicts the criteria used to differentiate between poor and very poor.

In **Bidnal** the household studies again reflect the weakness of using ownership of land and house as indicators, and the fact that informants have used more criteria in categorising the households in their communities than they have described in the table 2d above. The scale of land ownership described in table 2d is not continuous but it is clear that land area has not been considered alone when classifying the households. For example, the rich household (case 1) who has only 20 acres instead of the 40 acres specified for the rich category, is so placed because their land was irrigated and therefore had greater potential than the equivalent area of dryland.

Case 3 (a medium family) has only 3 acres of land (rather than 8-10 specified in the criteria) but also has a shop business and is retired from a salaried position. In fact, on division of his father's lands between his brothers, he received very little due to the fact that he had a well paid position at the time. Another characteristic that sets the medium families apart from the poorer families is the level of education held by the adults. The poor family (case 5) that has 5 acres of land and 6 dairy buffalo has only 1 acre less than medium family (case 4) and 2 acres more than the other medium family (case 3), but is uneducated, and also one of the family members is an

agricultural labourer. The second poor family (case 6) have no land, but used to have 4 acres (sold for construction) but despite this they are still classed as poor, which according to table 2d is a land holding group in this village. However, there is again another criteria, that of the ability of the family to labour, that keeps family 6 better off than the very poor families who are widowed and aged/retired.

Having a business in addition to land, coming from a wealthy family and being educated, and having more family members able to work are all characteristics that were probably considered by the informants while ranking these households, more so in fact than the specified area of land ownership defined in table 2d..

In **Shiraguppi** a large land holder (40 acres) has been classed in the medium category, and although low soil fertility is given as one of the reasons for this, the family also has loans to repay and is known as a defaulter at the bank. In contrast the other medium family has less land than specified for medium families, but also has dairy cattle that must lift his income level up to the specified Rs200/day (or Rs3000-4000/month). The poor and very poor fit the description given, and although the land holdings of the poor are less than 2 acres, the fact that they have land differentiates them from the very poor households studied.

The above discussion has shown that:

1. Characteristics that the informants used to define the different wealth categories prior to the sorting of households were not a complete set, and those indicators given (e.g., land or house holdings) were not sufficiently well defined.
2. The whole household situation was considered by the respondents during the process of assigning households to categories, including criteria not pre-defined, but resulting in greater confidence in the results.
3. The only village where the process is considered to have been inadequately carried out is Mandihal, possibly because of informant bias/expectations.
4. In some villages (e.g. Kelageri, Mandihal) there was some indication that the predetermined number of categories may not have been appropriate for the situation in the village, making it difficult to differentiate between categories.
5. The additional characteristics of households that influenced the informants in the ranking process are summarised in table 3.

Some of the characteristics with which the informants had thought to rank the households needed further qualification. It was clear that land holding alone was not the only information used, but also the quality of the land, how it was used (potential profitability) and its tenure (if it had been leased out/in). Similarly sometimes the characteristics had defined categories with only one livelihood activity (e.g. agricultural labour), when in fact the ranking process depended upon more detailed knowledge of the household livelihood strategy, for example, the combination of activities and the level of independent sources of income. The number of family members working, a characteristic defined in Dasankoppa, was more accurately applied in the ranking process, as informants considered not only the number working but also the number of dependents that those workers had to support.

The other characteristics used but not considered in any detail previous to the ranking procedure were less tangible social and human capitals, and livelihood outcomes, seen to be almost absent in the above section 3.2.

- education levels
- the ability to afford to have women and children not working
- the burden of debt suffered by the household.

Table 3. Additional criteria by which villagers ranked the households studied.

Criteria assumed* to have been used in the ranking procedure but not described in tables 2a-2d	Village where missing criteria were evident after comparing between the households studied
Importance of quality or potential of the land owned (fertility and presence or absence of irrigation facilities) rather than acreage alone.	Shiraguppi
Leased in land considered as well as own land.	Pudakalkatti
Land use (areas under mangoes, guava)	Kelageri
Ability to send children to school/avoid child labour	Mandihal
Levels of education held by adults	Bidnal
Level of independence regarding sources of income (Self employment)	Pudakalkatti
Weight of debts or necessity to lease out land.	Kelageri Inamveerapur
Physical strength or weakness of family rather than just the number working (number who can work : not working).	Dasankoppa Gabbur
Whether or not women have to work, and what kind of work they do (part of family labour force or employed outside)	Kelageri
Value of combination of income sources.	Bidnal

*assumed after examining differences in households case studies

3.3 Estimation of the extent of poverty in the study villages

Table 4. Percentage distribution of households in each socio-economic category.

Village	Total number of households in the village.	Rich		Medium		Poor		Very poor	
		%	No.	%	No.	%	No.	%	No.
Mandihal	190	**8**	16	**40**	76	**28**	53	**24**	45
Kelageri	1013	**9**	91	**26**	263	**28**	284	**37**	375
Pudakalkatti	355	**21**	75	**38**	135	**25**	88	**16**	57
Dasankoppa	31	**18**	5	**33**	12	**36**	10	**13**	4
Old Gabbur	78	**11**	9	**30**	23	**27**	21	**32**	25
Inamveerapur	65	**15**	10	**40**	25	**40**	26	**5**	4
Bidnal	400	**11**	44	**28**	112	**53**	212	**8**	32
Shiraguppi	639	**5**	32	**24**	153	**38**	243	**33**	211

Table 5. Comparison of extent of poverty between villages along transects

	Poorer	Better off	Reasons
Dharwad west transect	Mandihal 12 km from city *15% more in the poor or very poor categories than Kelageri	Kelageri 6 km from city	Cross checking the criteria for ranking with the household studies indicated that the medium to very poor categories in Mandihal were poorer than the same categories in Kelageri, as even the landowners had to supplement income with labouring work (albeit higher skilled than the poorer landless category). In Kelageri even the very poor households send children to school, whereas in Mandihal only the medium and rich households were able to afford this. The difference can be largely attributed to the lower agricultural potential in Mandihal, combined with poorer access to markets and employment alternatives.
Dharwad north	Dasankoppa 6 km from city 9% more in the poor or very poor categories	Pudakalkatti 18 km from city	A small difference perhaps reflected in the small size of Dasankoppa and the poorer provision of transport which could effectively render it effectively "further" from the city than it is, compared to Pudakalkatti, which is on the road and well provided for by regular KSRTC and private buses. Certainly the poor and very poor household studies show a lower diversity of income sources in Dasankoppa where there is a greater reliance upon agricultural labour than in the Pudakalkatti studies.
Hubli south transect	Old Gabbur 6 km from city 14% more in the poor or very poor categories.	Inamveerapur 16 km from city	Old Gabbur is the most neglected village in terms of infrastructure and services, including transport. An attempt was made to relocate the people to New Gabbur, a place less affected by development of the road and the sewage channels (Nallahs) from the city in the 60's; since then there has be no provision of government services until recently. The poor people for example, have not benefited from the housing scheme as they have in all other study villages.
Hubli East transect	Shiraguppi 15 km from city 10% more in the poor or very poor categories	Bidnal 3 km from city	The criteria for ranking were fairly similar and household studies were quite representative of these. Bidnal has the advantage of being closer to the city than any of the other villages studied and the opportunities for poor and very poor to take advantage of markets are greater, and the costs and inconvenience of transport into the city much less. There is an acute agricultural labour problem as a result. Proximity to the market is reflected in the greater percentage of people involved in dairy and vegetable (onions and chilli) production in Bidnal than Shiraguppi, but they also enjoy the "benefits" of the sewage irrigation.

* Data from Mandihal were not considered to be as reliable as that of the other seven villages. After examining the criteria used in the wealth ranking procedures in table 2a, and the figures in table 3 and the data from the household studies, it was thought that the figures would be more comparable if the "poor" of Kelageri were considered equivalent to the medium of Mandihal. Hence for Kelageri there would be 37% in the poor and very poor category and 63% in the wealthier category, and 42% for Mandihal, giving a difference of 15%.

The findings described above indicate that variables such as agricultural potential (soil types, rainfall patterns), and the regular provision of transport and of other government assistance can have a more significant effect on livelihoods and hence

the extent of poverty within communities, than can distance from the urban centres alone.

4. What are the main characteristics of livelihood strategies of the poor and the very poor?

This section addresses research question 2.3 (see Table 1).

4.1 Methods

The main method used to address this question was the household livelihoods survey, which involved a sample of eight households from each of the eight villages, based on selecting two examples from each of the four socio-economic groups determined by the wealth ranking procedure discussed in section 3. One household study was rejected due to a lack of confidence in the results, leaving a total of 63 studies to be considered in the analysis.

Each of the household studies established the composition of the family and their occupations (livelihood activity) if they contributed to the household needs. For each livelihood activity carried out by members of the household, the season or period over which the activity was carried out and where it was located was also sought. After these had been recorded the family were asked to rank the different activities in terms of importance to the overall household livelihood. The team where asked to be sure to include the opinions of the young and of women in this process. As a result, some of the household studies did not have a ranking of importance of activities at household level, but a ranking of importance of activities carried out by each individual according to that individual; some of them only carried out 1 activity, resulting in a list of activities ranked in first place: upon reflection, a matrix preference ranking might have been an easier and more effective tool, but would have taken a great deal more time. Following this process the respondents were asked for the reasons for the order in which they had ranked the activities to determine what were the relative benefits and disbenefits of each.

Limitations

It had also been planned that a village group would be interviewed about the livelihood activities carried out by the villagers, and the rough proportion of households involved in each would be estimated. An example of the results can be found in Appendix B6. Several weaknesses in the data were found;

i) there was a lack of detail on the groups of activities described, where food crops, floriculture, horticulture and plantation had been indiscriminatively included in the term “Agriculture”. It had been assumed that the cropping survey (Annex A) would give this information and that it need not be recorded here (similar problems arose in the recording of the assets of the study households when animal numbers were sometimes not recorded as there had been a livestock survey).

ii) an attempt had been made at ranking the importance of activities carried out within the village for the community in general. The information from this has been summarized in Figure 1 (section 2), but the results could be highly biased towards the respondents’ own priorities rather than that of the village in general, depending on to what extent the group of informants were representative of the village, which was not easily determined or reported in sufficient detail. It would have been better to do this exercise in focus groups for each different socio-economic class, and perhaps even for men, women and youths, but time restricted the possibilities.

Analysis

Summaries of the information from the eight household studies for each village are given in Appendix B2. It should be remembered that the sample is small and from across eight villages which are far from uniform in the livelihood opportunities available. In section 4.2 the data analysis gives a general picture of the livelihood characteristics of the poor and very poor from across the areas of study, contrasting with the wealthier groups and showing any interdependencies.

In section 4.3 the analysis concentrates on i) looking at the changes in assets and livelihoods strategies of the study families and the factors causing (directly or indirectly) those changes and on ii) comparing between the villages to detect differences due to distance from the cities or other factors.

4.2 Livelihood activities of different socio-economic groups.

Table 6 shows the range of livelihood activities carried out by the different groups and the importance of them in terms of the number of people involved from the 63 households studied.

Table 6 Livelihood activities carried out within the households studied across all eight villages, showing the number of family workers involved, by socio-economic group.

Type of Activity	Rich		Medium		Poor		Very Poor	
	No.	%	No.	%	No.	%	No.	%
Agricultural Production	72	**72**	56	**60**	12	**17**		
Dairy	19	**19**	23	**24**	5	**7**	1	**2**
Brick Production (ownership of kilns)	2	**2**	1	**1**				
Auxiliary agricultural enterprise	3	**3**						
Profession	3	**3**	1	**1**				
Driving	1	**1**	1	**1**	1	**1**		
Business			1	**1**	1	**1**	1	**2**
Artisan			1	**1**	5	**7**	2	**5**
Small livestock (sheep, goats, chickens)							2	**5**
Related to religious festivals or duty					2	**3**	1	**2**
Fuel wood trading					1	**1**	3	**7**
Fruit or milk trading (middlemen not producers)	1	**1**			2	**3**		
Gov. service job							2	**5**
Commercial labour			1	**1**	3	**4**	8	**19**
Construction labour			1	**1**	5	**7**	5	**12**
Brick/Quarry labour			2	**2**	9	**13**	1	**2**
Agricultural labour			6	**6**	25	**35**	17	**39**
Total Number of family workers	101	**100**	94	**99**	71	**99**	43	**100**
Number of households		16		15*		16		16

*one household study was rejected due to lack of clarity, probably a problem of poor recording in the field.

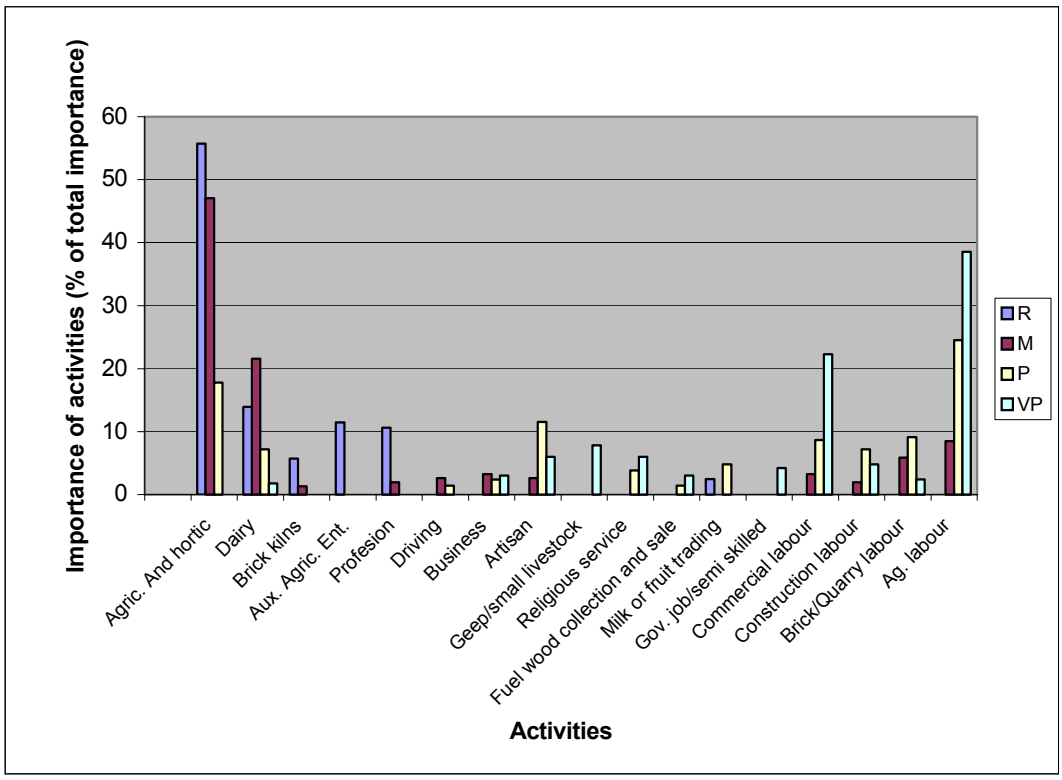
Although table 6 shows the way in which the people of households in the different groups are occupied it does not indicate the importance of the different activities

according to their contribution (financial or other value or kind of benefit) to the household.

In order to make an adjustment to account for this, for each socio-economic group, a calculation was carried out to incorporate the number of households involved in an activity and a weighting according to the level of importance that each household gave to it in the form of a rank order. This calculation is explained in Appendix B6, with an example. The results have been presented in the bar chart in figure 2.

Comparing between the table above and the graph, there is actually little difference in the pattern displayed. However, it can be seen from the column for the very poor in table 6 that activities related to religion involve fewer people than for brick or quarry labour, but as they were given a high rank by the families involved, they are represented in figure 2 as being of greater importance.

Figure 2 Importance of type of activity to the livelihood strategies of the different socio-economic groups.



The list of activities has been put approximately in decreasing order of resources and skills required to undertake the activity, and the effect of this is a clearly demonstrated division between the wealthier and the poorer groups. There is also an obvious overlap in the medium and poor groups that reflect the varying perceptions of wealth between villages.

Some indication of the different degree of diversity of livelihood activities amongst the groups can be seen from the data, with a considerable emphasis of the wealthier families of the rich group resting on a few types of activity; agricultural production, followed with more or less equal importance given to dairy production, professional occupations and enterprises linked to agricultural activities such as tractor hire business or flour mills or land based activities such as brick production (mostly in 1 village only).

For medium families there is a similar pattern with less importance attributed to agriculture and more to dairy. There is a greater range of activities in these families with more involved in the less skilled or less highly resource dependent ones such as driving, petty business and artisans, and even labouring work. It should be mentioned that the data from one of the villages (Mandihal) has resulted in a higher importance given to quarry and agricultural labouring jobs than would have been expected for this category and one medium family in Inamveerapur account for the representation of the medium class in construction and commercial labour.

The spread amongst the different activity types of the poor and very poor families is broader and more even than with the wealthier groups, with a greater emphasis on agriculture, dairy and artisanal activities and fresh produce trade in the poor than for the very poor, where the higher peaks show the importance of the lower paid agriculture and commercial labouring jobs. There are more poor people involved in activities with greater independence and higher pay, such as dairy, agriculture, trading and artisans than in the very poor group. Interestingly, the very poor have fewer (2%) workers involved in the better paid brick and quarry labouring activities than the poor, even though there appear to be enough opportunities in these activities to employ more people. As discussed in the previous section, the poorest tend to have a larger proportion of family members who are unable to carry out the more arduous labouring work, some even having health problems as a result of having carried out quarry work in the past. A larger number of the very poor were widows (or women with disabled husbands) as the main bread earners.

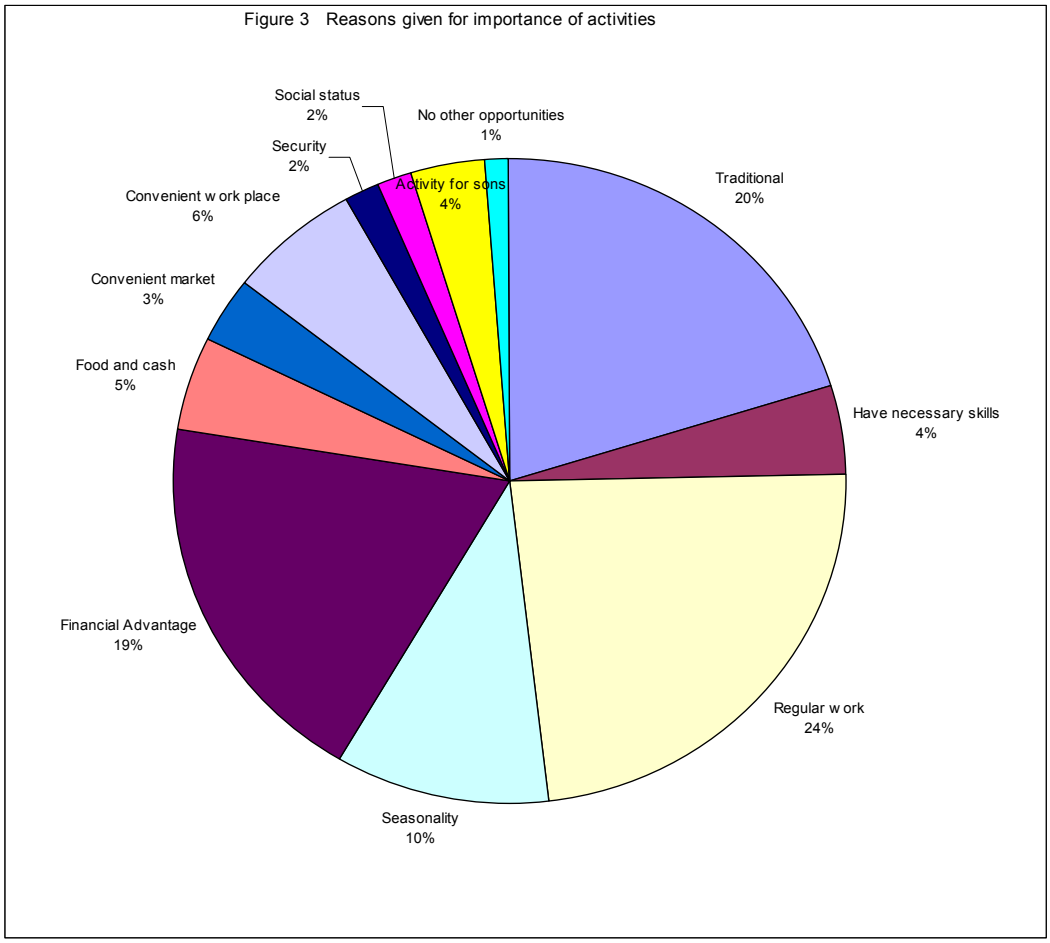
4.3 Factors influencing importance of an activity to household livelihood strategies.

As the families ranked the various activities carried out within their households, they were asked to explain the relative advantages and the importance attributed to each. The frequency with which each response was given has been indicated in the pie chart, figure 3, and the bar chart in figure 4 compares reasons given for the different activities.

Regularity of work appears to be the single most frequently reported reason (24%) for the importance of activities by the study families, with another 10% of the reasons linked to the seasonal compatibility of various activities. Activities that keep someone employed for the best part of the year are usually favoured over those limited to shorter periods/seasons. One clear example of this is found in the case of one of the poorest families of Shiraguppi, where the husband has blacksmith and plumbing skills, but ranked the blacksmith activity higher than the plumbing as the latter is season bound (from June to October).

Tradition accounted for 20% of the responses in determining the importance of activities to a family. To what extent this response is linked to holding of land is indicated by the fact that it accounted for 26% of the reasons for importance of agricultural labour ie. it was not just a response given for the importance of agricultural production from one's own land. It also accounted for 33% of reasons for importance of artisanal trades linked to another 4% of reasons related to "having the skills", which in the majority of cases (with the exception of brick making or quarry skills) are passed down through the family (professions such as law, or craft trades such as blacksmithing and carpentry).

Figure 3 Reasons given for importance of activities



19 % of reasons given were related to the **financial** advantages gained through the activities (higher pay rates or profit levels), with another 5% indicating the importance of payment in kind (for religious services, agricultural labour and child care workers) or the extra benefits from by products (fodder, fuel) or supplies for the family (milk, grains and pulses). Financial advantage was the reason for importance of the brick production, fruit and milk trading, petty (grocery) business, driving, dairy production and construction and brick and quarry labour. The following list represents the order in terms of size of reward for the different activities, as found in the study responses. Also related to this category would be the “convenient market or market opportunity” that explained the importance of an activity, particularly for dairy (milk and curd sales) and agriculture (vegetables and horticulture) products. Clearly the ease with which a market is accessed affects the profitability of a product, but it is not always related to proximity of the city, as adequate markets are sometimes found within the village.

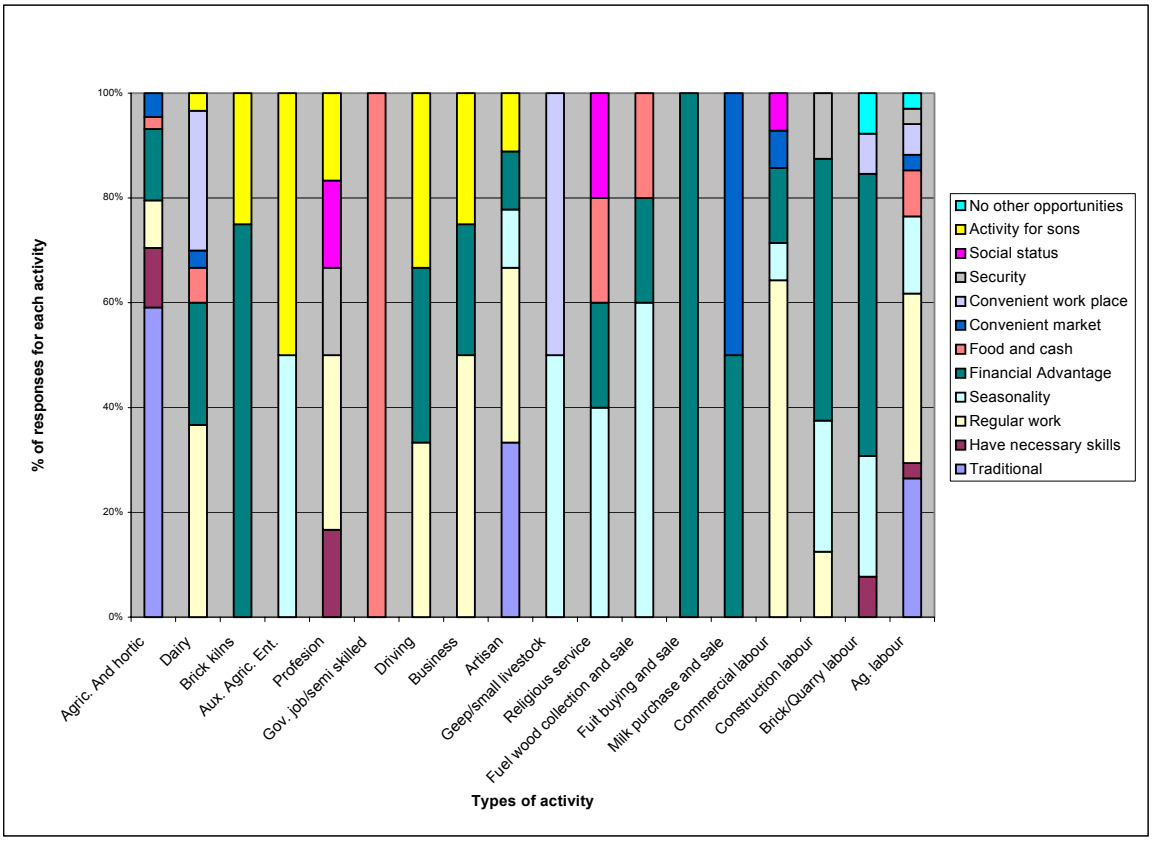
Table 7. Some information from case studies relating to the earnings from various activities carried out by the poor and very poor.

Activity	Men	Women
Brick / quarry labour	Rs100/ day	Rs60/day
Construction Labour	Rs80/day	Rs60/day
Commercial labour	200/week (shop labour) or piecework (*/load)for coolies (loading and unloading) that could amount to150-200 on a good day. 1000/month for employment such as watchman or 1555/month for KEB worker.	NA
Fuel wood trade		Rs40/daybundle
Milk trade	Rs50/day (profit)	NA
Agric labour	Rs50/day (very variable but not more than 70)	Rs25-30/day
Religious devotions		Enough food from 14 houses for 2 people for 1 week.
Religious music/ Festivals	Rs2-3000/year	

An interesting consideration in the mind of the informants while ranking the activities was **the necessity to occupy working members of the family**. In the wealthier groups where many were “joint” families, this had a lot to do with the number of sons and brothers that needed their own responsibilities and opportunity to make their own contributions; hence 4% of reasons for importance of different activities were related to “finding or giving the sons an activity”. This included brick production, auxiliary agricultural enterprises such as tractor hire, driving lorries and running a flour mill, grazing cows and selling the milk, and professional activities (law, politics, teaching) and even running a provisions store and training to be a tiler.

Also there are cultural limitations on what the women of wealthier families can do, as it is considered socially degrading for women members to have to work outside of the family enterprises, but also difficult for them to work any distance away from the home because of their domestic duties. For this reason one of the more significant benefits of dairy (27% of reasons) was the **convenience of the work place**. This was also a significant benefit of sheep rearing (50% of reasons), brick and quarry labour and agricultural labour, which are available within the villages.

Figure 4 . Reasons for level of importance attributed to the different types of activities



4.4 Diversity of household livelihood strategies and divisions of labour within families.

In the discussion in section 4.2 and 4.3 there has been some mention of the "diversity" of livelihood activities within the households. Looking at figure 2 we can see how many more types of activity involve the three less wealthy categories than the wealthiest (6, 11,13 and 12 respectively) but this does not indicate diversity within the households, merely within that socio-economic category. Looking at the studies per socio-economic group in each village, it is clear that the number of activities per household doesn't give a valid impression of diversity either, as the working number of people per household and the division of these (or spread) amongst the number of activities carried out within the household strategy is not taken into account, thereby misrepresenting the real meaning of diversity within the household. In order to be able to consider all of the necessary factors using the data available, an index of diversity known as "The Shannon Weiner Index" has been calculated (see workings and formula in Appendix B7). The results of this consist of four comparative figures, the lower of which represent lower levels of diversity.

The method uses all of the relevant information available, and indicates the fact that the poor and to a slightly lesser extent the poorest groups show a greater degree of diversity than the wealthier groups, and in the same way the medium families show greater diversity than the rich.

Table 8. Comparing diversity of livelihoods between socio-economic groups.

Socio-economic class	Shannon Weiner (SW) Index representing degree of diversity amongst household livelihood strategies.
Rich	0.93
Medium	1.25
Poor	2.02
Very Poor	1.90

One significant draw back in these data for looking at this issue is that the diversity of crops grouped within the term "Agriculture" is not taken into account, as this information was not available from the household studies. Also the different tasks within the dairy enterprise, including grazing, fodder collection, milking, production of curds and milk selling that can occupy different members have not been considered. However in the case of dairy related activities, they all depend on the same resources and market, but in the case of agriculture the different crops use resources in different ways and depend on different markets thereby representing different sources of livelihoods. Grouping them together under the term Agriculture for this analysis is therefore not allowing for the full level of diversity of livelihoods that exists amongst those depending on "Agriculture".

Four factors seem to have influenced levels of diversity in the livelihoods strategies of the study families:

i) Number in the family and the need to occupy all of the working members:

This is more common in the larger rich and medium families, particularly the larger land holders and "joint" families, where the brothers stay together with their wives and children in the family homestead: In Inamveerapur the first rich family studied had 18 working members in the family. A total number of 25 –30 members is not uncommon. This means that there are a far greater number of people dependent on fewer or more specialised activities (although the resources and revenues are greater), which is reflected in a SW index for the rich and medium categories.

However, as the capacity of the agricultural activities to absorb the family labour is reached, alternatives are sought for sons, and the range of livelihood activities within the joint family becomes more diverse. There are examples of this in the study sample, where due to declining availability of casual labour, cropping has been replaced by the less labour intensive production of fruit trees; e.g. Kelegeri 2nd household study; one family with 25 acres now employs only the head of the family, while the three sons are teaching, running the brick kiln, or in the army. In Shiraguppi the 3rd household study (medium class), shows that there are already five men and two women available to work on the 40 acre farm, so the son has chosen to take up an alternative trade which is new to the family (tiling) and based on the expanding construction industry (and which might even represent loss of social status).

ii) Need to supplement income in addition to the one main regular activity

Poor or medium families with small land holdings may need to supplement their income from their farms with additional activities. For example in Shiraguppi both families 5 and 6 do agricultural labour in addition to working

their own small holdings, and family 5 has a general store and family 6 sells bangles during festivals for extra cash. There are nine such examples, five of which are poor, one very poor and three medium families.

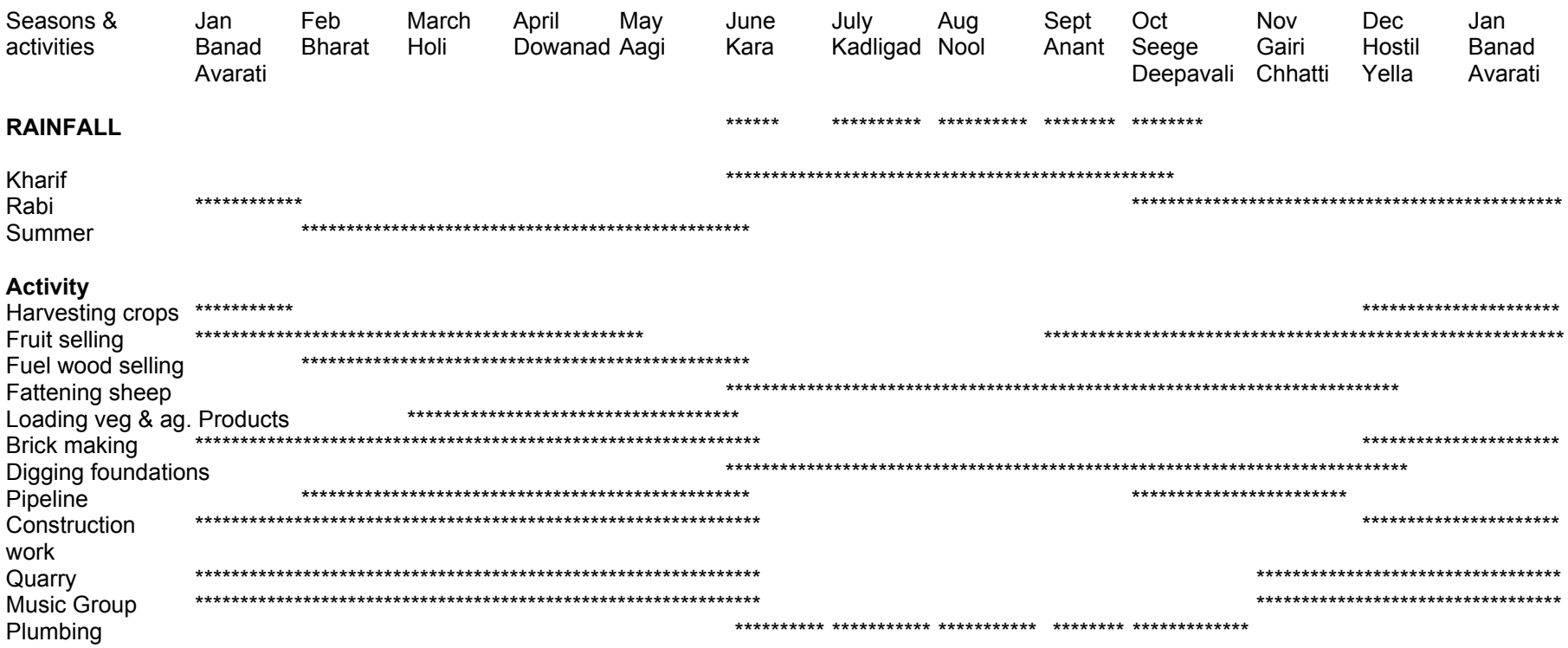
iii) Need to find a series of seasonal activities to provide work throughout the year.

Figure 5 shows the duration of the three main climatic seasons and the periods over which different seasonally affected activities are carried out, according to information from a seasonal calendar drawn up in the village of Kelageri, and supplemented with details from the family studies. In Mandihal people prefer stone quarry work because it is better paid, but they do agricultural labour in the Kharif season when quarry work is not available. A good example of how families use different activities to provide them with an income year round was found in Kelageri, where one man of family 6 (poor), was involved in brick making from December to June, then Kharif season agricultural labour from June to October followed by installation of a pipeline in Dharwad from October to November. The second man did the same except he preferred to work as a coolie (unskilled labourer) in Dharwad (loading and unloading trucks) in the months of June to October. Eleven of the family studies show examples of this kind of seasonal diversity in livelihoods activities; three from the very poor, seven from the poor category and one from the medium category.

iv) Capacity to work amongst family members.

The aged, widows, wives of disabled and fathers of young families have fewer opportunities to have a diversity of livelihood activities, and such families represent 50% of the poorest group in the sample (8 in 16). Women are reluctant or unable to venture far from the home in order to find opportunities, particularly if they have young children to care for by themselves (for example study 8 in Mandihal and 7 in Shiraguppi), or are alone without family (study 8 in Dasankoppa). The aged might find lighter activities such as sheep grazing (study 7 in Pudakalkatti) to supplement their incomes, but are otherwise dependent on Agricultural labour, close to the home, or upon the income of sons (for example study 8 in Bidnal). One exception is study 8 in Gabbur, where an aged couple, the husband being disabled, depend upon payments in kind for the wife's religious devotions. Even a man with a young wife and babies might find it difficult to venture farther from home (study 8 in Shiraguppi) to look for better opportunities. These factors have contributed to a lower level of diversity in the poorest group than in the poor group.

Figure 5. Seasonality of different livelihood activities carried out by households the peri-urban area of Hubli- Dharwad.



5. How does change in the PUI affect livelihood strategies and options?

5.1 What peri-urban effects on livelihoods can be determined by comparing the livelihoods activities between villages close to the cities and those further away?

In the same way that a comparison was made between the importance of livelihoods activities of different socio-economic groups in section 4.2 (figure 2), the four villages further (12-18 km) from city have been compared with the four that are nearer (3-6 km from city) using the two pie charts in figure 6 and 7.

Figure 6. Importance attributed to different activities amongst households from villages closer to the city

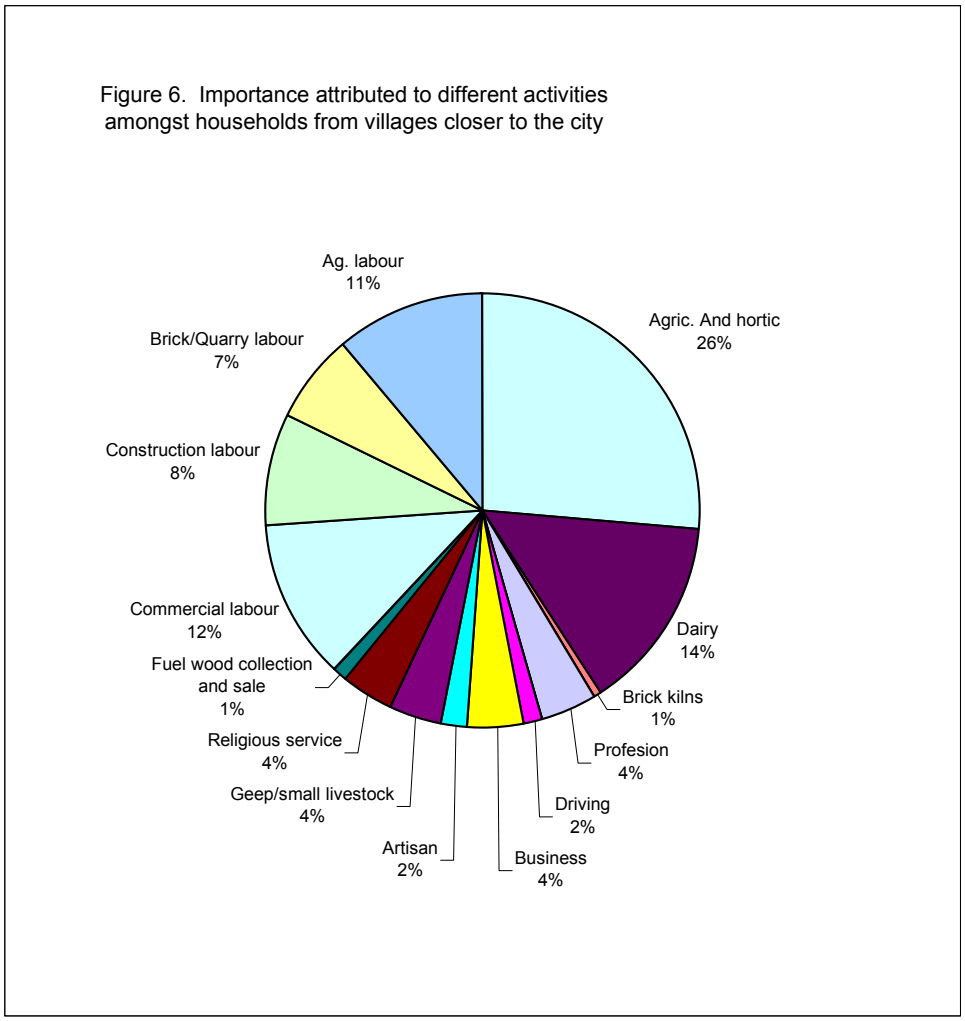
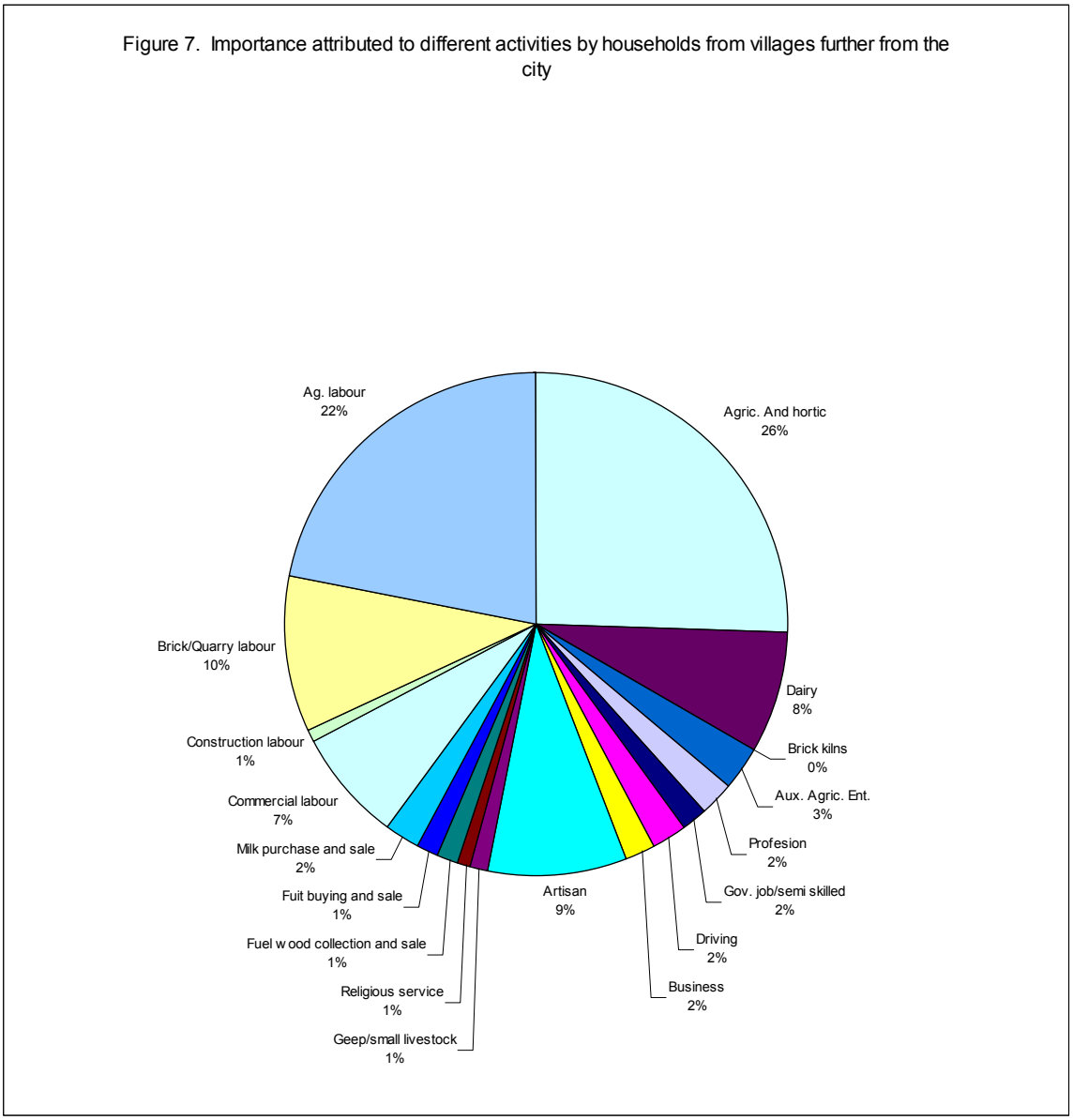


Figure 7 Importance attributed to different activities amongst households from villages closer to the city



Agriculture has equal importance in both the nearer and further villages, although the data do not distinguish between the types of cropping. Agricultural labour however, was found to be more important to those living further from the cities, as were the brick and quarry labour. The availability of construction and commercial employment opportunities have given the poorer people of the nearer villages alternatives, which is also demonstrated in the difference in the importance attributed to this type of activity in the near (20%) and further (8%) villages.

In the further villages there is a greater level of importance placed on trades that may have more limited markets in villages nearer to the city due to competition or easy access of the consumers or producers in those villages to the city markets. For example, “auxiliary agricultural enterprises” include the flour and dehusking mill run from one of the larger farms, where the owner explained that there was no other mill for

10 km. The same is true of the importance of the artisanal trades in the further villages. The trade in milk products may be more important in further villages where owners of dairy animals can not so easily sell their own produce to the city market, and there is therefore a greater reliance on the middle man**.** However, where there is a Karnataka Milk Federation co-operative society, farmers have the convenience and choice of being able to sell their milk through an alternative channel. Of the eight villages, three have such a facility, Shiraguppi, Pudakalkatti and Kelageri.

The proximity to the market is probably also the reason for greater importance (6%) of the dairy production in the nearer villages, as milk can be sold direct, avoiding the cut of the middleman and the transport is easier. This is not to say that milk vendors do not operate in the near villages, merely that there is a greater probability that families will sell their own milk if they have sufficient family labour to do so**.** This information should be considered in respect to the costs of fodder and availability of grazing. From livestock survey data wealthier households have their own grazing fodder and feed sources from their own land, but for the smaller land holders or those with no land, it is costly to meet these requirements. However, fewer poorer families have milk animals in the further villages according to the household studies and the market survey data. It is difficult to see how the poorer families involved in dairy, who can not rely on their own land for grazing and dry fodder and must therefore purchase it, make a living out of the activity, given the figures in the livestock survey (Annex A).

To determine if there was any difference between nearer and further villages diversities of household livelihood strategies were compared between socio-economic groups (Table 9).

Table 9 Comparing diversity of household livelihood strategies between the near and far study villages.

Proximity to cities.	**Shannon Weiner (SW) Index representing degree of diversity amongst household livelihood strategies.**
Nearer villages	1.7
Further villages	1.8

Unlike the results of the comparison presented in table 8, there is no obvious difference attributable to proximity to Hubli-Dharwad. This indicates that socio-economic class has a greater influence on livelihood diversity than does proximity of households to the cities.

5.2 How have livelihood strategies in the eight study villages changed over the past 30 years and what are the main causes of change?

This section addresses research question 2.5 (see Table 1).

5.2.1. Data collection and analysis.

In the household interviews people were asked to describe how their assets and livelihood strategies had changed since they became a family/started working, and why these changes were made. A summary of the results of what the changes were by village can be found in table 10, for the poorer groups and table 15 for the wealthier groups, and the reasons for change are discussed with the help of flow charts (figures 8 and 9 on pages B33 and B40 respectively) summarising the typical choices made by members of the study families.

5.2.2. Changes to livelihood strategies reported by the poor and very poor households.

Table 10. Changes in livelihoods activities and assets reported by 32 poor and very poor households:

New/ additional livelihood activities adopted by poor/very poor.	**Village**								No. of changes	% of total number of changes
	K	**M**	**D**	**P**	**G**	**In**	**B**	**Sh**		
Bricks/Quarry	2	2			1	1			6	**12.5**
Commercial Labour	1			2	2		2		7	**15**
Construction labour	4		1			1	1	1	8	**17**
Business/vending			1			2	2	2	7	**15**
Artisan	1	1		1	1				4	**8**
Sheep/goats/poultry	1		1	1	1				4	**812**
Dairy	1		1	1	2		1		6	**12.5**
Agric. on own or leased land.			1	1					2	**4**
No work, dependent		1			1				2	**4**
Agricultural labour after leasing out own land			1	1					2	**4**
Total per village (4 families)	10	4	6	7	8	4	6	3	48	**100%**

Changes in assets*[1] poor/very poor	**K**	**M**	**D**	**P**	**G**	**In**	**B**	**Sh**	**Total**
Leasing in land				1					**1**
Obtained land (gov. grant)			1						**1**
Leasing out land			1	1					**2**
Sold land							1		**1**

Changes in assets*[1] Some families had purchased small implements, livestock or made repairs to or bought / been given houses this information was not clear or consistant in detail. Change in land holdings has been included for comparison with wealthier families.

When comparing the number of changes reported in the near villages (totalling 30) with the further villages (totalling 18), it seems that there has been a greater tendency to change or add activities in the household livelihood strategy in the nearer villages. Looking at the differences by transect, the data from nearer villages in each transect show at least twice as many changes except for Pudakalkatti and Dasankoppa. As mentioned in section 3, Dasankoppa is peculiar in that it is small and poorly served by transport facilities, whereas Pudakalkatti, much further from the city, is well served by both state and private transport services.

Table 11 Comparing the number of changes in livelihood activities amongst poor and very poor between nearer and further villages.

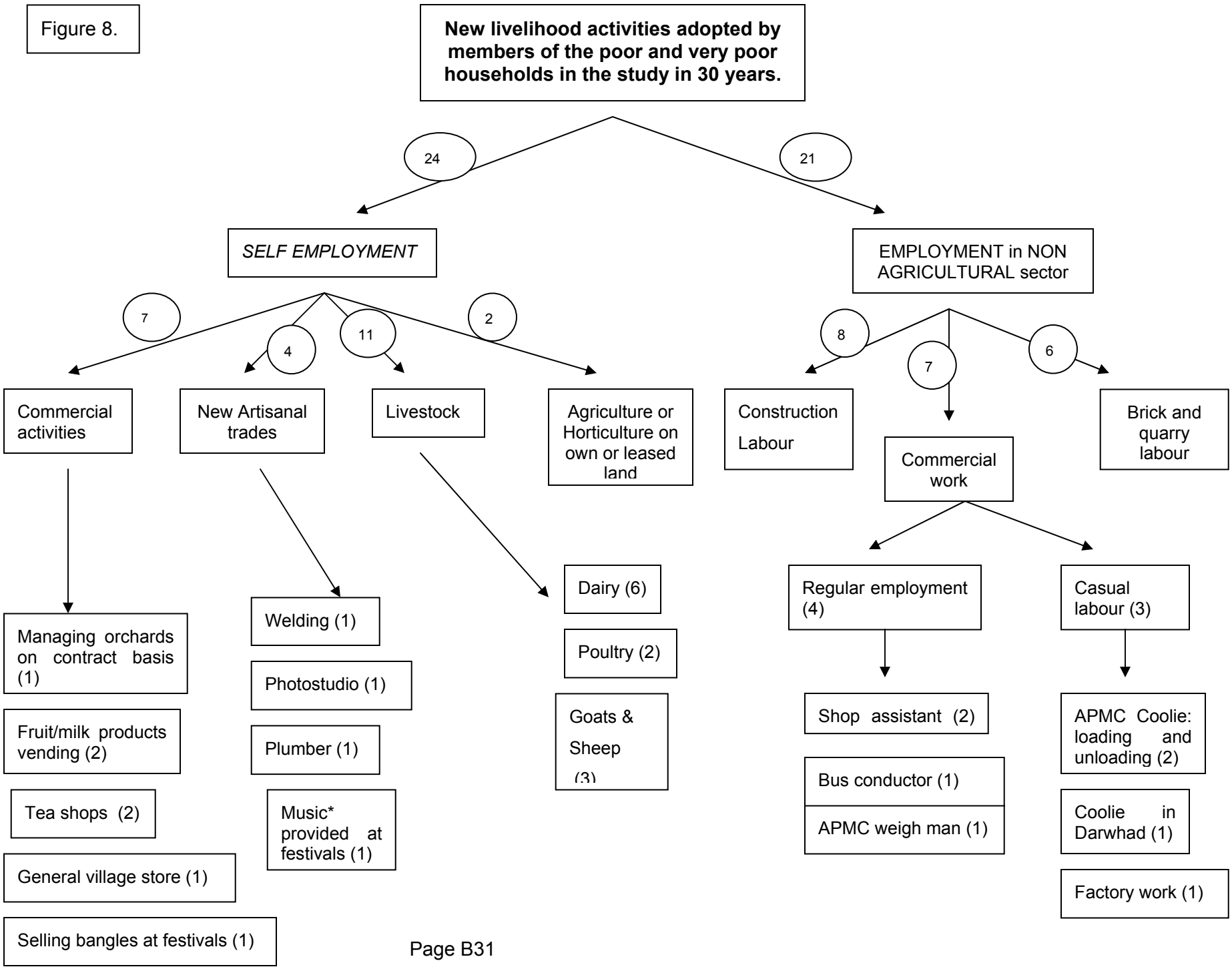
Nearer villages	Kelageri	Dasankoppa	Gabbur	Bidnal	**Total**
	10	6	8	6	30
Further villages	Mandihal	Pudakalkatti	Inamveerapur	Shiraguppi	**Total**
	4	7	4	3	18

The reasons given for changing livelihood activities within households over the years reflect to a large extent the changes in family circumstances (e.g., aging, death of family members, joint families dividing, sons becoming old enough to work) and the reasons for preference for different activities already discussed above. Figure 8 shows the options that members of the poor and very poor study families have taken up over the years. Many have adopted the “non agricultural” employment opportunities that pay higher wages than agricultural labour, while others have found opportunities where they can earn a living or contribute to it, from independent activities (self employment). The numbers in the diagram represent the number of individuals following each path, not the number of households. The total number is 45, compared to the 48 in table 10, above. The difference is due to the fact that changes such as resorting to agricultural labour after leasing out own land, or complete dependency on remittances after illness, have not been included as “options”, and 3 of the 48 reported in table 11 above represent such changes.

Ellis (1999) reported that, ‘Diversification contributes positively to livelihood sustainability because it reduces proneness to stress and shocks", which from a policy perspective indicates the importance of developing an enabling environment for diversification through appropriate policy and service provision, thus facilitating the poor to gain access to increased opportunities.

Data collected by this project highlight the importance of non-farm incomes and the diversity of incomes in the household livelihoods strategy.

Figure 8.


New livelihood activities adopted by members of the poor and very poor households in the study in 30 years.
24
21
SELF EMPLOYMENT
EMPLOYMENT in NON AGRICULTURAL sector
7
4
11
2
8
7
6
Commercial activities
New Artisanal trades
Livestock
Agriculture or Horticulture on own or leased land
Construction Labour
Commercial work
Brick and quarry labour
Managing orchards on contract basis (1)
Fruit/milk products vending (2)
Tea shops (2)
General village store (1)
Selling bangles at festivals (1)
Welding (1)
Photostudio (1)
Plumber (1)
Music* provided at festivals (1)
Dairy (6)
Poultry (2)
Goats & Sheep (3)
Regular employment (4)
Casual labour (3)
Shop assistant (2)
Bus conductor (1)
APMC weigh man (1)
APMC Coolie: loading and unloading (2)
Coolie in Darwhad (1)
Factory work (1)

The following sections describe in more detail evidence of the affects of the expanding construction industry and changes in markets for land, labour, products and skills, on livelihood strategies

Brick kilns.

Brick production is carried out on the less productive red soils that are more dominant in the south and south westerly transects from Dharwad (Kelageri and Mandihal) and Hubli (Gabbur and Inamveerapur). It is particularly prevalent in one of the study villages, Kelageri, where its expansion over the years was described (Table 12) by two brick kiln owners and recorded in the table 12 as a timeline.

Table 12. Time line describing expansion of brick kilns in Kelageri.

Period	Event	Impact
1964	Building contractors from Darwhad city trained the farmers in brick production	The first kilns were initiated in the village
1969	Fuel wood became costly and not available for firing the bricks	Started using coal.
1970	Building construction increased in Dharwad city, due to expansion of the area under the city development programme	Demand for bricks increased steadily. Number of brick kiln units expanded.
1975	Labour began to migrate to the city for work on construction sites	Agriculture began to suffer from decreasing availability of labour.
1986	A total of 20 brick kilns had been established by this year.	Shortage of top-soil now felt by kiln owners.
1990	Price of bricks fixed	
1998	Locally farmers no longer prepared to sell as they are aware of value of top-soil and cost per 1 or 2 foot of soil rose and became increasingly unavailable.	20-30 km must be traveled to obtain soil for kilns by leasing land from were it can be removed. Area must be leveled by brick-makers before farmer reestablishes paddy.
2000	Cost of coal increased Cost of labour increased Costs for collecting soil has increased	Price of bricks has not increased, unless sold to some one who does not buy regularly.

One of the strengths of the activity to the poor and very poor are that it provides labour for both men *and* women, it is located in the village and is available during the "off" season. Permanent contracts of work for reasonable rates are negotiated with the labourers. There may then be an advantage of employing some of the same as agricultural labourers in the rainy season, i.e., the brick kilns help land owners to keep labour in the village.

Stone quarrying

In a similar way to the brick kilns above, the number of quarries in the study village of Mandihal increased with the expansion of the area under the city development programme from 1975. Since then it has become one of the main sources of employment alternatives to agricultural labour in Mandihal, just 6 km further along the road from Kelageri. Quarry labour has similar advantages to brick making in that it is close to the village, and men, women and children are employed and it is done outside of the main agricultural season, so that it is complimentary with agricultural work (Table 13).

Table 13. Development of the stone quarries in Mandihal.

Time line	Quarry development	Comments	Changing daily rates of pay for labour
1964	First stone quarry established.	Men were getting higher wages because they did the heavier work like stone breaking and lifting the stone from the quarry. Women were getting lower wages because they were involved in light work like lifting of stone powder and crushed stone near stone crushing machine.	Man – Rs 3. Woman – Rs 0.75.
1972	2nd stone quarry		Man-Rs 5 Woman-Rs 2
1975	3rd stone quarry	There was heavy demand from building construction work and roads. During "off" season men and women became increasingly occupied as a labour in quarry work.	Man-Rs 5 Woman-Rs 3
1980 1985 1987	8 12 18	Due to heavy demand for the stone, business people from Dharwad and Hubli started to procure licences from Mines and Geology Dept. to start quarry businesses in Mandihal.	Man Rs 12 Woman - Rs 8 Man – Rs 20 Woman - Rs 15 Wages remained the same
1995 – 2000 2000		Labour demanded higher wages Due to Labour Act the wages were revised. Now all quarries are rented.	Wages remained the same Man -50 Rs./ day Woman Rs -25./ day

However it is not as highly paid as jobs in the city and the stone dust can have a serious negative affect on health. One of the families involved in this combination of work since the 1980's (5th family study Mandihal) have continued because they "have

no choice", and another (4th family study, Mandihal) stopped quarry work and returned to agriculture labour alone due to problems of ill health.

Loss of land due to development.

Within the 63 study families only two were found to have sold land for development of housing and infrastructure, and both were directed to do so by the HDMC. One was a wealthier land owner of 20 acres in Gabbur (study 2) who sold 1 acre for road development, and the other a poor farmer in Bidnal (study 6) of only 4 acres, who sold all of his land for housing development in 1980. The latter referred to the high price received but the family is now dependent on labouring in agriculture and construction work, and on the distribution of leaves and flowers, a religious duty of the family for which they receive food (grain and flour).

Changes in labour market

The move of labour towards the construction industry and to a lesser extent, other, commercial alternatives, has resulted in an insufficiency in labour for the traditional agricultural crops, particularly during peak periods.

In some cases those still interested in agricultural labour have organized themselves into work groups and as such are able to negotiate rates of pay for complete jobs to be carried out; in much the same way as construction and brick making labour is organized. In Pudakalkatti there are about 10 groups like this, and in each group 10-20 members, one of whom is the leader. The rate of pay depends on the task, the type of crop, and the area to be covered. The leader will negotiate and take the workers to the fields. The group will work in neighbouring villages as well as their own, and can work much faster in a team. There is plenty of work available and they have been able to negotiate much higher rates (Rs50/day compared to Rs 20-25 stated in other villages). Table 14 shows some examples of rates negotiated per acre for weeding and harvesting of different crops.

Table14 . Rates negotiated for agricultural labour by groups in Pudakalkatti.

Crop	Work	Rate/acre	Members
Groundnut	Harvesting	Rs 250	5
Sorghum	Harvesting	50 Kg grain	8 men 6 women
Potato	Harvesting& Packing	Rs 500	5 men 10 women
Wheat	Harvesting	50 Kg grain	8 men, 6 women
Chickpea	Harvesting	50 Kg grain	6 men, 4 women
Rabi Sorghum	Harvesting	50 Kg grain	6 men 8 women
Greengram	Harvesting	Rs 400	6 men, 6 female
Groundnut	Weeding	Rs 300	10 women
Sorghum	Weeding	Rs 300	10 women

Adapting to change in markets

In Pudakalkatti carpenters and blacksmiths have noticed a decline in the demand for their trade in the villages that is associated with the decline in agricultural labour and mechanization of agriculture and two have found independent means to supplement incomes.

Study family 5 explained that between 1965 and 1975 the business of blacksmithing increased with farm production, but since that period there has been a reduction. Wages used to be in cash and in food grains, but now the latter has reduced. In order to adapt to this, his son acquired welding skills, and they were able to add welding to their range of services in 1995 after the purchase of a welding machine. For this, a loan of Rs 40,000 was obtained from the bank and they have managed to repay 80% of this with profits. The first son is continuing with the traditional service of blacksmithing and the third son has started driving tractor for one of the wealthier families.

Another carpenter (Pudakalkatti study family 6) in the same village took a subsidized loan from the BDO office (Taluka Panchayat) to buy carpentry implements and had work restoring an old house from which he repaid the loan. In order to supplement income from carpentry he started dairy production (4 cows) in 1990 and then in 1995 started leasing land in order to produce food for the family and fodder. In the future he wishes to continue with these activities, leasing land according to his capacity each year. Expansion of dairy is not possible as there is not enough room to house the animals, but there is a market for milk in the village. He believes he will find more work as there is a better market for carpentry skills in the city compared to the village, due to increasing construction of houses, but also there will be more competition.

One interesting example of recognizing and taking up a new opportunity presented by the urban market is the musicians group that has started to charge for playing at different festivals throughout the year. They used to just play at festivals within the village for no charge, as was traditional. However, as they realised that there was increasing demand for their music outside the village and in the city they started to play for outsiders and to charge. There are eight members in the group, and for the family studied (family 7, Kelageri) it was the most important part of their livelihood strategy.

Youths looking for better alternatives.

Both family 7 in Mandihal and family 6 in Gabbur have sons who had managed to acquire new skills that would have a market in the town; photography and development (photo studio) and plumbing respectively. Both would like to open their own independent businesses depending on the city market, but at present do not have finance and the latter lacks the social contacts and confidence to get his own contracts. Another youth, son of a very poor blacksmith family (8) in Shiraguppi is studying in Dharwad to be a dental nurse (as a student he receives only Rs 200 month).

Opportunities for agricultural production: buying or leasing in land.

One example of a poor landless family leasing land to start production of their own has already been given above (the carpenter in Pudakalkatti). Another family in Dasankoppa (family 5) was allotted 2 acres by the government in 1985 and they left agricultural labouring to work their own land. As land is available for purchase in the area, both of the poor families interviewed in this village (families 5 and 6) intend to expand their land area.

One of the families interviewed in Gabbur (family 3) was landless but managed to lease land in 1980 and left agricultural labour to work in their own land, producing vegetables, and in 1985 they were able to purchase dairy animals. Previously, as agricultural labourers, this family would have been categorised as poor. A similar example was found in Inamveerapur, where a family categorized as “medium” class, was formerly landless, but started working on land under a share cropping arrangement in 1970 on 5 acres. He then started leasing 4 acres of land in1980, and

when it became available bought it in 1985 and now is leasing an additional six more acres.

Opportunities for dairy production and other livestock

In Gabbur, one of the poor families (family 5) was able to leave agricultural labour in 1985 and start dairy production and direct selling of milk to customers in Hubli, for the benefits of independence and for the higher income. Over the years he has been able to buy items for the house including a television. He intends to try to increase his herd (now three buffalo and two cows), but is threatened by the cost of feed and forage. In Bidnal one small land owner (5 acres) bought six buffalo in 1999 and is selling milk to a hotel nearby, and in Kelageri family 7 purchased two cows in 1998 (from profits of music group).

Two other poor families in Gabbur acquired cows but one (family 8) sold theirs two years later, as they could not manage the grazing (age), and the other (family 6) do not own the cow but care for it on the basis that the milk is shared between themselves and the owners. In Dasankoppa family 7 started dairy production in 1976 but changed from dairy to goat rearing in 1996 as it was easier to manage them. Another family in Shiraguppi kept sheep between 1980 and 1985 but sold them when they couldn't manage them as well as agricultural labour and grazing had become difficult.

Rearing of goats on a "share basis" was an opportunity taken up by study family 7 in Pudakalkatti. The goats are bought before the rainy season each year and fattened up and sold before the availability of green fodder becomes a problem in the dry season. Another two very poor families in Dasankoppa and Gabbur also started goats/sheep rearing, as it has the advantage of being easier than agriculture for older men, and it is easier to find grazing.

Small scale egg production is also maintained by a couple of the poor families interviewed, one (Kelegeri study family 5) having bought 20-30 birds in 1996, but the number was reduced due to difficulties with maintaining the birds, and at present there are only 5 remaining.

Commerce: self employment and employment

Half of the commercial activities established by the study families depend not on the city but on the local village market, including the teashops, general store and selling of bangles. Those depending mostly on the Dharwad market are the vendors of fruit and milk products. The family that started the vending of milk (Dasankoppa, family 6) in 1986 managed both this and agricultural production on 1 acre until 1995, when both activities became too much and they decided to limit themselves to crop production.

The other vendor of fruit and milk products (family 5) started out as a labourer in agriculture and then in 1985 began taking orchards (mango and guava) on contract basis. The orchard owner negotiates a fee with the contractor to take on all of the operations of the orchard, in return for the harvest and sale value of the fruit. This puts the risk into the hands of the contractor, but prevents him from losing the opportunity of taking the harvest through competition nearer the time. This particular family suffered serious losses in 1995 when there was a glut of fruit and market prices dropped. Since then they have returned to agricultural labour and petty trading of milk and fruit. They have recovered their losses and hope to return to the same activity of contracting orchards as it has been profitable and they have the skills necessary. There are also plenty of orchards, but their capacity to bear the risk is not the same as it was and the prices of fruit still fluctuate greatly.

Table 15. Changes in livelihoods activities and assets reported by 31 Rich and Medium families

Changes in Livelihood Activities	K	M	D	P	G	In	B	Sh	**No. of changes**	**% of total number of changes**
Fruit plantations started	4	1	1			1			**7**	**19**
Vegetable production started			2	2	3	4		1	**12**	**32**
Sugar cane production started	1			2					**3**	**8**
Brick production	2								**2**	**5**
Started dairy production and sale		2	1		2	2	1	3	**11**	**30**
Started business		1					1		**2**	**5**
Totals	7	4	4	4	5	7	2	4	**37**	**%**
Changes in assets	K	M	D	P	G	In	B	Sh	**Number of changes**	**% of total number of changes**
Irrigation: bore holes installed	2	1	2	2			2		**9**	**20.5**
Irrigation with sewage					3	2			**5**	**11**
Tractors, combines & trucks	3	1	1	2		1	2	1	**11**	**25**
Leasing* in land		1			1	1			**3**	**7**
Purchased land	2		1	3	1	2	1	1	**12**	**27**
Leasing out land							1	1	**2**	**4.5**
Sold land	1				1				**2**	**4.5**
									44	**100%**

Most of the families studied who had members taking up employment (casual or regular) opportunities in the commercial sector live closer to the town, in Bidinal or Gabbur. Even so, those working in shops on a regular basis find the transport costs high and also find that it's difficult to arrive at work on time, which makes their jobs insecure. One mother is trying to persuade her son to learn agricultural skills and to

start agricultural labouring with her in place of shop work as she wants her son to be in the village. Another person, employed as a bus conductor, collecting money from customers on the journey to and from Pudakalkatti, complained that there was a great deal of risk involved as accidents are frequent and one can get beaten up by angry customers when you ask them for their money.

5.2.3. Changes to livelihood strategies reported by the wealthier (rich and medium category) study households.

When the results of changes in activities are compared between the transects for the wealthier households in the same way as for the poorer households in section 5.2.2, there is very little difference between nearer (18) and further villages (17) and the same can be said for changes in assets (Table 16). This suggests that the pressures for change amongst the wealthy are less related to factors influenced by proximity to the cities than for the poor, where the difference in number of changes in livelihood activities were nearly twice as many in the nearer villages.

Table 16 Comparison of the number of changes in livelihood activities amongst rich and medium families between nearer and further villages.

Nearer villages	Kelageri	Dasankoppa	Gabbur	Bidnal	**Total**
	7	4	5	2	18
Further villages	Mandihal	Pudakalkatti	Inamveerapur	Shiraguppi	**Total**
	4	4	7	4	19

The changes recorded in table 15 reflect the main causes for change described in the flow chart (Figure 9). Most of the changes in livelihood strategies of the wealthier (rich and medium category) families studied have been one or a combination of:

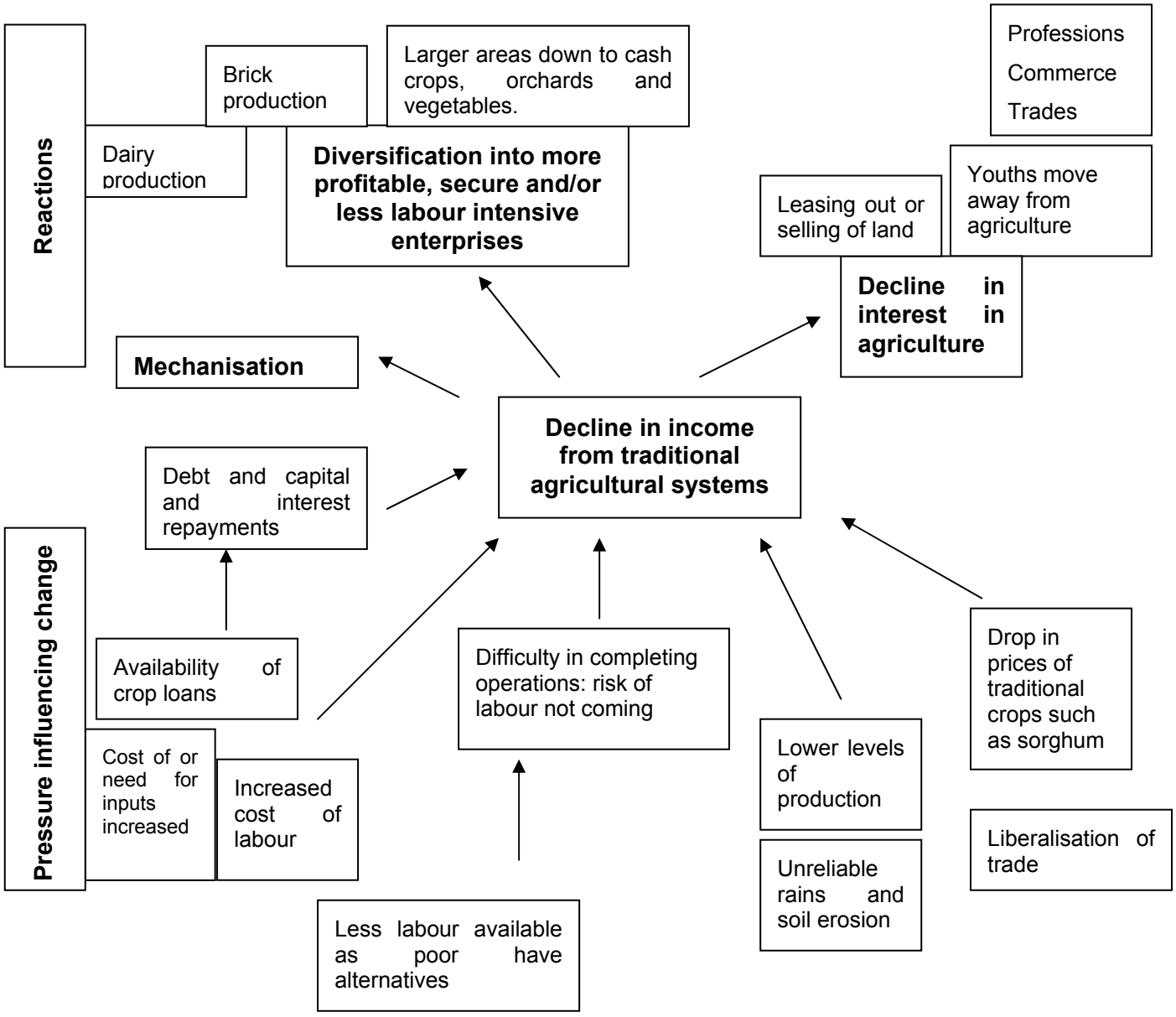
i) adaptations to decline in availability of labour for agriculture

ii) reaction to changing/emerging markets

iii) reduction in interest in agriculture resulting from reduced profitability and insecure income and changing expectations of youths.

Following on from the above discussion about the opportunities taken up by some of the poorer families studied, one of the key factors that has influenced change amongst the wealthy is the reduction in availability and increased cost of agricultural labour. Farmers began to feel this trend as early as the mid 1970s, which is when, according to the quarry and brick kiln time lines (tables 12 and 13 above), the area available for such developments was expanded. During this period annual crops were also hit by drought and the combination of these factors and good prices for fruit such as mango and guava encouraged farmers to put considerable proportions of land down to plantations of orchards. This was particularly prevalent in Kelageri, where all four of the wealthier households studied (box 1) adapted in similar ways in the 1970s and 1980s, and continued to expand the area under orchards, some by buying more land especially for the purpose.

Figure 9. Factors influencing change in livelihood strategies amongst the rich and medium families.



Coinciding with a decline in availability of labour has been the increase in mechanization of agriculture, and of the 29 wealthier families in the sample that had land, 11 of the larger land holders had purchased machines (mostly tractors) since the 1980s. In Bidnal household study1, a tractor and harvester had been purchased.

A similarly large number (9) have installed irrigation facilities to allow the expansion of areas under orchard or other high value crops such as groundnuts, sorghum, vegetables and flowers. In addition to these 9, 5 more have started irrigation with sewage water. Since the late 1970s farmers in Gabbur and Inamveerapur have been able to benefit from the increase in sewage water by tapping into the sewage channels that pass through both of these villages, a resource mentioned by five of the eight wealthier families interviewed in the area (see Annex F which deals specifically with the issue of sewage irrigation). This resource has enabled farmers to diversify cropping from rainfed to irrigated vegetables and there are several examples of families (see box 2) leasing or buying land in order to expand production. Mr. Nagaraj, a representative of The Pollution Control Board reported that villagers in Gabbur had told him that "sewage irrigation is a lifeline" (Report of the target Institutions Meeting Zilla Panchayat office Dharwad August 17th 2001, Project R7959).

Box 1. Time lines of the four wealthier households studied in Kelageri.

	Rich household in Kelageri (study 1)		*Rich household Kelageri(study 2)*
1950	Rainfed agriculture on 12 acres.	1950	Inherited 20 acres
1970	Started mango plantation (100 plants)	1960	Purchased 5 acres (it's not know for what purpose)
1990	Bought 8 acres and started brick kilns		
1996	Drilled bore well and bought a tractor	1980	Planted 150 mangos
1997	Irrigated agriculture: sugar cane and groundnuts	1990	Started brick kilns
		1995	Drilled bore well
1998	Expansion of mango and sapota plantations	2000	Planted another 150 mangos (Of 25 acres, 7.5 are now under mangos)
	Medium household in Kelageri (study 3)		*Medium household in Kelageri (study 4).*
1975	Purchased tractor. Agriculture on 15 acres.	1976	15 acres of mango planted
		1993	Tractor bought with bank loan
1985	Planted Mango orchard (4 acres)	1998	Sold 10 acres to pay off loan
1990	Purchased house and land (4 acres)	1999	Planted 4 more acres of mango
1994	Started brick kilns		
1999	Stopped brick kilns due to lack of soil		Now has 40 acres, 19 under mango.
2000	Started partnership for brick kilns, taking soil form other areas.		

The increase in brick production has already been described (table 12) and within the sample it was concentrated amongst the Kelageri families of whom three in four started kilns in the 1990s in order to supplement incomes.

The number of wealthy families in the sample establishing dairy production increased from the 1970s with seven of the 11 starting in the 1990s. It is interesting to note that Mr. Kathavate, Assistant Director of the Department of Animal Husbandry reported that 46% of the loans made within the agricultural sector go to animal husbandry (Report of the Target Institutions Meeting Zilla Panchayat office Dharwad 17 August, 2001; Project R7959). The most common reason reported was to supplement income from agricultural activities with a product that had a secure market, although one family (Shiraguppi family 1) had started selling because of an excess production

of milk. One family stopped dairy production as it became difficult to find labour to graze the animals and they did not want to take a child out of school.

Box 2. Time lines of the four wealthier households studied in Gabbur

	Rich household – study 1		*Rich household study 2*
1979	Bought "water lifting machine" and started growing with sewage water for city market.	1975	Irrigation from sewage canal became possible
1998	Bought tractor	1980	Started vegetable production, moving out of rainfed crops.
	Medium Household - study 3		*Medium household – study 4*
1978	Started work as agricultural labourer	1990	Started agriculture on 3 acres of inherited land.
1980	Bought land "on lease basis"		
1981	Started working own land	1995	Leased in 3 acres of additional land and bought 2 buffalo.
1985	Bought diary animals		
1989	Reconstructed old house	1998	Renovated house Bought 2 bullocks

Within the sample of rich and medium families there were only four who had sold land or leased out land, compared to the fifteen who had expanded their area. Of the former, one had sold 1 acre for development and the other 10 acres to pay back debts incurred through the marriage of his daughter and purchase of a tractor. The only examples of reduction in area of land due to the lack of profits from production were found in Bidnal where family 3 stopped leasing in land and started a grocery shop, and in Shiraguppi, family 2 started to lease out 50% of his land (20 acres) in 1998 due to labour problems and lack of profits. He said that at times of peak labour requirements he did not sleep at nights for fear the labour would not show up to do the work and the produce would be spoiled in the fields.

6. Vulnerability and coping strategies.

The following tables represent summaries of the main factors increasing vulnerability describedamongst the households studied.

Table 17 Factors promoting vulnerability reported in five of the wealthy households studied, the strategy used to cope and indications of their impact on security of livelihoods

Village, household study number & socio-economic category	Description of shock, trend, stress.	Coping strategy	Impact on well being and security of livelihood.
Shiraguppi 2 Rich	Labour shortage and crop failure (1994), Poor health of father, death of one of the remaining bullocks and debt.	1994: Sold 2 bullocks & reduced agricultural activities to favour dairy. 1998 started leasing out 50% of land (20 acres).	Regular income from leasing land has eased debt and there is security in knowledge that land is still under own control. Women working on own land.
Kelageri 4 Medium	Marriage costs and debt from buying tractor.	Sold 10 acres and then planted 4 more acres with mango	Assets somewhat depleted but no longer in debt. Family still able to send 11 children to school.
Bidnal 4 Medium	5 years ago, an accident at work caused father's leg injury; now disabled.	Shared out his 7 acres of land and gets % of the crop in payment.	With continued income from land and from Dairy production managed by wife the 3 children are still able to go to school and assets are maintained.
Shiraguppi 3 Medium	Erratic rainfall, decline in soil fertility and low prices.	Defaulters at bank. Borrow money from co-operative society. Loans increased from Rs 800 to Rs2000/acre.	In debt. No children to send to school, but apparent decline in socio-economic position (owner of 40 acres usually considered rich, not medium). Also, son has found trade to follow (tiling), not usual for medium families.
Inamveerapur 3 Medium	Death of husband in 1980	Wife and 2 sons (1 of 10 years) worked in Ag. labour or in factory and leased out their 2 acres for 9 years until debts paid and family had capacity to work own land. They then took it back and started growing vegetables.	Whole family work on land, earn sufficient and have security in land and occupation.

Table 18 Factors promoting vulnerability reported in eight of the poorer households studied, the strategy used to cope and indications of their impact on security of livelihoods.

Village, study number & socio-economic category	Description of shock, trend, stress.	Coping strategy	Impact on security of livelihood.
Gabbur 8 Very poor	Disabled husband and aged wife.	"Devadasi": Devotee of Goddess Yellema	Supported in food by 10 – 15 households. Possibilities of expanding to cover more households.
Gabbur 6 Poor	Husband drinks and not always able to work.	Lives off her wages from agricultural labour and that of her 12 year old daughter and son (apprentice plumber).	Reduced income. Child not at school.
Inamveerapur 6 Poor	Owe Rs 10,000 to brick kiln owner for marriage of daughter and payment for health care (2 young sons who died.)	He is old himself (60 odd yrs) but able to lease out his 1 acre, and son wife and daughter work in brick production until debt is repaid. Also agricultural labour and selling of wood.	Young daughter not attending school.
Inamveerapur 5 Poor	Used to contract the management and harvest of mango orchards until prices crashed in 1995 and lost all money.	Recovering slowly by buying and selling head basket loads of fruit and curds to supplement ag. labour wages.	Reduced income and reserves, but has intention to return to contracting orchards.
Inamveerapur 7 Very poor	Marriage expenses of 2 daughters.	Leased out is 2 acres of land.	Agricultural labour and pipeline work. Loss of independence ie: dependent on others for work and have to go to town for better paid pipeline job.
Mandihal 4 Medium	Worked for 20 years in the quarries, then stopped due to ill health caused by dust.	Now working as agricultural labourer.	Less pay but necessary for health reasons. Son still working in the quarry.
Mandihal 8 Very poor	Husband developed "asthma" in 1992, stopped work then but died in 1998. Widow has tailoring skills but developed depression and has not worked since.	Support from sons in law. No one working (sons still under 12 years).	Dependent.
Pudakalkatti 8 Very poor	Drought in village. Dependency ratio: Old women and 3 children. Only himself and wife to work.	Left agr. labour work for Coolie work in Dharwad + extra job of collecting money on buses. Sold land (1 *gunta**).	Insecurity due to dangers of collecting money on buses – physical abuse and risk of road accidents.

*In 1980 land leased at a rate of Rs 400/year or 800/year depending on quality.

* $1/10^{th}$ of an acre (0.04 ha)

Health and health hazards

Eight of the above 13 cases of vulnerability were associated with health problems and costs (three wealthy and five poor). In seven cases this meant a reduction in family labour/ skill. In one case health care costs had left the family heavily in debt. Most of the problems were a result of disability due to work related illness or accidents, and /or death of the head of household. One however was self inflicted, related to alcoholism, a problem considered to be a result of men working in the cities away from home, as they are tempted to spend part of their daily earnings in bars with colleagues on their way home. In this case the drinking had weakened the man's physical capacity to the extent that he had been unable to continue working. This problem was also reported in a previous study (Environmental Planning and Management project R7209) in other villages in the PUI area.

In the above cases there are two examples of where women have lost their husbands. Although the widow from the wealthier medium category (Inamveerapur) had land, she was unable to farm it herself, not having the skills or capacity, and having two young sons. They leased out the land, obtaining some income from that; the 10 year old worked in a factory and the others in agricultural labour until they were old enough and sufficiently knowledgeable to regain their land and start vegetable production. The value of leasing out land is evident from this example. The asset is secure for future use and still brings in a regular income. In contrast the landless carpenter's wife had few resources to rely on and became dependent on family support.

Work related illnesses mentioned in the above table include respiratory problems from carpentry and quarry work. This problem is well known amongst the quarry workers, but as wage levels are higher and agriculture in the area quite poor, many derive the main part of their income from this activity. Women are particularly vulnerable as they have fewer alternatives, due to their preference to work within the village, closer to domestic duties. The same can be said of other hazards such as that of exposure to the risks of sewage irrigation of vegetable crops. Women are involved to a greater extent in the husbandry of the crop, especially weeding (Bradford, 2001).

Another hazard that could be considered work related is the danger presented by the poorly controlled road traffic. Several fatal accidents were observed in a ten day period on the road between Dharwad and Hubli, one of which involved a bus which ran into women selling fruit by the road side, killing them and many of the passengers. This concern was expressed by one man who has taken up the opportunity to add to his income by collecting the bus fares on a private bus service running from Pudakalkatti.

Insecurity of production and markets.

Insecure markets for agricultural products (including fruit), a shortage of labour and crop failure, appear as stress or shocks in five of the above cases. Most of these are the wealthier land owners, but poorer families, including agricultural labourers and orchard contractors have also been affected, and have had to adopt less favourable livelihood activities as a result. The better off have turned the focus of their activities to those that offer greater security, including orchards and dairy production.

Table 19 A summary of coping mechanisms from tables 17 and 18.

Coping mechanisms	Wealthier	Poorer	Total
Sale of land	1	1	2
Leasing (or sharing) out of land	3	2	5
Choosing more secure livelihood options	2		2
Choosing poorer livelihood options .		5	3
Resorting to debt	3	2	5
Women working	2		2
Depend on women and children working.		3	3
Dependent on relatives or others		2	2

Debt

Five in thirteen cases describe how households have become indebted. Three of the cases have had to pay for marriage ceremonies and in combination with the costs of health care and crop/market failure mentioned above, have resorted to borrowing money. The problem of repaying debt has been met by selling or leasing out land by both the wealthy and poor. The poor, however, combine this with increasing the contribution of women and children to the work force, and adopting poorer livelihood activities, as they have insufficient area to lease out as well as continue farming.

The link between price fluctuations of agricultural products and the level or gravity of debt into which farmers fall has been firmly established by A.Bradford (2001) in a summary of articles from the "Deccan Herald" newspaper, on farmer suicides in Dharwad district. In this particular season maize and potato growers had been especially affected by the volatile markets. Farmers suffer an "inability to repay debts often accrued over several years and then one particularly bad crop failure or severe market price collapse results in large losses" (Bradford 2001) In order to obtain loans from banks the farmers have to mortgage their ancestral land or put their house up for security, adding pressure to the situation.

References

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